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MB91F585LA/B/C/D
MB91F586LA/B/C/D
MB91F587LA/B/C/D

FR81S, MB91580L Series Microcontroller Datasheet

This series has Cypress 32-bit microcontrollers for automobile motor control. They use the FR81S CPU that is compatible with the FR family.

Features

FR81S CPU Core

- 32-bit RISC, load/store architecture, pipeline 5-stage structure
- Maximum operating frequency: 128MHz (Source oscillation= 4.0MHz, 32 multiplied (PLL clock multiplication system))
- General-purpose register: 32 bits, 16 sets
- 16-bit fixed length instructions (basic instructions), 1 instruction per cycle
- Instructions appropriate to embedded applications
 - Memory-to-memory transfer instructions
 - Bit manipulation instructions
 - Barrel shift instructions
- High-level language support instructions
 - Function entry/exit instructions
 - Register content multi-load and store instructions
- Bit search instructions
Logical 1 detection, 0 detection, and change-point detection
- Branch instructions with delay slot
Overhead decrement during branch process
- Register interlock function
Easy assembler writing
- Built-in multiplier and instruction level support
 - Signed 32-bit multiplication: 5 cycles
 - Signed 16-bit multiplication: 3 cycles
- Interrupt (PC/PS saving)
 - 6 cycles (16 priority levels)
- The Harvard architecture allows simultaneous execution of program and data access.
- Instruction compatibility with the FR family
- Built-in memory protection function (MPU)
 - Eight protection areas can be specified commonly for instructions and data.
 - Control access privilege in both privilege mode and user mode
- Built-in FPU (floating-point operation)
 - IEEE754 compliant
 - Floating-point register: 32 bits × 16 sets

Peripheral functions

- Clock generation (SSCG function is available)
 - Main oscillation (4 to 20 MHz)
 - PLL multiplication rate: 1 to 32 times
- CR oscillation
 - Oscillation frequency: 100kHz, with frequency accuracy $\pm 50\%$ (pre-trimming)
 - Trimming is enabled
 - To be used as a count clock of hardware watchdog
 - MB91F585LC/F586LC/F587LC/F585LD/F586LD/F587LD: Oscillation stop feature during stand-by is not available
 - MB91F585LA/F586LA/F587LA/F585LB/F586LB/F587LB: Oscillation stop feature during stand-by is available
- Built-in program flash memory capacity
MB91F585L: 512+64 Kbytes
MB91F586L: 768+64 Kbytes
MB91F587L: 1024+64 Kbytes
- Built-in data flash (WorkFlash) 64 Kbytes
- Built-in RAM capacity
 - Main RAM
MB91F585L: 48 Kbytes
MB91F586L: 64 Kbytes
MB91F587L: 96 Kbytes
 - Backup RAM 8 Kbytes
- General-purpose ports:
MB91F585LA/F586LA/F587LA/F585LC/F586LC/F587LC 98 ports
MB91F585LB/F586LB/F587LB/F585LD/F586LD/F587LD 111 ports
 - Including eight I²C pseudo open drain corresponding ports
- External bus interface
(MB91F585LB/F586LB/F587LB/F585LD/F586LD/F587LD)
 - Maximum operating frequency: 40MHz
 - 22-bit address, 16-bit data
- DMA controller
 - Up to 8 channels can be started simultaneously.
 - 2 transfer factors (Internal peripheral request and software)

- External interrupt input: 8 channels
Level ("H" / "L") or edge detection (rising or falling) enabled
- Multi-function serial communication (built-in transmission/reception FIFO memory): 5 channels
< UART (Asynchronous serial interface) >
 - Full-duplex double buffering system, 64-byte transmission FIFO memory, 64-byte reception FIFO memory
 - Parity or no parity is selectable.
 - Built-in dedicated baud rate generator
 - An external clock can be used as the transfer clock
 - Parity, frame, and overrun error detection functions provided
 - DMA transfer supported
- < CSIO (Synchronous serial interface) >
 - Full-duplex double buffering system, 64-byte transmission FIFO memory, 64-byte reception FIFO memory
 - SPI supported; master and slave systems supported; 5 to 16, 20, 24, 32-bit data length can be set.
 - Built-in dedicated baud rate generator (Master operation)
 - An external clock can be entered. (Slave operation)
 - Overrun error detection function is provided.
 - Built-in chip selection function
 - DMA transfer supported
- < LIN interface (v2.1) >
 - Full-duplex double buffering system, 64-byte transmission FIFO memory, 64-byte reception FIFO memory
 - LIN protocol revision 2.1 supported.
 - Master and slave systems supported
 - Framing error and overrun error detection
 - LIN synch break generation and detection; LIN synch delimiter generation
 - Built-in dedicated baud rate generator
 - An external clock can be adjusted by the reload counter.
 - DMA transfer supported
- < I²C >
 - Supported for 4 channels: ch.0, ch.1, ch.3, and ch.4.
 - Full-duplex double buffering system, 64-byte transmission FIFO memory, 64-byte reception FIFO memory
 - Standard mode (Max. 100 kbps) / high-speed mode (Max. 400 kbps) supported
 - DMA transfer supported (for transmission only)
- CAN controller (CAN): 3 channels
 - Transfer speed: Up to 1Mbps
 - 64-transmission/reception message buffering: 3 channels
- FlexRay controller: 1 unit (ch.A/ch.B)
 - FlexRay Specifications Version 2.1 supported
 - Up to 128 message buffers
 - 8K bytes of message RAM
 - Variable length of message buffers
 - Each message buffer can be allocated as a part of reception buffer, transmission buffer or reception FIFO memory
 - Host access to the message buffer via input and output buffers
 - Filtering for slot counter, cycle counter and channels
 - Maskable interrupts are supported
- PPG: 16 bits × 24 channels
- Reload timer: 16 bits × 4 channels
- A/D converter (successive approximation type)
 - 12-bit resolution: 3 units (24 channels)
 - Conversion time: 1 μs
- Free-run timer: 16 bits × 6 channels (1 channel can be selected for input capture, and 1 channel for output compare.)
- Input capture: 16 bits × 8 channels (linked to the free-run timer)
- Output compare: 16 bits × 12 channels (linked to the free-run timer)
- Waveform generator: 2 units (12 channels)
- R/D converter: 1 channel
(MB91F585LA/F586LA/F587LA/F585LC/F586LC/F587LC)
- 10-bit D/A converter: 1 channel
(MB91F585LB/F586LB/F587LB/F585LD/F586LD/F587LD)
- Calibration: The hardware watchdog for CR oscillation drive
The CR oscillation frequency can be trimmed.
- Clock Supervisor
 - Anomaly supervisory feature (by damaged quartz, etc.) of external main oscillation (4MHz)
 - When anomaly is detected, clock is switched to CR.
- Up/ down counter: 2 channels
8/16-bit Up/ down counter
- Base timer: 2 channels
 - 16-bit timer
 - Any of four PWM/PPG/PWC/reload timer functions can be selected and used.
 - As for the functions of PWC and reload timer, 2 channels of cascade mode can be used as 32-bit timer.
- CRC generation
- Watchdog timer
 - Hardware watchdog
 - Software watchdog
- NMI

- Interrupt controller
- Interrupt request batch read
 - Multiple interrupts from peripherals can be read by a series of registers.
- I/O relocation
 - Change of pin position of peripheral functions
- Low-power consumption mode
 - Sleep/Stop/Watch
 - Stop (Power shut-off)/Watch (Power shut-off)
- Power-on reset
- Low-voltage detection reset (external low-voltage detection)
- Low-voltage detection reset (internal low-voltage detection)
- Device package: LQFP-144
- CMOS 90 nm technology
- Power supplies
 - Single 5V power supply
 - The voltage step-down circuit brings the 5.0V down to generate 1.2V internally
 - I/O 5.0V

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1. Product Lineup

MB91580L Series Product Lineup Comparison

■ Memory size

Items	MB91F585LA MB91F585LB MB91F585LC MB91F585LD	MB91F586LA MB91F586LB MB91F586LC MB91F586LD	MB91F587LA MB91F587LB MB91F587LC MB91F587LD
Flash memory capacity (program)	512+64 Kbytes	768+64 Kbytes	1024+64 Kbytes
Flash memory capacity (work)	64 Kbytes		
RAM capacity (main)	48 Kbytes	64 Kbytes	96 Kbytes
RAM capacity (backup)	8 Kbytes		

■ Function

Items	MB91F585LA MB91F586LA MB91F587LA	MB91F585LB MB91F586LB MB91F587LB	MB91F585LC MB91F586LC MB91F587LC	MB91F585LD MB91F586LD MB91F587LD
System clock	On-chip PLL clock multiplication system (Up to 32 times of multiplication) Minimum instruction execution time: 7.81ns (128MHz, source oscillation 4MHz × 32 times of multiplication)			
CR oscillation	Provided			
Oscillation stop feature during stand-by	Provided	Provided	Not provided	Not provided
External bus interface	Not provided	Address: 22 bits Data: 16 bits	Not provided	Address: 22 bits Data: 16 bits
DMA transfer	8 channels			
16-bit base timer	2 channels			
Free-run timer	6 channels			
Input capture	8 channels			
Output compare	12 channels			
Waveform generator	2 units (12 channels)			
16-bit reload timer	4 channels			
PPG	24 channels			
External interrupt	8 channels			
A/D converter	3 units (24 channels)			
R/D converter	Provided	Not provided	Provided	Not provided
D/A converter	Not provided	Provided	Not provided	Provided
Up/ down counter	2 channels			
Multi-function serial interface	5 channels			
CAN	64 msb × 3 channels (ch.0/ch.1/ch.2)			
FlexRay	128 msb × 1 unit (ch.A / ch.B)			
Software watchdog	Provided			
Hardware watchdog	Provided			

Items	MB91F585LA MB91F586LA MB91F587LA	MB91F585LB MB91F586LB MB91F587LB	MB91F585LC MB91F586LC MB91F587LC	MB91F585LD MB91F586LD MB91F587LD
CRC generation	1 channel			
Low-voltage detection reset (Internal low-voltage detection)	Provided			
Low-voltage detection reset (External low-voltage detection)	Provided			
Device package	LQFP-144			
Debug interface	Built-in OCD (On Chip Debug Unit)			

MB91580M Series Product Lineup Comparison
■ Memory size

Items	MB91F583MG MB91F583MH MB91F583MJ MB91F583MK	MB91F584MG MB91F584MH MB91F584MJ MB91F584MK	MB91F585MG MB91F585MH MB91F585MJ MB91F585MK
Flash memory capacity (program)	256+64 Kbytes	384+64 Kbytes	512+64 Kbytes
Flash memory capacity (work)	64 Kbytes		
RAM capacity (main)	32 Kbytes	48 Kbytes	48 Kbytes
RAM capacity (backup)	8 Kbytes		

■ Function

Items	MB91F583MG MB91F584MG MB91F585MG	MB91F583MH MB91F584MH MB91F585MH	MB91F583MJ MB91F584MJ MB91F585MJ	MB91F583MK MB91F584MK MB91F585MK
System clock	On-chip PLL clock multiplication system (Up to 32 times of multiplication) Minimum instruction execution time: 7.81ns (128MHz, source oscillation 4MHz × 32 times of multiplication)			
CR oscillation	Provided			
Oscillation stop feature during stand-by	Provided	Provided	Not provided	Not provided
External bus interface	Not provided			
DMA transfer	8 channels			
16-bit base timer	2 channels			
Free-run timer	6 channels			
Input capture	4 channels			
Output compare	7 channels			
Waveform generator	2 unit (7channels)			
16-bit reload timer	4 channels			
PPG	6 channels			
External interrupt	8 channels			
A/D converter	3 units (23 channels)			
R/D converter	Not provided			
D/A converter	Provided			
Up/ down counter	2 channels			
Multi-function serial interface	4 channels			
CAN	64msb × 2 channels (ch.0/ch.1)			
FlexRay	128msb × 1 unit (ch.A / ch.B)	Not provided	128msb × 1 unit (ch.A / ch.B)	Not provided
Software watchdog	Provided			
Hardware watchdog	Provided			
CRC generation	2 channels			

Items	MB91F583MG MB91F584MG MB91F585MG	MB91F583MH MB91F584MH MB91F585MH	MB91F583MJ MB91F584MJ MB91F585MJ	MB91F583MK MB91F584MK MB91F585MK
Low-voltage detection reset (Internal low-voltage detection)	Provided			
Low-voltage detection reset (External low-voltage detection)	Provided			
Device package	LQFP-100			
Debug interface	Built-in OCD (On Chip Debug Unit)			

Note: For details on the MB91580M series, see the "MB91580M/S Series HARDWARE MANUAL".

MB91580S Series Product Lineup Comparison
■ Memory size

Items	MB91F583SG MB91F583SH MB91F583SJ MB91F583SK	MB91F584SG MB91F584SH MB91F584SJ MB91F584SK	MB91F585SG MB91F585SH MB91F585SJ MB91F585SK
Flash memory capacity (program)	256+64 Kbytes	384+64 Kbytes	512+64 Kbytes
Flash memory capacity (work)	64 Kbytes		
RAM capacity (main)	32 Kbytes	48 Kbytes	48 Kbytes
RAM capacity (backup)	8 Kbytes		

■ Function

Items	MB91F583SG MB91F584SG MB91F585SG	MB91F583SH MB91F584SH MB91F585SH	MB91F583SJ MB91F584SJ MB91F585SJ	MB91F583SK MB91F584SK MB91F585SK
System clock	On-chip PLL clock multiplication system (Up to 32 times of multiplication) Minimum instruction execution time: 7.81ns (128MHz, source oscillation 4MHz × 32 times of multiplication)			
CR oscillation	Provided			
Oscillation stop feature during stand-by	Provided	Provided	Not provided	Not provided
External bus interface	Not provided			
DMA transfer	8 channels			
16-bit base timer	2 channels			
Free-run timer	6 channels			
Input capture	4 channels			
Output compare	7 channels			
Waveform generator	2 unit (7channels)			
16-bit reload timer	4 channels			
PPG	6 channels			
External interrupt	7 channels			
A/D converter	3 units (17 channels)			
R/D converter	Not provided			
D/A converter	Provided			
Up/ down counter	2 channels			
Multi-function serial interface	2 channels			
CAN	64msb × 1 channel (ch.0)			
FlexRay	128msb × 1unit (ch.A / ch.B)	Not provided	128msb × 1unit (ch.A / ch.B)	Not provided
Software watchdog	Provided			
Hardware watchdog	Provided			
CRC generation	2 channels			

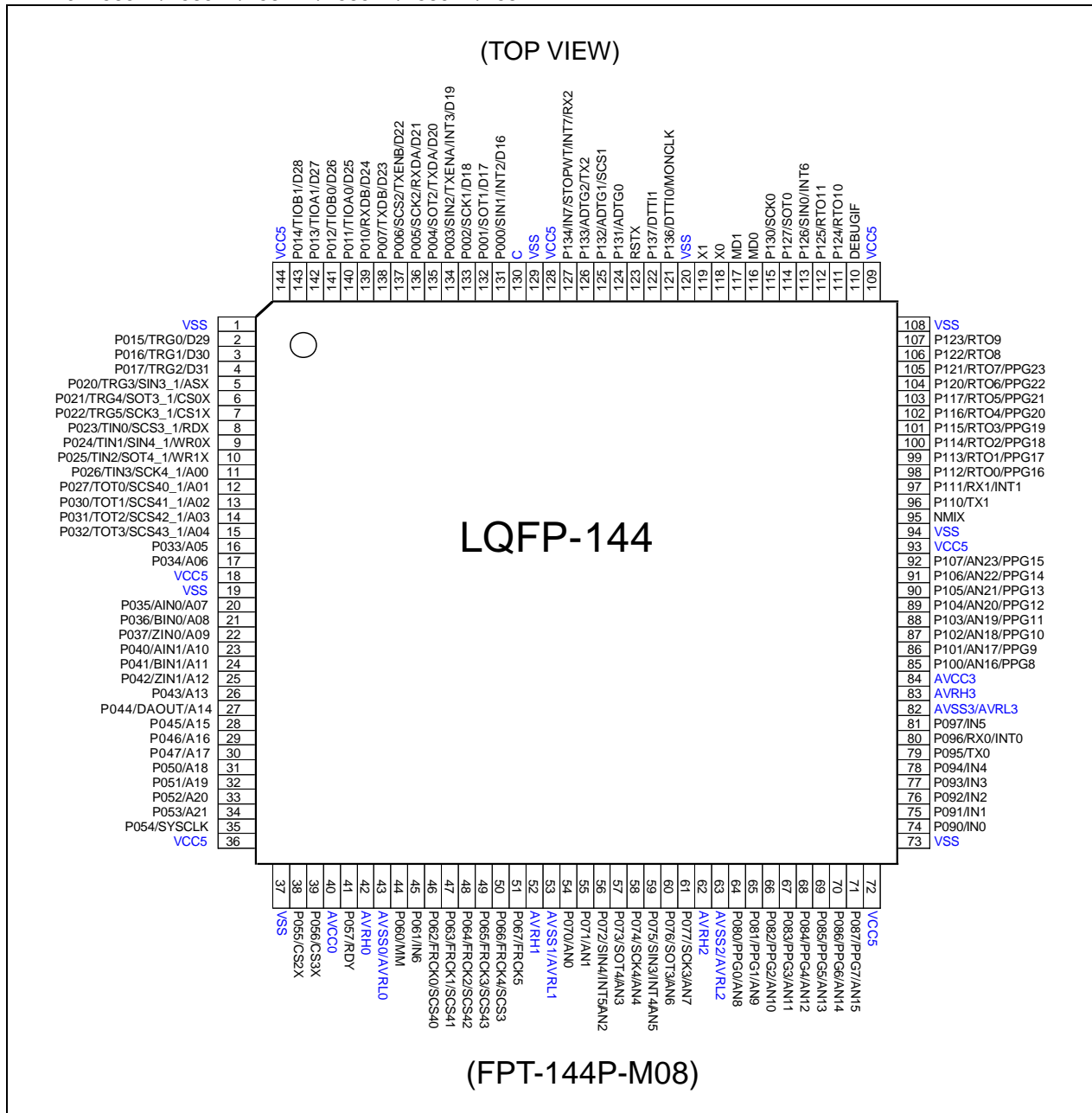
Items	MB91F583SG MB91F584SG MB91F585SG	MB91F583SH MB91F584SH MB91F585SH	MB91F583SJ MB91F584SJ MB91F585SJ	MB91F583SK MB91F584SK MB91F585SK
Low-voltage detection reset (Internal low-voltage detection)	Provided			
Low-voltage detection reset (External low-voltage detection)	Provided			
Device package	LQFP-64			
Debug interface	Built-in OCD (On Chip Debug Unit)			

Note: For details on the MB91580S series, see the "MB91580M/S Series HARDWARE MANUAL".



■ LQFP-144 Pin Assignment MB91F585LA/F586LA/F587LA/F585LC/F586LC/F587LC

■ MB91F585LB/F586LB/F587LB/F585LD/F586LD/F587LD



3. Pin Description

■ MB91F585LA/F586LA/F587LA/F585LC/F586LC/F587LC

Pin No.	Pin name	I/O circuit type*	Function
118	X0	A	Main clock oscillation input pin
119	X1		Main clock oscillation output pin
95	NMIX	B	Interrupt input pin without mask
123	RSTX	B	External reset input pin
116	MD0	C	Mode pin 0 (with high-voltage control)
117	MD1	C	Mode pin 1 (with high-voltage control)
131	P000	E	General-purpose I/O port
	INT2		INT2 external interrupt input pin
	SIN1		Multi-function serial ch.1 serial data input pin
132	P001	K	General-purpose I/O port
	SOT1		Multi-function serial ch.1 serial data output pin/ I ² C ch.1 serial data I/O pin (SDA)
133	P002	K	General-purpose I/O port
	SCK1		Multi-function serial ch.1 clock I/O pin/ I ² C ch.1 clock I/O pin (SCL)
134	P003	O	General-purpose I/O port
	TXENA		FlexRay ch.A operation enable output pin
	INT3		INT3 external interrupt input pin
	SIN2		Multi-function serial ch.2 serial data input pin
135	P004	N	General-purpose I/O port
	TXDA		FlexRay ch.A data output pin
	SOT2		Multi-function serial ch.2 serial data output pin
136	P005	N	General-purpose I/O port
	RXDA		FlexRay ch.A data input pin
	SCK2		Multi-function serial ch.2 clock I/O pin
137	P006	N	General-purpose I/O port
	TXENB		FlexRay ch.B operation enable output pin
	SCS2		Multi-function serial ch2 serial chip select I/O pin
138	P007	N	General-purpose I/O port
	TXDB		FlexRay ch.B data output pin
139	P010	N	General-purpose I/O port
	RXDB		FlexRay ch.B data input pin
140	P011	D	General-purpose I/O port
	TIOA0		Base timer ch.0 TIOA I/O pin

Pin No.	Pin name	I/O circuit type*	Function
141	P012	D	General-purpose I/O port
	TIOB0		Base timer ch.0 TIOB I/O pin
142	P013	D	General-purpose I/O port
	TIOA1		Base timer ch.1 TIOA I/O pin
143	P014	D	General-purpose I/O port
	TIOB1		Base timer ch.1 TIOB I/O pin
2	P015	D	General-purpose I/O port
	TRG0		PPG ch.0 to ch.3 external trigger
3	P016	D	General-purpose I/O port
	TRG1		PPG ch.4 to ch.7 external trigger
4	P017	D	General-purpose I/O port
	TRG2		PPG ch.8 to ch.11 external trigger
5	P020	D	General-purpose I/O port
	TRG3		PPG ch.12 to ch.15 external trigger
	SIN3_1		Multi-function serial ch.3 serial data input pin (1)
6	P021	K	General-purpose I/O port
	TRG4		PPG16 to PPG19 external trigger
	SOT3_1		Multi-function serial ch.3 serial data output pin (1)/ I ² C ch.3 serial data I/O pin (1) (SDA)
7	P022	K	General-purpose I/O port
	TRG5		PPG ch.20 to ch.23 external trigger
	SCK3_1		Multi-function serial ch.3 clock I/O pin (1)/ I ² C ch.3 clock I/O pin (1) (SCL)
8	P023	D	General-purpose I/O port
	TIN0		Reload timer ch.0 event input pin
	SCS3_1		Multi-function serial ch.3 serial chip select I/O pin (1)
9	P024	D	General-purpose I/O port
	TIN1		Reload timer ch.1 event input pin
	SIN4_1		Multi-function serial ch.4 serial data input pin (1)
10	P025	K	General-purpose I/O port
	TIN2		Reload timer ch.2 event input pin
	SOT4_1		Multi-function serial ch.4 serial data output pin (1)/ I ² C ch.4 serial data I/O pin (1) (SDA)
11	P026	K	General-purpose I/O port
	TIN3		Reload timer ch.3 event input pin
	SCK4_1		Multi-function serial ch.4 clock I/O pin (1)/ I ² C ch.4 clock I/O pin (1) (SCL)

Pin No.	Pin name	I/O circuit type*	Function
12	P027	D	General-purpose I/O port
	TOT0		Reload timer ch.0 output pin
	SCS40_1		Multi-function serial ch.4 serial chip select 0 I/O pin (1)
13	P030	D	General-purpose I/O port
	TOT1		Reload timer ch.1 output pin
	SCS41_1		Multi-function serial ch.4 serial chip select 1 output pin (1)
14	P031	D	General-purpose I/O port
	TOT2		Reload timer ch.2 output pin
	SCS42_1		Multi-function serial ch.4 serial chip select 2 output pin (1)
15	P032	D	General-purpose I/O port
	TOT3		Reload timer ch.3 output pin
	SCS43_1		Multi-function serial ch.4 serial chip select 3 output pin (1)
16	P033	D	General-purpose I/O port
17	P034	D	General-purpose I/O port
20	P035	D	General-purpose I/O port
	AIN0		Up/ down counter ch.0 AIN input pin
	RDC_U		RDC phase U output pin
21	P036	D	General-purpose I/O port
	BIN0		Up/ down counter ch.0 BIN input pin
	RDC_V		RDC phase V output pin
22	P037	D	General-purpose I/O port
	ZIN0		Up/ down counter ch.0 ZIN input pin
	RDC_W		RDC phase W output pin
23	P040	D	General-purpose I/O port
	AIN1		Up/ down counter ch.1 AIN input pin
	RDC_A		RDC phase A output pin
24	P041	D	General-purpose I/O port
	BIN1		Up/ down counter ch.1 BIN input pin
	RDC_B		RDC phase B output pin
25	P042	D	General-purpose I/O port
	ZIN1		Up/ down counter ch.1 ZIN input pin
	RDC_Z		RDC phase Z output pin
26	RDC_ACT	J	RDC operation status output pin
27	MAG_OUT	I	RDC excitation signal output pin
28	MAG_PLUS	H	RDC excitation external input pin +
29	MAG_MINUS	H	RDC excitation external input pin -
30	COS_OUT	I	RDC COS output pin

Pin No.	Pin name	I/O circuit type*	Function
31	COS_MINUS	H	RDC COS input pin -
32	COS_PLUS	H	RDC COS input pin +
33	SIN_PLUS	H	RDC SIN input pin +
34	SIN_MINUS	H	RDC SIN input pin -
35	SIN_OUT	I	RDC SIN output pin
38	COS_IN	H	RDC COS coil earth leakage detection input pin
39	SIN_IN	H	RDC SIN coil earth leakage detection input pin
41	AREF2	I	RDC Aref output (AVcc0/2) pin
44	P060	D	General-purpose I/O port
	MM		Clock supervisor main clock missing output pin
45	P061	D	General-purpose I/O port
	IN6		16-bit input capture ch.6 external pulse input pin
46	P062	D	General-purpose I/O port
	FRCK0		Free-run timer ch.0 external clock input pin
	SCS40		Multi-function serial ch.4 serial chip select 0 I/O pin
47	P063	D	General-purpose I/O port
	FRCK1		Free-run timer ch.1 external clock input pin
	SCS41		Multi-function serial ch.4 serial chip select 1 output pin
48	P064	D	General-purpose I/O port
	FRCK2		Free-run timer ch.2 external clock input pin
	SCS42		Multi-function serial ch.4 serial chip select 2 output pin
49	P065	D	General-purpose I/O port
	FRCK3		Free-run timer ch.3 external clock input pin
	SCS43		Multi-function serial ch.4 serial chip select 3 output pin
50	P066	D	General-purpose I/O port
	FRCK4		Free-run timer ch.4 external clock input pin
	SCS3		Multi-function serial ch.3 serial chip select I/O pin
51	P067	D	General-purpose I/O port
	FRCK5		Free-run timer ch.5 external clock input pin
54	P070	F	General-purpose I/O port
	AN0		ADC analog 0 input pin
55	P071	F	General-purpose I/O port
	AN1		ADC analog 1 input pin
56	P072	G	General-purpose I/O port
	AN2		ADC analog 2 input pin
	SIN4		Multi-function serial ch.4 serial data input pin
	INT5		INT5 external interrupt input pin

Pin No.	Pin name	I/O circuit type*	Function
57	P073	M	General-purpose I/O port
	AN3		ADC analog 3 input pin
	SOT4		Multi-function serial ch.4 serial data output pin/ I ² C ch.4 serial data I/O pin (SDA)
58	P074	M	General-purpose I/O port
	AN4		ADC analog 4 input pin
	SCK4		Multi-function serial ch.4 clock I/O pin/ I ² C ch.4 clock I/O pin (SCL)
59	P075	G	General-purpose I/O port
	AN5		ADC analog 5 input pin
	SIN3		Multi-function serial ch.3 serial data input pin
	INT4		INT4 external interrupt input pin
60	P076	M	General-purpose I/O port
	AN6		ADC analog 6 input pin
	SOT3		Multi-function serial ch.3 serial data output pin/ I ² C ch.3 serial data I/O pin (SDA)
61	P077	M	General-purpose I/O port
	AN7		ADC analog 7 input pin
	SCK3		Multi-function serial ch.3 clock I/O pin / I ² C ch.3 clock I/O pin (SCL)
64	P080	F	General-purpose I/O port
	AN8		ADC analog 8 input pin
	PPG0		PPG ch.0 output pin
65	P081	F	General-purpose I/O port
	AN9		ADC analog 9 input pin
	PPG1		PPG ch.1 output pin
66	P082	F	General-purpose I/O port
	AN10		ADC analog 10 input pin
	PPG2		PPG ch.2 output pin
67	P083	F	General-purpose I/O port
	AN11		ADC analog 11 input pin
	PPG3		PPG ch.3 output pin
68	P084	F	General-purpose I/O port
	AN12		ADC analog 12 input pin
	PPG4		PPG ch.4 output pin
69	P085	F	General-purpose I/O port
	AN13		ADC analog 13 input pin
	PPG5		PPG ch.5 output pin

Pin No.	Pin name	I/O circuit type*	Function
70	P086	F	General-purpose I/O port
	AN14		ADC analog 14 input pin
	PPG6		PPG ch.6 output pin
71	P087	F	General-purpose I/O port
	AN15		ADC analog 15 input pin
	PPG7		PPG ch.7 output pin
74	P090	D	General-purpose I/O port
	IN0		16-bit input capture ch.0 external pulse input pin
75	P091	D	General-purpose I/O port
	IN1		16-bit input capture ch.1 external pulse input pin
76	P092	D	General-purpose I/O port
	IN2		16-bit input capture ch.2 external pulse input pin
77	P093	D	General-purpose I/O port
	IN3		16-bit input capture ch.3 external pulse input pin
78	P094	D	General-purpose I/O port
	IN4		16-bit input capture ch.4 external pulse input pin
79	P095	D	General-purpose I/O port
	TX0		CAN transmission data 0 output pin
80	P096	E	General-purpose I/O port
	RX0		CAN reception data 0 input pin
	INT0		INT0 external interrupt input pin
81	P097	D	General-purpose I/O port
	IN5		16-bit input capture ch.5 external pulse input pin
85	P100	F	General-purpose I/O port
	PPG8		PPG ch.8 output pin
	AN16		ADC analog 16 input pin
86	P101	F	General-purpose I/O port
	PPG9		PPG ch.9 output pin
	AN17		ADC analog 17 input pin
87	P102	F	General-purpose I/O port
	PPG10		PPG ch.10 output pin
	AN18		ADC analog 18 input pin
88	P103	F	General-purpose I/O port
	PPG11		PPG ch.11 output pin
	AN19		ADC analog 19 input pin

Pin No.	Pin name	I/O circuit type*	Function
89	P104	F	General-purpose I/O port
	PPG12		PPG ch.12 output pin
	AN20		ADC analog 20 input pin
90	P105	F	General-purpose I/O port
	PPG13		PPG ch.13 output pin
	AN21		ADC analog 21 input pin
91	P106	F	General-purpose I/O port
	PPG14		PPG ch.14 output pin
	AN22		ADC analog 22 input pin
92	P107	F	General-purpose I/O port
	PPG15		PPG ch.15 output pin
	AN23		ADC analog 23 input pin
96	P110	D	General-purpose I/O port
	TX1		CAN transmission data 1 output pin
97	P111	E	General-purpose I/O port
	RX1		CAN reception data 1 input pin
	INT1		INT1 external interrupt input pin
98	P112	D	General-purpose I/O port
	RTO0		Waveform generator ch.0 output pin
	PPG16		PPG ch.16 output pin
99	P113	D	General-purpose I/O port
	RTO1		Waveform generator ch.1 output pin
	PPG17		PPG ch.17 output pin
100	P114	D	General-purpose I/O port
	RTO2		Waveform generator ch.2 output pin
	PPG18		PPG ch.18 output pin
101	P115	D	General-purpose I/O port
	RTO3		Waveform generator ch.3 output pin
	PPG19		PPG ch.19 output pin
102	P116	D	General-purpose I/O port
	RTO4		Waveform generator ch.4 output pin
	PPG20		PPG ch.20 output pin
103	P117	D	General-purpose I/O port
	RTO5		Waveform generator ch.5 output pin
	PPG21		PPG ch.21 output pin

Pin No.	Pin name	I/O circuit type*	Function
104	P120	D	General-purpose I/O port
	RTO6		Waveform generator ch.6 output pin
	PPG22		PPG ch.22 output pin
105	P121	D	General-purpose I/O port
	RTO7		Waveform generator ch.7 output pin
	PPG23		PPG ch.23 output pin
106	P122	D	General-purpose I/O port
	RTO8		Waveform generator ch.8 output pin
107	P123	D	General-purpose I/O port
	RTO9		Waveform generator ch.9 output pin
111	P124	D	General-purpose I/O port
	RTO10		Waveform generator ch.10 output pin
112	P125	D	General-purpose I/O port
	RTO11		Waveform generator ch.11 output pin
113	P126	E	General-purpose I/O port
	SIN0		Multi-function serial ch.0 serial data input pin
	INT6		INT6 external interrupt input pin
114	P127	K	General-purpose I/O port
	SOT0		Multi-function serial ch.0 serial data output pin/ I ² C ch.0 serial data I/O pin (SDA)
115	P130	K	General-purpose I/O port
	SCK0		Multi-function serial ch.0 clock I/O pin/ I ² C ch.0 clock I/O pin (SCL)
124	P131	D	General-purpose I/O port
	ADTG0		A/D converter ch.0 to ch.7 external trigger input pin
125	P132	D	General-purpose I/O port
	ADTG1		A/D converter ch.8 to ch.15 external trigger input pin
	SCS1		Multi-function serial ch.1 serial chip select I/O pin
126	P133	D	General-purpose I/O port
	ADTG2		A/D converter ch.16 to ch.23 external trigger input pin
	TX2		CAN transmission data 2 output pin
127	P134	E	General-purpose I/O port
	STOPWT		FlexRay Stopwatch input pin
	RX2		CAN reception data 2 input pin
	INT7		INT7 external interrupt input pin
	IN7		16-bit input capture ch.7 external pulse input pin
110	DEBUGIF	L	DEBUG I/F pin

Pin No.	Pin name	I/O circuit type*	Function
121	P136	D	General-purpose I/O port
	DTTI0		Waveform generator output stop signal input pin 0
	MONCLK		Clock monitor output pin
122	P137	D	General-purpose I/O port
	DTTI1		Waveform generator output stop signal input pin 1
40	AVCC0	-	R/D converter power supply
84	AVCC3	-	A/D converter analog power supply
42	AVRH0	-	R/D converter upper limit reference voltage power supply
52	AVRH1	-	A/D converter upper limit reference voltage
62	AVRH2	-	A/D converter upper limit reference voltage
83	AVRH3	-	A/D converter upper limit reference voltage
43	AVSS0	-	R/D converter GND
	AVRL0		R/D converter lower limit reference voltage
53	AVSS1	-	A/D converter GND
	AVRL1		A/D converter lower limit reference voltage
63	AVSS2	-	A/D converter GND
	AVRL2		A/D converter lower limit reference voltage
82	AVSS3	-	A/D converter GND
	AVRL3		A/D converter lower limit reference voltage
130	C	-	External capacity connection output
18, 36, 93, 72, 109, 128, 144	VCC5	-	+5.0V power supply
1, 19, 37, 73, 94, 108, 120, 129	VSS	-	GND

*: For the I/O circuit types, see "I/O circuit type".

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Pin No.	Pin name	I/O circuit type ^{*1}	Function
118	X0	A	Main clock oscillation input pin
119	X1		Main clock oscillation output pin
95	NMIX	B	Interrupt input pin without mask
123	RSTX	B	External reset input pin
116	MD0	C	Mode pin 0 (with high-voltage control)
117	MD1	C	Mode pin 1 (with high-voltage control)
131	P000	E	General-purpose I/O port
	D16		External bus data bit16 I/O pin
	INT2		INT2 external interrupt input pin
	SIN1		Multi-function serial ch.1 serial data input pin
132	P001	K	General-purpose I/O port
	D17		External bus data bit17 I/O pin
	SOT1		Multi-function serial ch.1 serial data output pin/ I ² C ch.1 serial data I/O pin (SDA)
133	P002	K	General-purpose I/O port
	D18		External bus data bit18 I/O pin
	SCK1		Multi-function serial ch.1 clock I/O pin / I ² C ch.1 clock I/O pin (SCL)
134	P003	O	General-purpose I/O port
	D19		External bus data bit19 I/O pin
	TXENA		FlexRay ch.A operation enable output pin
	INT3		INT3 external interrupt input pin
	SIN2		Multi-function serial ch.2 serial data input pin
135	P004	N	General-purpose I/O port
	D20		External bus data bit20 I/O pin
	TXDA		FlexRay ch.A data output pin
	SOT2		Multi-function serial ch.2 serial data output pin
136	P005	N	General-purpose I/O port
	D21		External bus data bit21 I/O pin
	RXDA		FlexRay ch.A data input pin
	SCK2		Multi-function serial ch.2 clock I/O pin

Pin No.	Pin name	I/O circuit type ^{**1}	Function
137	P006	N	General-purpose I/O port
	D22		External bus data bit22 I/O pin
	TXENB		FlexRay ch.B operation enable output pin
	SCS2		Multi-function serial ch.2 serial chip select I/O pin
138	P007	N	General-purpose I/O port
	D23		External bus data bit23 I/O pin
	TXDB		FlexRay ch.B data output pin
139	P010	N	General-purpose I/O port
	D24		External bus data bit24 I/O pin
	RXDB		FlexRay ch.B data input pin
140	P011	D	General-purpose I/O port
	D25		External bus data bit25 I/O pin
	TIOA0		Base timer ch.0 TIOA I/O pin
141	P012	D	General-purpose I/O port
	D26		External bus data bit26 I/O pin
	TIOB0		Base timer ch.0 TIOB I/O pin
142	P013	D	General-purpose I/O port
	D27		External bus data bit27 I/O pin
	TIOA1		Base timer ch.1 TIOA I/O pin
143	P014	D	General-purpose I/O port
	D28		External bus data bit28 I/O pin
	TIOB1		Base timer ch.1 TIOB I/O pin
2	P015	D	General-purpose I/O port
	D29		External bus data bit29 I/O pin
	TRG0		PPG ch.0 to ch.3 external trigger
3	P016	D	General-purpose I/O port
	D30		External bus data bit30 I/O pin
	TRG1		PPG ch.4 to ch.7 external trigger
4	P017	D	General-purpose I/O port
	D31		External bus data bit31 I/O pin
	TRG2		PPG ch.8 to ch.11 external trigger
5	P020	D	General-purpose I/O port
	ASX		External bus address strobe output pin
	TRG3		PPG ch.12 to ch.15 external trigger
	SIN3_1		Multi-function serial ch.3 serial data input pin (1)

Pin No.	Pin name	I/O circuit type ^{**1}	Function
6	P021	K	General-purpose I/O port
	CS0X		External bus chip select 0 output pin
	TRG4		PPG16 to PPG19 external trigger
	SOT3_1		Multi-function serial ch.3 serial data output pin (1)/ I ² C ch.3 serial data I/O pin (1) (SDA)
7	P022	K	General-purpose I/O port
	CS1X		External bus chip select 1 output pin
	TRG5		PPG ch.20 to ch.23 external trigger
	SCK3_1		Multi-function serial ch.3 clock I/O pin (1)/ I ² C ch.3 clock I/O pin (1) (SCL)
8	P023	D	General-purpose I/O port
	RDX		External bus read strobe output pin
	TIN0		Reload timer ch.0 event input pin
	SCS3_1		Multi-function serial ch.3 serial chip select I/O pin (1)
9	P024	D	General-purpose I/O port
	WR0X		External bus write strobe 0 output pin
	TIN1		Reload timer ch.1 event input pin
	SIN4_1		Multi-function serial ch.4 serial data input pin (1)
10	P025	K	General-purpose I/O port
	WR1X		External bus write strobe 1 output pin
	TIN2		Reload timer ch.2 event input pin
	SOT4_1		Multi-function serial ch.4 serial data output pin (1)/ I ² C ch.4 serial data I/O pin (1) (SDA)
11	P026	K	General-purpose I/O port
	A00		External bus address bit0 output pin
	TIN3		Reload timer ch.3 event input pin
	SCK4_1		Multi-function serial ch.4 clock I/O pin (1)/ I ² C ch.4 clock I/O pin (1) (SCL)
12	P027	D	General-purpose I/O port
	A01		External bus address bit1 output pin
	TOT0		Reload timer ch.0 output pin
	SCS40_1		Multi-function serial ch.4 serial chip select 0 I/O pin (1)
13	P030	D	General-purpose I/O port
	A02		External bus address bit2 output pin
	TOT1		Reload timer ch.1 output pin
	SCS41_1		Multi-function serial ch.4 serial chip select 1 output pin (1)

Pin No.	Pin name	I/O circuit type ^{**1}	Function
14	P031	D	General-purpose I/O port
	A03		External bus address bit3 output pin
	TOT2		Reload timer ch.2 output pin
	SCS42_1		Multi-function serial ch.4 serial chip select 2 output pin (1)
15	P032	D	General-purpose I/O port
	A04		External bus address bit4 output pin
	TOT3		Reload timer ch.3 output pin
	SCS43_1		Multi-function serial ch.4 serial chip select 3 output pin (1)
16	P033	D	General-purpose I/O port
	A05		External bus address bit5 output pin
17	P034	D	General-purpose I/O port
	A06		External bus address bit6 output pin
20	P035	D	General-purpose I/O port
	A07		External bus address bit7 output pin
	AIN0		Up/ down counter ch.0 AIN input pin
21	P036	D	General-purpose I/O port
	A08		External bus address bit8 output pin
	BIN0		Up/ down counter ch.0 BIN input pin
22	P037	D	General-purpose I/O port
	A09		External bus address bit9 output pin
	ZIN0		Up/ down counter ch.0 ZIN input pin
23	P040	D	General-purpose I/O port
	A10		External bus address bit10 output pin
	AIN1		Up/ down counter ch.1 AIN input pin
24	P041	D	General-purpose I/O port
	A11		External bus address bit11 output pin
	BIN1		Up/ down counter ch.1 BIN input pin
25	P042	D	General-purpose I/O port
	A12		External bus address bit12 output pin
	ZIN1		Up/ down counter ch.1 ZIN input pin
26	P043	D	General-purpose I/O port
	A13		External bus address bit13 output pin
27	P044	P	General-purpose I/O port
	A14		External bus address bit14 output pin
	DAOUT		DAC analog output pin
28	P045	D	General-purpose I/O port
	A15		External bus address bit15 output pin

Pin No.	Pin name	I/O circuit type*	Function
29	P046	D	General-purpose I/O port
	A16		External bus address bit16 output pin
30	P047	D	General-purpose I/O port
	A17		External bus address bit17 output pin
31	P050	D	General-purpose I/O port
	A18		External bus address bit18 output pin
32	P051	D	General-purpose I/O port
	A19		External bus address bit19 output pin
33	P052	D	General-purpose I/O port
	A20		External bus address bit20 output pin
34	P053	D	General-purpose I/O port
	A21		External bus address bit21 output pin
35	P054	D	General-purpose I/O port
	SYSCLK		External bus system clock output pin
38	P055	D	General-purpose I/O port
	CS2X		External bus chip select 2 output pin
39	P056	D	General-purpose I/O port
	CS3X		External bus chip select 3 output pin
41	P057	D	General-purpose I/O port
	RDY		External bus ready input pin
44	P060	D	General-purpose I/O port
	MM		Clock supervisor main clock missing output pin
45	P061	D	General-purpose I/O port
	IN6		16-bit input capture ch.6 external pulse input pin
46	P062	D	General-purpose I/O port
	FRCK0		Free-run timer ch.0 external clock input pin
	SCS40		Multi-function serial ch.4 serial chip select 0 I/O pin
47	P063	D	General-purpose I/O port
	FRCK1		Free-run timer ch.1 external clock input pin
	SCS41		Multi-function serial ch.4 serial chip select 1 output pin
48	P064	D	General-purpose I/O port
	FRCK2		Free-run timer ch.2 external clock input pin
	SCS42		Multi-function serial ch.4 serial chip select 2 output pin
49	P065	D	General-purpose I/O port
	FRCK3		Free-run timer ch.3 external clock input pin
	SCS43		Multi-function serial ch.4 serial chip select 3 output pin

Pin No.	Pin name	I/O circuit type ^{**1}	Function
50	P066	D	General-purpose I/O port
	FRCK4		Free-run timer ch.4 external clock input pin
	SCS3		Multi-function serial ch.3 serial chip select I/O pin
51	P067	D	General-purpose I/O port
	FRCK5		Free-run timer ch.5 external clock input pin
54	P070	F	General-purpose I/O port
	AN0		ADC analog 0 input pin
55	P071	F	General-purpose I/O port
	AN1		ADC analog 1 input pin
56	P072	G	General-purpose I/O port
	AN2		ADC analog 2 input pin
	SIN4		Multi-function serial ch.4 serial data input pin
	INT5		INT5 external interrupt input pin
57	P073	M	General-purpose I/O port
	AN3		ADC analog 3 input pin
	SOT4		Multi-function serial ch.4 serial data output pin I ² C ch.4 serial data I/O pin (SDA)
58	P074	M	General-purpose I/O port
	AN4		ADC analog 4 input pin
	SCK4		Multi-function serial ch.4 clock I/O / I ² C ch.4 clock I/O pin (SCL)
59	P075	G	General-purpose I/O port
	AN5		ADC analog 5 input pin
	SIN3		Multi-function serial ch.3 serial data input pin
	INT4		INT4 external interrupt input pin
60	P076	M	General-purpose I/O port
	AN6		ADC analog 6 input pin
	SOT3		Multi-function serial ch.3 serial data output pin / I ² C ch.3 serial data I/O pin (SDA)
61	P077	M	General-purpose I/O port
	AN7		ADC analog 7 input pin
	SCK3		Multi-function serial ch.3 clock I/O pin / I ² C ch.3 clock I/O pin (SCL)
64	P080	F	General-purpose I/O port
	AN8		ADC analog 8 input pin
	PPG0		PPG ch.0 output pin

Pin No.	Pin name	I/O circuit type ^{*1}	Function
65	P081	F	General-purpose I/O port
	AN9		ADC analog 9 input pin
	PPG1		PPG ch.1 output pin
66	P082	F	General-purpose I/O port
	AN10		ADC analog 10 input pin
	PPG2		PPG ch.2 output pin
67	P083	F	General-purpose I/O port
	AN11		ADC analog 11 input pin
	PPG3		PPG ch.3 output pin
68	P084	F	General-purpose I/O port
	AN12		ADC analog 12 input pin
	PPG4		PPG ch.4 output pin
69	P085	F	General-purpose I/O port
	AN13		ADC analog 13 input pin
	PPG5		PPG ch.5 output pin
70	P086	F	General-purpose I/O port
	AN14		ADC analog 14 input pin
	PPG6		PPG ch.6 output pin
71	P087	F	General-purpose I/O port
	AN15		ADC analog 15 input pin
	PPG7		PPG ch.7 output pin
74	P090	D	General-purpose I/O port
	IN0		16-bit input capture ch.0 external pulse input pin
75	P091	D	General-purpose I/O port
	IN1		16-bit input capture ch.1 external pulse input pin
76	P092	D	General-purpose I/O port
	IN2		16-bit input capture ch.2 external pulse input pin
77	P093	D	General-purpose I/O port
	IN3		16-bit input capture ch.3 external pulse input pin
78	P094	D	General-purpose I/O port
	IN4		16-bit input capture ch.4 external pulse input pin
79	P095	D	General-purpose I/O port
	TX0		CAN transmission data 0 output pin
80	P096	E	General-purpose I/O port
	RX0		CAN reception data 0 input pin
	INT0		INT0 external interrupt input pin

Pin No.	Pin name	I/O circuit type ^{**1}	Function
81	P097	D	General-purpose I/O port
	IN5		16-bit input capture ch.5 external pulse input pin
85	P100	F	General-purpose I/O port
	PPG8		PPG ch.8 output pin
	AN16		ADC analog 16 input pin
86	P101	F	General-purpose I/O port
	PPG9		PPG ch.9 output pin
	AN17		ADC analog 17 input pin
87	P102	F	General-purpose I/O port
	PPG10		PPG ch.10 output pin
	AN18		ADC analog 18 input pin
88	P103	F	General-purpose I/O port
	PPG11		PPG ch.11 output pin
	AN19		ADC analog 19 input pin
89	P104	F	General-purpose I/O port
	PPG12		PPG ch.12 output pin
	AN20		ADC analog 20 input pin
90	P105	F	General-purpose I/O port
	PPG13		PPG ch.13 output pin
	AN21		ADC analog 21 input pin
91	P106	F	General-purpose I/O port
	PPG14		PPG ch.14 output pin
	AN22		ADC analog 22 input pin
92	P107	F	General-purpose I/O port
	PPG15		PPG ch.15 output pin
	AN23		ADC analog 23 input pin
96	P110	D	General-purpose I/O port
	TX1		CAN transmission data 1 output pin
97	P111	E	General-purpose I/O port
	RX1		CAN reception data 1 input pin
	INT1		INT1 external interrupt input pin
98	P112	D	General-purpose I/O port
	RTO0		Waveform generator ch.0 output pin
	PPG16		PPG ch.16 output pin

Pin No.	Pin name	I/O circuit type ^{**1}	Function
99	P113	D	General-purpose I/O port
	RTO1		Waveform generator ch.1 output pin
	PPG17		PPG ch.17 output pin
100	P114	D	General-purpose I/O port
	RTO2		Waveform generator ch.2 output pin
	PPG18		PPG ch.18 output pin
101	P115	D	General-purpose I/O port
	RTO3		Waveform generator ch.3 output pin
	PPG19		PPG ch.19 output pin
102	P116	D	General-purpose I/O port
	RTO4		Waveform generator ch.4 output pin
	PPG20		PPG ch.20 output pin
103	P117	D	General-purpose I/O port
	RTO5		Waveform generator ch.5 output pin
	PPG21		PPG ch.21 output pin
104	P120	D	General-purpose I/O port
	RTO6		Waveform generator ch.6 output pin
	PPG22		PPG ch.22 output pin
105	P121	D	General-purpose I/O port
	RTO7		Waveform generator ch.7 output pin
	PPG23		PPG ch.23 output pin
106	P122	D	General-purpose I/O port
	RTO8		Waveform generator ch.8 output pin
107	P123	D	General-purpose I/O port
	RTO9		Waveform generator ch.9 output pin
111	P124	D	General-purpose I/O port
	RTO10		Waveform generator ch.10 output pin
112	P125	D	General-purpose I/O port
	RTO11		Waveform generator ch.11 output pin
113	P126	E	General-purpose I/O port
	SIN0		Multi-function serial ch.0 serial data input pin
	INT6		INT6 external interrupt input pin
114	P127	K	General-purpose I/O port
	SOT0		Multi-function serial ch.0 serial data output pin/ I ² C ch.0 serial data I/O pin (SDA)

Pin No.	Pin name	I/O circuit type ^{*1}	Function
115	P130	K	General-purpose I/O port
	SCK0		Multi-function serial ch.0 clock I/O pin/ I ² C ch.0 clock I/O pin (SCL)
124	P131	D	General-purpose I/O port
	ADTG0		A/D converter ch.0 to ch.7 external trigger input pin
125	P132	D	General-purpose I/O port
	ADTG1		A/D converter ch.8 to ch.15 external trigger input pin
	SCS1		Multi-function serial ch.1 serial chip select I/O pin
126	P133	D	General-purpose I/O port
	ADTG2		A/D converter ch.16 to ch.23 external trigger input pin
	TX2		CAN transmission data 2 output pin
127	P134	E	General-purpose I/O port
	STOPWT		FlexRay Stopwatch input pin
	RX2		CAN reception data 2 input pin
	INT7		INT7 external interrupt input pin
	IN7		16-bit input capture ch.7 external pulse input pin
110	DEBUGIF	L	DEBUG I/F pin
121	P136	D	General-purpose I/O port
	DTTI0		Waveform generator output stop signal input pin 0
	MONCLK		Clock monitor output pin
122	P137	D	General-purpose I/O port
	DTTI1		Waveform generator output stop signal input pin 1
40	AVCC0	-	*2
84	AVCC3	-	A/D converter analog power supply
42	AVRH0	-	*2
52	AVRH1	-	A/D converter upper limit reference voltage
62	AVRH2	-	A/D converter upper limit reference voltage
83	AVRH3	-	A/D converter upper limit reference voltage
43	AVSS0	-	*3
	AVRL0		*3
53	AVSS1	-	A/D converter GND
	AVRL1		A/D converter lower limit reference voltage
63	AVSS2	-	A/D converter GND
	AVRL2		A/D converter lower limit reference voltage
82	AVSS3	-	A/D converter GND
	AVRL3		A/D converter lower limit reference voltage
130	C	-	External capacity connection output pin

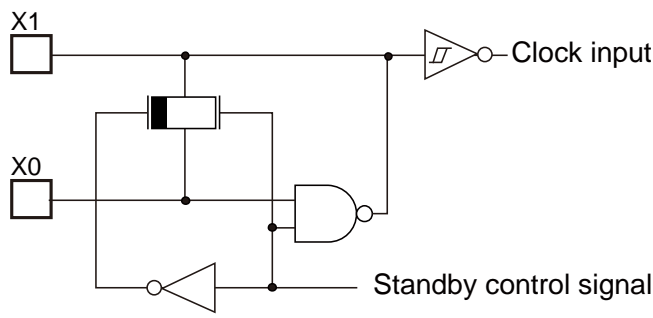
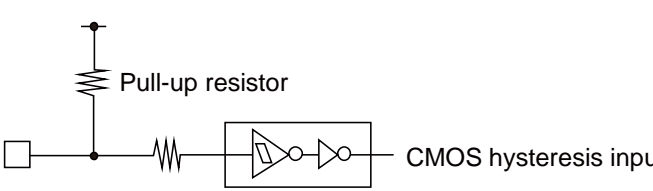
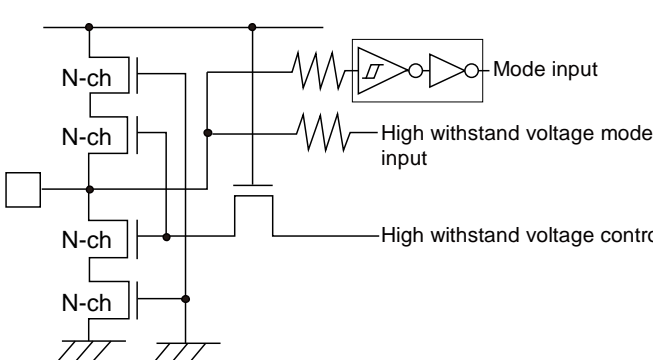
Pin No.	Pin name	I/O circuit type*	Function
18, 36, 93, 72, 109, 128, 144	VCC5	-	+5.0V power supply
1, 19, 37, 73, 94, 108, 120, 129	VSS	-	GND

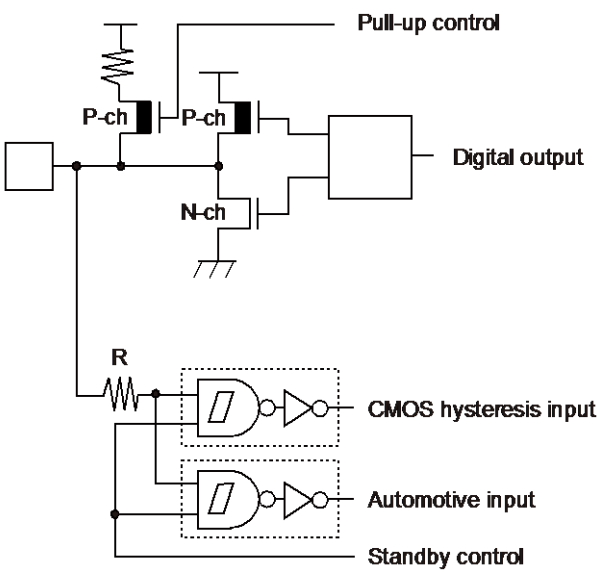
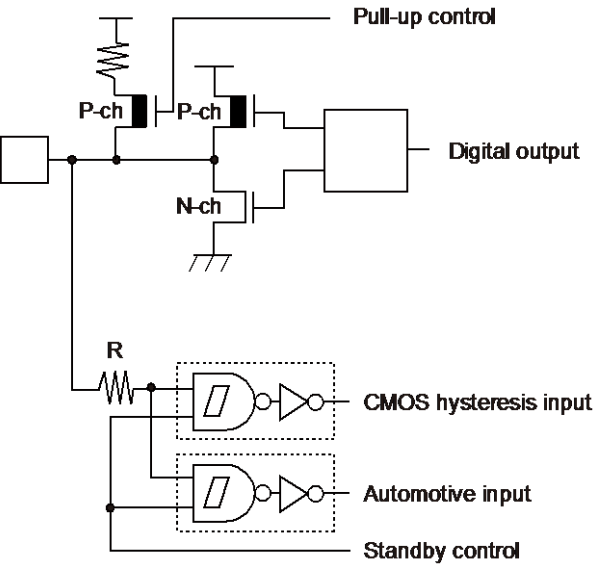
*1:For the I/O circuit types, see " I/O circuit type".

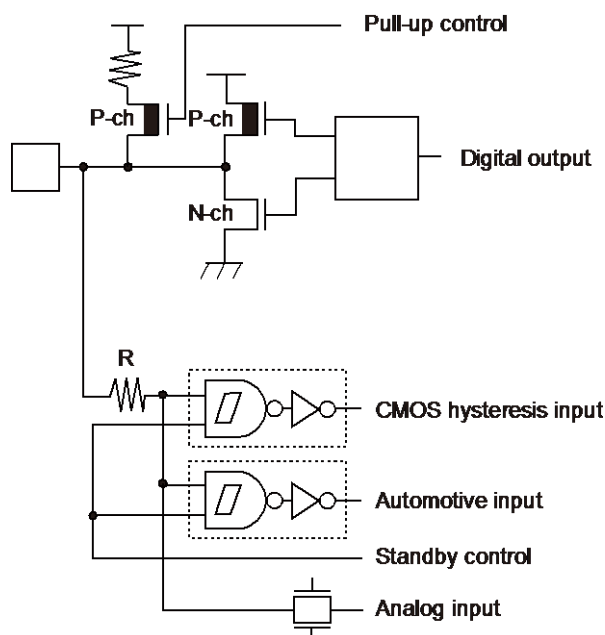
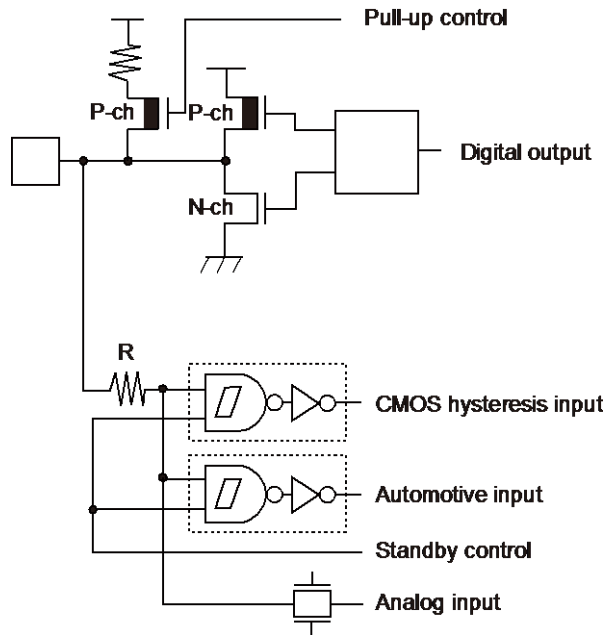
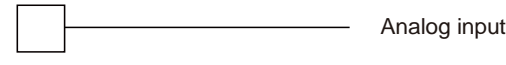
*2:The MB91F585LB/F586LB/F587LB/F585LD/F586LD/F587LD do not use this pin. Connect it with the VCC5 pin.


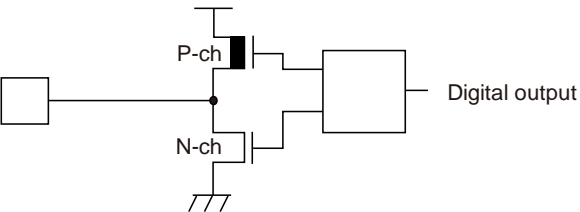
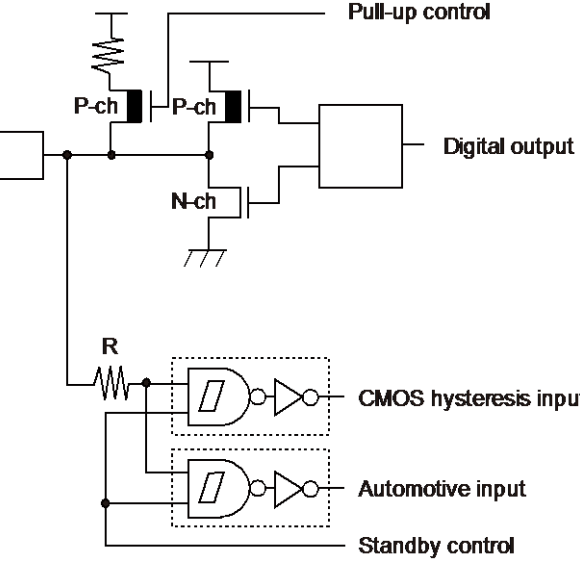
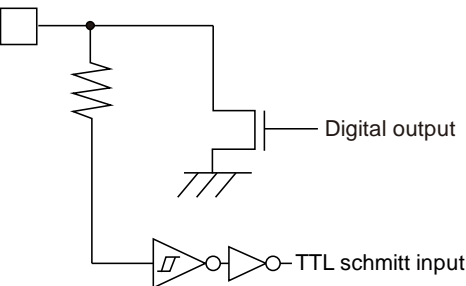
*3:The MB91F585LB/F586LB/F587LB/F585LD/F586LD/F587LD do not use this pin. Connect it with the VSS pin.

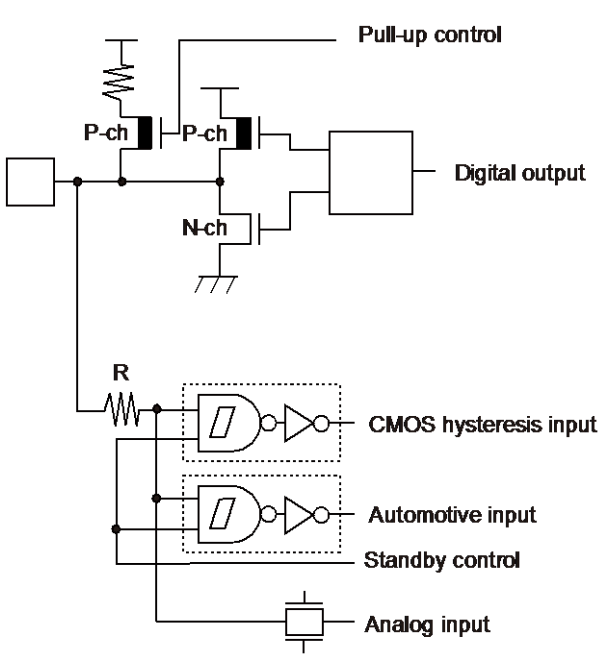
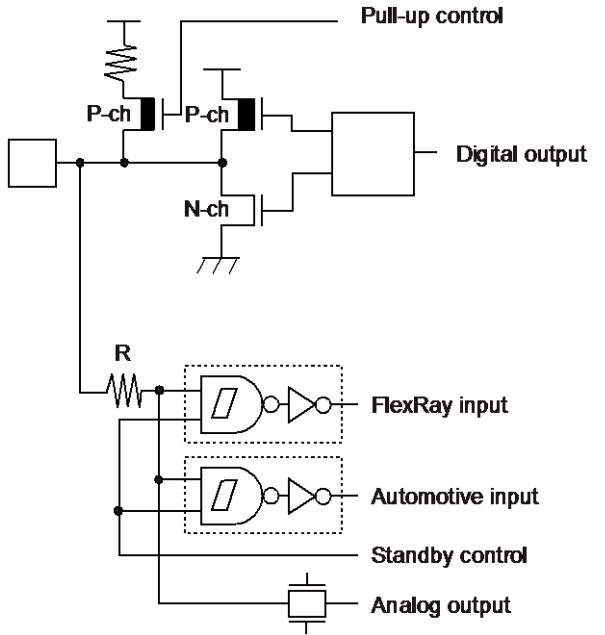
4. I/O Circuit Type

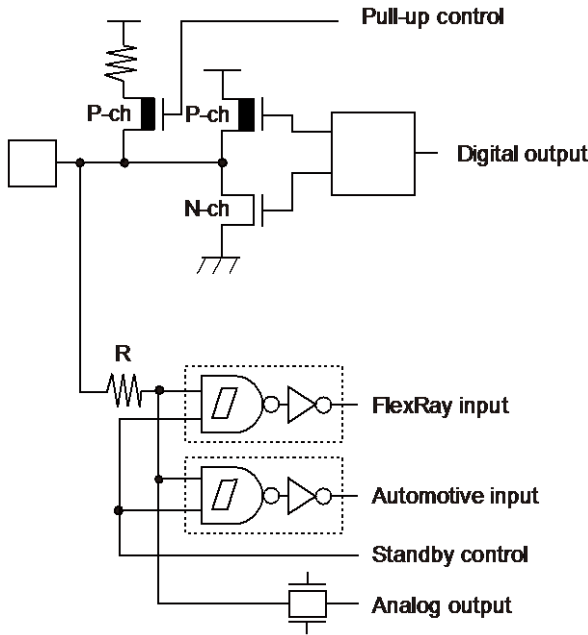
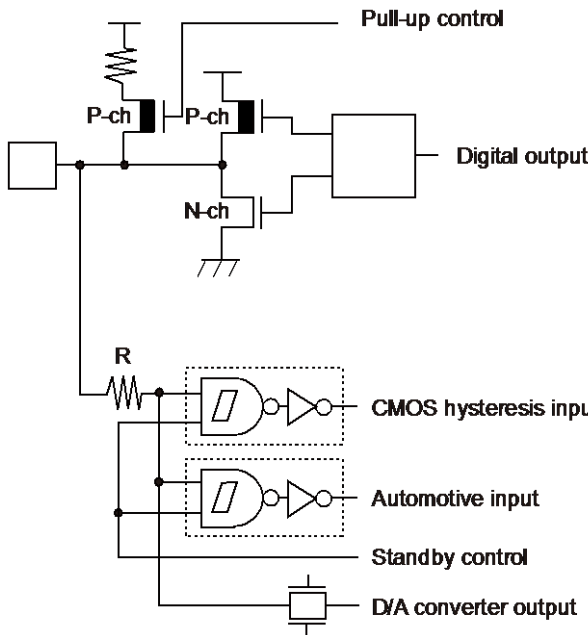
Type	Circuit	Remarks
A		Oscillation feedback resistor: Approx. 1 M Ω
B		<ul style="list-style-type: none"> ■ CMOS hysteresis input ■ With 50 kΩ pull-up resistor
C		<ul style="list-style-type: none"> ■ Schmitt input ■ With high withstand voltage control

Type	Circuit	Remarks
D		<ul style="list-style-type: none"> ■ General-purpose I/O port ■ CMOS level output $I_{OH}=-2/-5\text{mA}$, $I_{OL}=2/5\text{mA}$ ■ With 50kΩ pull-up resistor control ■ CMOS hysteresis input $(0.7V_{CC}/0.3V_{CC})$ ■ Automotive input $(0.8V_{CC}/0.5V_{CC})$
E		<ul style="list-style-type: none"> ■ General-purpose I/O port ■ CMOS level output $I_{OH}=-2/-5\text{mA}$, $I_{OL}=2/5\text{mA}$ ■ With 50 kΩ pull-up resistor control ■ CMOS hysteresis input $(0.7V_{CC}/0.3V_{CC})$ During standby, the input value retains the previous value. ■ Automotive input $(0.8V_{CC}/0.5V_{CC})$ During standby, the input value retains the previous value.

Type	Circuit	Remarks
F		<ul style="list-style-type: none"> ■ With analog input, general-purpose I/O port ■ CMOS level output $I_{OH}=-2/-5mA$, $I_{OL}=2/5mA$ ■ With 50 kΩ pull-up resistor control ■ CMOS hysteresis input (0.7Vcc/0.3Vcc) ■ Automotive input (0.8Vcc/0.5Vcc)
G		<ul style="list-style-type: none"> ■ With analog input, general-purpose I/O port ■ CMOS level output $I_{OH}=-2/-5mA$, $I_{OL}=2/5mA$ ■ With 50 kΩ pull-up resistor control ■ CMOS hysteresis input (0.7Vcc/0.3Vcc) During standby, the input value retains the previous value. ■ Automotive input (0.8Vcc/0.5Vcc) During standby, the input value retains the previous value.
H ¹		Analog input

Type	Circuit	Remarks
I*	 Analog output	Analog output
J*		CMOS level output $I_{OH} = -2/-5\text{mA}$, $I_{OL} = 2/5\text{mA}$
K		<ul style="list-style-type: none"> ■ With I²C, general-purpose I/O port ■ CMOS level output $I_{OH} = -3\text{mA}$, $I_{OL} = 3\text{mA}$ (at I²C output) $I_{OH} = -2/-5\text{mA}$, $I_{OL} = 2/5\text{mA}$ (other than above) ■ With 50 kΩ pull-up resistor control ■ CMOS hysteresis input (0.7V_{cc}/0.3V_{cc}) ■ Automotive input (0.8V_{cc}/0.5V_{cc})
L		Open drain I/O

Type	Circuit	Remarks
M		<ul style="list-style-type: none"> ■ With analog input, I²C, general-purpose I/O port ■ CMOS level output I_{OH}=-3mA, I_{OL}=3mA (at I²C output) I_{OH}=-2/-5mA, I_{OL}=2/5mA (other than above) ■ With 50 kΩ pull-up resistor control ■ CMOS hysteresis input (0.7Vcc/0.3Vcc) ■ Automotive input (0.8Vcc/0.5Vcc)
N		<ul style="list-style-type: none"> ■ With analog output, general-purpose I/O port ■ CMOS level output I_{OH}=-2/-4mA, I_{OL}=2/4mA ■ With 50 kΩ pull-up resistor control ■ FlexRay input (0.7Vcc/0.3Vcc) ■ Automotive input (0.8Vcc/0.5Vcc)

Type	Circuit	Remarks
O		<ul style="list-style-type: none"> ■ With analog output, general-purpose I/O port ■ CMOS level output $I_{OH}=-2/-4mA$, $I_{OL}=2/4mA$ ■ With 50 kΩ pull-up resistor control ■ FlexRay input (0.7Vcc/0.3Vcc) During standby, the input value retains the previous value. ■ Automotive input (0.8Vcc/0.5Vcc) During standby, the input value retains the previous value.
P		<ul style="list-style-type: none"> ■ With D/A converter output, general-purpose I/O port ■ CMOS level output $I_{OH}=-2/-5mA$, $I_{OL}=2/5mA$ ■ With 50 kΩ pull-up resistor control ■ CMOS hysteresis input (0.7Vcc/0.3Vcc) ■ Automotive input (0.8Vcc/0.5Vcc)

*: MB91F585LA/F586LA/F587LA/F585LC/F586LC/F587LC only

5. Handling Precautions

Any semiconductor devices have inherently a certain rate of failure. The possibility of failure is greatly affected by the conditions in which they are used (circuit conditions, environmental conditions, etc.). This page describes precautions that must be observed to minimize the chance of failure and to obtain higher reliability from your Cypress semiconductor devices.

1. Precautions for Product Design

This section describes precautions when designing electronic equipment using semiconductor devices.

■ Absolute Maximum Ratings

Semiconductor devices can be permanently damaged by application of stress (voltage, current, temperature, etc.) in excess of certain established limits, called absolute maximum ratings. Do not exceed these ratings.

■ Recommended Operating Conditions

Recommended operating conditions are normal operating ranges for the semiconductor device. All the device's electrical characteristics are warranted when operated within these ranges.

Always use semiconductor devices within the recommended operating conditions. Operation outside these ranges may adversely affect reliability and could result in device failure.

No warranty is made with respect to uses, operating conditions, or combinations not represented on the data sheet. Users considering application outside the listed conditions are advised to contact their sales representative beforehand.

■ Processing and Protection of Pins

These precautions must be followed when handling the pins which connect semiconductor devices to power supply and input/output functions.

(1) Preventing Over-Voltage and Over-Current Conditions

Exposure to voltage or current levels in excess of maximum ratings at any pin is likely to cause deterioration within the device, and in extreme cases leads to permanent damage of the device. Try to prevent such overvoltage or over-current conditions at the design stage.

(2) Protection of Output Pins

Shorting of output pins to supply pins or other output pins, or connection to large capacitance can cause large current flows. Such conditions if present for extended periods of time can damage the device. Therefore, avoid this type of connection.

(3) Handling of Unused Input Pins

Unconnected input pins with very high impedance levels can adversely affect stability of operation. Such pins should be connected through an appropriate resistance to a power supply pin or ground pin.

■ Latch-up

Semiconductor devices are constructed by the formation of P-type and N-type areas on a substrate. When subjected to abnormally high-voltages, internal parasitic PNP junctions (called thyristor structures) may be formed, causing large current levels in excess of several hundred mA to flow continuously at the power supply pin. This condition is called latch-up.

CAUTION: The occurrence of latch-up not only causes loss of reliability in the semiconductor device, but can cause injury or damage from high heat, smoke or flame. To prevent this from happening, do the following:

- (1) Be sure that voltages applied to pins do not exceed the absolute maximum ratings. This should include attention to abnormal noise, surge levels, etc.
- (2) Be sure that abnormal current flows do not occur during the power-on sequence.

■ Observance of Safety Regulations and Standards

Most countries in the world have established standards and regulations regarding safety, protection from electromagnetic interference, etc. Customers are requested to observe applicable regulations and standards in the design of products.

■ Fail-Safe Design

Any semiconductor devices have inherently a certain rate of failure. You must protect against injury, damage or loss from such failures by incorporating safety design measures into your facility and equipment such as redundancy, fire protection, and prevention of over-current levels and other abnormal operating conditions.

■ Precautions Related to Usage of Devices

Cypress semiconductor devices are intended for use in standard applications (computers, office automation and other office equipment, industrial, communications, and measurement equipment, personal or household devices, etc.).

CAUTION: Customers considering the use of our products in special applications where failure or abnormal operation may directly affect human lives or cause physical injury or property damage, or where extremely high levels of reliability are demanded (such as aerospace systems, atomic energy controls, sea floor repeaters, vehicle operating controls, medical devices for life support, etc.) are requested to consult with sales representatives before such use. The company will not be responsible for damages arising from such use without prior approval.

2. Precautions for Package Mounting

Package mounting may be either lead insertion type or surface mount type. In either case, for heat resistance during soldering, you should only mount under Cypress's recommended conditions. For detailed information about mount conditions, contact your sales representative.

■ Lead Insertion Type

Mounting of lead insertion type packages onto printed circuit boards may be done by two methods: direct soldering on the board, or mounting by using a socket.

Direct mounting onto boards normally involves processes for inserting leads into through-holes on the board and using the flow soldering (wave soldering) method of applying liquid solder. In this case, the soldering process usually causes leads to be subjected to thermal stress in excess of the absolute ratings for storage temperature. Mounting processes should conform to Cypress recommended mounting conditions.

If socket mounting is used, differences in surface treatment of the socket contacts and IC lead surfaces can lead to contact deterioration after long periods. For this reason it is recommended that the surface treatment of socket contacts and IC leads be verified before mounting.

■ Surface Mount Type

Surface mount packaging has longer and thinner leads than lead-insertion packaging, and therefore leads are more easily deformed or bent. The use of packages with higher pin counts and narrower pin pitch results in increased susceptibility to open connections caused by deformed pins, or shorting due to solder bridges.

You must use appropriate mounting techniques. Cypress recommends the solder reflow method, and has established a ranking of mounting conditions for each product. Users are advised to mount packages in accordance with Cypress ranking of recommended conditions.

■ Lead-Free Packaging

CAUTION: When ball grid array (BGA) packages with Sn-Ag-Cu balls are mounted using Sn-Pb eutectic soldering, junction strength may be reduced under some conditions of use.

■ Storage of Semiconductor Devices

Because plastic chip packages are formed from plastic resins, exposure to natural environmental conditions will cause absorption of moisture. During mounting, the application of heat to a package that has absorbed moisture can cause surfaces to peel, reducing moisture resistance and causing packages to crack. To prevent, do the following:

- (1) Avoid exposure to rapid temperature changes, which cause moisture to condense inside the product. Store products in locations where temperature changes are slight.
- (2) Use dry boxes for product storage. Products should be stored below 70% relative humidity, and at temperatures between 5°C and 30°C. When you open Dry Package that recommends humidity 40% to 70% relative humidity.
- (3) When necessary, Cypress Inc. packages semiconductor devices in highly moisture-resistant aluminum laminate bags, with a silica gel desiccant. Devices should be sealed in their aluminum laminate bags for storage.
- (4) Avoid storing packages where they are exposed to corrosive gases or high levels of dust.

■ Baking

Packages that have absorbed moisture may be de-moisturized by baking (heat drying). Follow the Cypress recommended conditions for baking.

Condition: 125°C/24 h

■ Static Electricity

Because semiconductor devices are particularly susceptible to damage by static electricity, you must take the following precautions:

- (1) Maintain relative humidity in the working environment between 40% and 70%. Use of an apparatus for ion generation may be needed to remove electricity.
- (2) Electrically ground all conveyors, solder vessels, soldering irons and peripheral equipment.
- (3) Eliminate static body electricity by the use of rings or bracelets connected to ground through high resistance (on the level of 1 MΩ). Wearing of conductive clothing and shoes, use of conductive floor mats and other measures to minimize shock loads is recommended.
- (4) Ground all fixtures and instruments, or protect with anti-static measures.
- (5) Avoid the use of styrofoam or other highly static-prone materials for storage of completed board assemblies.

3. Precautions for Use Environment

Reliability of semiconductor devices depends on ambient temperature and other conditions as described above.

For reliable performance, do the following:

(1) Humidity

Prolonged use in high humidity can lead to leakage in devices as well as printed circuit boards. If high humidity levels are anticipated, consider anti-humidity processing.

(2) Discharge of Static Electricity

When high-voltage charges exist close to semiconductor devices, discharges can cause abnormal operation. In such cases, use anti-static measures or processing to prevent discharges.

(3) Corrosive Gases, Dust, or Oil

Exposure to corrosive gases or contact with dust or oil may lead to chemical reactions that will adversely affect the device. If you use devices in such conditions, consider ways to prevent such exposure or to protect the devices.

(4) Radiation, Including Cosmic Radiation

Most devices are not designed for environments involving exposure to radiation or cosmic radiation. Users should provide shielding as appropriate.

(5) Smoke, Flame

CAUTION: Plastic molded devices are flammable, and therefore should not be used near combustible substances. If devices begin to smoke or burn, there is danger of the release of toxic gases. Customers considering the use of Cypress products in other special environmental conditions should consult with sales representatives.

6. Handling Devices

The latch-up prevention and pin processing are explained below.

■ For latch-up prevention

If a voltage higher than VCC or a voltage lower than VSS is applied to an I/O pin, or if a voltage exceeding the ratings is applied between VCC and VSS pins, a latch-up may occur in CMOS IC. If the latch-up occurs, the power supply current increases excessively and device elements may be damaged by heat. Take care to prevent any voltage from exceeding the maximum ratings in device application.

Also, the analog power supplies (AVCC0*, AVCC3, AVRH0*, AVRH1, AVRH2, AVRH3) and analog input must not exceed the digital power supply (VCC5) when the power supply to the analog system is turned on or off.

In the correct power-on sequence, turn on the digital power supply voltage (VCC5) and analog power supply voltages (AVCC0*, AVCC3, AVRH0*, AVRH1, AVRH2, AVRH3) simultaneously. Alternatively, turn on the digital power supply voltage (VCC5) first, and then turn on the analog power supplies (AVCC0*, AVCC3, AVRH0*, AVRH1, AVRH2, AVRH3).

*: MB91F585LA/F586LA/F587LA/F585LC/F586LC/F587LC only

■ Treatment of unused pins

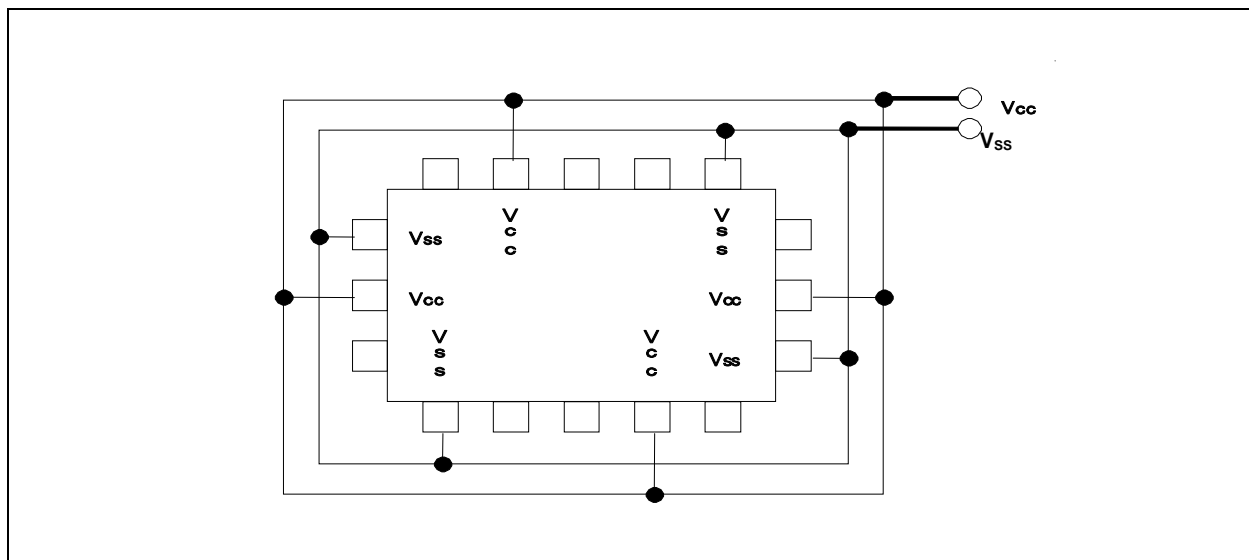
If unused input pins are left open, they may cause a permanent damage to the device due to device malfunction or latch-up. Connect a 2kΩ or higher resistor to each of unused input pins for pull-up or pull-down processing.

Also, if I/O pins are not used, they must be set to the output state for releasing or they must be set to the input state and treated in the same way as for the input pins.

■ Power supply pins

The device is designed to ensure that if the device contains multiple VCC or VSS pins, the pins that should be at the same potential are interconnected to prevent latch-up or other malfunctions. Further, connect these pins to an external power supply or ground to reduce unwanted radiation, prevent strobe signals from malfunctioning due to a raised ground level, and fulfill the total output current standard, etc. As shown below, all VSS power supply pins must be treated in the similar way. If multiple VCC or VSS systems are connected, the device cannot operate correctly even within the guaranteed operating range.

Power Supply Input Pins



The power supply pins should be connected to VCC and VSS of this device at the low impedance from the power supply source.

In the area close to this device, a ceramic capacitor having the capacitance larger than the capacitor of C pin is recommended to use as a bypass capacitor between VCC and VSS pins.

■ Crystal oscillation circuit

An external noise to the X0 or X1 pin may cause a device malfunction. The printed circuit board must be designed to lay out X0 and X1 pins, crystal oscillator (or ceramic resonator), and the bypass capacitor to be grounded to the close position to the device.

The printed circuit board artwork is recommended to surround the X0 and X1 pins by ground circuits.

■ Mode pin (MD[1:0])

Connect the MD[1:0] mode pin to the VCC or VSS pin directly. To prevent an erroneous selection of test mode caused by the noise, reduce the pattern length between each mode pin and VCC or VSS pin on the printed circuit board. Also, use the low-impedance pin connection.

■ During power-on

To prevent a malfunction of the voltage step-down circuit built in the device, set the voltage rising time to have 50μs or longer (between 0.2V and 2.7V) during power-on.

■ Notes during PLL clock operation

When the PLL clock is selected and if the oscillator is disconnected or if the input is stopped, this clock may continue to operate at the free running frequency of the self oscillator circuit built in the PLL. This operation is not guaranteed.

■ Treatment of R/D converter* and A/D converter power supply pins

Connect the pins to have AVCC0 = AVCC3 = AVRH0 = AVRH1=AVRH2=AVRH3=VCC and AVSS0/AVRL0=AVSS1/AVRL1=AVSS2/AVRL2=AVSS3/AVRL3=VSS even if the R/D converter* and the A/D converter are not used.

■ Note on using external clock

The external clock is unsupported.

External direct clock input cannot use.

■ Power-on sequence of R/D converter* and A/D converter power supply analog inputs

Be sure to turn on the digital power supply (VCC5) first, and then turn on the R/D converter* and A/D converter power supplies (AVCC0*, AVCC3, AVRH0*, AVRH1, AVRH2, AVRH3, AVRL0*, AVRL1, AVRL2, AVRL3) and analog inputs (MAG_PLUS*, MAG_MINUS*, COS_PLUS*, COS_MINUS*, SIN_PLUS*, SIN_MINUS*, COS_IN*, SIN_IN*, AN0 to AN23). Also, turn off the R/D converter* and A/D converter power supplies (AVCC0*, AVCC3, AVRH0*, AVRH1, AVRH2, AVRH3, AVRL0*, AVRL1, AVRL2, AVRL3) and analog inputs (MAG_PLUS*, MAG_MINUS*, COS_PLUS*, COS_MINUS*, SIN_PLUS*, SIN_MINUS*, COS_IN*, SIN_IN*, AN0 to AN23) first, and then turn off the digital power supply (VCC5). When the AVRH0*, AVRH1, AVRH2, and AVRH3 pin voltages are turned on or off, they must not exceed AVCC0* and AVCC3. Even if a common analog input pin is used as an input port, its input voltage must not exceed AVCC0* or AVCC3. (However, the analog power supply voltage and digital power supply voltage can be turned on or off simultaneously.)

■ Treatment of C pin

This device contains a voltage step-down circuit. A capacitor must always be connected to the C pin to assure the internal stabilization of the device. For the standard values, see the "Recommended Operating Conditions" of the latest data sheet.

*: MB91F585LA/F586LA/F587LA/F585LC/F586LC/F587LC only

7. Application Notes

■ Function Switching of a Multiplexed Port

To switch between the port function and the multiplexed pin function, use the PFR (port function register). However, if a pin is also used for an external bus, its function is switched by the external bus setting. For details, see "I/O PORTS" in Hardware Manual.

*: MB91F585LB/F586LB/F587LB/F585LD/F586LD/F587LD only

■ Low-power Consumption Mode

To transit to the sleep mode, watch mode, stop mode, watch mode(power-off) or stop mode(power-off), follow the procedure explained in the "Activating the sleep mode, watch mode, or stop mode" or the "Activating the watch mode (power-off) or stop mode(power-off)" of "POWER CONSUMPTION CONTROL" in Hardware Manual.

Take the following notes when using a monitor debugger.

Do not set a break point for the low-power consumption transition program.

Do not execute an operation step for the low-power consumption transition program.

■ Notes When Writing Data in a Register Having the Status Flag

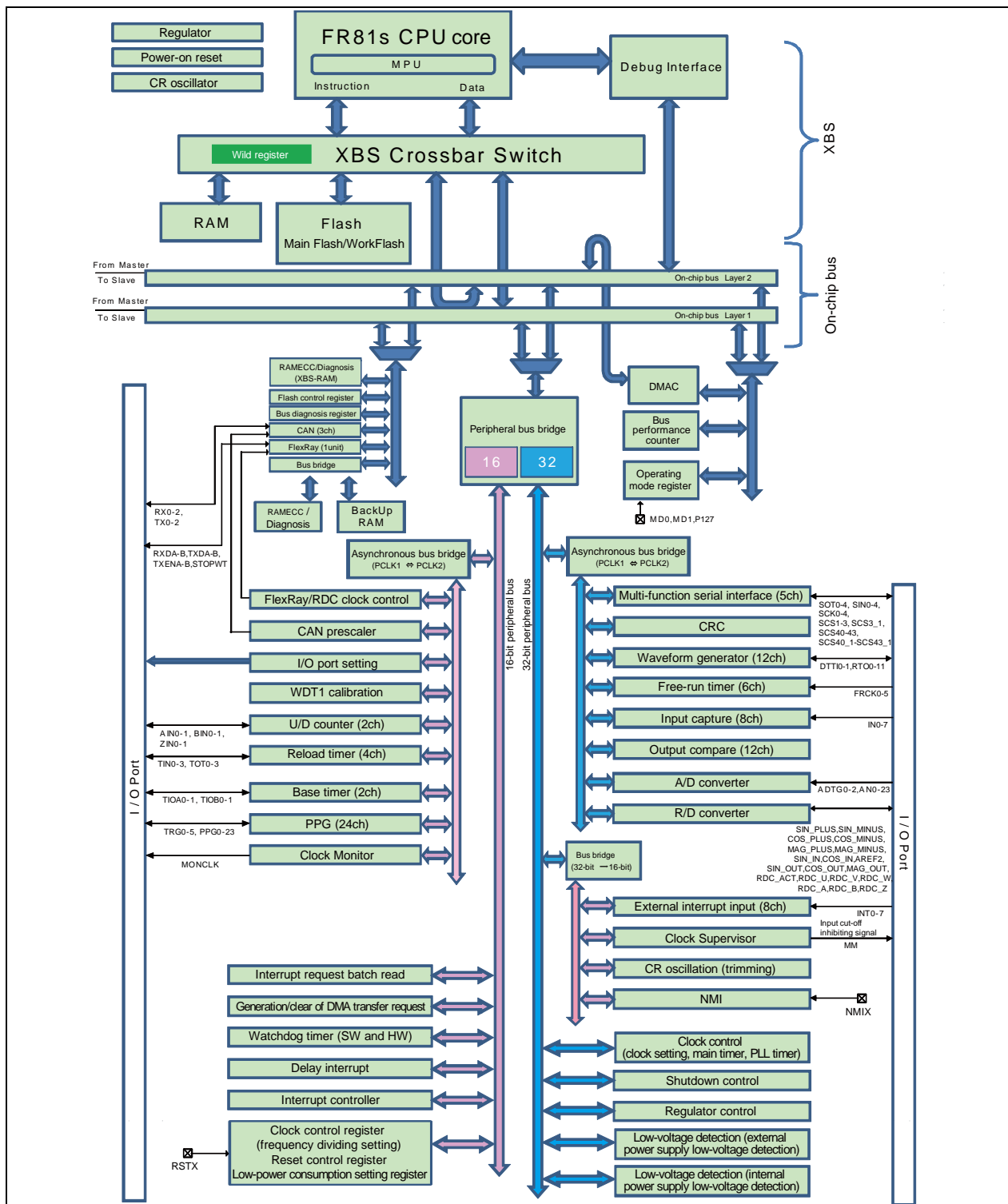
When writing data in the register that has a status flag (especially, an interrupt request flag) to control function, take care not to clear its status flag erroneously.

The program must be written not to clear the flag to the status bit, and to set the control bits to have the desired value. Especially, if multiple control bits are used, the bit instruction cannot be used. (The bit instruction can access to a single bit only.) The Byte, Half-word, or Word access must be used to write data in the control bits and status flag simultaneously. During this time, take care not to clear other bits (in this case, the bits of status flag) erroneously.

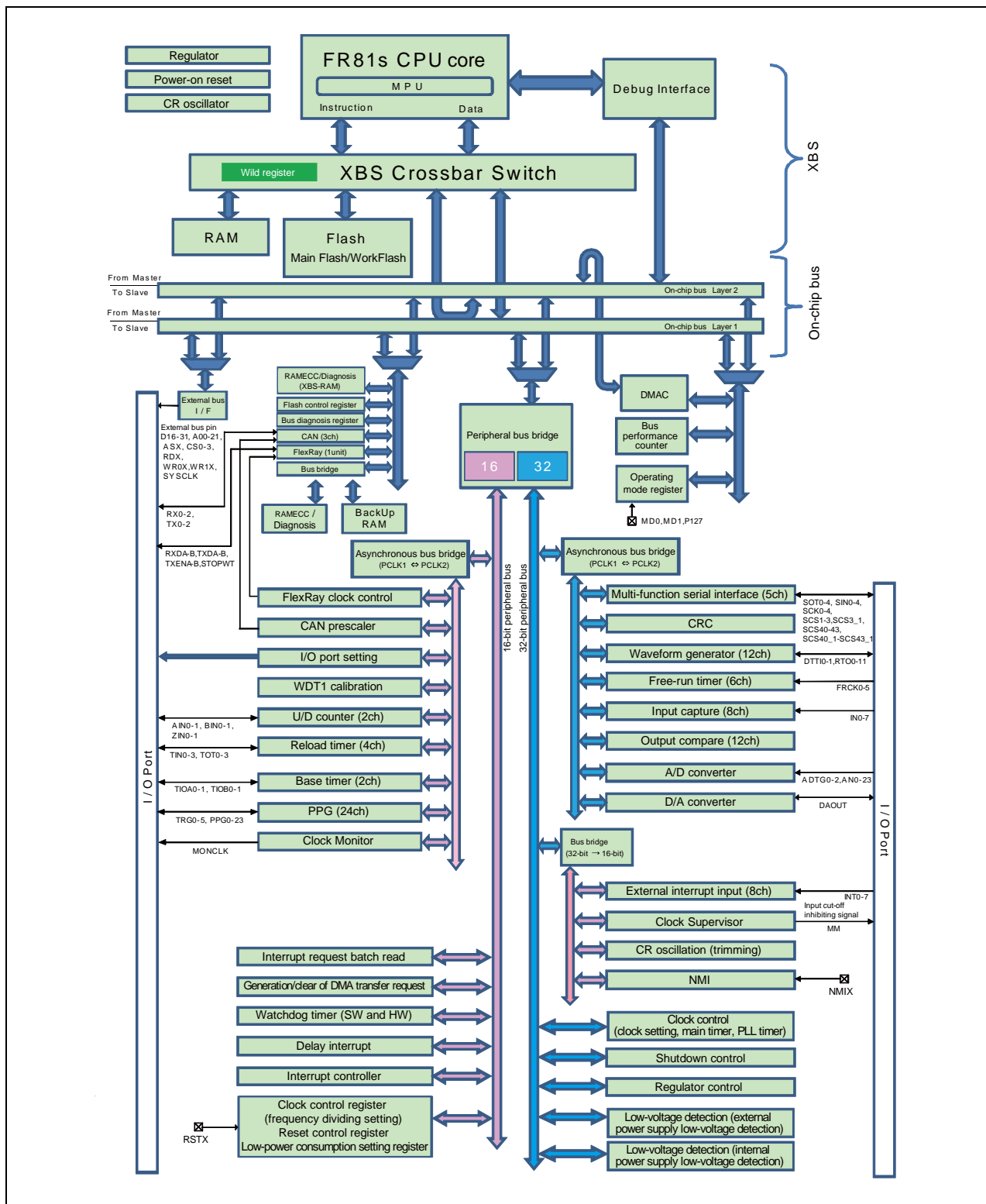
Note: These points can be ignored because the bit instructions already take the points into consideration for registers that support read-modify-write (RMW) operations. These points must be considered when using the bit instructions for registers that do not support RMW operations.

8. Block Diagram

MB91F585LA/F586LA/F587LA/F585LC/F586LC/F587LC



MB91F585LB/F586LB/F587LB/F585LD/F586LD/F587LD



9. Memory Map

MB91F585LA/F586LA/F587LA/F585LC/F586LC/F587LC

M B91F585LA/F585LC		M B91F586LA/F586LC		M B91F587LA/F587LC	
0000_0000 H	I/O area	0000_0000 H	I/O area	0000_0000 H	I/O area
0000_4000 H	BackUp RAM(8KB)	0000_4000 H	BackUp RAM(8KB)	0000_4000 H	BackUp RAM(8KB)
0000_6000 H	I/O area	0000_6000 H	I/O area	0000_6000 H	I/O area
0001_0000 H	RAM(48KB)	0001_0000 H	RAM(64KB)	0001_0000 H	RAM(96KB)
0001_C000 H	Reserved	0002_0000 H	Reserved	0002_8000 H	Reserved
0007_0000 H	Flash memory (512+64)KB	0007_0000 H	Flash memory (768+64)KB	0007_0000 H	Flash memory (1024+64)KB
000F_FC00 H	Interrupt vector table Reset vector table	000F_FC00 H	Interrupt vector table Reset vector table	000F_FC00 H	Interrupt vector table Reset vector table
0010_0000 H	Reserved	0010_0000 H	Flash memory	0010_0000 H	Flash memory
		0014_0000 H	Reserved	0018_0000 H	Reserved
0033_0000 H	WorkFlash (64KB)	0033_0000 H	WorkFlash (64KB)	0033_0000 H	WorkFlash (64KB)
0034_0000 H	Reserved	0034_0000 H	Reserved	0034_0000 H	Reserved
FFFF_FFFF H		FFFF_FFFF H		FFFF_FFFF H	

MB91F585LB/F586LB/F587LB/F585LD/F586LD/F587LD

M B 91F585LB/F585LD		M B 91F586LB/F586LD		M B 91F587LB/F587LD	
0000_0000 H	I/O area	0000_0000 H	I/O area	0000_0000 H	I/O area
0000_4000 H	BackUp RAM(8KB)	0000_4000 H	BackUp RAM(8KB)	0000_4000 H	BackUp RAM(8KB)
0000_6000 H	I/O area	0000_6000 H	I/O area	0000_6000 H	I/O area
0001_0000 H	RAM(48KB)	0001_0000 H	RAM(64KB)	0001_0000 H	RAM(96KB)
0001_C000 H	Reserved	0002_0000 H	Reserved	0002_8000 H	Reserved
0007_0000 H	Flash memory (512+64)KB	0007_0000 H	Flash memory (768+64)KB	0007_0000 H	Flash memory (1024+64)KB
000F_FC00 H	Interrupt vector table Reset vector table	000F_FC00 H	Interrupt vector table Reset vector table	000F_FC00 H	Interrupt vector table Reset vector table
0010_0000 H	Reserved	0010_0000 H	Flash memory	0010_0000 H	Flash memory
0033_0000 H	WorkFlash (64KB)	0033_0000 H	WorkFlash (64KB)	0018_0000 H	Reserved
0034_0000 H	Reserved	0034_0000 H	Reserved	0033_0000 H	WorkFlash (64KB)
0040_0000 H	External bus area	0040_0000 H	External bus area	0034_0000 H	Reserved
FFFF_FFFF H		FFFF_FFFF H		0040_0000 H	External bus area
				FFFF_FFFF H	

10. I/O Map

The following I/O map shows the relationship between memory space and registers for peripheral resources.

Legend of I/O Map

Read/Write attribute (R: Read W: Write)

Address	Address offset value/Register name				Block
	+ 0	+ 1	+ 2	+ 3	
000090 _H	BT1TMR [R] H 00000000 00000000		BT1TMCR [R/W] B,H,W 00000000 00000000		Base timer 1
000094 _H	-	BT1STC [R/W] B 00000000	-	-	
000098 _H	BT1PCSR/BT1PRLL [R/W] H 00000000 00000000		BT1PDUT/BT1PRLH/BT1DTBF [R/W] H 00000000 00000000		
00009C _H	BTSEL [R/W] B ----0000	-	BTSSSR [W] B, H -----11		
0000A0 _H	ADERH [R/W] B, H, W 00000000 00000000		ADERL [R/W] B, H, W 00000000 00000000		A/D converter
0000A4 _H	ADCS1 [R/W] B,H,W 00000000	ADCS0 [R/W] B,H,W 00000000	ADCR1 [R] B,H,W -----XX	ADCR0 [R] B,H,W XXXXXXXX	
0000A8 _H	ADCT1 [R/W] B,H,W 00010000	ADCT0 [R/W] B,H,W 00101100	ADSCH [R/W] B,H,W ---00000	ADECH [R/W] B,H,W ---00000	

Data access attribute
 B: Byte
 H: Half-word
 W: Word
(Note)
 The access by the data access attribute not described is disabled.

Initial register value after reset

The initial register values after reset are indicated as follows:

"1": Initial value "1"

"0": Initial value "0"

"X": Initial value undefined

"-": Reserved bit/Undefined bit

"*": Initial value "0" or "1" according to the setting

Note:

It is prohibited to access addresses not described here.

MB91F585LA/F586LA/F587LA/F585LC/F586LC/F587LC

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000000 _H	PDR00[R/W] B,H,W XXXXXXXXXX	PDR01[R/W] B,H,W XXXXXXXXXX	PDR02[R/W] B,H,W XXXXXXXXXX	PDR03[R/W] B,H,W XXXXXXXXXX	Port data register
000004 _H	PDR04[R/W] B,H,W -----XXX	-	PDR06[R/W] B,H,W XXXXXXXXXX	PDR07[R/W] B,H,W XXXXXXXXXX	
000008 _H	PDR08[R/W] B,H,W XXXXXXXXXX	PDR09[R/W] B,H,W XXXXXXXXXX	PDR10[R/W] B,H,W XXXXXXXXXX	PDR11[R/W] B,H,W XXXXXXXXXX	
00000C _H	PDR12[R/W] B,H,W XXXXXXXXXX	PDR13[R/W] B,H,W XX-XXXXX	-	-	
000010 _H 000038 _H	-	-	-	-	Reserved
00003C _H	WDTCR0[R/W] B,H,W -0--0000	WDTCPR0[W] B,H,W 00000000	WDTCR1[R] B,H,W ----0010	WDTCPR1[W] B,H,W 00000000	Watchdog timer [S]
000040 _H	-	-	-		Reserved
000044 _H	DICR[R/W] B -----0	-	-	-	Delay interrupt
000048 _H 00005C _H	-		-		Reserved
000060 _H	TMRLRA0[R/W] H XXXXXXXXXX XXXXXXXXX		TMR0[R] H XXXXXXXXXX XXXXXXXXX		Reload timer 0
000064 _H	TMRLRB0[R/W] H XXXXXXXXXX XXXXXXXXX		TMCSR0[R/W] B,H,W 00000000 0-000000		
000068 _H 00007C _H	-	-	-	-	Reserved
000080 _H	BT0TMR[R] H 00000000 00000000		BT0TMCR[R/W] H -0000000 00000000		Base timer 0
000084 _H	BT0TMCR2[R/W] B -----0	BT0STC[R/W] B -0-0-0-0	-	-	
000088 _H	BT0PCSR/BT0PRL[R/W] H 00000000 00000000		BT0PDUT/BT0PRLH/BT0DTBF [R/W] H 00000000 00000000		
00008C _H	-	-	-	-	
000090 _H	BT1TMR[R] H 00000000 00000000		BT1TMCR[R/W] H -0000000 00000000		Base timer 1
000094 _H	BT1TMCR2[R/W] B -----0	BT1STC[R/W] B -0-0-0-0	-	-	
000098 _H	BT1PCSR/BT1PRL[R/W] H 00000000 00000000		BT1PDUT/BT1PRLH/BT1DTBF[R/W] H 00000000 00000000		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00009C _H	BTSEL01[R/W] B ----0000	-	BTSSSR[W] B,H -----11		Base timer 0,1
0000A0 _H 0000FC _H	-	-	-	-	Reserved
000100 _H	TMRLRA1[R/W] H XXXXXXXX XXXXXXXX		TMR1[R] H XXXXXXXX XXXXXXXX		Reload timer 1
000104 _H	TMRLRB1[R/W] H XXXXXXXX XXXXXXXX		TMCSR1[R/W] B,H,W 00000000 0-000000		
000108 _H	TMRLRA2[R/W] H XXXXXXXX XXXXXXXX		TMR2[R] H XXXXXXXX XXXXXXXX		Reload timer 2
00010C _H	TMRLRB2[R/W] H XXXXXXXX XXXXXXXX		TMCSR2[R/W] B,H,W 00000000 0-000000		
000110 _H	TMRLRA3[R/W] H XXXXXXXX XXXXXXXX		TMR3[R] H XXXXXXXX XXXXXXXX		Reload timer 3
000114 _H	TMRLRB3[R/W] H XXXXXXXX XXXXXXXX		TMCSR3[R/W] B,H,W 00000000 0-000000		
000118 _H 00011C _H	-	-	-	-	Reserved
000120 _H	IRPR0H[R] B,H,W 00-----	IRPR0L[R] B,H,W 00-----	IRPR1H[R] B,H,W 00-----	IRPR1L[R] B,H,W -----	Interrupt request batch read register
000124 _H	IRPR2H[R] B,H,W -----	IRPR2L[R] B,H,W 0000----	IRPR3H[R] B,H,W 00-----	IRPR3L[R] B,H,W 00-----	
000128 _H	IRPR4H[R] B,H,W 00-----	IRPR4L[R] B,H,W 000000--	IRPR5H[R] B,H,W 00-----	IRPR5L[R] B,H,W 00-----	
00012C _H	IRPR6H[R] B,H,W 000000--	IRPR6L[R] B,H,W 000000--	IRPR7H[R] B,H,W 000000--	IRPR7L[R] B,H,W 000000--	
000130 _H	IRPR8H[R] B,H,W 000000--	IRPR8L[R] B,H,W 00-----	IRPR9H[R] B,H,W 00-----	IRPR9L[R] B,H,W 00-----	
000134 _H	IRPR10H[R] B,H,W 00-----	IRPR10L[R] B,H,W 00-----	IRPR11H[R] B,H,W 00-----	IRPR11L[R] B,H,W 0000000-	
000138 _H	IRPR12H[R] B,H,W 0000000-	IRPR12L[R] B,H,W 00000000	IRPR13H[R] B,H,W 00000000	IRPR13L[R] B,H,W 00000000	
00013C _H	IRPR14H[R] B,H,W 00-----	IRPR14L[R] B,H,W 00-----	IRPR15H[R] B,H,W 00000000	IRPR15L[R] B,H,W 00000---	
000140 _H	IRPR16H[R] B,H,W 00-----	IRPR16L[R] B,H,W 00-----	IRPR17H[R] B,H,W 00-----	IRPR17L[R] B,H,W 00-----	
000144 _H	IRPR18H[R] B,H,W 00-----	IRPR18L[R] B,H,W 000000--	-	-	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000148 _H 0001FC _H	-	-	-	-	Reserved
000200 _H	PCN0[R/W] B,H,W 00000000 000000-0		PCSR0[W] H,W XXXXXXXXXX XXXXXXXXX		PPG0
000204 _H	PDUT0[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR0[R] H,W 11111111 11111111		
000208 _H	PCN1[R/W] B,H,W 00000000 000000-0		PCSR1[W] H,W XXXXXXXXXX XXXXXXXXX		PPG1
00020C _H	PDUT1[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR1[R] H,W 11111111 11111111		
000210 _H	PCN2[R/W] B,H,W 00000000 000000-0		PCSR2[W] H,W XXXXXXXXXX XXXXXXXXX		PPG2
000214 _H	PDUT2[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR2[R] H,W 11111111 11111111		
000218 _H	PCN3[R/W] B,H,W 00000000 000000-0		PCSR3[W] H,W XXXXXXXXXX XXXXXXXXX		PPG3
00021C _H	PDUT3[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR3[R] H,W 11111111 11111111		
000220 _H	PCN4[R/W] B,H,W 00000000 000000-0		PCSR4[W] H,W XXXXXXXXXX XXXXXXXXX		PPG4
000224 _H	PDUT4[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR4[R] H,W 11111111 11111111		
000228 _H	PCN5[R/W] B,H,W 00000000 000000-0		PCSR5[W] H,W XXXXXXXXXX XXXXXXXXX		PPG5
00022C _H	PDUT5[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR5[R] H,W 11111111 11111111		
000230 _H	PCN6[R/W] B,H,W 00000000 000000-0		PCSR6[W] H,W XXXXXXXXXX XXXXXXXXX		PPG6
000234 _H	PDUT6[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR6[R] H,W 11111111 11111111		
000238 _H	PCN7[R/W] B,H,W 00000000 000000-0		PCSR7[W] H,W XXXXXXXXXX XXXXXXXXX		PPG7
00023C _H	PDUT7[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR7[R] H,W 11111111 11111111		
000240 _H	PCN8[R/W] B,H,W 00000000 000000-0		PCSR8[W] H,W XXXXXXXXXX XXXXXXXXX		PPG8
000244 _H	PDUT8[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR8[R] H,W 11111111 11111111		
000248 _H	PCN9[R/W] B,H,W 00000000 000000-0		PCSR9[W] H,W XXXXXXXXXX XXXXXXXXX		PPG9
00024C _H	PDUT9[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR9[R] H,W 11111111 11111111		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000250 _H	PCN10[R/W] B,H,W 00000000 000000-0		PCSR10[W] H,W XXXXXXXXXX XXXXXXXXX		PPG10
000254 _H	PDUT10[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR10[R] H,W 11111111 11111111		
000258 _H	PCN11[R/W] B,H,W 00000000 000000-0		PCSR11[W] H,W XXXXXXXXXX XXXXXXXXX		PPG11
00025C _H	PDUT11[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR11[R] H,W 11111111 11111111		
000260 _H	PCN12[R/W] B,H,W 00000000 000000-0		PCSR12[W] H,W XXXXXXXXXX XXXXXXXXX		PPG12
000264 _H	PDUT12[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR12[R] H,W 11111111 11111111		
000268 _H	PCN13[R/W] B,H,W 00000000 000000-0		PCSR13[W] H,W XXXXXXXXXX XXXXXXXXX		PPG13
00026C _H	PDUT13[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR13[R] H,W 11111111 11111111		
000270 _H	PCN14[R/W] B,H,W 00000000 000000-0		PCSR14[W] H,W XXXXXXXXXX XXXXXXXXX		PPG14
000274 _H	PDUT14[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR14[R] H,W 11111111 11111111		
000278 _H	PCN15[R/W] B,H,W 00000000 000000-0		PCSR15[W] H,W XXXXXXXXXX XXXXXXXXX		PPG15
00027C _H	PDUT15[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR15[R] H,W 11111111 11111111		
000280 _H	PCN16[R/W] B,H,W 00000000 000000-0		PCSR16[W] H,W XXXXXXXXXX XXXXXXXXX		PPG16
000284 _H	PDUT16[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR16[R] H,W 11111111 11111111		
000288 _H	PCN17[R/W] B,H,W 00000000 000000-0		PCSR17[W] H,W XXXXXXXXXX XXXXXXXXX		PPG17
00028C _H	PDUT17[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR17[R] H,W 11111111 11111111		
000290 _H	PCN18[R/W] B,H,W 00000000 000000-0		PCSR18[W] H,W XXXXXXXXXX XXXXXXXXX		PPG18
000294 _H	PDUT18[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR18[R] H,W 11111111 11111111		
000298 _H	PCN19[R/W] B,H,W 00000000 000000-0		PCSR19[W] H,W XXXXXXXXXX XXXXXXXXX		PPG19
00029C _H	PDUT19[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR19[R] H,W 11111111 11111111		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
0002A0 _H	PCN20[R/W] B,H,W 00000000 000000-0		PCSR20[W] H,W XXXXXXXX XXXXXXXX		PPG20
0002A4 _H	PDUT20[W] H,W XXXXXXXX XXXXXXXX		PTMR20[R] H,W 11111111 11111111		
0002A8 _H	PCN21[R/W] B,H,W 00000000 000000-0		PCSR21[W] H,W XXXXXXXX XXXXXXXX		PPG21
0002AC _H	PDUT21[W] H,W XXXXXXXX XXXXXXXX		PTMR21[R] H,W 11111111 11111111		
0002B0 _H	PCN22[R/W] B,H,W 00000000 000000-0		PCSR22[W] H,W XXXXXXXX XXXXXXXX		PPG22
0002B4 _H	PDUT22[W] H,W XXXXXXXX XXXXXXXX		PTMR22[R] H,W 11111111 11111111		
0002B8 _H	PCN23[R/W] B,H,W 00000000 000000-0		PCSR23[W] H,W XXXXXXXX XXXXXXXX		PPG23
0002BC _H	PDUT23[W] H,W XXXXXXXX XXXXXXXX		PTMR23[R] H,W 11111111 11111111		
0002C0 _H	GTRS0[R/W] B,H,W -0000000 -0000000		GTRS1[R/W] B,H,W -0000000 -0000000		PPG Control
0002C4 _H	GTRS2[R/W] B,H,W -0000000 -0000000		GTRS3[R/W] B,H,W -0000000 -0000000		
0002C8 _H	GTRS4[R/W] B,H,W -0000000 -0000000		GTRS5[R/W] B,H,W -0000000 -0000000		
0002CC _H	GTRS6[R/W] B,H,W -0000000 -0000000		GTRS7[R/W] B,H,W -0000000 -0000000		
0002D0 _H	GTRS8[R/W] B,H,W -0000000 -0000000		GTRS9[R/W] B,H,W -0000000 -0000000		
0002D4 _H	GTRS10[R/W] B,H,W -0000000 -0000000		GTRS11[R/W] B,H,W -0000000 -0000000		
0002D8 _H	GTREN0[R/W] H,W 00000000 00000000		GTREN1[R/W] H,W ----- 00000000		
0002DC _H					Reserved
0002E0 _H	-	GATEC0[R/W] B,H,W -----00	-	GATEC2[R/W] B,H,W -----00	PPG GATE Control
0002E4 _H	-	GATEC4[R/W] B,H,W -----00	-	GATEC8[R/W] B,H,W -----00	
0002E8 _H	-	GATEC10[R/W] B,H,W -----00	-	GATEC12[R/W] B,H,W -----00	
0002EC _H	-	-	-	-	Reserved
0002F0 _H	RCRH0[W] H,W 00000000	RCRL0[W] B,H,W 00000000	UDCRH0[R] H,W 00000000	UDCRL0[R] B,H,W 00000000	U/D counter 0
0002F4 _H	CCR0[R/W] B,H 00000000 -0001000		-	CSR0[R] B 00000000	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
0002F8 _H	RCRH1[W] H,W 00000000	RCRL1[W] B,H,W 00000000	UDCRH1[R] H,W 00000000	UDCRL1[R] B,H,W 00000000	U/D counter 1
0002FC _H	CCR1[R/W] B,H 00000000 -0001000		-	CSR1[R] B 00000000	
000300 _H	-				Reserved
000304 _H	-	-	-	-	Reserved
000308 _H	-				Reserved
00030C _H	-	-	-	-	
000310 _H	-	-	MPUCR[R/W] H 000000-0 ----0100		MPU [S] (Only the CPU can access this area)
000314 _H	-	-	-	-	
000318 _H	-				
00031C _H	-	-	-	-	
000320 _H	DPVAR[R] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000324 _H	-	-	DPVSR[R/W] H ----- 00000--0		
000328 _H	DEAR[R] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00032C _H	-	-	DESR[R/W] H ----- 00000--0		
000330 _H	PABR0[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
000334 _H	-	-	PACR0[R/W] H 000000-0 00000--0		
000338 _H	PABR1[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
00033C _H	-	-	PACR1[R/W] H 000000-0 00000--0		
000340 _H	PABR2[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
000344 _H	-	-	PACR2[R/W] H 000000-0 00000--0		
000348 _H	PABR3[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
00034C _H	-	-	PACR3[R/W] H 000000-0 00000--0		
000350 _H	PABR4[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000354 _H	-	-	PACR4[R/W] H 000000-0 00000--0		MPU [S] (Only the CPU can access this area)
000358 _H	PABR5[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
00035C _H	-	-	PACR5[R/W] H 000000-0 00000--0		
000360 _H	PABR6[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
000364 _H	-	-	PACR6[R/W] H 000000-0 00000--0		
000368 _H	PABR7[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
00036C _H	-	-	PACR7[R/W] H 000000-0 00000--0		
000370 _H	-				Reserved [S]
000374 _H	-	-	-		
000378 _H	-				
00037C _H	-	-	-		
000380 _H	-				
000384 _H	-	-	-		
000388 _H	-				
00038C _H	-	-	-		
000390 _H	-				
000394 _H	-	-	-		Reserved [S]
000398 _H	-				
00039C _H	-	-	-		
0003A0 _H	-				
0003A4 _H	-	-	-		
0003A8 _H	-				
0003AC _H	-	-	-		
0003B0 _H 0003FC _H	-	-	-	-	Reserved [S]

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000400 _H	ICSEL0[R/W] B,H,W -----000	ICSEL1[R/W] B,H,W -----0	ICSEL2[R/W] B,H,W -----0	ICSEL3[R/W] B,H,W -----0	Generation and clearing of DMA transfer requests
000404 _H	ICSEL4[R/W] B,H,W -----0	ICSEL5[R/W] B,H,W -----0	ICSEL6[R/W] B,H,W -----0	ICSEL7[R/W] B,H,W -----000	
000408 _H	ICSEL8[R/W] B,H,W -----0	ICSEL9[R/W] B,H,W -----0	ICSEL10[R/W] B,H,W -----000	ICSEL11[R/W] B,H,W -----000	
00040C _H	ICSEL12[R/W] B,H,W -----000	ICSEL13[R/W] B,H,W -----000	ICSEL14[R/W] B,H,W -----000	ICSEL15[R/W] B,H,W -----0	
000410 _H	ICSEL16[R/W] B,H,W -----0	ICSEL17[R/W] B,H,W -----0	ICSEL18[R/W] B,H,W -----0	ICSEL19[R/W] B,H,W -----0	
000414 _H	ICSEL20[R/W] B,H,W -----0	ICSEL21[R/W] B,H,W -----000	ICSEL22[R/W] B,H,W -----000	ICSEL23[R/W] B,H,W -----000	Generation and clearing of DMA transfer requests
000418 _H	ICSEL24[R/W] B,H,W -----000	ICSEL25[R/W] B,H,W -----000	ICSEL26[R/W] B,H,W -----0	ICSEL27[R/W] B,H,W -----0	
00041C _H	-	-	-	-	
000420 _H	-	-	-	-	
000424 _H 00043C _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000440 _H	ICR00[R/W] B,H,W ---11111	ICR01[R/W] B,H,W ---11111	ICR02[R/W] B,H,W ---11111	ICR03[R/W] B,H,W ---11111	Interrupt controller [S]
000444 _H	ICR04[R/W] B,H,W ---11111	ICR05[R/W] B,H,W ---11111	ICR06[R/W] B,H,W ---11111	ICR07[R/W] B,H,W ---11111	
000448 _H	ICR08[R/W] B,H,W ---11111	ICR09[R/W] B,H,W ---11111	ICR10[R/W] B,H,W ---11111	ICR11[R/W] B,H,W ---11111	
00044C _H	ICR12[R/W] B,H,W ---11111	ICR13[R/W] B,H,W ---11111	ICR14[R/W] B,H,W ---11111	ICR15[R/W] B,H,W ---11111	
000450 _H	ICR16[R/W] B,H,W ---11111	ICR17[R/W] B,H,W ---11111	ICR18[R/W] B,H,W ---11111	ICR19[R/W] B,H,W ---11111	
000454 _H	ICR20[R/W] B,H,W ---11111	ICR21[R/W] B,H,W ---11111	ICR22[R/W] B,H,W ---11111	ICR23[R/W] B,H,W ---11111	
000458 _H	ICR24[R/W] B,H,W ---11111	ICR25[R/W] B,H,W ---11111	ICR26[R/W] B,H,W ---11111	ICR27[R/W] B,H,W ---11111	
00045C _H	ICR28[R/W] B,H,W ---11111	ICR29[R/W] B,H,W ---11111	ICR30[R/W] B,H,W ---11111	ICR31[R/W] B,H,W ---11111	
000460 _H	ICR32[R/W] B,H,W ---11111	ICR33[R/W] B,H,W ---11111	ICR34[R/W] B,H,W ---11111	ICR35[R/W] B,H,W ---11111	
000464 _H	ICR36[R/W] B,H,W ---11111	ICR37[R/W] B,H,W ---11111	ICR38[R/W] B,H,W ---11111	ICR39[R/W] B,H,W ---11111	
000468 _H	ICR40[R/W] B,H,W ---11111	ICR41[R/W] B,H,W ---11111	ICR42[R/W] B,H,W ---11111	ICR43[R/W] B,H,W ---11111	
00046C _H	ICR44[R/W] B,H,W ---11111	ICR45[R/W] B,H,W ---11111	ICR46[R/W] B,H,W ---11111	ICR47[R/W] B,H,W ---11111	
000470 _H 00047C _H	-	-	-	-	Reserved [S]
000480 _H	RSTRR[R] B,H,W XXXX--XX	RSTCR[R/W] B,H,W 111----0	STBCR[R/W] B,H,W* 000---11	-	Reset control [S] Power consumption control [S] * Writing to STBCR by DMA is disabled.
000484 _H	-	-	-	-	Reserved [S]
000488 _H	DIVR0[R/W] B,H,W 000-----	-	DIVR2[R/W] B,H,W 0011----	-	Clock control [S]
00048C _H	-	-	-	-	Reserved [S]
000490 _H	IORR0[R/W] B,H,W -0000000	IORR1[R/W] B,H,W -0000000	IORR2[R/W] B,H,W -0000000	IORR3[R/W] B,H,W -0000000	DMA transfer request from a peripheral [S]
000494 _H	IORR4[R/W] B,H,W -0000000	IORR5[R/W] B,H,W -0000000	IORR6[R/W] B,H,W -0000000	IORR7[R/W] B,H,W -0000000	
000498 _H	-	-	-	-	
00049C _H	-	-	-	-	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
0004A0 _H	-	-	-	-	Reserved
0004A4 _H	CANPRE[R/W] B,H,W ----0000	-	-	-	CAN prescaler
0004A8 _H 0004AC _H	-	-	-	-	Reserved
0004B0 _H	-	-	-	-	Reserved
0004B4 _H 0004C0 _H	-	-	-	-	Reserved
0004C4 _H	CUCR1[R/W] B,H,W ----- ---0--00		CUTD1[R/W] B,H,W 11000011 01010000		WDT1 calibration
0004C8 _H	CUTR1[R] B,H,W ----- 00000000 00000000 00000000				
0004CC _H 0004DC _H	-	-	-	-	Reserved
0004E0 _H	-	-	CSCFG[R/W] B,H,W ---0----	CMCFG[R/W] B,H,W 00000000	Clock monitor
0004E4 _H	-	-	-	-	
0004E8 _H	PLL2DIVM[R/W] B,H,W ----0000	PLL2DIVN[R/W] B,H,W -0000000	PLL2DIVG[R/W] B,H,W ----0000	PLL2MULG[R/W] B,H,W 00000000	FlexRay/RDC clock control
0004EC _H	PLL2CTRL[R/W] B,H,W ----0000	PLL2DIVK[R/W] B,H,W -----0	CLKR2[R/W] B,H,W 000--000	-	
0004F0 _H 0004FC _H	-	-	-	-	Reserved
000500 _H	-				Reserved
000504 _H	-				Reserved
000508 _H 00050C _H	-	-	-	-	Reserved
000510 _H	CSELR[R/W] B,H,W -0----00	CMONR[R] B,H,W -01---00	MTMCR[R/W] B,H,W 00001111	-	Clock control [S]
000514 _H	PLLCR[R/W] B,H,W 00-00000 11110000		CSTBR[R/W] B,H,W ----0000	PTMCR[R/W] B,H,W 00-----	
000518 _H	-	-	CPUAR[R/W] B,H,W 0---XXXX	-	Reset [S]
00051C _H	-	-	-	-	Reserved [S]

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000520 _H	CCPSSEL[R/W] B,H,W -----0	-	-	CCPSDIVR[R/W] B,H,W -000-000	Clock control 2
000524 _H	-	CCPLLFBR[R/W] B,H,W -0000000	CCSSFBR0[R/W] B,H,W --000000	CCSSFBR1[R/W] B,H,W ---00000	
000528 _H	-	CCSSCCR0[R/W] B,H,W ----0000	CCSSCCR1[R/W] H,W 000-----		
00052C _H	-	CCCGRCR0[R/W] B,H,W 00----00	CCCGRCR1[R/W] B,H,W 00000000	CCCGRCR2[R/W] B,H,W 00000000	
000530 _H	-	-	CCPMUCR0[R/W] B,H,W 0-----00	CCPMUCR1[R/W] B,H,W 0--00000	
000534 _H	-	-	-	-	
000538 _H	-	-	-	-	
00053C _H	-	-	-	-	
000540 _H 00054C _H	-	-	-	-	Reserved
000550 _H	EIRR0[R/W] B,H,W XXXXXXXX	ENIR0[R/W] B,H,W 00000000	ELVR0[R/W] B,H,W 00000000 00000000		External interrupt (INT0 to 7)
000554 _H 000568 _H	-	-	-	-	Reserved
00056C _H	-	CSVCR[R/W] B -0--1--0	-	-	CSV
000570 _H	CRTR[R/W] B,H,W 01111111	-	-	-	WDT1 calibration (trimming)
000574 _H 00057C _H	-	-	-	-	Reserved
000580 _H	REGSEL[R/W] B,H,W 01--110-	-	-	-	Regulator control
000584 _H	LVD5R[R/W] B,H,W -----1	LVD5F[R/W] B,H,W 0-010--1	LVD[R/W] B,H,W 01000--0	-	Low-voltage detection
000588 _H 00058C _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000590 _H	PMUSTR [R/W] B,H,W 0-----1X	PMUCTLR[R/W] B,H,W 0-00----	PWRTMCTL[R/W] B,H,W -----011	-	PMU
000594 _H	-	PMUINTF1[R/W] B,H,W 00000000	PMUINTF2[R/W] B,H,W -00-----	-	
000598 _H	-	-	-	-	
00059C _H	-	-	-	-	
0005A0 _H 0005FC _H	-	-	-	-	Reserved
000600 _H 00060C _H	-	-	-	-	Reserved [S]
000610 _H 00063C _H	-	-	-	-	Reserved [S]
000640 _H 00064C _H	-	-	-	-	Reserved [S]
000650 _H 00067C _H	-	-	-	-	Reserved [S]
000680 _H 00068C _H	-	-	-	-	Reserved [S]
000690 _H 0006BC _H	-	-	-	-	Reserved [S]
0006C0 _H 0006CC _H	-	-	-	-	Reserved [S]
0006D0 _H 0006F0 _H	-	-	-	-	Reserved
0006F4 _H	-	-	-	-	Reserved
0006F8 _H 0006FC _H	-	-	-	-	Reserved
000700 _H	-	-	-	-	Reserved
000704 _H 00070C _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000710 _H	BPCCRA[R/W] B 00000000	BPCCRB[R/W] B 00000000	BPCCRC[R/W] B 00000000	-	Bus performance counter
000714 _H	BPCTRA[R/W] W 00000000 00000000 00000000 00000000				
000718 _H	BPCTRB[R/W] W 00000000 00000000 00000000 00000000				
00071C _H	BPCTRC[R/W] W 00000000 00000000 00000000 00000000				
000720 _H 0007F8 _H	-	-	-	-	Reserved
0007FC _H	BMODR[R] B,H,W XXXXXXXX	-	-	-	Operation mode
000800 _H 00083C _H	-	-	-	-	Reserved [S]
000840 _H	FCTLR[R/W] H -0--1000 0--0----		-	FSTR[R/W] B -----001	Flash memory register [S]
000844 _H	-	-	-	-	Reserved [S]
000848 _H 000854 _H	-	-	-	-	Reserved [S]
000858 _H	-	-	WREN[R/W] H 00000000 00000000		Wild register [S]
00085C _H 00087C _H	-	-	-	-	Reserved [S]

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000880 _H	WRAR00[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				Wild register [S]
000884 _H	WRDR00[R/W] W XXXXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000888 _H	WRAR01[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
00088C _H	WRDR01[R/W] W XXXXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000890 _H	WRAR02[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
000894 _H	WRDR02[R/W] W XXXXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000898 _H	WRAR03[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
00089C _H	WRDR03[R/W] W XXXXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008A0 _H	WRAR04[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008A4 _H	WRDR04[R/W] W XXXXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008A8 _H	WRAR05[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008AC _H	WRDR05[R/W] W XXXXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008B0 _H	WRAR06[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008B4 _H	WRDR06[R/W] W XXXXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008B8 _H	WRAR07[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008BC _H	WRDR07[R/W] W XXXXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
0008C0 _H	WRAR08[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008C4 _H	WRDR08[R/W] W XXXXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
0008C8 _H	WRAR09[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				Wild register [S]
0008CC _H	WRDR09[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008D0 _H	WRAR10[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008D4 _H	WRDR10[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008D8 _H	WRAR11[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008DC _H	WRDR11[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008E0 _H	WRAR12[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008E4 _H	WRDR12[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008E8 _H	WRAR13[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008EC _H	WRDR13[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008F0 _H	WRAR14[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008F4 _H	WRDR14[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008F8 _H	WRAR15[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008FC _H	WRDR15[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
000900 _H 000BF8 _H	-	-	-	-	Reserved
000BFC _H	-	-	UER[W] B,H,W ----- -----X		OCDU

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000C00 _H	DCCR0[R/W] W 0----000 --00--00 00000000 0-000000				DMA controller [S]
000C04 _H	DCSR0[R/W] H 0-----000		DTCR0[R/W] H 00000000 00000000		
000C08 _H	DSAR0[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C0C _H	DDAR0[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C10 _H	DCCR1[R/W] W 0----000 --00--00 00000000 0-000000				
000C14 _H	DCSR1[R/W] H 0-----000		DTCR1[R/W] H 00000000 00000000		
000C18 _H	DSAR1[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C1C _H	DDAR1[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C20 _H	DCCR2[R/W] W 0----000 --00--00 00000000 0-000000				
000C24 _H	DCSR2[R/W] H 0-----000		DTCR2[R/W] H 00000000 00000000		
000C28 _H	DSAR2[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C2C _H	DDAR2[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C30 _H	DCCR3[R/W] W 0----000 --00--00 00000000 0-000000				
000C34 _H	DCSR3[R/W] H 0-----000		DTCR3[R/W] H 00000000 00000000		
000C38 _H	DSAR3[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C3C _H	DDAR3[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C40 _H	DCCR4[R/W] W 0----000 --00--00 00000000 0-000000				
000C44 _H	DCSR4[R/W] H 0-----000		DTCR4[R/W] H 00000000 00000000		
000C48 _H	DSAR4[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C4C _H	DDAR4[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C50 _H	DCCR5[R/W] W 0----000 --00--00 00000000 0-000000				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000C54 _H	DCSR5[R/W] H 0-----000		DTCR5[R/W] H 00000000 00000000		DMA controller [S]
000C58 _H	DSAR5[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C5C _H	DDAR5[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C60 _H	DCCR6[R/W] W 0---000 --00--00 00000000 0-000000				
000C64 _H	DCSR6[R/W] H 0-----000		DTCR6[R/W] H 00000000 00000000		
000C68 _H	DSAR6[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C6C _H	DDAR6[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C70 _H	DCCR7[R/W] W 0---000 --00--00 00000000 0-000000				
000C74 _H	DCSR7[R/W] H 0-----000		DTCR7[R/W] H 00000000 00000000		
000C78 _H	DSAR7[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C7C _H	DDAR7[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C80 _H 000DF0 _H	-	-	-	-	
000DF4 _H	-	-	DNMIR[R/W] B 0-----0	DILVR[R/W] B ---11111	
000DF8 _H	DMACR[R/W] W 0-----0-----0-----0-----				
000DFC _H	-	-	-	-	Reserved [S]
000E00 _H	DDR00[R/W] B,H 00000000	DDR01[R/W] B,H 00000000	DDR02[R/W] B,H 00000000	DDR03[R/W] B,H 00000000	Data direction register
000E04 _H	DDR04[R/W] B,H -----000	-	DDR06[R/W] B,H 00000000	DDR07[R/W] B,H 00000000	
000E08 _H	DDR08[R/W] B,H 00000000	DDR09[R/W] B,H 00000000	DDR10[R/W] B,H 00000000	DDR11[R/W] B,H 00000000	
000E0C _H	DDR12[R/W] B,H 00000000	DDR13[R/W] B,H 00-00000	-	-	
000E10 _H 000E1C _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000E20 _H	PFR00[R/W] B,H 00000000	PFR01[R/W] B,H 00000000	PFR02[R/W] B,H 00000000	PFR03[R/W] B,H 00000000	Port function register
000E24 _H	PFR04[R/W] B,H -----000	-	PFR06[R/W] B,H 00000000	PFR07[R/W] B,H 00000000	
000E28 _H	PFR08[R/W] B,H 00000000	PFR09[R/W] B,H 00000000	PFR10[R/W] B,H 00000000	PFR11[R/W] B,H 00000000	
000E2C _H	PFR12[R/W] B,H 00000000	PFR13[R/W] B,H 00-00000	-	-	
000E30 _H 000E3C _H	-	-	-	-	Reserved
000E40 _H	PDDR00[R] B,H,W XXXXXXXXX	PDDR01[R] B,H,W XXXXXXXXX	PDDR02[R] B,H,W XXXXXXXXX	PDDR03[R] B,H,W XXXXXXXXX	Input data direct read register
000E44 _H	PDDR04[R] B,H,W -----XXX	-	PDDR06[R] B,H,W XXXXXXXXX	PDDR07[R] B,H,W XXXXXXXXX	
000E48 _H	PDDR08[R] B,H,W XXXXXXXXX	PDDR09[R] B,H,W XXXXXXXXX	PDDR10[R] B,H,W XXXXXXXXX	PDDR11[R] B,H,W XXXXXXXXX	
000E4C _H	PDDR12[R] B,H,W XXXXXXXXX	PDDR13[R] B,H,W XX-XXXXX	-	-	
000E50 _H 000E5C _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000E60 _H	EPFR00[R/W] B,H ----000	EPFR01[R/W] B,H -----00	EPFR02[R/W] B,H --000000	EPFR03[R/W] B,H 00000000	Extended port function register
000E64 _H	EPFR04[R/W] B,H 00000000	EPFR05[R/W] B,H 00000000	EPFR06[R/W] B,H -----00	EPFR07[R/W] B,H ----0000	
000E68 _H	EPFR08[R/W] B,H ---0000	EPFR09[R/W] B,H -----0	EPFR10[R/W] B,H 00000000	EPFR11[R/W] B,H ---0000	
000E6C _H	EPFR12[R/W] B,H --000000	EPFR13[R/W] B,H -----1	EPFR14[R/W] B,H -0000000	EPFR15[R/W] B,H -0000000	
000E70 _H	EPFR16[R/W] B,H --000000	EPFR17[R/W] B,H 00000000	EPFR18[R/W] B,H 00000000	EPFR19[R/W] B,H 00000000	
000E74 _H	EPFR20[R/W] B,H 00000000	EPFR21[R/W] B,H 00000000	EPFR22[R/W] B,H 00000000	EPFR23[R/W] B,H 00000000	
000E78 _H	EPFR24[R/W] B,H 00000000	EPFR25[R/W] B,H 00000000	EPFR26[R/W] B,H 00000000	EPFR27[R/W] B,H 00000000	
000E7C _H	EPFR28[R/W] B,H 00000000	EPFR29[R/W] B,H 00000000	EPFR30[R/W] B,H 00000000	EPFR31[R/W] B,H 00000000	
000E80 _H	EPFR32[R/W] B,H 00000000	-	-	-	
000E84 _H 000EBC _H	-	-	-	-	Reserved
000EC0 _H	PPER00[R/W] B,H 00000000	PPER01[R/W] B,H 00000000	PPER02[R/W] B,H 00000000	PPER03[R/W] B,H 00000000	Port pull-up/down enable register
000EC4 _H	PPER04[R/W] B,H ----000	-	PPER06[R/W] B,H 00000000	PPER07[R/W] B,H 00000000	
000EC8 _H	PPER08[R/W] B,H 00000000	PPER09[R/W] B,H 00000000	PPER10[R/W] B,H 00000000	PPER11[R/W] B,H 00000000	
000ECC _H	PPER12[R/W] B,H 00000000	PPER13[R/W] B,H 00-00000	-	-	
000ED0 _H 000EDC _H	-	-	-	-	Reserved
000EE0 _H	PILR00[R/W] B,H 11111111	PILR01[R/W] B,H 11111111	PILR02[R/W] B,H 11111111	PILR03[R/W] B,H 11111111	Port input level selection register
000EE4 _H	PILR04[R/W] B,H -----111	-	PILR06[R/W] B,H 11111111	PILR07[R/W] B,H 11111111	
000EE8 _H	PILR08[R/W] B,H 11111111	PILR09[R/W] B,H 11111111	PILR10[R/W] B,H 11111111	PILR11[R/W] B,H 11111111	
000EEC _H	PILR12[R/W] B,H 11111111	PILR13[R/W] B,H 11-11111	-	-	
000EF0 _H 000EFC _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000F00 _H 000F1C _H	-	-	-	-	Reserved
000F20 _H	PODR00[R/W] B,H 00000000	PODR01[R/W] B,H 00000000	PODR02[R/W] B,H 00000000	PODR03[R/W] B,H 00000000	Port output drive register
000F24 _H	PODR04[R/W] B,H -----000	-	PODR06[R/W] B,H 00000000	PODR07[R/W] B,H 00000000	
000F28 _H	PODR08[R/W] B,H 00000000	PODR09[R/W] B,H 00000000	PODR10[R/W] B,H 00000000	PODR11[R/W] B,H 00000000	
000F2C _H	PODR12[R/W] B,H 00000000	PODR13[R/W] B,H 00-00000	-	-	
000F30 _H 000F3C _H	-	-	-	-	Reserved
000F40 _H	PORTEN[R/W] B,H,W -----00	-	-	-	Port input enable register
000F44 _H	KEYCDR[R/W] H 00000000 00000000		-	-	Port key code
000F48 _H	ADERH[R/W] B,H ----- 11111111		ADERL[R/W] B,H 11111111 11111111		Analog input enable register
000F4C _H	-	-	-	-	Reserved
000F50 _H 000FFC _H	-	-	-	-	Reserved
001000 _H	SACR[R/W] B,H,W -----0	PICD[R/W] B,H,W ----0011	-	-	Synchronous/asyn chronous switch control
001004 _H 0010BC _H	-	-	-	-	Reserved
0010C0 _H	-	-	-	CRCCR[R/W] B,H,W -0000000	CRC arithmetic operation
0010C4 _H	CRCINIT[R/W] B,H,W 11111111 11111111 11111111 11111111				
0010C8 _H	CRCIN[R/W] B,H,W 00000000 00000000 00000000 00000000				
0010CC _H	CRCCR[R] B,H,W 11111111 11111111 11111111 11111111				
0010D0 _H 0010FC _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
001100 _H	TCGS[R/W] B,H,W -----00	-	-	TCGSE[R/W] B,H,W --000000	Free-run timer simultaneous activation
001104 _H	CPCLRB0/CPCLR0[R/W] H,W 11111111 11111111		TCDT0[R/W] H,W 00000000 00000000		Free-run timer 0
001108 _H	TCCS0[R/W] B,H,W 00000000 01000000 ----0000 -----				
00110C _H	CPCLRB1/CPCLR1[R/W] H,W 11111111 11111111		TCDT1[R/W] H,W 00000000 00000000		Free-run timer 1
001110 _H	TCCS1[R/W] B,H,W 00000000 01000000 ----0000 -----				
001114 _H	CPCLRB2/CPCLR2[R/W] H,W 11111111 11111111		TCDT2[R/W] H,W 00000000 00000000		Free-run timer 2
001118 _H	TCCS2[R/W] B,H,W 00000000 01000000 ----0000 -----				
00111C _H	CPCLRB3/CPCLR3[R/W] H,W 11111111 11111111		TCDT3[R/W] H,W 00000000 00000000		Free-run timer 3
001120 _H	TCCS3[R/W] B,H,W 00000000 01000000 ----0000 -----				
001124 _H	CPCLRB4/CPCLR4[R/W] H,W 11111111 11111111		TCDT4[R/W] H,W 00000000 00000000		Free-run timer 4
001128 _H	TCCS4[R/W] B,H,W 00000000 01000000 ----0000 -----				
00112C _H	CPCLRB5/CPCLR5[R/W] H,W 11111111 11111111		TCDT5[R/W] H,W 00000000 00000000		Free-run timer 5
001130 _H	TCCS5[R/W] B,H,W 00000000 01000000 ----0000 -----				
001134 _H	FRS0[R/W] B,H,W ----- -000-000 -000-000 -000-000				Free-run timer selection
001138 _H	FRS1[R/W] B,H,W ----- -000-000 -000-000				
00113C _H	FRS2[R/W] B,H,W ----- -000-000 -000-000 -000-000				
001140 _H	FRS3[R/W] B,H,W ----- -000-000 -000-000				
001144 _H	FRS4[R/W] B,H,W -000-000 -000-000 -000-000 -000-000				
001148 _H	FRS5[R/W] B,H,W -000-000 -000-000 -000-000 -000-000				
00114C _H	FRS6[R/W] B,H,W -000-000 -000-000 -000-000 -000-000				
001150 _H	-				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
001154 _H	OCCPB0/OCCP0[R/W] H,W 00000000 00000000		OCCPB1/OCCP1[R/W] H,W 00000000 00000000		Output compare 0/1
001158 _H	OCS01[R/W] B,H,W -110--00 00001100		-	OCMOD01[R/W] B,H,W -----00	
00115C _H	OCCPB2/OCCP2[R/W] H,W 00000000 00000000		OCCPB3/OCCP3[R/W] H,W 00000000 00000000		Output compare 2/3
001160 _H	OCS23[R/W] B,H,W -110--00 00001100		-	OCMOD23[R/W] B,H,W -----00	
001164 _H	OCCPB4/OCCP4[R/W] H,W 00000000 00000000		OCCPB5/OCCP5[R/W] H,W 00000000 00000000		Output compare 4/5
001168 _H	OCS45[R/W] B,H,W -110--00 00001100		-	OCMOD45[R/W] B,H,W -----00	
00116C _H	OCCPB6/OCCP6[R/W] H,W 00000000 00000000		OCCPB7/OCCP7[R/W] H,W 00000000 00000000		Output compare 6/7
001170 _H	OCS67[R/W] B,H,W -110--00 00001100		-	OCMOD67[R/W] B,H,W -----00	
001174 _H	OCCPB8/OCCP8[R/W] H,W 00000000 00000000		OCCPB9/OCCP9[R/W] H,W 00000000 00000000		Output compare 8/9
001178 _H	OCS89[R/W] B,H,W -110--00 00001100		-	OCMOD89[R/W] B,H,W -----00	
00117C _H	OCCPB10/OCCP10[R/W] H,W 00000000 00000000		OCCPB11/OCCP11[R/W] H,W 00000000 00000000		Output compare 10/11
001180 _H	OCS1011[R/W] B,H,W -110--00 00001100		-	OCMOD1011 [R/W] B,H,W -----00	
001184 _H	IPCP0[R] H,W 00000000 00000000		IPCP1[R] H,W 00000000 00000000		Input capture 0/1
001188 _H	ICS01[R/W] B,H,W -----00 00000000		-	LSYNS[R/W] B,H,W ---00000	
00118C _H	IPCP2[R] H,W 00000000 00000000		IPCP3[R] H,W 00000000 00000000		Input capture 2/3
001190 _H	ICS23[R/W] B,H,W -----00 00000000		-	-	
001194 _H	IPCP4[R] H,W 00000000 00000000		IPCP5[R] H,W 00000000 00000000		Input capture 4/5
001198 _H	ICS45[R/W] B,H,W -----00 00000000		-	-	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00119C _H	IPCP6[R] H,W 00000000 00000000		IPCP7[R] H,W 00000000 00000000		Input capture 6/7
0011A0 _H	ICS67[R/W] B,H,W -----00 00000000		-	-	
0011A4 _H	DTSR[R/W] B,H,W -----10	-	-	-	DTTI selection
0011A8 _H	TMRR0[R/W] H,W 00000000 00000001		TMRR1[R/W] H,W 00000000 00000001		Waveform generator 0/1/2
0011AC _H	TMRR2[R/W] H,W 00000000 00000001		-	-	
0011B0 _H	DTSCR0[R/W] B,H,W 00000000	DTSCR1[R/W] B,H,W 00000000	DTSCR2[R/W] B,H,W 00000000	-	
0011B4 _H	-	DTIR0[R/W] B,H,W 000000--	-	DTMNS0[R/W] B,H,W 00---000	
0011B8 _H	-	SIGCR10[R/W] B,H,W 00000000	-	SIGCR20[R/W] B,H,W 000000-1	
0011BC _H	PICS0[R/W] B,H,W 000000-- -----				
0011C0 _H	TMRR3[R/W] H,W 00000000 00000001		TMRR4[R/W] H,W 00000000 00000001		Waveform generator 3/4/5
0011C4 _H	TMRR5[R/W] H,W 00000000 00000001		-	-	
0011C8 _H	DTSCR3[R/W] B,H,W 00000000	DTSCR4[R/W] B,H,W 00000000	DTSCR5[R/W] B,H,W 00000000	-	
0011CC _H	-	DTIR1[R/W] B,H,W 000000--	-	DTMNS1[R/W] B,H,W 00---000	
0011D0 _H	-	SIGCR11[R/W] B,H,W 00000000	-	SIGCR21[R/W] B,H,W 000000-1	
0011D4 _H	PICS1[R/W] B,H,W 000000-- -----				
0011D8 _H	-	-	-	-	12-bit A/D converter
0011DC _H	ADTSS[R/W] B,H,W -----0	-	-	-	
0011E0 _H	ADTSE[R/W] B,H,W ----- 00000000 00000000 00000000				
0011E4 _H	ADCOMP0/ADCOMPB0[R/W] H,W 00000000 00000000		ADCOMP1/ADCOMPB1[R/W] H,W 00000000 00000000		
0011E8 _H	ADCOMP2/ADCOMPB2[R/W] H,W 00000000 00000000		ADCOMP3/ADCOMPB3[R/W] H,W 00000000 00000000		
0011EC _H	ADCOMP4/ADCOMPB4[R/W] H,W 00000000 00000000		ADCOMP5/ADCOMPB5[R/W] H,W 00000000 00000000		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
0011F0 _H	ADCOMP6/ADCOMPB6[R/W] H,W 00000000 00000000		ADCOMP7/ADCOMPB7[R/W] H,W 00000000 00000000		12-bit A/D converter
0011F4 _H	ADCOMP8/ADCOMPB8[R/W] H,W 00000000 00000000		ADCOMP9/ADCOMPB9[R/W] H,W 00000000 00000000		
0011F8 _H	ADCOMP10/ADCOMPB10[R/W] H,W 00000000 00000000		ADCOMP11/ADCOMPB11[R/W] H,W 00000000 00000000		
0011FC _H	ADCOMP12/ADCOMPB12[R/W] H,W 00000000 00000000		ADCOMP13/ADCOMPB13[R/W] H,W 00000000 00000000		
001200 _H	ADCOMP14/ADCOMPB14[R/W] H,W 00000000 00000000		ADCOMP15/ADCOMPB15[R/W] H,W 00000000 00000000		
001204 _H	ADCOMP16/ADCOMPB16[R/W] H,W 00000000 00000000		ADCOMP17/ADCOMPB17[R/W] H,W 00000000 00000000		
001208 _H	ADCOMP18/ADCOMPB18[R/W] H,W 00000000 00000000		ADCOMP19/ADCOMPB19[R/W] H,W 00000000 00000000		
00120C _H	ADCOMP20/ADCOMPB20[R/W] H,W 00000000 00000000		ADCOMP21/ADCOMPB21[R/W] H,W 00000000 00000000		
001210 _H	ADCOMP22/ADCOMPB22[R/W] H,W 00000000 00000000		ADCOMP23/ADCOMPB23[R/W] H,W 00000000 00000000		
001214 _H	-	-	-	-	
001218 _H	-	-	-	-	
00121C _H	-	-	-	-	
001220 _H	-	-	-	-	
001224 _H	ADTCS0[R/W] B,H,W 00000000 0010-000		ADTCS1[R/W] B,H,W 00000000 0010-000		
001228 _H	ADTCS2[R/W] B,H,W 00000000 0010-000		ADTCS3[R/W] B,H,W 00000000 0010-000		
00122C _H	ADTCS4[R/W] B,H,W 00000000 0010-000		ADTCS5[R/W] B,H,W 00000000 0010-000		
001230 _H	ADTCS6[R/W] B,H,W 00000000 0010-000		ADTCS7[R/W] B,H,W 00000000 0010-000		
001234 _H	ADTCS8[R/W] B,H,W 00000000 0010-000		ADTCS9[R/W] B,H,W 00000000 0010-000		
001238 _H	ADTCS10[R/W] B,H,W 00000000 0010-000		ADTCS11[R/W] B,H,W 00000000 0010-000		
00123C _H	ADTCS12[R/W] B,H,W 00000000 0010-000		ADTCS13[R/W] B,H,W 00000000 0010-000		
001240 _H	ADTCS14[R/W] B,H,W 00000000 0010-000		ADTCS15[R/W] B,H,W 00000000 0010-000		
001244 _H	ADTCS16[R/W] B,H,W 00000000 00100000		ADTCS17[R/W] B,H,W 00000000 00100000		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
001248 _H	ADTCS18[R/W] B,H,W 00000000 00100000		ADTCS19[R/W] B,H,W 00000000 00100000		12-bit A/D converter
00124C _H	ADTCS20[R/W] B,H,W 00000000 00100000		ADTCS21[R/W] B,H,W 00000000 00100000		
001250 _H	ADTCS22[R/W] B,H,W 00000000 00100000		ADTCS23[R/W] B,H,W 00000000 00100000		
001254 _H	-	-	-	-	
001258 _H	-	-	-	-	
00125C _H	-	-	-	-	
001260 _H	-	-	-	-	
001264 _H	ADTCD0[R] B,H,W 10--0000 00000000		ADTCD1[R] B,H,W 10--0000 00000000		
001268 _H	ADTCD2[R] B,H,W 10--0000 00000000		ADTCD3[R] B,H,W 10--0000 00000000		
00126C _H	ADTCD4[R] B,H,W 10--0000 00000000		ADTCD5[R] B,H,W 10--0000 00000000		
001270 _H	ADTCD6[R] B,H,W 10--0000 00000000		ADTCD7[R] B,H,W 10--0000 00000000		
001274 _H	ADTCD8[R] B,H,W 10--0000 00000000		ADTCD9[R] B,H,W 10--0000 00000000		
001278 _H	ADTCD10[R] B,H,W 10--0000 00000000		ADTCD11[R] B,H,W 10--0000 00000000		
00127C _H	ADTCD12[R] B,H,W 10--0000 00000000		ADTCD13[R] B,H,W 10--0000 00000000		
001280 _H	ADTCD14[R] B,H,W 10--0000 00000000		ADTCD15[R] B,H,W 10--0000 00000000		
001284 _H	ADTCD16[R] B,H,W 10--0000 00000000		ADTCD17[R] B,H,W 10--0000 00000000		
001288 _H	ADTCD18[R] B,H,W 10--0000 00000000		ADTCD19[R] B,H,W 10--0000 00000000		
00128C _H	ADTCD20[R] B,H,W 10--0000 00000000		ADTCD21[R] B,H,W 10--0000 00000000		
001290 _H	ADTCD22[R] B,H,W 10--0000 00000000		ADTCD23[R] B,H,W 10--0000 00000000		
001294 _H	-	-	-	-	
001298 _H	-	-	-	-	
00129C _H	-	-	-	-	
0012A0 _H	-	-	-	-	
0012A4 _H	ADCS0[R/W] B,H,W 0-----		ADCH0[R] B,H,W -----000	ADMD0[R/W] B,H,W ----0000	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
0012A _H	ADCS1[R/W] B,H,W 0-----		ADCH1[R] B,H,W ----000	ADMD1[R/W] B,H,W ----0000	12-bit A/D converter
0012AC _H	ADCS2[R/W] B,H,W 0-----		ADCH2[R] B,H,W ----000	ADMD2[R/W] B,H,W ----0000	
0012B _{0H} 0012FC _H	-	-	-	-	Reserved
00130 _H	RDCCTR0[R/W] B,H,W 0---000	RDCCTR1[R/W] B,H,W -0000000	RDCINTR[R] B,H,W -0000000	RDCICER[R/W] B,H,W -----00	RDC
001304 _H	-	RDCCTR2[R/W] B,H,W ---00000	RDCIPR[R/W] H,W ----0000 00000000		
001308 _H	RDCCPR1[R/W] H,W ----0000 00000000		RDCCPR2[R/W] H,W ----0000 00000000		
00130C _H	RDCCPR3[R/W] H,W -----00 00000000		RDCCPR4[R/W] H,W -----00 00000000		
001310 _H	AGLDR[R] H,W 1---XXXX XXXXXXXXX		AGVLDR[R] H,W XXXXXXXX XXXXXXXXX		
001314 _H	AGLDBR[R] H,W 1---XXXX XXXXXXXXX		AGVLDBR[R] H,W XXXXXXXX XXXXXXXXX		
001318 _H	SCCIR[R/W] H,W 1---0000 00000000		-	-	
00131C _H	SINDR[R] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
001320 _H	COSDR[R] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				RDC
001324 _H	-		-		
001328 _H	SINDR1[R] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00132C _H	COSDR1[R] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
001330 _H	-		-		
001334 _H 0013FC _H	-	-	-	-	Reserved
001400 _H	-	-	-	-	Reserved
001404 _H 0014FC _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
001500 _H	SCR0/(IBCR0) [R/W] B,H,W 0--00000	SMR0[R/W] B,H,W 000000-0	SSR0[R/W] B,H,W 0--00011	ESCR0/(IBSR0) [R/W] B,H,W 00000000	Multi Function Serial I/F 0 *1: Byte access is possible only for access to lower 8 bits. *2: Reserved because I ² C mode is not set immediately after reset *3: Reserved because CSIO mode is not set immediately after reset *4: Reserved because LIN2.1 mode is not set immediately after reset
001504 _H	-/(RDR10/(TDR10))[R/W] H,W ----- *3		RDR00/(TDR00)[R/W] B,H,W -----0 00000000 *1		
001508 _H	SACSR0[R/W] B,H,W 0----000 00000000		STMR0[R] B,H,W 00000000 00000000		
00150C _H	STMCR0[R/W] B,H,W 00000000 00000000		-/(SFUR0) [R/W] B,H,W ----- *4		
001510 _H	-	-	-(SFLR10) [R/W] B,H,W ----- *4	-(SFLR00) [R/W] B,H,W ----- *4	
001514 _H	-	-	-	-	
001518 _H	-	-	-	-	
00151C _H	BGR0[R/W] H,W 00000000 00000000		-(ISMK0)[R/W] B,H,W ----- *2	-(ISBA0)[R/W] B,H,W ----- *2	Multi Function Serial I/F 1 *1: Byte access is possible only for access to lower 8 bits. *2: Reserved because I ² C mode is not set immediately after reset *3: Reserved because CSIO mode is not set immediately after reset *4: Reserved because LIN2.1 mode is not set immediately after reset
001520 _H	FCR10[R/W] B,H,W 00-00100	FCR00[R/W] B,H,W -0000000	FBYTE20[R/W] B,H,W 00000000	FBYTE10[R/W] B,H,W 00000000	
001524 _H	SCR1/(IBCR1) [R/W] B,H,W 0--00000	SMR1[R/W] B,H,W 000000-0	SSR1[R/W] B,H,W 0--00011	ESCR1/(IBSR1) [R/W] B,H,W 00000000	
001528 _H	-/(RDR11/(TDR11))[R/W] H,W ----- *3		RDR01/(TDR01)[R/W] B,H,W -----0 00000000 *1		
00152C _H	SACSR1[R/W] B,H,W 0----000 00000000		STMR1[R] B,H,W 00000000 00000000		
001530 _H	STMCR1[R/W] B,H,W 00000000 00000000		-(SCSCR1/SFUR1) [R/W] B,H,W ----- *3,*4		
001534 _H	-(SCSTR31) [R/W] B,H,W ----- *3	-(SCSTR21) [R/W] B,H,W ----- *3	-(SCSTR11/SFLR11) [R/W] B,H,W ----- *3,*4	-(SCSTR01/SFLR01) [R/W] B,H,W ----- *3,*4	
001538 _H	-	-	-	-	
00153C _H	-	-	-	TBYTE01[R/W] B,H,W 00000000	
001540 _H	BGR1[R/W] H,W 00000000 00000000		-(ISMK1)[R/W] B,H,W ----- *2	-(ISBA1)[R/W] B,H,W ----- *2	
001544 _H	FCR11[R/W] B,H,W 00-00100	FCR01[R/W] B,H,W -0000000	FBYTE21[R/W] B,H,W 00000000	FBYTE11[R/W] B,H,W 00000000	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
001548 _H	SCR2[R/W] B,H,W 0--00000	SMR2[R/W] B,H,W 000000-0	SSR2[R/W] B,H,W 0--00011	ESCR2[R/W] B,H,W 00000000	Multi Function Serial I/F 2 *1: Byte access is possible only for access to lower 8 bits. *3: Reserved because CSIO mode is not set immediately after reset *4: Reserved because LIN2.1 mode is not set immediately after reset
00154C _H	-/(RDR12/(TDR12))[R/W] H,W ----- *3		RDR02/(TDR02)[R/W] B,H,W -----0 00000000 *1		
001550 _H	SACSR2[R/W] B,H,W 0----000 00000000		STMCR2[R] B,H,W 00000000 00000000		
001554 _H	STMCR2[R/W] B,H,W 00000000 00000000		-/(SCSCR2/SFUR2) [R/W] B,H,W ----- *3,*4		
001558 _H	-(SCSTR32) [R/W] B,H,W ----- *3	-(SCSTR22) [R/W] B,H,W ----- *3	-(SCSTR12/SFLR12) [R/W] B,H,W ----- *3,*4	-(SCSTR02/SFLR02) [R/W] B,H,W ----- *3,*4	
00155C _H	-	-	-	-	
001560 _H	-	-	-	TBYTE02[R/W] B,H,W 00000000	
001564 _H	BGR2[R/W] H,W 00000000 00000000		-	-	
001568 _H	FCR12[R/W] B,H,W 00-00100	FCR02[R/W] B,H,W -0000000	FBYTE22[R/W] B,H,W 00000000	FBYTE12[R/W] B,H,W 00000000	Multi Function Serial I/F 3 *1: Byte access is possible only for access to lower 8 bits. *2: Reserved because I ² C mode is not set immediately after reset *3: Reserved because CSIO mode is not set immediately after reset *4: Reserved because LIN2.1 mode is not set immediately after reset
00156C _H	SCR3/(IBCR3) [R/W] B,H,W 0--00000	SMR3[R/W] B,H,W 000000-0	SSR3[R/W] B,H,W 0--00011	ESCR3/(IBSR3) [R/W] B,H,W 00000000	
001570 _H	-/(RDR13/(TDR13))[R/W] H,W ----- *3		RDR03/(TDR03)[R/W] B,H,W -----0 00000000 *1		
001574 _H	SACSR3[R/W] B,H,W 0----000 00000000		STMCR3[R] B,H,W 00000000 00000000		
001578 _H	STMCR3[R/W] B,H,W 00000000 00000000		-/(SCSCR3/SFUR3) [R/W] B,H,W ----- *3,*4		
00157C _H	-(SCSTR33) [R/W] B,H,W ----- *3	-(SCSTR23) [R/W] B,H,W ----- *3	-(SCSTR13/SFLR13) [R/W] B,H,W ----- *3,*4	-(SCSTR03/SFLR03) [R/W] B,H,W ----- *3,*4	
001580 _H	-	-	-	-	
001584 _H	-	-	-	TBYTE03[R/W] B,H,W 00000000	
001588 _H	BGR3[R/W] H,W 00000000 00000000		-(ISMK3)[R/W] B,H,W ----- *2	-(ISBA3)[R/W] B,H,W ----- *2	
00158C _H	FCR13[R/W] B,H,W 00-00100	FCR03[R/W] B,H,W -0000000	FBYTE23[R/W] B,H,W 00000000	FBYTE13[R/W] B,H,W 00000000	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
001590 _H	SCR4/(IBCR4) [R/W] B,H,W 0--00000	SMR4[R/W] B,H,W 000000-0	SSR4[R/W] B,H,W 0--00011	ESCR4/(IBSR4) [R/W] B,H,W 00000000	Multi Function Serial I/F 4 *1: Byte access is possible only for access to lower 8 bits. *2: Reserved because I ² C mode is not set immediately after reset *3: Reserved because CSIO mode is not set immediately after reset *4: Reserved because LIN2.1 mode is not set immediately after reset
001594 _H	-/(RDR14/(TDR14))[R/W] H,W ----- *3		RDR04/(TDR04)[R/W] B,H,W -----0 00000000 *1		
001598 _H	SACSR4[R/W] B,H,W 0----000 00000000		STMR4[R] B,H,W 00000000 00000000		
00159C _H	STMCR4[R/W] B,H,W 00000000 00000000		-/(SCSCR4/SFUR4) [R/W] B,H,W ----- *3,*4		
0015A0 _H	-/(SCSTR34) [R/W] B,H,W ----- *3	-/(SCSTR24) [R/W] B,H,W ----- *3	-/(SCSTR14/SFLR14) [R/W] B,H,W ----- *3,*4	-/(SCSTR04/SFLR04) [R/W] B,H,W ----- *3,*4	
0015A4 _H	-	-/(SCSFR24)[R/W] B,H,W ----- *3	-/(SCSFR14)[R/W] B,H,W ----- *3	-/(SCSFR04)[R/W] B,H,W ----- *3	
0015A8 _H	-/(TBYTE34)[R/W] B,H,W ----- *3	-/(TBYTE24)[R/W] B,H,W ----- *3	-/(TBYTE14)[R/W] B,H,W ----- *3	TBYTE04[R/W] B,H,W 00000000	
0015AC _H	BGR4[R/W] H,W 00000000 00000000		-/(ISMK4)[R/W] B,H,W ----- *2	-/(ISBA4)[R/W] B,H,W ----- *2	Reserved
0015B0 _H	FCR14[R/W] B,H,W 00-00100	FCR04[R/W] B,H,W -0000000	FBYTE24[R/W] B,H,W 00000000	FBYTE14[R/W] B,H,W 00000000	
0015B4 _H 001FFC _H	-	-	-	-	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
002000 _H	CTRLR0[R/W] B,H,W ----- 000-0001		STATR0[R/W] B,H,W ----- 00000000		CAN 0 64msb
002004 _H	ERRCNT0 [R] B,H,W 00000000 00000000		BTR0[R/W] B,H,W -0100011 00000001		
002008 _H	INTR0[R] B,H,W 00000000 00000000		TESTR0[R/W] B,H,W ----- X00000--		
00200C _H	BRPER0[R/W] B,H,W ----- ----0000		-		
002010 _H	IF1CREQ0[R/W] B,H,W 0----- 00000001		IF1CMSK0[R/W] B,H,W ----- 00000000		
002014 _H	IF1MSK20[R/W] B,H,W 11-11111 11111111		IF1MSK10[R/W] B,H,W 11111111 11111111		
002018 _H	IF1ARB20[R/W] B,H,W 00000000 00000000		IF1ARB10[R/W] B,H,W 00000000 00000000		
00201C _H	IF1MCTR0[R/W] B,H,W 00000000 0---0000		-		
002020 _H	IF1DTA10[R/W] B,H,W 00000000 00000000		IF1DTA20[R/W] B,H,W 00000000 00000000		
002024 _H	IF1DTB10[R/W] B,H,W 00000000 00000000		IF1DTB20[R/W] B,H,W 00000000 00000000		
002028 _H , 00202C _H	-		-		
002030 _H , 002034 _H	Reserved (IF1 data mirror)				
002038 _H , 00203C _H	-		-		
002040 _H	IF2CREQ0[R/W] B,H,W 0----- 00000001		IF2CMSK0[R/W] B,H,W ----- 00000000		
002044 _H	IF2MSK20[R/W] B,H,W 11-11111 11111111		IF2MSK10[R/W] B,H,W 11111111 11111111		
002048 _H	IF2ARB20[R/W] B,H,W 00000000 00000000		IF2ARB10[R/W] B,H,W 00000000 00000000		
00204C _H	IF2MCTR0[R/W] B,H,W 00000000 0---0000		-		
002050 _H	IF2DTA10[R/W] B,H,W 00000000 00000000		IF2DTA20[R/W] B,H,W 00000000 00000000		
002054 _H	IF2DTB10[R/W] B,H,W 00000000 00000000		IF2DTB20[R/W] B,H,W 00000000 00000000		
002058 _H , 00205C _H	-		-		
002060 _H , 002064 _H	Reserved (IF2 data mirror)				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
002068 _H 00207C _H	-	-	-	-	CAN 0 64msb
002080 _H	TREQR20[R] B,H,W 00000000 00000000		TREQR10[R] B,H,W 00000000 00000000		
002084 _H	TREQR40[R] B,H,W 00000000 00000000		TREQR30[R] B,H,W 00000000 00000000		
002088 _H	-	-	-	-	
00208C _H	-	-	-	-	
002090 _H	NEWDT20[R] B,H,W 00000000 00000000		NEWDT10[R] B,H,W 00000000 00000000		
002094 _H	NEWDT40[R] B,H,W 00000000 00000000		NEWDT30[R] B,H,W 00000000 00000000		
002098 _H	-	-	-	-	
00209C _H	-	-	-	-	
0020A0 _H	INTPND20[R] B,H,W 00000000 00000000		INTPND10[R] B,H,W 00000000 00000000		
0020A4 _H	INTPND40[R] B,H,W 00000000 00000000		INTPND30[R] B,H,W 00000000 00000000		
0020A8 _H	-	-	-	-	
0020AC _H	-	-	-	-	
0020B0 _H	MSGVAL20[R] B,H,W 00000000 00000000		MSGVAL10[R] B,H,W 00000000 00000000		
0020B4 _H	MSGVAL40[R] B,H,W 00000000 00000000		MSGVAL30[R] B,H,W 00000000 00000000		
0020B8 _H	-	-	-	-	
0020BC _H	-	-	-	-	
0020C0 _H 0020FC _H	-	-	-	-	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
002100 _H	CTRLR1[R/W] B,H,W ----- 000-0001		STATR1[R/W] B,H,W ----- 00000000		CAN 1 64msb
002104 _H	ERRCNT1 [R] B,H,W 00000000 00000000		BTR1[R/W] B,H,W -0100011 00000001		
002108 _H	INTR1[R] B,H,W 00000000 00000000		TESTR1[R/W] B,H,W ----- X00000--		
00210C _H	BRPER1[R/W] B,H,W ----- ----0000		-		
002110 _H	IF1CREQ1[R/W] B,H,W 0----- 00000001		IF1CMSK1[R/W] B,H,W ----- 00000000		
002114 _H	IF1MSK21[R/W] B,H,W 11-11111 11111111		IF1MSK11[R/W] B,H,W 11111111 11111111		
002118 _H	IF1ARB21[R/W] B,H,W 00000000 00000000		IF1ARB11[R/W] B,H,W 00000000 00000000		
00211C _H	IF1MCTR1[R/W] B,H,W 00000000 0---0000		-		
002120 _H	IF1DTA11[R/W] B,H,W 00000000 00000000		IF1DTA21[R/W] B,H,W 00000000 00000000		
002124 _H	IF1DTB11[R/W] B,H,W 00000000 00000000		IF1DTB21[R/W] B,H,W 00000000 00000000		
002128 _H , 00212C _H	-		-		
002130 _H , 002134 _H	Reserved (IF1 data mirror)				
002138 _H , 00213C _H	-		-		
002140 _H	IF2CREQ1[R/W] B,H,W 0----- 00000001		IF2CMSK1[R/W] B,H,W ----- 00000000		
002144 _H	IF2MSK21[R/W] B,H,W 11-11111 11111111		IF2MSK11[R/W] B,H,W 11111111 11111111		
002148 _H	IF2ARB21[R/W] B,H,W 00000000 00000000		IF2ARB11[R/W] B,H,W 00000000 00000000		
00214C _H	IF2MCTR1[R/W] B,H,W 00000000 0---0000		-		
002150 _H	IF2DTA11[R/W] B,H,W 00000000 00000000		IF2DTA21[R/W] B,H,W 00000000 00000000		
002154 _H	IF2DTB11[R/W] B,H,W 00000000 00000000		IF2DTB21[R/W] B,H,W 00000000 00000000		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
002158 _H , 00215C _H	-		-		CAN 1 64msb
002160 _H , 002164 _H	Reserved (IF2 data mirror)				
002168 _H 00217C _H	-		-		
002180 _H	TREQR21[R] B,H,W 00000000 00000000		TREQR11[R] B,H,W 00000000 00000000		
002184 _H	TREQR41[R] B,H,W 00000000 00000000		TREQR31[R] B,H,W 00000000 00000000		
002188 _H	-		-		
00218C _H	-		-		
002190 _H	NEWDT21[R] B,H,W 00000000 00000000		NEWDT11[R] B,H,W 00000000 00000000		
002194 _H	NEWDT41[R] B,H,W 00000000 00000000		NEWDT31[R] B,H,W 00000000 00000000		
002198 _H	-		-		
00219C _H	-		-		
0021A0 _H	INTPND21[R] B,H,W 00000000 00000000		INTPND11[R] B,H,W 00000000 00000000		
0021A4 _H	INTPND41[R] B,H,W 00000000 00000000		INTPND31[R] B,H,W 00000000 00000000		
0021A8 _H	-		-		
0021AC _H	-		-		
0021B0 _H	MSGVAL21[R] B,H,W 00000000 00000000		MSGVAL11[R] B,H,W 00000000 00000000		
0021B4 _H	MSGVAL41[R] B,H,W 00000000 00000000		MSGVAL31[R] B,H,W 00000000 00000000		
0021B8 _H	-		-		
0021BC _H	-		-		
0021C0 _H 0021FC _H	-		-		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
002200 _H	CTRLR2[R/W] B,H,W ----- 000-0001		STATR2[R/W] B,H,W ----- 00000000		CAN 2 64msb
002204 _H	ERRCNT2 [R] B,H,W 00000000 00000000		BTR2[R/W] B,H,W -0100011 00000001		
002208 _H	INTR2[R] B,H,W 00000000 00000000		TESTR2[R/W] B,H,W ----- X00000--		
00220C _H	BRPER2[R/W] B,H,W ----- ----0000		-		
002210 _H	IF1CREQ2[R/W] B,H,W 0----- 00000001		IF1CMSK2[R/W] B,H,W ----- 00000000		
002214 _H	IF1MSK22[R/W] B,H,W 11-11111 11111111		IF1MSK12[R/W] B,H,W 11111111 11111111		
002218 _H	IF1ARB22[R/W] B,H,W 00000000 00000000		IF1ARB12[R/W] B,H,W 00000000 00000000		
00221C _H	IF1MCTR2[R/W] B,H,W 00000000 0---0000		-		
002220 _H	IF1DTA12[R/W] B,H,W 00000000 00000000		IF1DTA22[R/W] B,H,W 00000000 00000000		
002224 _H	IF1DTB12[R/W] B,H,W 00000000 00000000		IF1DTB22[R/W] B,H,W 00000000 00000000		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
002228 _H , 00222C _H	-		-		CAN 2 64msb
002230 _H , 002234 _H	Reserved (IF1 data mirror)				
002238 _H , 00223C _H	-		-		
002240 _H	IF2CREQ2[R/W] B,H,W 0----- 00000001		IF2CMSK2[R/W] B,H,W ----- 00000000		
002244 _H	IF2MSK22[R/W] B,H,W 11-11111 11111111		IF2MSK12[R/W] B,H,W 11111111 11111111		
002248 _H	IF2ARB22[R/W] B,H,W 00000000 00000000		IF2ARB12[R/W] B,H,W 00000000 00000000		
00224C _H	IF2MCTR2[R/W] B,H,W 00000000 0---0000		-		
002250 _H	IF2DTA12[R/W] B,H,W 00000000 00000000		IF2DTA22[R/W] B,H,W 00000000 00000000		
002254 _H	IF2DTB12[R/W] B,H,W 00000000 00000000		IF2DTB22[R/W] B,H,W 00000000 00000000		
002258 _H , 00225C _H	-		-		
002260 _H , 002264 _H	Reserved (IF2 data mirror)				
002268 _H 00227C _H	-		-		
002280 _H	TREQR22[R] B,H,W 00000000 00000000		TREQR12[R] B,H,W 00000000 00000000		
002284 _H	TREQR42[R] B,H,W 00000000 00000000		TREQR32[R] B,H,W 00000000 00000000		
002288 _H	-		-		
00228C _H	-		-		
002290 _H	NEWDT22[R] B,H,W 00000000 00000000		NEWDT12[R] B,H,W 00000000 00000000		
002294 _H	NEWDT42[R] B,H,W 00000000 00000000		NEWDT32[R] B,H,W 00000000 00000000		
002298 _H	-		-		
00229C _H	-		-		
0022A0 _H	INTPND22[R] B,H,W 00000000 00000000		INTPND12[R] B,H,W 00000000 00000000		
0022A4 _H	INTPND42[R] B,H,W 00000000 00000000		INTPND32[R] B,H,W 00000000 00000000		
0022A8 _H	-		-		
0022AC _H	-		-		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
0022B0 _H	MSGVAL22[R] B,H,W 00000000 00000000		MSGVAL12[R] B,H,W 00000000 00000000		CAN 2 64msb
0022B4 _H	MSGVAL42[R] B,H,W 00000000 00000000		MSGVAL32[R] B,H,W 00000000 00000000		
0022B8 _H	-		-		
0022BC _H	-		-		
0022C0 _H 0022FC _H	-	-	-	-	
002300 _H	DFCTLR[R/W] B,H,W -0-----		-	DFSTR[R/W] B,H,W -----001	WorkFlash
002304 _H	-	-	-	-	
002308 _H	FLIFCTLR[R/W] B,H,W ---0--00	-	FLIFFER1[R/W] B,H,W -----	FLIFFER2[R/W] B,H,W -----	
00230C _H 0023FC _H	-	-	-	-	Reserved
003000 _H	SEEARX[R] B,H,W -0000000 00000000		DEEARX[R] B,H,W -0000000 00000000		XBS RAM ECC control register
003004 _H	EECSR[X/R/W] B,H,W ----00-0	-	EFEARX[R/W] B,H,W -0000000 00000000		
003008 _H	-	EFECRX[R/W] B,H,W -----0 00000000 00000000			
00300C _H	TEAR0X[R] B,H,W 000----- -0000000 00000000				XBS RAM diagnosis register
003010 _H	TEAR1X[R] B,H,W 000----- -0000000 00000000				
003014 _H	TEAR2X[R] B,H,W 000----- -0000000 00000000				
003018 _H	TAEARX[R/W] B,H,W -1011111 11111111		TASARX[R/W] B,H,W -0000000 00000000		
00301C _H	TFECRX[R/W] B,H,W ----0000	TICRX[R/W] B,H,W ----0000	TTCRX[R/W] B,H,W -----00 00001100		
003020 _H	TSRCRX[R/W] B,H,W 0-----	-	-	TKCCRX[R/W] B,H,W 00----00	
003024 _H	SEEARA[R] B,H,W --000000 00000000		DEEARA[R] B,H,W --000000 00000000		Backup RAM ECC control register
003028 _H	EECSRA[R/W] B,H,W ----00-0	-	EFEARA[R/W] B,H,W --000000 00000000		
00302C _H	-	EFECRA[R/W] B,H,W -----0 00000000 00000000			

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
003030 _H	TEAR0A[R] B,H,W 000-----000 00000000				Backup RAM diagnosis register
003034 _H	TEAR1A[R] B,H,W 000-----000 00000000				
003038 _H	TEAR2A[R] B,H,W 000-----000 00000000				
00303C _H	TAEARA[R/W] B,H,W -----111 11111111		TASARA[R/W] B,H,W -----000 00000000		
003040 _H	TFECRA[R/W] B,H,W ----0000	TICRA[R/W] B,H,W ----0000	TTCRA[R/W] B,H,W -----00 00001100		
003044 _H	TSRCRA[R/W] B,H,W 0-----	-	-	TKCCRA[R/W] B,H,W 00----00	
003048 _H 0030FC _H	-	-	-	-	Reserved
003100 _H	BUSDIGSR0[R/W] H,W 00000000 0----00		BUSDIGSR1[R/W] H,W 00000000 0----00		Bus diagnosis
003104 _H	BUSDIGSR2[R/W] H,W 00000000 0----00		BUSTSTR0[R/W] H,W 00--0000 00000000		
003108 _H	BUSADR0[R] W 00000000 00000000 00000000 00000000				
00310C _H	BUSADR1[R] W 00000000 00000000 00000000 00000000				
003110 _H	BUSADR2[R] W 00000000 00000000 00000000 00000000				
003114 _H	-		BUSDIGSR3[R/W] H,W 00000000 0----00		
003118 _H	BUSDIGSR4[R/W] H,W 00000000 0----00		BUSTSTR1[R/W] H,W 00--0000 00000000		
00311C _H	-				
003120 _H	BUSADR3[R] W 00000000 00000000 00000000 00000000				
003124 _H	BUSADR4[R] W 00000000 00000000 00000000 00000000				
003128 _H 003FFC _H	-	-	-	-	Reserved
004000 _H 005FFC _H	Backup RAM				Backup RAM area
006000 _H 00CFFC _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D000 _H	CIF0[R] W 00000100 11111111 01011011 11111111				FlexRay CIF
00D004 _H	CIF1[R/W] W 00000000 -----0 -0000000 -----				
00D008 _H 00D00C _H	-	-	-	-	Reserved
00D010 _H	-				FlexRay GIF
00D014 _H	-				
00D018 _H	-	-	-	-	
00D01C _H	LCK[R/W] W -----00000000				
00D020 _H	EIR[R/W] W ----000 ----000 ----0000 00000000				FlexRay INT
00D024 _H	SIR[R/W] W -----00 -----00 00000000 00000000				
00D028 _H	EILS[R/W] W ----000 ----000 ----0000 00000000				
00D02C _H	SILS[R/W] W -----11 -----11 11111111 11111111				
00D030 _H	EIES[R/W] W ----000 ----000 ----0000 00000000				
00D034 _H	EIER[R/W] W ----000 ----000 ----0000 00000000				
00D038 _H	SIES[R/W] W -----00 -----00 00000000 00000000				
00D03C _H	SIER[R/W] W -----00 -----00 00000000 00000000				
00D040 _H	ILE[R/W] W -----000000000000000000000000				
00D044 _H	T0C[R/W] W --000000 00000000 -00000000 -----00				
00D048 _H	T1C[R/W] W --000000 00000010 -----00000000				
00D04C _H	STPW1[R/W] W --000000 00000000 --000000 -00000000				
00D050 _H	STPW2[R] W ----000 00000000 -----000 00000000				
00D054 _H 00D07C _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D080 _H	SUCC1[R/W] W ----1100 01000000 00010-00 1---0000				FlexRay SUC
00D084 _H	SUCC2[R/W] W ----0001 ---00000 00000101 00000100				
00D088 _H	SUCC3[R/W] W ----- 00010001				
00D08C _H	NEMC[R/W] W -----0000				FlexRay NEM
00D090 _H	PRTC1[R/W] W 000010-0 01001100 0000-110 00110011				FlexRay
00D094 _H	PRTC2[R/W] W --001111 00101101 --001010 --001110				PRT
00D098 _H	MHDC[R/W] W ---00000 00000000 ----- -0000000				FlexRay MHD
00D09C _H	-				Reserved
00D0A0 _H	GTUC1[R/W] W ----- ----0000 00000010 10000000				FlexRay GTU
00D0A4 _H	GTUC2[R/W] W ----- ----0010 --000000 00001010				
00D0A8 _H	GTUC3[R/W] W -0000010 -0000010 00000000 00000000				
00D0AC _H	GTUC4[R/W] W --000000 00001000 --000000 00000111				
00D0B0 _H	GTUC5[R/W] W 00001110 ---00000 00000000 00000000				
00D0B4 _H	GTUC6[R/W] W ----000 00000010 ----000 00000000				
00D0B8 _H	GTUC7[R/W] W -----00 00000010 -----00 00000100				
00D0BC _H	GTUC8[R/W] W ---00000 00000000 ----- --000010				
00D0C0 _H	GTUC9[R/W] W ----- ---00 ---00001 --000001				
00D0C4 _H	GTUC10[R/W] W ----000 00000010 --000000 00000101				
00D0C8 _H	GTUC11[R/W] W ----000 ----000 -----00 -----00				
00D0CC _H 00D0FC _H	-				Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D100 _H	CCSV[R] W --000000 00010000 -100--00 00000000				FlexRay SUC
00D104 _H	CCEV[R] W -----00000 00--0000				
00D108 _H 00D10C _H	-				Reserved
00D110 _H	SCV[R] W ----000 00000000 ----000 00000000				FlexRay GTU
00D114 _H	MTCCV[R] W -----0000000 --000000 00000000				
00D118 _H	RCV[R] W -----0000 00000000				
00D11C _H	OCV[R] W -----000 00000000 00000000				
00D120 _H	SFS[R] W -----0000 00000000 00000000				
00D124 _H	SWNIT[R] W -----0000 00000000				
00D128 _H	ACS[R/W] W -----00000 --00000				
00D12C _H	-				
00D130 _H	ESID1[R] W -----00----00 00000000				
00D134 _H	ESID2[R] W -----00----00 00000000				
00D138 _H	ESID3[R] W -----00----00 00000000				
00D13C _H	ESID4[R] W -----00----00 00000000				
00D140 _H	ESID5[R] W -----00----00 00000000				
00D144 _H	ESID6[R] W -----00----00 00000000				
00D148 _H	ESID7[R] W -----00----00 00000000				
00D14C _H	ESID8[R] W -----00----00 00000000				
00D150 _H	ESID9[R] W -----00----00 00000000				
00D154 _H	ESID10[R] W -----00----00 00000000				
00D158 _H	ESID11[R] W -----00----00 00000000				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D15C _H	ESID12[R] W ----- 00---00 00000000				FlexRay GTU
00D160 _H	ESID13[R] W ----- 00---00 00000000				
00D164 _H	ESID14[R] W ----- 00---00 00000000				
00D168 _H	ESID15[R] W ----- 00---00 00000000				
00D16C _H	-				
00D170 _H	OSID1[R] W ----- 00---00 00000000				
00D174 _H	OSID2[R] W ----- 00---00 00000000				
00D178 _H	OSID3[R] W ----- 00---00 00000000				
00D17C _H	OSID4[R] W ----- 00---00 00000000				
00D180 _H	OSID5[R] W ----- 00---00 00000000				
00D184 _H	OSID6[R] W ----- 00---00 00000000				
00D188 _H	OSID7[R] W ----- 00---00 00000000				
00D18C _H	OSID8[R] W ----- 00---00 00000000				
00D190 _H	OSID9[R] W ----- 00---00 00000000				
00D194 _H	OSID10[R] W ----- 00---00 00000000				
00D198 _H	OSID11[R] W ----- 00---00 00000000				
00D19C _H	OSID12[R] W ----- 00---00 00000000				
00D1A0 _H	OSID13[R] W ----- 00---00 00000000				
00D1A4 _H	OSID14[R] W ----- 00---00 00000000				
00D1A8 _H	OSID15[R] W ----- 00---00 00000000				
00D1AC _H	-				Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D1B0 _H	NMV1[R] W 00000000 00000000 00000000 00000000				FlexRay NEM
00D1B4 _H	NMV2[R] W 00000000 00000000 00000000 00000000				
00D1B8 _H	NMV3[R] W 00000000 00000000 00000000 00000000				
00D1BC _H 00D2FC _H	-				Reserved
00D300 _H	MRC[R/W] W -----001 10000000 00000000 00000000				FlexRay MHD
00D304 _H	FRF[R/W] W -----1 10000000 ---00000 00000000				
00D308 _H	FRFM[R/W] W -----00000 000000--				
00D30C _H	FCL[R/W] W -----10000000				
00D310 _H	MHDS[R/W] W -0000000 -0000000 -0000000 00000000				
00D314 _H	LDTS[R] W -----000 00000000 -----000 00000000				
00D318 _H	FSR[R] W -----00000000 -----000				
00D31C _H	MHDF[R/W] W -----0 00000000				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D320 _H	TXRQ1[R] W 00000000 00000000 00000000 00000000				FlexRay MHD
00D324 _H	TXRQ2[R] W 00000000 00000000 00000000 00000000				
00D328 _H	TXRQ3[R] W 00000000 00000000 00000000 00000000				
00D32C _H	TXRQ4[R] W 00000000 00000000 00000000 00000000				
00D330 _H	NDAT1[R] W 00000000 00000000 00000000 00000000				
00D334 _H	NDAT2[R] W 00000000 00000000 00000000 00000000				
00D338 _H	NDAT3[R] W 00000000 00000000 00000000 00000000				
00D33C _H	NDAT4[R] W 00000000 00000000 00000000 00000000				
00D340 _H	MBSC1[R] W 00000000 00000000 00000000 00000000				
00D344 _H	MBSC2[R] W 00000000 00000000 00000000 00000000				
00D348 _H	MBSC3[R] W 00000000 00000000 00000000 00000000				
00D34C _H	MBSC4[R] W 00000000 00000000 00000000 00000000				
00D350 _H 00D3EC _H	-				Reserved
00D3F0 _H	CREL[R] W 00010000 00111001 00000010 00000110				FlexRay
00D3F4 _H	ENDN[R] W 10000111 01100101 01000011 00100001				GIF
00D3F8 _H 00D3FC _H	-				Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D400 _H 00D4FC _H	WRDSn[1-64][R/W] W 00000000 00000000 00000000 00000000				FlexRay IBF
00D500 _H	WRHS1[R/W] W --000000 -00000000 -----000 00000000				
00D504 _H	WRHS2[R/W] W ----- -00000000 -----000 00000000				
00D508 _H	WRHS3[R/W] W ----- -00000000 -----000 00000000				
00D50C _H	-				
00D510 _H	IBCM[R/W] W ----- -00000000 -----000				
00D514 _H	IBCR[R/W] W 0----- -00000000 0----- -00000000				
00D518 _H 00D5FC _H	-				Reserved
00D600 _H 00D6FC _H	RDDS _n [1-64][R] W 00000000 00000000 00000000 00000000				FlexRay OBF
00D700 _H	RDHS1[R] W --000000 -00000000 -----000 00000000				
00D704 _H	RDHS2[R] W -00000000 -00000000 -----000 00000000				
00D708 _H	RDHS3[R] W --000000 -00000000 -----000 00000000				
00D70C _H	MBS[R] W --000000 -00000000 00-000000 00000000				
00D710 _H	OBCM[R/W] W ----- -00000000 -----000				
00D714 _H	OBCR[R/W] W ----- -00000000 0-----00 -00000000				
00D718 _H 00D7FC _H	-				Reserved
00D800 _H 00EFFC _H	-				Reserved
00F000 _H 00FEFC _H	-				Reserved [S]
00FF00 _H	DSUCR[R/W] B,H,W ----- -00000000	-	-	-	OCDU [S]

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00FF04 _H 00FF0C _H	-	-	-	-	Reserved [S]
00FF10 _H	PCSR[R/W] B,H,W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				OCDU [S]
00FF14 _H	PSSR[R/W] B,H,W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00FF18 _H 00FF4 _H	-	-	-	-	Reserved [S]
00FF8 _H	EDIR1[R] B,H,W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				OCDU [S]
00FFC _H	EDIR0[R] B,H,W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				

[S]:It is a system register. The illegal instruction exception (data access error) is generated when reading and writing to these registers in the user mode.

MB91F585LB/F586LB/F587LB/F585LD/F586LD/F587LD

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000000 _H	PDR00[R/W] B,H,W XXXXXXXXXX	PDR01[R/W] B,H,W XXXXXXXXXX	PDR02[R/W] B,H,W XXXXXXXXXX	PDR03[R/W] B,H,W XXXXXXXXXX	Port data register
000004 _H	PDR04[R/W] B,H,W XXXXXXXXXX	PDR05[R/W] B,H,W XXXXXXXXXX	PDR06[R/W] B,H,W XXXXXXXXXX	PDR07[R/W] B,H,W XXXXXXXXXX	
000008 _H	PDR08[R/W] B,H,W XXXXXXXXXX	PDR09[R/W] B,H,W XXXXXXXXXX	PDR10[R/W] B,H,W XXXXXXXXXX	PDR11[R/W] B,H,W XXXXXXXXXX	
00000C _H	PDR12[R/W] B,H,W XXXXXXXXXX	PDR13[R/W] B,H,W XX-XXXXX	-	-	
000010 _H 000038 _H	-	-	-	-	Reserved
00003C _H	WDTCSR0[R/W] B,H,W -0--0000	WDTCSR0[W] B,H,W 00000000	WDTCSR1[R] B,H,W ----0010	WDTCSR1[W] B,H,W 00000000	Watchdog timer [S]
000040 _H	-	-	-	-	Reserved
000044 _H	DICR[R/W] B -----0	-	-	-	Delay interrupt
000048 _H 00005C _H	-		-		Reserved
000060 _H	TMRLRA0[R/W] H XXXXXXXXXX XXXXXXXXX		TMR0[R] H XXXXXXXXXX XXXXXXXXX		Reload timer 0
000064 _H	TMRLRB0[R/W] H XXXXXXXXXX XXXXXXXXX		TMCSR0[R/W] B,H,W 00000000 0-000000		
000068 _H 00007C _H	-	-	-	-	Reserved
000080 _H	BT0TMR[R] H 00000000 00000000		BT0TMCR[R/W] H -0000000 00000000		Base timer 0
000084 _H	BT0TMCR2 [R/W] B -----0	BT0STC [R/W] B -0-0-0-0	-	-	
000088 _H	BT0PCSR/BT0PRL [R/W] H 00000000 00000000		BT0PDUT/BT0PRLH/BT0DTBF [R/W] H 00000000 00000000		
00008C _H	-	-	-	-	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000090 _H	BT1TMR[R] H 00000000 00000000		BT1TMCR[R/W] H -0000000 00000000		Base timer 1
000094 _H	BT1TMCR2 [R/W] B -----0	BT1STC [R/W] B -0-0-0-0	-	-	
000098 _H	BT1PCSR/BT1PRL [R/W] H 00000000 00000000		BT1PDUT/BT1PRLH/BT1DTBF [R/W] H 00000000 00000000		
00009C _H	BTSEL01[R/W] B ----0000	-	BTSSSR[W] B,H ----- 11		Base timer 0, 1
0000A0 _H 0000FC _H	-	-	-	-	Reserved
000100 _H	TMRLRA1[R/W] H XXXXXXXX XXXXXXXX		TMR1[R] H XXXXXXXX XXXXXXXX		Reload timer 1
000104 _H	TMRLRB1[R/W] H XXXXXXXX XXXXXXXX		TMCSR1[R/W] B,H,W 00000000 0-000000		
000108 _H	TMRLRA2[R/W] H XXXXXXXX XXXXXXXX		TMR2[R] H XXXXXXXX XXXXXXXX		Reload timer 2
00010C _H	TMRLRB2[R/W] H XXXXXXXX XXXXXXXX		TMCSR2[R/W] B,H,W 00000000 0-000000		
000110 _H	TMRLRA3[R/W] H XXXXXXXX XXXXXXXX		TMR3[R] H XXXXXXXX XXXXXXXX		Reload timer 3
000114 _H	TMRLRB3[R/W] H XXXXXXXX XXXXXXXX		TMCSR3[R/W] B,H,W 00000000 0-000000		
000118 _H 00011C _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000120 _H	IRPR0H[R] B,H,W 00-----	IRPR0L[R] B,H,W 00-----	IRPR1H[R] B,H,W 00-----	IRPR1L[R] B,H,W -----	Interrupt request batch read register
000124 _H	IRPR2H[R] B,H,W -----	IRPR2L[R] B,H,W 0000----	IRPR3H[R] B,H,W 00-----	IRPR3L[R] B,H,W 00-----	
000128 _H	IRPR4H[R] B,H,W 00-----	IRPR4L[R] B,H,W 000000--	IRPR5H[R] B,H,W 00-----	IRPR5L[R] B,H,W 00-----	
00012C _H	IRPR6H[R] B,H,W 000000--	IRPR6L[R] B,H,W 000000--	IRPR7H[R] B,H,W 000000--	IRPR7L[R] B,H,W 000000--	
000130 _H	IRPR8H[R] B,H,W 000000--	IRPR8L[R] B,H,W 00-----	IRPR9H[R] B,H,W 00-----	IRPR9L[R] B,H,W 00-----	
000134 _H	IRPR10H[R] B,H,W 00-----	IRPR10L[R] B,H,W 00-----	IRPR11H[R] B,H,W 00-----	IRPR11L[R] B,H,W 0000000-	
000138 _H	IRPR12H[R] B,H,W 0000000-	IRPR12L[R] B,H,W 00000000	IRPR13H[R] B,H,W 00000000	IRPR13L[R] B,H,W 00000000	
00013C _H	IRPR14H[R] B,H,W 00-----	IRPR14L[R] B,H,W 00-----	IRPR15H[R] B,H,W 00000000	IRPR15L[R] B,H,W 00000---	
000140 _H	IRPR16H[R] B,H,W 00-----	IRPR16L[R] B,H,W 00-----	IRPR17H[R] B,H,W 00-----	IRPR17L[R] B,H,W 00-----	
000144 _H	IRPR18H[R] B,H,W 00-----	IRPR18L[R] B,H,W 000000--	-	-	
000148 _H 0001FC _H	-	-	-	-	Reserved
000200 _H	PCN0[R/W] B,H,W 00000000 000000-0		PCSR0[W] H,W XXXXXXXX XXXXXXXX		PPG0
000204 _H	PDUT0[W] H,W XXXXXXXX XXXXXXXX		PTMR0[R] H,W 11111111 11111111		
000208 _H	PCN1[R/W] B,H,W 00000000 000000-0		PCSR1[W] H,W XXXXXXXX XXXXXXXX		PPG1
00020C _H	PDUT1[W] H,W XXXXXXXX XXXXXXXX		PTMR1[R] H,W 11111111 11111111		
000210 _H	PCN2[R/W] B,H,W 00000000 000000-0		PCSR2[W] H,W XXXXXXXX XXXXXXXX		PPG2
000214 _H	PDUT2[W] H,W XXXXXXXX XXXXXXXX		PTMR2[R] H,W 11111111 11111111		
000218 _H	PCN3[R/W] B,H,W 00000000 000000-0		PCSR3[W] H,W XXXXXXXX XXXXXXXX		PPG3
00021C _H	PDUT3[W] H,W XXXXXXXX XXXXXXXX		PTMR3[R] H,W 11111111 11111111		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000220 _H	PCN4[R/W] B,H,W 00000000 000000-0		PCSR4[W] H,W XXXXXXXXXX XXXXXXXXX		PPG4
000224 _H	PDUT4[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR4[R] H,W 11111111 11111111		
000228 _H	PCN5[R/W] B,H,W 00000000 000000-0		PCSR5[W] H,W XXXXXXXXXX XXXXXXXXX		PPG5
00022C _H	PDUT5[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR5[R] H,W 11111111 11111111		
000230 _H	PCN6[R/W] B,H,W 00000000 000000-0		PCSR6[W] H,W XXXXXXXXXX XXXXXXXXX		PPG6
000234 _H	PDUT6[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR6[R] H,W 11111111 11111111		
000238 _H	PCN7[R/W] B,H,W 00000000 000000-0		PCSR7[W] H,W XXXXXXXXXX XXXXXXXXX		PPG7
00023C _H	PDUT7[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR7[R] H,W 11111111 11111111		
000240 _H	PCN8[R/W] B,H,W 00000000 000000-0		PCSR8[W] H,W XXXXXXXXXX XXXXXXXXX		PPG8
000244 _H	PDUT8[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR8[R] H,W 11111111 11111111		
000248 _H	PCN9[R/W] B,H,W 00000000 000000-0		PCSR9[W] H,W XXXXXXXXXX XXXXXXXXX		PPG9
00024C _H	PDUT9[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR9[R] H,W 11111111 11111111		
000250 _H	PCN10[R/W] B,H,W 00000000 000000-0		PCSR10[W] H,W XXXXXXXXXX XXXXXXXXX		PPG10
000254 _H	PDUT10[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR10[R] H,W 11111111 11111111		
000258 _H	PCN11[R/W] B,H,W 00000000 000000-0		PCSR11[W] H,W XXXXXXXXXX XXXXXXXXX		PPG11
00025C _H	PDUT11[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR11[R] H,W 11111111 11111111		
000260 _H	PCN12[R/W] B,H,W 00000000 000000-0		PCSR12[W] H,W XXXXXXXXXX XXXXXXXXX		PPG12
000264 _H	PDUT12[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR12[R] H,W 11111111 11111111		
000268 _H	PCN13[R/W] B,H,W 00000000 000000-0		PCSR13[W] H,W XXXXXXXXXX XXXXXXXXX		PPG13
00026C _H	PDUT13[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR13[R] H,W 11111111 11111111		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000270 _H	PCN14[R/W] B,H,W 00000000 000000-0		PCSR14[W] H,W XXXXXXXXXX XXXXXXXXX		PPG14
000274 _H	PDUT14[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR14[R] H,W 11111111 11111111		
000278 _H	PCN15[R/W] B,H,W 00000000 000000-0		PCSR15[W] H,W XXXXXXXXXX XXXXXXXXX		PPG15
00027C _H	PDUT15[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR15[R] H,W 11111111 11111111		
000280 _H	PCN16[R/W] B,H,W 00000000 000000-0		PCSR16[W] H,W XXXXXXXXXX XXXXXXXXX		PPG16
000284 _H	PDUT16[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR16[R] H,W 11111111 11111111		
000288 _H	PCN17[R/W] B,H,W 00000000 000000-0		PCSR17[W] H,W XXXXXXXXXX XXXXXXXXX		PPG17
00028C _H	PDUT17[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR17[R] H,W 11111111 11111111		
000290 _H	PCN18[R/W] B,H,W 00000000 000000-0		PCSR18[W] H,W XXXXXXXXXX XXXXXXXXX		PPG18
000294 _H	PDUT18[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR18[R] H,W 11111111 11111111		
000298 _H	PCN19[R/W] B,H,W 00000000 000000-0		PCSR19[W] H,W XXXXXXXXXX XXXXXXXXX		PPG19
00029C _H	PDUT19[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR19[R] H,W 11111111 11111111		
0002A0 _H	PCN20[R/W] B,H,W 00000000 000000-0		PCSR20[W] H,W XXXXXXXXXX XXXXXXXXX		PPG20
0002A4 _H	PDUT20[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR20[R] H,W 11111111 11111111		
0002A8 _H	PCN21[R/W] B,H,W 00000000 000000-0		PCSR21[W] H,W XXXXXXXXXX XXXXXXXXX		PPG21
0002AC _H	PDUT21[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR21[R] H,W 11111111 11111111		
0002B0 _H	PCN22[R/W] B,H,W 00000000 000000-0		PCSR22[W] H,W XXXXXXXXXX XXXXXXXXX		PPG22
0002B4 _H	PDUT22[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR22[R] H,W 11111111 11111111		
0002B8 _H	PCN23[R/W] B,H,W 00000000 000000-0		PCSR23[W] H,W XXXXXXXXXX XXXXXXXXX		PPG23
0002BC _H	PDUT23[W] H,W XXXXXXXXXX XXXXXXXXX		PTMR23[R] H,W 11111111 11111111		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
0002C0 _H	GTRS0[R/W] B,H,W -0000000 -0000000		GTRS1[R/W] B,H,W -0000000 -0000000		PPG Control
0002C4 _H	GTRS2[R/W] B,H,W -0000000 -0000000		GTRS3[R/W] B,H,W -0000000 -0000000		
0002C8 _H	GTRS4[R/W] B,H,W -0000000 -0000000		GTRS5[R/W] B,H,W -0000000 -0000000		
0002CC _H	GTRS6[R/W] B,H,W -0000000 -0000000		GTRS7[R/W] B,H,W -0000000 -0000000		
0002D0 _H	GTRS8[R/W] B,H,W -0000000 -0000000		GTRS9[R/W] B,H,W -0000000 -0000000		
0002D4 _H	GTRS10[R/W] B,H,W -0000000 -0000000		GTRS11[R/W] B,H,W -0000000 -0000000		
0002D8 _H	GTREN0[R/W] H,W 00000000 00000000		GTREN1[R/W] H,W ----- 00000000		
0002DC _H	-		-		Reserved
0002E0 _H	-	GATEC0[R/W] B,H,W -----00	-	GATEC2[R/W] B,H,W -----00	PPG GATE Control
0002E4 _H	-	GATEC4[R/W] B,H,W -----00	-	GATEC8[R/W] B,H,W -----00	
0002E8 _H	-	GATEC10[R/W] B,H,W -----00	-	GATEC12[R/W] B,H,W -----00	
0002EC _H	-	-	-	-	Reserved
0002F0 _H	RCRH0[W] H,W 00000000	RCRL0[W] B,H,W 00000000	UDCRH0[R] H,W 00000000	UDCRL0[R] B,H,W 00000000	U/D counter 0
0002F4 _H	CCR0[R/W] B,H 00000000 -0001000		-	CSR0[R] B 00000000	
0002F8 _H	RCRH1[W] H,W 00000000	RCRL1[W] B,H,W 00000000	UDCRH1[R] H,W 00000000	UDCRL1[R] B,H,W 00000000	U/D counter 1
0002FC _H	CCR1[R/W] B,H 00000000 -0001000		-	CSR1[R] B 00000000	
000300 _H	-				Reserved
000304 _H	-	-	-	-	Reserved
000308 _H	-				Reserved
00030C _H	-	-	-	-	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000310 _H	-	-	MPUCR[R/W] H 000000-0 ----0100		MPU [S] (Only the CPU can access this area)
000314 _H	-	-	-	-	
000318 _H	-				
00031C _H	-	-	-		
000320 _H	DPVAR[R] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000324 _H	-	-	DPVSR[R/W] H ----- 00000--0		
000328 _H	DEAR[R] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00032C _H	-	-	DESR[R/W] H ----- 00000--0		
000330 _H	PABR0[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
000334 _H	-	-	PACR0[R/W] H 000000-0 00000--0		
000338 _H	PABR1[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
00033C _H	-	-	PACR1[R/W] H 000000-0 00000--0		
000340 _H	PABR2[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
000344 _H	-	-	PACR2[R/W] H 000000-0 00000--0		
000348 _H	PABR3[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
00034C _H	-	-	PACR3[R/W] H 000000-0 00000--0		
000350 _H	PABR4[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
000354 _H	-	-	PACR4[R/W] H 000000-0 00000--0		
000358 _H	PABR5[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
00035C _H	-	-	PACR5[R/W] H 000000-0 00000--0		
000360 _H	PABR6[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				
000364 _H	-	-	PACR6[R/W] H 000000-0 00000--0		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000368 _H	PABR7[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXX0000				MPU [S] (Only the CPU can access this area)
00036C _H	-	-	PACR7[R/W] H 000000-0 00000--0		
000370 _H	-				Reserved [S]
000374 _H	-	-	-		
000378 _H	-				
00037C _H	-	-	-		
000380 _H	-				
000384 _H	-	-	-		
000388 _H	-				
00038C _H	-	-	-		
000390 _H	-				Reserved [S]
000394 _H	-	-	-		
000398 _H	-				
00039C _H	-	-	-		
0003A0 _H	-				
0003A4 _H	-	-	-		
0003A8 _H	-				
0003AC _H	-	-	-		
0003B0 _H 0003FC _H	-	-	-	-	Reserved [S]
000400 _H	ICSEL0[R/W] B,H,W -----000	ICSEL1[R/W] B,H,W -----0	ICSEL2[R/W] B,H,W -----0	ICSEL3[R/W] B,H,W -----0	Generation and clearing of DMA transfer requests
000404 _H	ICSEL4[R/W] B,H,W -----0	ICSEL5[R/W] B,H,W -----0	ICSEL6[R/W] B,H,W -----0	ICSEL7[R/W] B,H,W ----000	
000408 _H	ICSEL8[R/W] B,H,W -----0	ICSEL9[R/W] B,H,W -----0	ICSEL10[R/W] B,H,W ----000	ICSEL11[R/W] B,H,W ----000	
00040C _H	ICSEL12[R/W] B,H,W ----000	ICSEL13[R/W] B,H,W ----000	ICSEL14[R/W] B,H,W ----000	ICSEL15[R/W] B,H,W -----0	
000410 _H	ICSEL16[R/W] B,H,W -----0	ICSEL17[R/W] B,H,W -----0	ICSEL18[R/W] B,H,W -----0	ICSEL19[R/W] B,H,W -----0	
000414 _H	ICSEL20[R/W] B,H,W -----0	ICSEL21[R/W] B,H,W ----000	ICSEL22[R/W] B,H,W ----000	ICSEL23[R/W] B,H,W ----000	
000418 _H	ICSEL24[R/W] B,H,W ----000	ICSEL25[R/W] B,H,W ----000	ICSEL26[R/W] B,H,W -----0	ICSEL27[R/W] B,H,W -----0	
00041C _H	-	-	-	-	
000420 _H	-	-	-	-	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000424 _H 00043C _H	-	-	-	-	Reserved
000440 _H	ICR00[R/W] B,H,W ---11111	ICR01[R/W] B,H,W ---11111	ICR02[R/W] B,H,W ---11111	ICR03[R/W] B,H,W ---11111	Interrupt controller [S]
000444 _H	ICR04[R/W] B,H,W ---11111	ICR05[R/W] B,H,W ---11111	ICR06[R/W] B,H,W ---11111	ICR07[R/W] B,H,W ---11111	
000448 _H	ICR08[R/W] B,H,W ---11111	ICR09[R/W] B,H,W ---11111	ICR10[R/W] B,H,W ---11111	ICR11[R/W] B,H,W ---11111	
00044C _H	ICR12[R/W] B,H,W ---11111	ICR13[R/W] B,H,W ---11111	ICR14[R/W] B,H,W ---11111	ICR15[R/W] B,H,W ---11111	
000450 _H	ICR16[R/W] B,H,W ---11111	ICR17[R/W] B,H,W ---11111	ICR18[R/W] B,H,W ---11111	ICR19[R/W] B,H,W ---11111	
000454 _H	ICR20[R/W] B,H,W ---11111	ICR21[R/W] B,H,W ---11111	ICR22[R/W] B,H,W ---11111	ICR23[R/W] B,H,W ---11111	
000458 _H	ICR24[R/W] B,H,W ---11111	ICR25[R/W] B,H,W ---11111	ICR26[R/W] B,H,W ---11111	ICR27[R/W] B,H,W ---11111	
00045C _H	ICR28[R/W] B,H,W ---11111	ICR29[R/W] B,H,W ---11111	ICR30[R/W] B,H,W ---11111	ICR31[R/W] B,H,W ---11111	
000460 _H	ICR32[R/W] B,H,W ---11111	ICR33[R/W] B,H,W ---11111	ICR34[R/W] B,H,W ---11111	ICR35[R/W] B,H,W ---11111	
000464 _H	ICR36[R/W] B,H,W ---11111	ICR37[R/W] B,H,W ---11111	ICR38[R/W] B,H,W ---11111	ICR39[R/W] B,H,W ---11111	
000468 _H	ICR40[R/W] B,H,W ---11111	ICR41[R/W] B,H,W ---11111	ICR42[R/W] B,H,W ---11111	ICR43[R/W] B,H,W ---11111	
00046C _H	ICR44[R/W] B,H,W ---11111	ICR45[R/W] B,H,W ---11111	ICR46[R/W] B,H,W ---11111	ICR47[R/W] B,H,W ---11111	
000470 _H 00047C _H	-	-	-	-	Reserved [S]
000480 _H	RSTRR[R] B,H,W XXXX--XX	RSTCR[R/W] B,H,W 111----0	STBCR[R/W] B,H,W* 000---11	-	Reset control [S] Power consumption control [S] * Writing to STBCR by DMA is disabled.
000484 _H	-	-	-	-	Reserved [S]
000488 _H	DIVR0[R/W] B,H,W 000-----	DIVR1[R/W] B,H,W 0001----	DIVR2[R/W] B,H,W 0011----	-	Clock control [S]
00048C _H	-	-	-	-	Reserved [S]

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000490 _H	IORR0[R/W] B,H,W -0000000	IORR1[R/W] B,H,W -0000000	IORR2[R/W] B,H,W -0000000	IORR3[R/W] B,H,W -0000000	DMA transfer request from a peripheral [S]
000494 _H	IORR4[R/W] B,H,W -0000000	IORR5[R/W] B,H,W -0000000	IORR6[R/W] B,H,W -0000000	IORR7[R/W] B,H,W -0000000	
000498 _H	-	-	-	-	
00049C _H	-	-	-	-	
0004A0 _H	-	-	-	-	Reserved
0004A4 _H	CANPRE[R/W] B,H,W ----0000	-	-	-	CAN prescaler
0004A8 _H 0004AC _H	-	-	-	-	Reserved
0004B0 _H	-	-	-	-	Reserved
0004B4 _H 0004C0 _H	-	-	-	-	Reserved
0004C4 _H	CUCR1[R/W] B,H,W -----0--00		CUTD1[R/W] B,H,W 11000011 01010000		WDT1 calibration
0004C8 _H	CUTR1[R] B,H,W -----00000000 00000000 00000000				
0004CC _H 0004DC _H	-	-	-	-	Reserved
0004E0 _H	-	-	CSCFG[R/W] B,H,W ---0----	CMCFG[R/W] B,H,W 00000000	Clock monitor
0004E4 _H	-	-	-	-	
0004E8 _H	PLL2DIVM[R/W] B,H,W ----0000	PLL2DIVN[R/W] B,H,W -0000000	PLL2DIVG[R/W] B,H,W ----0000	PLL2MULG[R/W] B,H,W 00000000	FlexRay clock control
0004EC _H	PLL2CTRL[R/W] B,H,W ----0000	PLL2DIVK[R/W] B,H,W -----0	CLKR2[R/W] B,H,W 000--000	-	
0004F0 _H 0004FC _H	-	-	-	-	Reserved
000500 _H	-				Reserved
000504 _H	-				Reserved
000508 _H 00050C _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000510 _H	CSELR[R/W] B,H,W -0----00	CMONR[R] B,H,W -01---00	MTMCR[R/W] B,H,W 00001111	-	Clock control [S]
000514 _H	PLLCR[R/W] B,H,W 00-00000 11110000		CSTBR[R/W] B,H,W ----0000	PTMCR[R/W] B,H,W 00-----	
000518 _H	-	-	CPUAR[R/W] B,H,W 0---XXXX	-	Reset [S]
00051C _H	-	-	-	-	Reserved [S]
000520 _H	CCPSSELR[R/W] B,H,W -----0	-	-	CCPSDIVR[R/W] B,H,W -000-000	Clock control 2
000524 _H	-	CCPLLFBR[R/W] B,H,W -0000000	CCSSFBR0[R/W] B,H,W --000000	CCSSFBR1[R/W] B,H,W ---00000	
000528 _H	-	CCSSCCR0[R/W] B,H,W ----0000	CCSSCCR1[R/W] H,W 000-----		
00052C _H	-	CCCGRCR0[R/W] B,H,W 00----00	CCCGRCR1[R/W] B,H,W 00000000	CCCGRCR2[R/W] B,H,W 00000000	
000530 _H	-	-	CCPMUCR0[R/W] B,H,W 0----00	CCPMUCR1[R/W] B,H,W 0--00000	
000534 _H	-	-	-	-	
000538 _H	-	-	-	-	
00053C _H	-	-	-	-	
000540 _H 00054C _H	-	-	-	-	Reserved
000550 _H	EIRR0[R/W] B,H,W XXXXXXXXXX	ENIR0[R/W] B,H,W 00000000	ELVR0[R/W] B,H,W 00000000 00000000		External interrupt (INT0 to 7)
000554 _H 000568 _H	-	-	-	-	Reserved
00056C _H	-	CSVCR[R/W] B -0--1--0	-	-	CSV
000570 _H	CRTR[R/W] B,H,W 01111111	-	-	-	WDT1 calibration (trimming)
000574 _H 00057C _H	-	-	-	-	Reserved
000580 _H	REGSEL[R/W] B,H,W 01--110-	-	-	-	Regulator control

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000584 _H	LVD5R[R/W] B,H,W -----1	LVD5F[R/W] B,H,W 0-010--1	LVD[R/W] B,H,W 01000--0	-	Low-voltage detection
000588 _H 00058C _H	-	-	-	-	Reserved
000590 _H	PMUSTR [R/W] B,H,W 0-----1X	PMUCTLR[R/W] B,H,W 0-00----	PWRTMCTL[R/W] B,H,W -----011	-	PMU
000594 _H	-	PMUINTF1[R/W] B,H,W 00000000	PMUINTF2[R/W] B,H,W -00----	-	
000598 _H	-	-	-	-	
00059C _H	-	-	-	-	
0005A0 _H 0005FC _H	-	-	-	-	Reserved
000600 _H	ASR0[R/W] W 00000000 00000000 ----- 1111-001				External bus interface [S]
000604 _H	ASR1[R/W] W XXXXXXXXXX XXXXXXXXX ----- XXXX-XX0				
000608 _H	ASR2[R/W] W XXXXXXXXXX XXXXXXXXX ----- XXXX-XX0				
00060C _H	ASR3[R/W] W XXXXXXXXXX XXXXXXXXX ----- XXXX-XX0				
000610 _H 00063C _H	-	-	-	-	Reserved[S]
000640 _H	ACR0[R/W] W ----- 00--00--				External bus interface [S]
000644 _H	ACR1[R/W] W ----- XX--XX--				
000648 _H	ACR2[R/W] W ----- XX--XX--				
00064C _H	ACR3[R/W] W ----- XX--XX--				
000650 _H 00067C _H	-	-	-	-	Reserved[S]

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000680 _H	AWR0[R/W] W ----1111 00000000 11110000 00000-0-				External bus interface [S]
000684 _H	AWR1[R/W] W ----XXXX XXXXXXXXXX XXXXXXXXXX XXXXX-X-				
000688 _H	AWR2[R/W] W ----XXXX XXXXXXXXXX XXXXXXXXXX XXXXX-X-				
00068C _H	AWR3[R/W] W ----XXXX XXXXXXXXXX XXXXXXXXXX XXXXX-X-				
000690 _H 0006BC _H	-	-	-	-	Reserved[S]
0006C0 _H	DMAR0[R/W] W -----0000				External bus interface [S]
0006C4 _H	DMAR1[R/W] W -----0000				
0006C8 _H	DMAR2[R/W] W -----0000				
0006CC _H	DMAR3[R/W] W -----0000				
0006D0 _H 0006F0 _H	-	-	-	-	Reserved
0006F4 _H	-				Reserved
0006F8 _H 0006FC _H	-	-	-	-	Reserved
000700 _H	-				Reserved
000704 _H 00070C _H	-	-	-	-	Reserved
000710 _H	BPCCRA[R/W] B 00000000	BPCCRB[R/W] B 00000000	BPCCRC[R/W] B 00000000	-	Bus performance counter
000714 _H	BPCTRA[R/W] W 00000000 00000000 00000000 00000000				
000718 _H	BPCTRB[R/W] W 00000000 00000000 00000000 00000000				
00071C _H	BPCTRC[R/W] W 00000000 00000000 00000000 00000000				
000720 _H 0007F8 _H	-	-	-	-	Reserved
0007FC _H	BMODR[R] B,H,W XXXXXXXX	-	-	-	Operation mode

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000800 _H 00083C _H	-	-	-	-	Reserved [S]
000840 _H	FCTLR[R/W] H -0--1000 0--0----		-	FSTR[R/W] B -----001	Flash memory register [S]
000844 _H	-	-	-	-	Reserved [S]
000848 _H 000854 _H	-	-	-	-	Reserved [S]
000858 _H	-	-	WREN[R/W] H 00000000 00000000		Wild register [S]
00085C _H 00087C _H	-	-	-	-	Reserved [S]
000880 _H	WRAR0[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				Wild register [S]
000884 _H	WRDR0[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
000888 _H	WRAR01[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
00088C _H	WRDR01[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
000890 _H	WRAR02[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
000894 _H	WRDR02[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
000898 _H	WRAR03[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
00089C _H	WRDR03[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008A0 _H	WRAR04[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008A4 _H	WRDR04[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008A8 _H	WRAR05[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008AC _H	WRDR05[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008B0 _H	WRAR06[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008B4 _H	WRDR06[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
0008B8 _H	WRAR07[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				Wild register [S]
0008BC _H	WRDR07[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008C0 _H	WRAR08[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008C4 _H	WRDR08[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008C8 _H	WRAR09[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008CC _H	WRDR09[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008D0 _H	WRAR10[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008D4 _H	WRDR10[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008D8 _H	WRAR11[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008DC _H	WRDR11[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008E0 _H	WRAR12[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008E4 _H	WRDR12[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008E8 _H	WRAR13[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008EC _H	WRDR13[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008F0 _H	WRAR14[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008F4 _H	WRDR14[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
0008F8 _H	WRAR15[R/W] W ----- --XXXXXX XXXXXXXX XXXXXX--				
0008FC _H	WRDR15[R/W] W XXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX				
000900 _H 000BF8 _H	-	-	-	-	Reserved
000BFC _H	-	-	UER[W] B,H,W -----X		OCDU

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000C00 _H	DCCR0[R/W] W 0----000 --00--00 00000000 0-000000				DMA controller [S]
000C04 _H	DCSR0[R/W] H 0----- 000		DTCR0[R/W] H 00000000 00000000		
000C08 _H	DSAR0[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C0C _H	DDAR0[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C10 _H	DCCR1[R/W] W 0----000 --00--00 00000000 0-000000				
000C14 _H	DCSR1[R/W] H 0----- 000		DTCR1[R/W] H 00000000 00000000		
000C18 _H	DSAR1[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C1C _H	DDAR1[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C20 _H	DCCR2[R/W] W 0----000 --00--00 00000000 0-000000				
000C24 _H	DCSR2[R/W] H 0----- 000		DTCR2[R/W] H 00000000 00000000		
000C28 _H	DSAR2[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C2C _H	DDAR2[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C30 _H	DCCR3[R/W] W 0----000 --00--00 00000000 0-000000				
000C34 _H	DCSR3[R/W] H 0----- 000		DTCR3[R/W] H 00000000 00000000		
000C38 _H	DSAR3[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C3C _H	DDAR3[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C40 _H	DCCR4[R/W] W 0----000 --00--00 00000000 0-000000				
000C44 _H	DCSR4[R/W] H 0----- 000		DTCR4[R/W] H 00000000 00000000		
000C48 _H	DSAR4[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C4C _H	DDAR4[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C50 _H	DCCR5[R/W] W 0----000 --00--00 00000000 0-000000				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000C54 _H	DCSR5[R/W] H 0-----000		DTCR5[R/W] H 00000000 00000000		DMA controller [S]
000C58 _H	DSAR5[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C5C _H	DDAR5[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C60 _H	DCCR6[R/W] W 0---000 --00--00 00000000 0-000000				
000C64 _H	DCSR6[R/W] H 0-----000		DTCR6[R/W] H 00000000 00000000		
000C68 _H	DSAR6[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C6C _H	DDAR6[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C70 _H	DCCR7[R/W] W 0---000 --00--00 00000000 0-000000				
000C74 _H	DCSR7[R/W] H 0-----000		DTCR7[R/W] H 00000000 00000000		
000C78 _H	DSAR7[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C7C _H	DDAR7[R/W] W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
000C80 _H 000DF0 _H	-	-	-	-	
000DF4 _H	-	-	DNMIR[R/W] B 0-----0	DILVR[R/W] B ---11111	
000DF8 _H	DMACR[R/W] W 0-----0-----0-----				
000DFC _H	-	-	-	-	Reserved [S]
000E00 _H	DDR00[R/W] B,H 00000000	DDR01[R/W] B,H 00000000	DDR02[R/W] B,H 00000000	DDR03[R/W] B,H 00000000	Data direction register
000E04 _H	DDR04[R/W] B,H 00000000	DDR05[R/W] B,H 00000000	DDR06[R/W] B,H 00000000	DDR07[R/W] B,H 00000000	
000E08 _H	DDR08[R/W] B,H 00000000	DDR09[R/W] B,H 00000000	DDR10[R/W] B,H 00000000	DDR11[R/W] B,H 00000000	
000E0C _H	DDR12[R/W] B,H 00000000	DDR13[R/W] B,H 00-00000	-	-	
000E10 _H 000E1C _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000E20 _H	PFR00[R/W] B,H 00000000	PFR01[R/W] B,H 00000000	PFR02[R/W] B,H 00000000	PFR03[R/W] B,H 00000000	Port function register
000E24 _H	PFR04[R/W] B,H 00000000	PFR05[R/W] B,H 00000000	PFR06[R/W] B,H 00000000	PFR07[R/W] B,H 00000000	
000E28 _H	PFR08[R/W] B,H 00000000	PFR09[R/W] B,H 00000000	PFR10[R/W] B,H 00000000	PFR11[R/W] B,H 00000000	
000E2C _H	PFR12[R/W] B,H 00000000	PFR13[R/W] B,H 00-00000	-	-	
000E30 _H 000E3C _H	-	-	-	-	Reserved
000E40 _H	PDDR00[R] B,H,W XXXXXXXX	PDDR01[R] B,H,W XXXXXXXX	PDDR02[R] B,H,W XXXXXXXX	PDDR03[R] B,H,W XXXXXXXX	Input data direct read register
000E44 _H	PDDR04[R] B,H,W XXXXXXXX	PDDR05[R] B,H,W XXXXXXXX	PDDR06[R] B,H,W XXXXXXXX	PDDR07[R] B,H,W XXXXXXXX	
000E48 _H	PDDR08[R] B,H,W XXXXXXXX	PDDR09[R] B,H,W XXXXXXXX	PDDR10[R] B,H,W XXXXXXXX	PDDR11[R] B,H,W XXXXXXXX	
000E4C _H	PDDR12[R] B,H,W XXXXXXXX	PDDR13[R] B,H,W XX-XXXXX	-	-	
000E50 _H 000E5C _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000E60 _H	EPFR00[R/W] B,H ----000	EPFR01[R/W] B,H -----00	EPFR02[R/W] B,H --000000	EPFR03[R/W] B,H 00000000	Extended port function register
000E64 _H	EPFR04[R/W] B,H 00000000	EPFR05[R/W] B,H 00000000	EPFR06[R/W] B,H -----00	EPFR07[R/W] B,H ----0000	
000E68 _H	EPFR08[R/W] B,H ----0000	EPFR09[R/W] B,H -----0	EPFR10[R/W] B,H 00000000	EPFR11[R/W] B,H ----0000	
000E6C _H	-	EPFR13[R/W] B,H -----1	EPFR14[R/W] B,H -0000000	EPFR15[R/W] B,H -0000000	
000E70 _H	EPFR16[R/W] B,H --000000	EPFR17[R/W] B,H 00000000	EPFR18[R/W] B,H 00000000	EPFR19[R/W] B,H 00000000	
000E74 _H	EPFR20[R/W] B,H 00000000	EPFR21[R/W] B,H 00000000	EPFR22[R/W] B,H 00000000	EPFR23[R/W] B,H 00000000	
000E78 _H	EPFR24[R/W] B,H 00000000	EPFR25[R/W] B,H 00000000	EPFR26[R/W] B,H 00000000	EPFR27[R/W] B,H 00000000	
000E7C _H	EPFR28[R/W] B,H 00000000	EPFR29[R/W] B,H 00000000	EPFR30[R/W] B,H 00000000	EPFR31[R/W] B,H 00000000	
000E80 _H	EPFR32[R/W] B,H 00000000	-	-	-	
000E84 _H 000EBC _H	-	-	-	-	Reserved
000EC0 _H	PPER00[R/W] B,H 00000000	PPER01[R/W] B,H 00000000	PPER02[R/W] B,H 00000000	PPER03[R/W] B,H 00000000	Port pull-up/down enable register
000EC4 _H	PPER04[R/W] B,H 00000000	PPER05[R/W] B,H 00000000	PPER06[R/W] B,H 00000000	PPER07[R/W] B,H 00000000	
000EC8 _H	PPER08[R/W] B,H 00000000	PPER09[R/W] B,H 00000000	PPER10[R/W] B,H 00000000	PPER11[R/W] B,H 00000000	
000ECC _H	PPER12[R/W] B,H 00000000	PPER13[R/W] B,H 00-00000	-	-	
000ED0 _H 000EDC _H	-	-	-	-	Reserved
000EE0 _H	PILR00[R/W] B,H 11111111	PILR01[R/W] B,H 11111111	PILR02[R/W] B,H 11111111	PILR03[R/W] B,H 11111111	Port input level selection register
000EE4 _H	PILR04[R/W] B,H 11111111	PILR05[R/W] B,H 11111111	PILR06[R/W] B,H 11111111	PILR07[R/W] B,H 11111111	
000EE8 _H	PILR08[R/W] B,H 11111111	PILR09[R/W] B,H 11111111	PILR10[R/W] B,H 11111111	PILR11[R/W] B,H 11111111	
000EEC _H	PILR12[R/W] B,H 11111111	PILR13[R/W] B,H 11-11111	-	-	
000EF0 _H 000EFC _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
000F00 _H 000F1C _H	-	-	-	-	Reserved
000F20 _H	PODR00[R/W] B,H 00000000	PODR01[R/W] B,H 00000000	PODR02[R/W] B,H 00000000	PODR03[R/W] B,H 00000000	Port output drive register
000F24 _H	PODR04[R/W] B,H 00000000	PODR05[R/W] B,H 00000000	PODR06[R/W] B,H 00000000	PODR07[R/W] B,H 00000000	
000F28 _H	PODR08[R/W] B,H 00000000	PODR09[R/W] B,H 00000000	PODR10[R/W] B,H 00000000	PODR11[R/W] B,H 00000000	
000F2C _H	PODR12[R/W] B,H 00000000	PODR13[R/W] B,H 00-00000	-	-	
000F30 _H 000F3C _H	-	-	-	-	Reserved
000F40 _H	PORTEN[R/W] B,H,W -----00	-	-	-	Port input enable register
000F44 _H	KEYCDR[R/W] H 00000000 00000000		-	-	Port key code
000F48 _H	ADERH[R/W] B,H ----- 11111111		ADERL[R/W] B,H 11111111 11111111		Analog input enable register
000F4C _H	DAER[R/W] B,H -----0	-	-	-	Analog output enable register
000F50 _H 000FFC _H	-	-	-	-	Reserved
001000 _H	SACR[R/W] B,H,W -----0	PICD[R/W] B,H,W ----0011	-	-	Synchronous/asyn chronous switch control
001004 _H 0010BC _H	-	-	-	-	Reserved
0010C0 _H	-	-	-	CRCCR[R/W] B,H,W -0000000	CRC arithmetic operation
0010C4 _H	CRCINIT[R/W] B,H,W 11111111 11111111 11111111 11111111				
0010C8 _H	CRCIN[R/W] B,H,W 00000000 00000000 00000000 00000000				
0010CC _H	CRCR[R] B,H,W 11111111 11111111 11111111 11111111				
0010D0 _H 0010FC _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
001100 _H	TCGS[R/W] B,H,W -----00	-	-	TCGSE[R/W] B,H,W --000000	Free-run timer simultaneous activation
001104 _H	CPCLRB0/CPCLR0[R/W] H,W 11111111 11111111		TCDT0[R/W] H,W 00000000 00000000		Free-run timer 0
001108 _H	TCCS0[R/W] B,H,W 00000000 01000000 ----0000 -----				
00110C _H	CPCLRB1/CPCLR1[R/W] H,W 11111111 11111111		TCDT1[R/W] H,W 00000000 00000000		Free-run timer 1
001110 _H	TCCS1[R/W] B,H,W 00000000 01000000 ----0000 -----				
001114 _H	CPCLRB2/CPCLR2[R/W] H,W 11111111 11111111		TCDT2[R/W] H,W 00000000 00000000		Free-run timer 2
001118 _H	TCCS2[R/W] B,H,W 00000000 01000000 ----0000 -----				
00111C _H	CPCLRB3/CPCLR3[R/W] H,W 11111111 11111111		TCDT3[R/W] H,W 00000000 00000000		Free-run timer 3
001120 _H	TCCS3[R/W] B,H,W 00000000 01000000 ----0000 -----				
001124 _H	CPCLRB4/CPCLR4[R/W] H,W 11111111 11111111		TCDT4[R/W] H,W 00000000 00000000		Free-run timer 4
001128 _H	TCCS4[R/W] B,H,W 00000000 01000000 ----0000 -----				
00112C _H	CPCLRB5/CPCLR5[R/W] H,W 11111111 11111111		TCDT5[R/W] H,W 00000000 00000000		Free-run timer 5
001130 _H	TCCS5[R/W] B,H,W 00000000 01000000 ----0000 -----				
001134 _H	FRS0[R/W] B,H,W ----- -000-000 -000-000 -000-000				Free-run timer selection
001138 _H	FRS1[R/W] B,H,W ----- -000-000 -000-000				
00113C _H	FRS2[R/W] B,H,W ----- -000-000 -000-000 -000-000				
001140 _H	FRS3[R/W] B,H,W ----- -000-000 -000-000				
001144 _H	FRS4[R/W] B,H,W -000-000 -000-000 -000-000 -000-000				
001148 _H	FRS5[R/W] B,H,W -000-000 -000-000 -000-000 -000-000				
00114C _H	FRS6[R/W] B,H,W -000-000 -000-000 -000-000 -000-000				
001150 _H	-				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
001154 _H	OCCPB0/OCCP0[R/W] H,W 00000000 00000000		OCCPB1/OCCP1[R/W] H,W 00000000 00000000		Output compare 0/1
001158 _H	OCS01[R/W] B,H,W -110--00 00001100		-	OCMOD01[R/W] B,H,W -----00	
00115C _H	OCCPB2/OCCP2[R/W] H,W 00000000 00000000		OCCPB3/OCCP3[R/W] H,W 00000000 00000000		Output compare 2/3
001160 _H	OCS23[R/W] B,H,W -110--00 00001100		-	OCMOD23[R/W] B,H,W -----00	
001164 _H	OCCPB4/OCCP4[R/W] H,W 00000000 00000000		OCCPB5/OCCP5[R/W] H,W 00000000 00000000		Output compare 4/5
001168 _H	OCS45[R/W] B,H,W -110--00 00001100		-	OCMOD45[R/W] B,H,W -----00	
00116C _H	OCCPB6/OCCP6[R/W] H,W 00000000 00000000		OCCPB7/OCCP7[R/W] H,W 00000000 00000000		Output compare 6/7
001170 _H	OCS67[R/W] B,H,W -110--00 00001100		-	OCMOD67[R/W] B,H,W -----00	
001174 _H	OCCPB8/OCCP8[R/W] H,W 00000000 00000000		OCCPB9/OCCP9[R/W] H,W 00000000 00000000		Output compare 8/9
001178 _H	OCS89[R/W] B,H,W -110--00 00001100		-	OCMOD89[R/W] B,H,W -----00	
00117C _H	OCCPB10/OCCP10[R/W] H,W 00000000 00000000		OCCPB11/OCCP11[R/W] H,W 00000000 00000000		Output compare 10/11
001180 _H	OCS1011[R/W] B,H,W -110--00 00001100		-	OCMOD1011 [R/W] B,H,W -----00	
001184 _H	IPCP0[R] H,W 00000000 00000000		IPCP1[R] H,W 00000000 00000000		Input capture 0/1
001188 _H	ICS01[R/W] B,H,W -----00 00000000		-	LSYNS[R/W] B,H,W ---00000	
00118C _H	IPCP2[R] H,W 00000000 00000000		IPCP3[R] H,W 00000000 00000000		Input capture 2/3
001190 _H	ICS23[R/W] B,H,W -----00 00000000		-	-	
001194 _H	IPCP4[R] H,W 00000000 00000000		IPCP5[R] H,W 00000000 00000000		Input capture 4/5
001198 _H	ICS45[R/W] B,H,W -----00 00000000		-	-	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00119C _H	IPCP6[R] H,W 00000000 00000000		IPCP7[R] H,W 00000000 00000000		Input capture 6/7
0011A0 _H	ICS67[R/W] B,H,W -----00 00000000		-	-	
0011A4 _H	DTSR[R/W] B,H,W -----10	-	-	-	DTTI selection
0011A8 _H	TMRR0[R/W] H,W 00000000 00000001		TMRR1[R/W] H,W 00000000 00000001		Waveform generator 0/1/2
0011AC _H	TMRR2[R/W] H,W 00000000 00000001		-	-	
0011B0 _H	DTSCR0[R/W] B,H,W 00000000	DTSCR1[R/W] B,H,W 00000000	DTSCR2[R/W] B,H,W 00000000	-	
0011B4 _H	-	DTIR0[R/W] B,H,W 000000--	-	DTMNS0[R/W] B,H,W 00---000	
0011B8 _H	-	SIGCR10[R/W] B,H,W 00000000	-	SIGCR20[R/W] B,H,W 000000-1	
0011BC _H	PICS0[R/W] B,H,W 000000-- -----				
0011C0 _H	TMRR3[R/W] H,W 00000000 00000001		TMRR4[R/W] H,W 00000000 00000001		Waveform generator 3/4/5
0011C4 _H	TMRR5[R/W] H,W 00000000 00000001		-	-	
0011C8 _H	DTSCR3[R/W] B,H,W 00000000	DTSCR4[R/W] B,H,W 00000000	DTSCR5[R/W] B,H,W 00000000	-	
0011CC _H	-	DTIR1[R/W] B,H,W 000000--	-	DTMNS1[R/W] B,H,W 00---000	
0011D0 _H	-	SIGCR11[R/W] B,H,W 00000000	-	SIGCR21[R/W] B,H,W 000000-1	
0011D4 _H	PICS1[R/W] B,H,W 000000-- -----				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
0011D8 _H	-	-	-	-	12-bit A/D converter
0011DC _H	ADTSS[R/W] B,H,W -----0	-	-	-	
0011E0 _H	ADTSE[R/W] B,H,W ----- 00000000 00000000 00000000				
0011E4 _H	ADCOMP0/ADCOMPB0[R/W] H,W 00000000 00000000		ADCOMP1/ADCOMPB1[R/W] H,W 00000000 00000000		
0011E8 _H	ADCOMP2/ADCOMPB2[R/W] H,W 00000000 00000000		ADCOMP3/ADCOMPB3[R/W] H,W 00000000 00000000		
0011EC _H	ADCOMP4/ADCOMPB4[R/W] H,W 00000000 00000000		ADCOMP5/ADCOMPB5[R/W] H,W 00000000 00000000		
0011F0 _H	ADCOMP6/ADCOMPB6[R/W] H,W 00000000 00000000		ADCOMP7/ADCOMPB7[R/W] H,W 00000000 00000000		
0011F4 _H	ADCOMP8/ADCOMPB8[R/W] H,W 00000000 00000000		ADCOMP9/ADCOMPB9[R/W] H,W 00000000 00000000		
0011F8 _H	ADCOMP10/ADCOMPB10[R/W] H,W 00000000 00000000		ADCOMP11/ADCOMPB11[R/W] H,W 00000000 00000000		
0011FC _H	ADCOMP12/ADCOMPB12[R/W] H,W 00000000 00000000		ADCOMP13/ADCOMPB13[R/W] H,W 00000000 00000000		
001200 _H	ADCOMP14/ADCOMPB14[R/W] H,W 00000000 00000000		ADCOMP15/ADCOMPB15[R/W] H,W 00000000 00000000		
001204 _H	ADCOMP16/ADCOMPB16[R/W] H,W 00000000 00000000		ADCOMP17/ADCOMPB17[R/W] H,W 00000000 00000000		
001208 _H	ADCOMP18/ADCOMPB18[R/W] H,W 00000000 00000000		ADCOMP19/ADCOMPB19[R/W] H,W 00000000 00000000		
00120C _H	ADCOMP20/ADCOMPB20[R/W] H,W 00000000 00000000		ADCOMP21/ADCOMPB21[R/W] H,W 00000000 00000000		
001210 _H	ADCOMP22/ADCOMPB22[R/W] H,W 00000000 00000000		ADCOMP23/ADCOMPB23[R/W] H,W 00000000 00000000		
001214 _H	-	-	-	-	
001218 _H	-	-	-	-	
00121C _H	-	-	-	-	
001220 _H	-	-	-	-	
001224 _H	ADTCS0[R/W] B,H,W 00000000 0010-000		ADTCS1[R/W] B,H,W 00000000 0010-000		
001228 _H	ADTCS2[R/W] B,H,W 00000000 0010-000		ADTCS3[R/W] B,H,W 00000000 0010-000		
00122C _H	ADTCS4[R/W] B,H,W 00000000 0010-000		ADTCS5[R/W] B,H,W 00000000 0010-000		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
001230 _H	ADTCS6[R/W] B,H,W 00000000 0010-000		ADTCS7[R/W] B,H,W 00000000 0010-000		12-bit A/D converter
001234 _H	ADTCS8[R/W] B,H,W 00000000 0010-000		ADTCS9[R/W] B,H,W 00000000 0010-000		
001238 _H	ADTCS10[R/W] B,H,W 00000000 0010-000		ADTCS11[R/W] B,H,W 00000000 0010-000		
00123C _H	ADTCS12[R/W] B,H,W 00000000 0010-000		ADTCS13[R/W] B,H,W 00000000 0010-000		
001240 _H	ADTCS14[R/W] B,H,W 00000000 0010-000		ADTCS15[R/W] B,H,W 00000000 0010-000		
001244 _H	ADTCS16[R/W] B,H,W 00000000 00100000		ADTCS17[R/W] B,H,W 00000000 00100000		
001248 _H	ADTCS18[R/W] B,H,W 00000000 00100000		ADTCS19[R/W] B,H,W 00000000 00100000		
00124C _H	ADTCS20[R/W] B,H,W 00000000 00100000		ADTCS21[R/W] B,H,W 00000000 00100000		
001250 _H	ADTCS22[R/W] B,H,W 00000000 00100000		ADTCS23[R/W] B,H,W 00000000 00100000		
001254 _H	-	-	-	-	
001258 _H	-	-	-	-	
00125C _H	-	-	-	-	
001260 _H	-	-	-	-	
001264 _H	ADTCD0[R] B,H,W 10--0000 00000000		ADTCD1[R] B,H,W 10--0000 00000000		
001268 _H	ADTCD2[R] B,H,W 10--0000 00000000		ADTCD3[R] B,H,W 10--0000 00000000		
00126C _H	ADTCD4[R] B,H,W 10--0000 00000000		ADTCD5[R] B,H,W 10--0000 00000000		
001270 _H	ADTCD6[R] B,H,W 10--0000 00000000		ADTCD7[R] B,H,W 10--0000 00000000		
001274 _H	ADTCD8[R] B,H,W 10--0000 00000000		ADTCD9[R] B,H,W 10--0000 00000000		
001278 _H	ADTCD10[R] B,H,W 10--0000 00000000		ADTCD11[R] B,H,W 10--0000 00000000		
00127C _H	ADTCD12[R] B,H,W 10--0000 00000000		ADTCD13[R] B,H,W 10--0000 00000000		
001280 _H	ADTCD14[R] B,H,W 10--0000 00000000		ADTCD15[R] B,H,W 10--0000 00000000		
001284 _H	ADTCD16[R] B,H,W 10--0000 00000000		ADTCD17[R] B,H,W 10--0000 00000000		
001288 _H	ADTCD18[R] B,H,W 10--0000 00000000		ADTCD19[R] B,H,W 10--0000 00000000		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00128C _H	ADTCD20[R] B,H,W 10--0000 00000000		ADTCD21[R] B,H,W 10--0000 00000000		12-bit A/D converter
001290 _H	ADTCD22[R] B,H,W 10--0000 00000000		ADTCD23[R] B,H,W 10--0000 00000000		
001294 _H	-	-	-	-	
001298 _H	-	-	-	-	
00129C _H	-	-	-	-	
0012A0 _H	-	-	-	-	
0012A4 _H	ADCS0[R/W] B,H,W 0-----		ADCH0[R] B,H,W -----000	ADMD0[R/W] B,H,W ----0000	
0012A8 _H	ADCS1[R/W] B,H,W 0-----		ADCH1[R] B,H,W -----000	ADMD1[R/W] B,H,W ----0000	
0012AC _H	ADCS2[R/W] B,H,W 0-----		ADCH2[R] B,H,W -----000	ADMD2[R/W] B,H,W ----0000	
0012B0 _H 0012FC _H	-	-	-	-	Reserved
001300 _H	-	-	-	-	Reserved
001304 _H	-	-	-	-	
001308 _H	-	-	-	-	
00130C _H	-	-	-	-	
001310 _H	-	-	-	-	
001314 _H	-	-	-	-	
001318 _H	-	-	-	-	
00131C _H	-	-	-	-	
001320 _H	-	-	-	-	
001324 _H	-		-		
001328 _H	-	-	-	-	
00132C _H	-	-	-	-	
001330 _H	-		-		
001334 _H 0013FC _H	-	-	-	-	Reserved
001400 _H	DACR[R/W] B,H,W -----0	-	DADR[R/W] H,W -----XX XXXXXXXX		DAC
001404 _H 0014FC _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
001500 _H	SCR0/(IBCR0) [R/W] B,H,W 0--00000	SMR0 [R/W] B,H,W 000000-0	SSR0 [R/W] B,H,W 0--00011	ESCR0/(IBSR0) [R/W] B,H,W 00000000	Multi Function Serial I/F 0 *1: Byte access is possible only for access to lower 8 bits. *2: Reserved because I ² C mode is not set immediately after reset *3: Reserved because CSIO mode is not set immediately after reset *4: Reserved because LIN2.1 mode is not set immediately after reset
001504 _H	-/(RDR10/(TDR10))[R/W] H,W ----- *3		RDR00/(TDR00)[R/W] B,H,W -----0 00000000 *1		
001508 _H	SACSR0[R/W] B,H,W 0----000 00000000		STMR0[R] B,H,W 00000000 00000000		
00150C _H	STMCR0[R/W] B,H,W 00000000 00000000		-/(SFUR0) [R/W] B,H,W ----- *4		
001510 _H	-	-	-(SFLR10) [R/W] B,H,W ----- *4	-(SFLR00) [R/W] B,H,W ----- *4	
001514 _H	-	-	-	-	
001518 _H	-	-	-	-	
00151C _H	BGR0[R/W] H,W 00000000 00000000		-(ISMK0)[R/W] B,H,W ----- *2	-(ISBA0)[R/W] B,H,W ----- *2	
001520 _H	FCR10[R/W] B,H,W 00-00100	FCR00 [R/W] B,H,W -0000000	FBYTE20 [R/W] B,H,W 00000000	FBYTE10 [R/W] B,H,W 00000000	
001524 _H	SCR1/(IBCR1) [R/W] B,H,W 0--00000	SMR1[R/W] B,H,W 000000-0	SSR1[R/W] B,H,W 0--00011	ESCR1/(IBSR1) [R/W] B,H,W 00000000	Multi Function Serial I/F 1 *1: Byte access is possible only for access to lower 8 bits. *2: Reserved because I ² C mode is not set immediately after reset *3: Reserved because CSIO mode is not set immediately after reset *4: Reserved because LIN2.1 mode is not set immediately after reset
001528 _H	-/(RDR11/(TDR11))[R/W] H,W ----- *3		RDR01/(TDR01)[R/W] B,H,W -----0 00000000 *1		
00152C _H	SACSR1[R/W] B,H,W 0----000 00000000		STMR1[R] B,H,W 00000000 00000000		
001530 _H	STMCR1[R/W] B,H,W 00000000 00000000		-(SCSCR1/SFUR1) [R/W] B,H,W ----- *3,*4		
001534 _H	-(SCSTR31) [R/W] B,H,W ----- *3	-(SCSTR21) [R/W] B,H,W ----- *3	-(SCSTR11/SFLR11) [R/W] B,H,W ----- *3,*4	-(SCSTR01/SFLR01) [R/W] B,H,W ----- *3,*4	
001538 _H	-	-	-	-	
00153C _H	-	-	-	TBYTE01[R/W] B,H,W 00000000	
001540 _H	BGR1[R/W] H,W 00000000 00000000		-(ISMK1)[R/W] B,H,W ----- *2	-(ISBA1)[R/W] B,H,W ----- *2	
001544 _H	FCR11[R/W] B,H,W 00-00100	FCR01[R/W] B,H,W -0000000	FBYTE21[R/W] B,H,W 00000000	FBYTE11[R/W] B,H,W 00000000	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
001548 _H	SCR2[R/W] B,H,W 0--00000	SMR2[R/W] B,H,W 000000-0	SSR2[R/W] B,H,W 0--00011	ESCR2[R/W] B,H,W 00000000	Multi Function Serial I/F 2 *1: Byte access is possible only for access to lower 8 bits. *3: Reserved because CSIO mode is not set immediately after reset *4: Reserved because LIN2.1 mode is not set immediately after reset
00154C _H	-(RDR12/(TDR12))[R/W] H,W ----- *3		RDR02/(TDR02)[R/W] B,H,W -----0 00000000 *1		
001550 _H	SACSR2[R/W] B,H,W 0----000 00000000		STMR2[R] B,H,W 00000000 00000000		
001554 _H	STMCR2[R/W] B,H,W 00000000 00000000		-(SCSCR2/SFUR2) [R/W] B,H,W ----- *3,*4		
001558 _H	-(SCSTR32) [R/W] B,H,W ----- *3	-(SCSTR22) [R/W] B,H,W ----- *3	-(SCSTR12/SFLR12) [R/W] B,H,W ----- *3,*4	-(SCSTR02/SFLR02) [R/W] B,H,W ----- *3,*4	
00155C _H	-	-	-	-	
001560 _H	-	-	-	TBYTE02[R/W] B,H,W 00000000	
001564 _H	BGR2[R/W] H,W 00000000 00000000		-	-	Multi Function Serial I/F 3 *1: Byte access is possible only for access to lower 8 bits. *2: Reserved because I ² C mode is not set immediately after reset *3: Reserved because CSIO mode is not set immediately after reset *4: Reserved because LIN2.1 mode is not set immediately after reset
001568 _H	FCR12[R/W] B,H,W 00-00100	FCR02[R/W] B,H,W -0000000	FBYTE22[R/W] B,H,W 00000000	FBYTE12[R/W] B,H,W 00000000	
00156C _H	SCR3/(IBCR3) [R/W] B,H,W 0--00000	SMR3 [R/W] B,H,W 000000-0	SSR3 [R/W] B,H,W 0--00011	ESCR3/(IBSR3) [R/W] B,H,W 00000000	
001570 _H	-(RDR13/(TDR13))[R/W] H,W ----- *3		RDR03/(TDR03)[R/W] B,H,W -----0 00000000 *1		
001574 _H	SACSR3[R/W] B,H,W 0----000 00000000		STMR3[R] B,H,W 00000000 00000000		
001578 _H	STMCR3[R/W] B,H,W 00000000 00000000		-(SCSCR3/SFUR3) [R/W] B,H,W ----- *3,*4		
00157C _H	-(SCSTR33) [R/W] B,H,W ----- *3	-(SCSTR23) [R/W] B,H,W ----- *3	-(SCSTR13/SFLR13) [R/W] B,H,W ----- *3,*4	-(SCSTR03/SFLR03) [R/W] B,H,W ----- *3,*4	
001580 _H	-	-	-	-	*4: Reserved because LIN2.1 mode is not set immediately after reset
001584 _H	-	-	-	TBYTE03[R/W] B,H,W 00000000	
001588 _H	BGR3[R/W] H,W 00000000 00000000		-(ISMK3)[R/W] B,H,W ----- *2	-(ISBA3)[R/W] B,H,W ----- *2	
00158C _H	FCR13[R/W] B,H,W 00-00100	FCR03[R/W] B,H,W -0000000	FBYTE23[R/W] B,H,W 00000000	FBYTE13[R/W] B,H,W 00000000	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
001590 _H	SCR4/(IBCR4) [R/W] B,H,W 0--00000	SMR4 [R/W] B,H,W 000000-0	SSR4 [R/W] B,H,W 0--00011	ESCR4/(IBSR4) [R/W] B,H,W 00000000	Multi Function Serial I/F 4 *1: Byte access is possible only for access to lower 8 bits. *2: Reserved because I ² C mode is not set immediately after reset *3: Reserved because CSIO mode is not set immediately after reset *4: Reserved because LIN2.1 mode is not set immediately after reset
001594 _H	-/(RDR14/(TDR14))[R/W] H,W ----- *3		RDR04/(TDR04)[R/W] B,H,W -----0 00000000 *1		
001598 _H	SACSR4[R/W] B,H,W 0----000 00000000		STMR4[R] B,H,W 00000000 00000000		
00159C _H	STMCR4[R/W] B,H,W 00000000 00000000		-/(SCSCR4/SFUR4) [R/W] B,H,W ----- *3,*4		
0015A0 _H	-/(SCSTR34) [R/W] B,H,W ----- *3	-/(SCSTR24) [R/W] B,H,W ----- *3	-/(SCSTR14/SFLR14) [R/W] B,H,W ----- *3,*4	-/(SCSTR04/SFLR04) [R/W] B,H,W ----- *3,*4	
0015A4 _H	-	-/(SCSFR24)[R/W] B,H,W ----- *3	-/(SCSFR14)[R/W] B,H,W ----- *3	-/(SCSFR04)[R/W] B,H,W ----- *3	
0015A8 _H	-/(TBYTE34)[R/W] B,H,W ----- *3	-/(TBYTE24)[R/W] B,H,W ----- *3	-/(TBYTE14)[R/W] B,H,W ----- *3	TBYTE04[R/W] B,H,W 00000000	
0015AC _H	BGR4[R/W] H,W 00000000 00000000		-/(ISMK4)[R/W] B,H,W ----- *2	-/(ISBA4)[R/W] B,H,W ----- *2	
0015B0 _H	FCR14[R/W] B,H,W 00-00100	FCR04[R/W] B,H,W -0000000	FBYTE24[R/W] B,H,W 00000000	FBYTE14[R/W] B,H,W 00000000	
0015B4 _H 001FFC _H	-	-	-	-	Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
002000 _H	CTRLR0[R/W] B,H,W ----- 000-0001		STATR0[R/W] B,H,W ----- 00000000		CAN 0 64msb
002004 _H	ERRCNT0 [R] B,H,W 00000000 00000000		BTR0[R/W] B,H,W -0100011 00000001		
002008 _H	INTRO[R] B,H,W 00000000 00000000		TESTR0[R/W] B,H,W ----- X00000--		
00200C _H	BRPER0[R/W] B,H,W ----- ----0000		-		
002010 _H	IF1CREQ0[R/W] B,H,W 0----- 00000001		IF1CMSK0[R/W] B,H,W ----- 00000000		
002014 _H	IF1MSK20[R/W] B,H,W 11-11111 11111111		IF1MSK10[R/W] B,H,W 11111111 11111111		
002018 _H	IF1ARB20[R/W] B,H,W 00000000 00000000		IF1ARB10[R/W] B,H,W 00000000 00000000		
00201C _H	IF1MCTR0[R/W] B,H,W 00000000 0---0000		-		
002020 _H	IF1DTA10[R/W] B,H,W 00000000 00000000		IF1DTA20[R/W] B,H,W 00000000 00000000		
002024 _H	IF1DTB10[R/W] B,H,W 00000000 00000000		IF1DTB20[R/W] B,H,W 00000000 00000000		
002028 _H , 00202C _H	-		-		
002030 _H , 002034 _H	Reserved (IF1 data mirror)				
002038 _H , 00203C _H	-		-		
002040 _H	IF2CREQ0[R/W] B,H,W 0----- 00000001		IF2CMSK0[R/W] B,H,W ----- 00000000		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
002044 _H	IF2MSK20[R/W] B,H,W 11-11111 11111111		IF2MSK10[R/W] B,H,W 11111111 11111111		CAN 0 64msb
002048 _H	IF2ARB20[R/W] B,H,W 00000000 00000000		IF2ARB10[R/W] B,H,W 00000000 00000000		
00204C _H	IF2MCTR0[R/W] B,H,W 00000000 0---0000		-		
002050 _H	IF2DTA10[R/W] B,H,W 00000000 00000000		IF2DTA20[R/W] B,H,W 00000000 00000000		
002054 _H	IF2DTB10[R/W] B,H,W 00000000 00000000		IF2DTB20[R/W] B,H,W 00000000 00000000		
002058 _H , 00205C _H	-		-		
002060 _H , 002064 _H	Reserved (IF2 data mirror)				
002068 _H 00207C _H	-		-		
002080 _H	TREQR20[R] B,H,W 00000000 00000000		TREQR10[R] B,H,W 00000000 00000000		
002084 _H	TREQR40[R] B,H,W 00000000 00000000		TREQR30[R] B,H,W 00000000 00000000		
002088 _H	-		-		
00208C _H	-		-		
002090 _H	NEWDT20[R] B,H,W 00000000 00000000		NEWDT10[R] B,H,W 00000000 00000000		
002094 _H	NEWDT40[R] B,H,W 00000000 00000000		NEWDT30[R] B,H,W 00000000 00000000		
002098 _H	-		-		
00209C _H	-		-		
0020A0 _H	INTPND20[R] B,H,W 00000000 00000000		INTPND10[R] B,H,W 00000000 00000000		
0020A4 _H	INTPND40[R] B,H,W 00000000 00000000		INTPND30[R] B,H,W 00000000 00000000		
0020A8 _H	-		-		
0020AC _H	-		-		
0020B0 _H	MSGVAL20[R] B,H,W 00000000 00000000		MSGVAL10[R] B,H,W 00000000 00000000		
0020B4 _H	MSGVAL40[R] B,H,W 00000000 00000000		MSGVAL30[R] B,H,W 00000000 00000000		
0020B8 _H	-		-		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
0020BC _H	-		-		CAN 0 64msb
0020C0 _H					
0020FC _H	-		-		
002100 _H	CTRLR1[R/W] B,H,W ----- 000-0001		STATR1[R/W] B,H,W ----- 00000000		CAN1 64msb
002104 _H	ERRCNT1 [R] B,H,W 00000000 00000000		BTR1[R/W] B,H,W -0100011 00000001		
002108 _H	INTR1[R] B,H,W 00000000 00000000		TESTR1[R/W] B,H,W ----- X00000--		
00210C _H	BRPER1[R/W] B,H,W ----- ----0000		-		
002110 _H	IF1CREQ1[R/W] B,H,W 0----- 00000001		IF1CMSK1[R/W] B,H,W ----- 00000000		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
002114 _H	IF1MSK21[R/W] B,H,W 11-11111 11111111		IF1MSK11[R/W] B,H,W 11111111 11111111		CAN 1 64msb
002118 _H	IF1ARB21[R/W] B,H,W 00000000 00000000		IF1ARB11[R/W] B,H,W 00000000 00000000		
00211C _H	IF1MCTR1[R/W] B,H,W 00000000 0---0000		-		
002120 _H	IF1DTA11[R/W] B,H,W 00000000 00000000		IF1DTA21[R/W] B,H,W 00000000 00000000		
002124 _H	IF1DTB11[R/W] B,H,W 00000000 00000000		IF1DTB21[R/W] B,H,W 00000000 00000000		
002128 _H , 00212C _H	-		-		
002130 _H , 002134 _H	Reserved (IF1 data mirror)				
002138 _H , 00213C _H	-		-		
002140 _H	IF2CREQ1[R/W] B,H,W 0----- 00000001		IF2CMSK1[R/W] B,H,W ----- 00000000		
002144 _H	IF2MSK21[R/W] B,H,W 11-11111 11111111		IF2MSK11[R/W] B,H,W 11111111 11111111		
002148 _H	IF2ARB21[R/W] B,H,W 00000000 00000000		IF2ARB11[R/W] B,H,W 00000000 00000000		
00214C _H	IF2MCTR1[R/W] B,H,W 00000000 0---0000		-		
002150 _H	IF2DTA11[R/W] B,H,W 00000000 00000000		IF2DTA21[R/W] B,H,W 00000000 00000000		
002154 _H	IF2DTB11[R/W] B,H,W 00000000 00000000		IF2DTB21[R/W] B,H,W 00000000 00000000		
002158 _H , 00215C _H	-		-		
002160 _H , 002164 _H	Reserved (IF2 data mirror)				
002168 _H 00217C _H	-		-		
002180 _H	TREQR21[R] B,H,W 00000000 00000000		TREQR11[R] B,H,W 00000000 00000000		
002184 _H	TREQR41[R] B,H,W 00000000 00000000		TREQR31[R] B,H,W 00000000 00000000		
002188 _H	-		-		
00218C _H	-		-		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
002190 _H	NEWDT21[R] B,H,W 00000000 00000000		NEWDT11[R] B,H,W 00000000 00000000		CAN 1 64msb
002194 _H	NEWDT41[R] B,H,W 00000000 00000000		NEWDT31[R] B,H,W 00000000 00000000		
002198 _H	-		-		
00219C _H	-		-		
0021A0 _H	INTPND21[R] B,H,W 00000000 00000000		INTPND11[R] B,H,W 00000000 00000000		
0021A4 _H	INTPND41[R] B,H,W 00000000 00000000		INTPND31[R] B,H,W 00000000 00000000		
0021A8 _H	-		-		
0021AC _H	-		-		
0021B0 _H	MSGVAL21[R] B,H,W 00000000 00000000		MSGVAL11[R] B,H,W 00000000 00000000		
0021B4 _H	MSGVAL41[R] B,H,W 00000000 00000000		MSGVAL31[R] B,H,W 00000000 00000000		
0021B8 _H	-		-		
0021BC _H	-		-		
0021C0 _H 0021FC _H	-		-		
002200 _H	CTRLR2[R/W] B,H,W ----- 000-0001		STATR2[R/W] B,H,W ----- 00000000		CAN 2 64msb
002204 _H	ERRCNT2 [R] B,H,W 00000000 00000000		BTR2[R/W] B,H,W -0100011 00000001		
002208 _H	INTR2[R] B,H,W 00000000 00000000		TESTR2[R/W] B,H,W ----- X00000--		
00220C _H	BRPER2[R/W] B,H,W ----- ----0000		-		
002210 _H	IF1CREQ2[R/W] B,H,W 0----- 00000001		IF1CMSK2[R/W] B,H,W ----- 00000000		
002214 _H	IF1MSK22[R/W] B,H,W 11-11111 11111111		IF1MSK12[R/W] B,H,W 11111111 11111111		
002218 _H	IF1ARB22[R/W] B,H,W 00000000 00000000		IF1ARB12[R/W] B,H,W 00000000 00000000		
00221C _H	IF1MCTR2[R/W] B,H,W 00000000 0---0000		-		
002220 _H	IF1DTA12[R/W] B,H,W 00000000 00000000		IF1DTA22[R/W] B,H,W 00000000 00000000		
002224 _H	IF1DTB12[R/W] B,H,W 00000000 00000000		IF1DTB22[R/W] B,H,W 00000000 00000000		
002228 _H 00222C _H	-		-		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
002230 _H , 002234 _H	Reserved (IF1 data mirror)				CAN 2 64msb
002238 _H , 00223C _H	-		-		
002240 _H	IF2CREQ2[R/W] B,H,W 0----- 00000001		IF2CMSK2[R/W] B,H,W ----- 00000000		
002244 _H	IF2MSK22[R/W] B,H,W 11-11111 11111111		IF2MSK12[R/W] B,H,W 11111111 11111111		
002248 _H	IF2ARB22[R/W] B,H,W 00000000 00000000		IF2ARB12[R/W] B,H,W 00000000 00000000		
00224C _H	IF2MCTR2[R/W] B,H,W 00000000 0---0000		-		
002250 _H	IF2DTA12[R/W] B,H,W 00000000 00000000		IF2DTA22[R/W] B,H,W		
			00000000 00000000		
002254 _H	IF2DTB12[R/W] B,H,W 00000000 00000000		IF2DTB22[R/W] B,H,W 00000000 00000000		
002258 _H , 00225C _H	-		-		
002260 _H , 002264 _H	Reserved (IF2 data mirror)				
002268 _H 00227C _H	-		-		
002280 _H	TREQR22[R] B,H,W 00000000 00000000		TREQR12[R] B,H,W 00000000 00000000		
002284 _H	TREQR42[R] B,H,W 00000000 00000000		TREQR32[R] B,H,W 00000000 00000000		
002288 _H	-		-		
00228C _H	-		-		
002290 _H	NEWDT22[R] B,H,W 00000000 00000000		NEWDT12[R] B,H,W 00000000 00000000		
002294 _H	NEWDT42[R] B,H,W 00000000 00000000		NEWDT32[R] B,H,W 00000000 00000000		
002298 _H	-		-		
00229C _H	-		-		
0022A0 _H	INTPND22[R] B,H,W 00000000 00000000		INTPND12[R] B,H,W 00000000 00000000		
0022A4 _H	INTPND42[R] B,H,W 00000000 00000000		INTPND32[R] B,H,W 00000000 00000000		
0022A8 _H	-		-		

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
0022AC _H	-		-		CAN 2 64msb
0022B0 _H	MSGVAL22[R] B,H,W 00000000 00000000		MSGVAL12[R] B,H,W 00000000 00000000		
0022B4 _H	MSGVAL42[R] B,H,W 00000000 00000000		MSGVAL32[R] B,H,W 00000000 00000000		
0022B8 _H	-		-		
0022BC _H	-		-		
0022C0 _H 0022FC _H	-	-	-	-	
002300 _H	DFCTLR[R/W] B,H,W -0-----		-	DFSTR[R/W] B,H,W -----001	WorkFlash
002304 _H	-	-	-	-	
002308 _H	FLIFCTLR[R/W] B,H,W ---0--00	-	FLIFFER1[R/W] B,H,W -----	FLIFFER2[R/W] B,H,W -----	
00230C _H 002FFC _H	-	-	-	-	Reserved
003000 _H	SEEARX[R] B,H,W -0000000 00000000		DEEARX[R] B,H,W -0000000 00000000		XBS RAM ECC control register
003004 _H	EECSRX[R/W] B,H,W ----00-0	-	EFEARX[R/W] B,H,W -0000000 00000000		
003008 _H	-	EFECRX[R/W] B,H,W -----0 00000000 00000000			
00300C _H	TEAR0X[R] B,H,W 000----- -0000000 00000000				XBS RAM diagnosis register
003010 _H	TEAR1X[R] B,H,W 000----- -0000000 00000000				
003014 _H	TEAR2X[R] B,H,W 000----- -0000000 00000000				
003018 _H	TAEARX[R/W] B,H,W -1011111 11111111		TASARX[R/W] B,H,W -0000000 00000000		
00301C _H	TFECRX[R/W] B,H,W ----0000	TICRX[R/W] B,H,W ----0000	TTCRX[R/W] B,H,W -----00 00001100		
003020 _H	TSRCRX[R/W] B,H,W 0-----	-	-	TKCCRX[R/W] B,H,W 00----00	

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
003024 _H	SEEARA[R] B,H,W --000000 00000000		DEEARA[R] B,H,W --000000 00000000		Backup RAM ECC control register
003028 _H	EECSRA[R/W] B,H,W ----00-0	-	EFEARA[R/W] B,H,W --000000 00000000		
00302C _H	-	EFECRA[R/W] B,H,W -----0 00000000 00000000			
003030 _H	TEAR0A[R] B,H,W 000-----000 00000000				Backup RAM diagnosis register
003034 _H	TEAR1A[R] B,H,W 000-----000 00000000				
003038 _H	TEAR2A[R] B,H,W 000-----000 00000000				
00303C _H	TAEARA[R/W] B,H,W -----111 11111111		TASARA[R/W] B,H,W -----000 00000000		
003040 _H	TFECRA[R/W] B,H,W ----0000	TICRA[R/W] B,H,W ----0000	TTCRA[R/W] B,H,W -----00 00001100		
003044 _H	TSRCRA[R/W] B,H,W 0-----	-	-	TKCCRA[R/W] B,H,W 00----00	
003048 _H 0030FC _H	-	-	-	-	Reserved
003100 _H	BUSDIGSR0[R/W] H,W 00000000 0----00		BUSDIGSR1[R/W] H,W 00000000 0----00		Bus diagnosis
003104 _H	BUSDIGSR2[R/W] H,W 00000000 0----00		BUSTSTR0[R/W] H,W 00--0000 00000000		
003108 _H	BUSADR0[R] W 00000000 00000000 00000000 00000000				
00310C _H	BUSADR1[R] W 00000000 00000000 00000000 00000000				
003110 _H	BUSADR2[R] W 00000000 00000000 00000000 00000000				
003114 _H	-		BUSDIGSR3[R/W] H,W 00000000 0----00		
003118 _H	BUSDIGSR4[R/W] H,W 00000000 0----00		BUSTSTR1[R/W] H,W 00--0000 00000000		
00311C _H	-				
003120 _H	BUSADR3[R] W 00000000 00000000 00000000 00000000				
003124 _H	BUSADR4[R] W 00000000 00000000 00000000 00000000				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
003128 _H 003FFC _H	-	-	-	-	Reserved
004000 _H 005FFC _H	Backup RAM				Backup RAM area
006000 _H 00CFFC _H	-	-	-	-	Reserved
00D000 _H	CIF0[R] W 00000100 11111111 01011011 11111111				FlexRay CIF
00D004 _H	CIF1[R/W] W 00000000 -----0 -0000000 -----				
00D008 _H 00D00C _H	-	-	-	-	Reserved
00D010 _H	-				FlexRay GIF
00D014 _H	-				
00D018 _H	-	-	-	-	
00D01C _H	LCK[R/W] W ----- 00000000				
00D020 _H	EIR[R/W] W ----000 ----000 ---0000 00000000				FlexRay INT
00D024 _H	SIR[R/W] W -----00 -----00 00000000 00000000				
00D028 _H	EILS[R/W] W ----000 ----000 ----0000 00000000				
00D02C _H	SILS[R/W] W -----11 -----11 11111111 11111111				
00D030 _H	EIES[R/W] W ----000 ----000 ----0000 00000000				
00D034 _H	EIER[R/W] W ----000 ----000 ---0000 00000000				
00D038 _H	SIES[R/W] W -----00 -----00 00000000 00000000				
00D03C _H	SIER[R/W] W -----00 -----00 00000000 00000000				
00D040 _H	ILE[R/W] W ----- 00000000 -----00				
00D044 _H	T0C[R/W] W --000000 00000000 -0000000 -----00				
00D048 _H	T1C[R/W] W --000000 00000010 ----- 00				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D04C _H	STPW1[R/W] W --000000 00000000 --000000 -00000000				FlexRay INT
00D050 _H	STPW2[R] W -----000 00000000 -----000 00000000				
00D054 _H 00D07C _H	-	-	-	-	Reserved
00D080 _H	SUCC1[R/W] W ----1100 01000000 00010-00 1---0000				FlexRay SUC
00D084 _H	SUCC2[R/W] W ----0001 ---00000 00000101 00000100				
00D088 _H	SUCC3[R/W] W -----00010001				
00D08C _H	NEMC[R/W] W -----0000				FlexRay NEM
00D090 _H	PRTC1[R/W] W 000010-0 01001100 0000-110 00110011				FlexRay PRT
00D094 _H	PRTC2[R/W] W --001111 00101101 --001010 --001110				
00D098 _H	MHDC[R/W] W ---00000 00000000 ----- -0000000				FlexRay MHD
00D09C _H	-				Reserved
00D0A0 _H	GTUC1[R/W] W -----0000 00000010 10000000				FlexRay GTU
00D0A4 _H	GTUC2[R/W] W -----0010 --000000 00001010				
00D0A8 _H	GTUC3[R/W] W -0000010 -0000010 00000000 00000000				
00D0AC _H	GTUC4[R/W] W --000000 00001000 --000000 00000111				
00D0B0 _H	GTUC5[R/W] W 00001110 ---00000 00000000 00000000				
00D0B4 _H	GTUC6[R/W] W ----000 00000010 ----000 00000000				
00D0B8 _H	GTUC7[R/W] W -----00 00000010 -----00 00000100				
00D0BC _H	GTUC8[R/W] W ---00000 00000000 ----- --000010				
00D0C0 _H	GTUC9[R/W] W -----00 ---00001 --000001				
00D0C4 _H	GTUC10[R/W] W ----000 00000010 --000000 00000101				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D0C8 _H	GTUC11[R/W] W -----000 -----000 -----00 -----00				FlexRay GTU
00D0CC _H 00D0FC _H	-				Reserved
00D100 _H	CCSV[R] W --000000 00010000 -100--00 00000000				FlexRay
00D104 _H	CCEV[R] W -----000000 ---00000 00--0000				SUC
00D108 _H 00D10C _H	-				Reserved
00D110 _H	SCV[R] W -----000 00000000 -----000 00000000				FlexRay GTU
00D114 _H	MTCCV[R] W ----- --000000 --000000 00000000				
00D118 _H	RCV[R] W				
	-----0000 -----0000 00000000				
00D11C _H	OCV[R] W -----000 00000000 00000000				
00D120 _H	SFS[R] W -----0000 00000000 00000000				
00D124 _H	SWNIT[R] W -----0000 -----0000 00000000				
00D128 _H	ACS[R/W] W -----000000 ---00000				
00D12C _H	-				
00D130 _H	ESID1[R] W -----00 -----00 00000000				
00D134 _H	ESID2[R] W -----00 -----00 00000000				
00D138 _H	ESID3[R] W -----00 -----00 00000000				
00D13C _H	ESID4[R] W -----00 -----00 00000000				
00D140 _H	ESID5[R] W -----00 -----00 00000000				
00D144 _H	ESID6[R] W -----00 -----00 00000000				
00D148 _H	ESID7[R] W -----00 -----00 00000000				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D14C _H	ESID8[R] W ----- 00---00 00000000				FlexRay GTU
00D150 _H	ESID9[R] W ----- 00---00 00000000				
00D154 _H	ESID10[R] W ----- 00---00 00000000				
00D158 _H	ESID11[R] W ----- 00---00 00000000				
00D15C _H	ESID12[R] W ----- 00---00 00000000				
00D160 _H	ESID13[R] W ----- 00---00 00000000				
00D164 _H	ESID14[R] W ----- 00---00 00000000				
00D168 _H	ESID15[R] W ----- 00---00 00000000				
00D16C _H	-				
00D170 _H	OSID1[R] W				
	----- 00---00 00000000				
00D174 _H	OSID2[R] W ----- 00---00 00000000				
00D178 _H	OSID3[R] W ----- 00---00 00000000				
00D17C _H	OSID4[R] W ----- 00---00 00000000				
00D180 _H	OSID5[R] W ----- 00---00 00000000				
00D184 _H	OSID6[R] W ----- 00---00 00000000				
00D188 _H	OSID7[R] W ----- 00---00 00000000				
00D18C _H	OSID8[R] W ----- 00---00 00000000				
00D190 _H	OSID9[R] W ----- 00---00 00000000				
00D194 _H	OSID10[R] W ----- 00---00 00000000				
00D198 _H	OSID11[R] W ----- 00---00 00000000				
00D19C _H	OSID12[R] W ----- 00---00 00000000				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D1A0 _H	OSID13[R] W ----- 00----00 00000000				FlexRay GTU
00D1A4 _H	OSID14[R] W ----- 00----00 00000000				
00D1A8 _H	OSID15[R] W ----- 00----00 00000000				
00D1AC _H	-				
00D1B0 _H	NMV1[R] W 00000000 00000000 00000000 00000000				FlexRay NEM
00D1B4 _H	NMV2[R] W 00000000 00000000 00000000 00000000				
00D1B8 _H	NMV3[R] W 00000000 00000000 00000000 00000000				
00D1BC _H 00D2FC _H	-				Reserved
00D300 _H	MRC[R/W] W ----001 10000000 00000000 00000000				FlexRay MHD
00D304 _H	FRF[R/W] W				
	-----1 10000000 ---00000 00000000				
00D308 _H	FRFM[R/W] W ----- ---00000 000000--				
00D30C _H	FCL[R/W] W ----- 10000000				
00D310 _H	MHDS[R/W] W -0000000 -0000000 -0000000 00000000				
00D314 _H	LDTS[R] W ----000 00000000 ----000 00000000				
00D318 _H	FSR[R] W ----- 00000000 ----000				
00D31C _H	MHDF[R/W] W -----0 00000000				
00D320 _H	TXRQ1[R] W 00000000 00000000 00000000 00000000				
00D324 _H	TXRQ2[R] W 00000000 00000000 00000000 00000000				
00D328 _H	TXRQ3[R] W 00000000 00000000 00000000 00000000				
00D32C _H	TXRQ4[R] W 00000000 00000000 00000000 00000000				

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D330 _H	NDAT1[R] W 00000000 00000000 00000000 00000000				FlexRay MHD
00D334 _H	NDAT2[R] W 00000000 00000000 00000000 00000000				
00D338 _H	NDAT3[R] W 00000000 00000000 00000000 00000000				
00D33C _H	NDAT4[R] W 00000000 00000000 00000000 00000000				
00D340 _H	MBSC1[R] W 00000000 00000000 00000000 00000000				
00D344 _H	MBSC2[R] W 00000000 00000000 00000000 00000000				
00D348 _H	MBSC3[R] W 00000000 00000000 00000000 00000000				
00D34C _H	MBSC4[R] W 00000000 00000000 00000000 00000000				
00D350 _H 00D3EC _H	-				Reserved
00D3F0 _H	CREL[R] W 00010000 00111001 00000010 00000110				FlexRay
00D3F4 _H	ENDN[R] W 10000111 01100101 01000011 00100001				GIF
00D3F8 _H 00D3FC _H	-				Reserved
00D400 _H 00D4FC _H	WRDSn[1-64][R/W] W 00000000 00000000 00000000 00000000				FlexRay IBF
00D500 _H	WRHS1[R/W] W --000000 -00000000 -----000 00000000				
00D504 _H	WRHS2[R/W] W ----- -00000000 -----000 00000000				
00D508 _H	WRHS3[R/W] W ----- -----000 00000000				
00D50C _H	-				
00D510 _H	IBCM[R/W] W -----00 -----000				
00D514 _H	IBCR[R/W] W 0----- -00000000 0----- -00000000				
00D518 _H 00D5FC _H	-				Reserved

Address	Address offset value/Register name				Block
	+0	+1	+2	+3	
00D600 _H 00D6FC _H	RDDS _n [1-64][R] W 00000000 00000000 00000000 00000000				FlexRay OBF
00D700 _H	RDHS1[R] W --000000 -00000000 -----000 00000000				
00D704 _H	RDHS2[R] W -00000000 -00000000 -----000 00000000				
00D708 _H	RDHS3[R] W --000000 --000000 -----000 00000000				
00D70C _H	MBS[R] W --000000 --000000 00-000000 00000000				
00D710 _H	OBCM[R/W] W -----00 -----00				
00D714 _H	OBCR[R/W] W ----- -00000000 0-----00 -00000000				
00D718 _H 00D7FC _H	-				Reserved
00D800 _H 00EFFC _H	-				Reserved
00F000 _H 00FEFC _H	-				Reserved [S]
00FF00 _H	DSUCR[R/W] B,H,W -----0		-	-	OCDU [S]
00FF04 _H 00FF0C _H	-	-	-	-	Reserved [S]
00FF10 _H	PCSR[R/W] B,H,W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				OCDU [S]
00FF14 _H	PSSR[R/W] B,H,W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				
00FF18 _H 00FFF4 _H	-	-	-	-	Reserved [S]
00FFF8 _H	EDIR1[R] B,H,W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				OCDU [S]
00FFFC _H	EDIR0[R] B,H,W XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX				

[S]: It is a system register. The illegal instruction exception (data access error) is generated when reading and writing to these registers in the user mode.

11. Interrupt Vector Table

Interrupt factor	Interrupt number		Interrupt level	Offset	TBR default address	RN ^{*1}	Interrupt request batch read target
	Decimal	Hexadecimal					
Reset	0	00	-	3FC _H	000FFFC _H	-	-
System reserved	1	01	-	3F8 _H	000FFF8 _H	-	-
System reserved	2	02	-	3F4 _H	000FFF4 _H	-	-
System reserved	3	03	-	3F0 _H	000FFF0 _H	-	-
System reserved	4	04	-	3EC _H	000FFEC _H	-	-
FPU exception	5	05	-	3E8 _H	000FFE8 _H	-	-
Instruction access protection violation exception	6	06	-	3E4 _H	000FFE4 _H	-	-
Data access protection violation exception	7	07	-	3E0 _H	000FFE0 _H	-	-
Data access error interrupts	8	08	-	3DC _H	000FFDC _H	-	-
INTE instruction	9	09	-	3D8 _H	000FFD8 _H	-	-
Instruction break	10	0A	-	3D4 _H	000FFD4 _H	-	-
System reserved	11	0B	-	3D0 _H	000FFD0 _H	-	-
System reserved	12	0C	-	3CC _H	000FFCC _H	-	-
System reserved	13	0D	-	3C8 _H	000FFC8 _H	-	-
Exception of invalid instruction	14	0E	-	3C4 _H	000FFC4 _H	-	-
NMI request Error generation at internal bus diagnosis RAM double-bit error Backup RAM double-bit error RDC abnormality ^{*5}	15	0F	15(F _H) Fixed	3C0 _H	000FFC0 _H	-	○
External interrupt 0-7	16	10	ICR00	3BC _H	000FFBC _H	0	-
Reload timer 0 / 1	17	11	ICR01	3B8 _H	000FFB8 _H	1	○
Reload timer 2 / 3	18	12	ICR02	3B4 _H	000FFB4 _H	2	○
Multifunction serial interface ch0 (reception completed) / Multifunction serial interface ch0 (status)	19	13	ICR03	3B0 _H	000FFB0 _H	3 ^{*2}	○
Multifunction serial interface ch0 (transmission completed)	20	14	ICR04	3AC _H	000FFAC _H	4	-
Multifunction serial interface ch1 (reception completed) / Multifunction serial interface ch1 (status)	21	15	ICR05	3A8 _H	000FFA8 _H	5 ^{*2}	○
Multifunction serial interface ch1 (transmission completed)	22	16	ICR06	3A4 _H	000FFA4 _H	6	-
Multifunction serial interface ch2 (reception completed) / Multifunction serial interface ch2 (status)	23	17	ICR07	3A0 _H	000FFA0 _H	7 ^{*2}	○
Multifunction serial interface ch2 (transmission completed)	24	18	ICR08	39C _H	000FF9C _H	8	-

Interrupt factor	Interrupt number		Interrupt level	Offset	TBR default address	RN ^{*1}	Interrupt request batch read target
	Decimal	Hexadecimal					
Multifunction serial interface ch 3 (reception completed) / Multifunction serial interface ch3 (status)	25	19	ICR09	398 _H	000FFF98 _H	9 ^{*2}	○
Multifunction serial interface ch3 (transmission completed)	26	1A	ICR10	394 _H	000FFF94 _H	10	-
Multifunction serial interface ch 4 (reception completed) / Multifunction serial interface ch4 (status)	27	1B	ICR11	390 _H	000FFF90 _H	11 ^{*2}	○
Multifunction serial interface ch4 (transmission completed)	28	1C	ICR12	38C _H	000FFF8C _H	12	-
CAN 0	29	1D	ICR13	388 _H	000FFF88 _H	-	-
CAN 1	30	1E	ICR14	384 _H	000FFF84 _H	-	-
CAN 2 / FlexRay 0	31	1F	ICR15	380 _H	000FFF80 _H	-	○
FlexRay 1	32	20	ICR16	37C _H	000FFF7C _H	-	-
FlexRay timer 0	33	21	ICR17	378 _H	000FFF78 _H	-	-
FlexRay timer 1	34	22	ICR18	374 _H	000FFF74 _H	-	-
RAM diagnosis completed RAM initialization completed Error generation at RAM diagnosis Backup RAM diagnosis completed Backup RAM initialization completed Error generation at Backup RAM diagnosis	35	23	ICR19	370 _H	000FFF70 _H	-	○
Main timer/PLL timer/PLL gear for FlexRay/PLL alarm for FlexRay	36	24	ICR20	36C _H	000FFF6C _H	20 ^{*3}	○
Clock calibration unit (CR oscillation)	37	25	ICR21	368 _H	000FFF68 _H	-	-
U/D counter 0 / 1	38	26	ICR22	364 _H	000FFF64 _H	22	○
Free-run timer 0 (0 detection)/ (compare clear)	39	27	ICR23	360 _H	000FFF60 _H	23	○
Free-run timer 1 (0 detection)/ (compare clear)	40	28	ICR24	35C _H	000FFF5C _H	24	○
Free-run timer 2 (0 detection)/ (compare clear) PPG 0 / 1 / 2 / 3	41	29	ICR25	358 _H	000FFF58 _H	25	○
Free-run timer 3 (0 detection)/ (compare clear)	42	2A	ICR26	354 _H	000FFF54 _H	26	○
Free-run timer 4 (0 detection)/ (compare clear)	43	2B	ICR27	350 _H	000FFF50 _H	27	○
Free-run timer 5 (0 detection)/ (compare clear) PPG 4 / 5 / 6 / 7	44	2C	ICR28	34C _H	000FFF4C _H	28	○
ICU 0 (fetching) / ICU 1 (fetching) PPG 8 / 9 / 10 / 11	45	2D	ICR29	348 _H	000FFF48 _H	29	○

Interrupt factor	Interrupt number		Interrupt level	Offset	TBR default address	RN ^{*1}	Interrupt request batch read target
	Decimal	Hexadecimal					
ICU 2 (fetching) / ICU 3 (fetching) PPG 12 / 13 / 14 / 15	46	2E	ICR30	344 _H	000FFF44 _H	30	○
ICU 4 (fetching) / ICU 5 (fetching) PPG 16 / 17 / 18 / 19	47	2F	ICR31	340 _H	000FFF40 _H	31	○
ICU 6 (fetching) / ICU 7 (fetching) PPG 20 / 21 / 22 / 23	48	30	ICR32	33C _H	000FFF3C _H	32	○
OCU 0 (match) / OCU 1 (match)	49	31	ICR33	338 _H	000FFF38 _H	33	○
OCU 2 (match) / OCU 3 (match)	50	32	ICR34	334 _H	000FFF34 _H	34	○
OCU 4 (match) / OCU 5 (match)	51	33	ICR35	330 _H	000FFF30 _H	35	○
OCU 6 (match) / OCU 7 (match)	52	34	ICR36	32C _H	000FFF2C _H	36	○
OCU 8 (match) / OCU 9 (match)	53	35	ICR37	328 _H	000FFF28 _H	37	○
OCU 10 (match) / OCU 11 (match)	54	36	ICR38	324 _H	000FFF24 _H	38	○
WG dead timer underflow 0 / 1 / 2 WG dead timer reload 0 / 1 / 2 WG DTTI 0	55	37	ICR39	320 _H	000FFF20 _H	39	○
WG dead timer underflow 3 / 4 / 5 WG dead timer reload 3 / 4 / 5 WG DTTI 1	56	38	ICR40	31C _H	000FFF1C _H	40	○
AD converter 0 / 1 / 2 / 3 / 4 / 5 / 6 / 7	57	39	ICR41	318 _H	000FFF18 _H	41	○
AD converter 8 / 9 / 10 / 11 / 12 / 13 / 14 / 15	58	3A	ICR42	314 _H	000FFF14 _H	42	○
AD converter 16 / 17 / 18 / 19 / 20 / 21 / 22 / 23	59	3B	ICR43	310 _H	000FFF10 _H	43	○
Base timer 0 IRQ 0/ base timer 0 IRQ 1	60	3C	ICR44	30C _H	000FFF0C _H	44	○
Base timer 1 IRQ 0/ base timer 1 IRQ 1	61	3D	ICR45	308 _H	000FFF08 _H	45	○
DMAC 0 / 1 / 2 / 3 / 4 / 5 / 6 / 7	62	3E	ICR46	304 _H	000FFF04 _H	-	○
Delay interrupt	63	3F	ICR47	300 _H	000FFF00 _H	-	-
System reserved (Used for REALOS ^{*4} .)	64	40	-	2FC _H	000FFEFC _H	-	-
System reserved (Used for REALOS ^{*4} .)	65	41	-	2F8 _H	000FFE8 _H	-	-
Used with the INT instruction.	66 255	42 FF	-	2F4 _H 000 _H	000FFE4 _H 000FFC00 _H	-	-

*1 :Does not support a DMA transfer request caused by an interrupt generated from a peripheral to which no RN (resource number) is assigned.

*2 :The multi-function serial interface status does not support DMA transfer caused by I²C reception.

*3 : "PLL gear for FlexRay" and "PLL alarm for FlexRay" do not support DMA transfer.

*4 REALOS is a trademark of Cypress Semiconductor.

*5 : For RDC, the MB91F585LA/F586LA/F587LA/F585LC/F586LC/F587LC have corresponding functions.

12. Electrical Characteristics

12.1 Absolute Maximum Ratings

Parameter	Symbol	Rating		Unit	Remarks
		Min	Max		
Power supply voltage ^{*1, *2}	V _{CC}	V _{SS} -0.3	V _{SS} +6.0	V	
Analog power supply voltage ^{*1, *2}	AV _{CC}	V _{SS} -0.3	V _{SS} +6.0	V	AV _{CC} ≤ V _{CC}
Analog reference voltage ^{*1}	AVRH	V _{SS} -0.3	V _{SS} +6.0	V	AVRH ≤ AV _{CC}
Input voltage ^{*1}	V _I	V _{SS} -0.3	V _{CC} +0.3	V	
Analog pin input voltage ^{*1}	V _{IA}	V _{SS} -0.3	V _{CC} +0.3	V	
Output voltage ^{*1}	V _O	V _{SS} -0.3	V _{CC} +0.3	V	
Maximum clamp current	I _{CLAMP}	-	4	mA	*9
Total maximum clamp current	Σ I _{CLAMP}	-	20	mA	*9
"L" level maximum output current ^{*3}	I _{OL1}	-	7	mA	When setting to 2mA ^{*6}
	I _{OL2}	-	14	mA	When setting to 4mA ^{*7}
	I _{OL3}	-	17.5	mA	When setting to 5mA ^{*8}
"L" level average output current ^{*4}	I _{OLAV1}	-	2	mA	When setting to 2mA ^{*6}
	I _{OLAV2}	-	4	mA	When setting to 4mA ^{*7}
	I _{OLAV3}	-	5	mA	When setting to 5mA ^{*8}
"L" level total output current ^{*5}	ΣI _{OL}	-	50	mA	*6
"H" level maximum output current ^{*3}	I _{OH1}	-	-7	mA	When setting to 2mA ^{*6}
	I _{OH2}	-	-14	mA	When setting to 4mA ^{*7}
	I _{OH3}	-	-17.5	mA	When setting to 5mA ^{*8}
"H" level average output current ^{*4}	I _{OHAV1}	-	-2	mA	When setting to 2mA ^{*6}
	I _{OHAV2}	-	-4	mA	When setting to 4mA ^{*7}
	I _{OHAV3}	-	-5	mA	When setting to 5mA ^{*8}
"H" level total output current ^{*5}	ΣI _{OH}	-	-50	mA	*6
Power consumption	P _D	-	690	mW	
Operating temperature	T _A	-40	+125	°C	*10, *11
Storage temperature	T _{stg}	-55	+150	°C	

*1: These parameters are based on the condition that V_{SS}=AV_{SS}=0.0V.

*2: Caution must be taken that AV_{CC} does not exceed V_{CC}.

*3: The maximum output current is defined as the value of the peak current flowing through any one of the corresponding pins.

*4: The average output current is defined as the value of the average current flowing through any one of the corresponding pins for a 10 ms period. The average value is the operation current x the operation ratio.

*5: The total output current is defined as the maximum current value flowing through all of corresponding pins.

*6: Corresponding pins: General-purpose ports

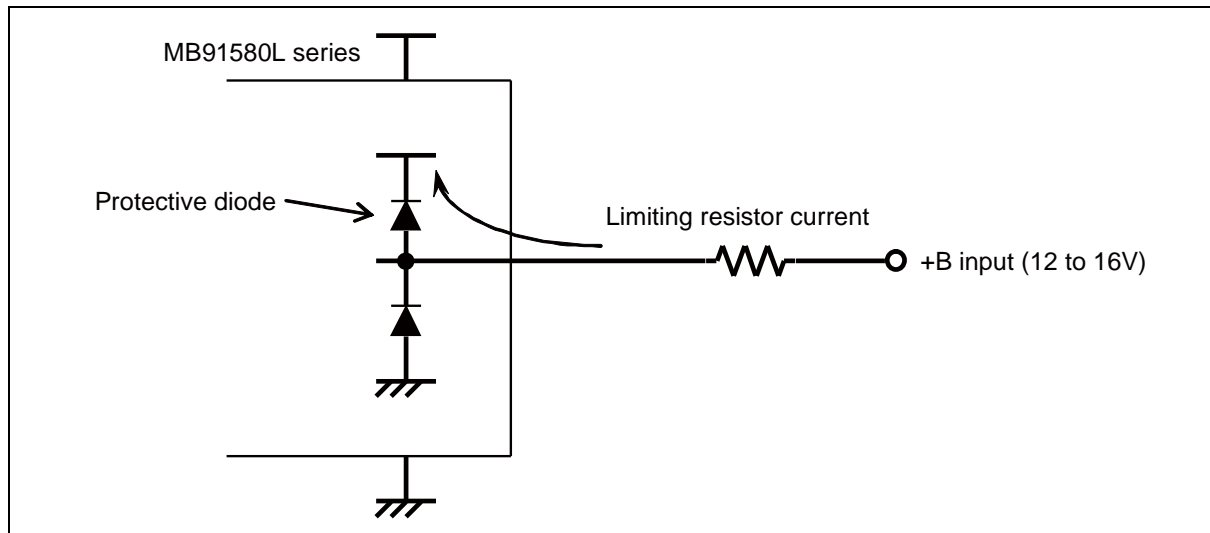
*7: Corresponding pins: General-purpose ports of P003 to P007, P010

*8: Corresponding pins: General-purpose ports other than those of P003 to P007, P010

*9: • Corresponding pins: General-purpose ports

- Use the devices within recommended operating conditions.
- Use the devices with direct voltage (current).
- The + B signal should always be applied by connecting a limiting resistor between the + B signal and the microcontroller.
- The value of the limiting resistor should be set so that the current input to the microcontroller pin does not exceed rated values at any time regardless of instantaneously or constantly when the + B signal is input.
- Note that when the microcontroller drive current is low, such as in the low-power consumption modes, the + B input potential can increase the potential at the V_{CC} pin via a protective diode, possibly affecting other devices.
- Note that if the + B signal is input when the microcontroller is off (not fixed at 0 V), since the power is supplied through the pin, the microcontroller may operate incompletely.
- Note that if the +B signal is input at power-on, since the power is supplied through the pin, the power-on reset may not function in the power supply voltage.
- Do not leave + B input pins open.

Sample recommended circuit



*10: To use this product at $T_A=125^\circ\text{C}$, equip this on a multilayer board with four or more layers.

To equip this on a single-layer board, change the operating conditions (operating frequency, power supply voltage, etc) to use this at the power consumption $P_D=500\text{mW}$ or lower, or use this at $T_A=110^\circ\text{C}$ or lower.

*11: When it is used exceeding $T_A=125^\circ\text{C}$, contact your sales representative.

WARNING: Semiconductor devices can be permanently damaged by application of stress (voltage, current, temperature, etc.) in excess of absolute maximum ratings. Do not exceed these ratings.

12.2 Recommended operating conditions

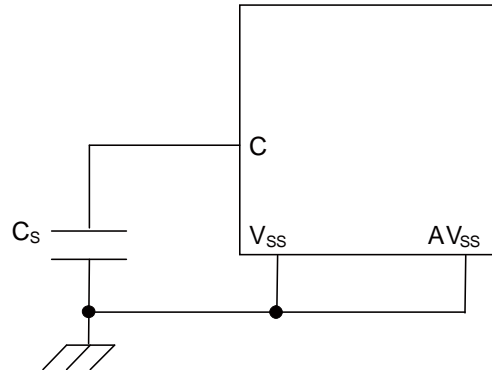
($V_{SS} = AV_{SS} = 0.0V$)

Parameter	Symbol	Value		Unit	Remarks
		Min	Max		
Power supply voltage	V_{CC}	4.5	5.5	V	Recommended operation guarantee range
	AV_{CC}	4.5	5.5	V	
	V_{CC}	3.7	5.5	V	Operation guarantee range
	AV_{CC}	3.7	5.5	V	
Smoothing capacitor ^{*1}	C_S	4.7 (tolerance within $\pm 50\%$)		μF	Use a ceramic capacitor or a capacitor that has the similar frequency characteristics. Use a capacitor with a capacitance greater than C_S as the smoothing capacitor on the VCC pin.
Operating temperature	T_A	-40	+125	$^{\circ}C$	*2

*1: For connection of smoothing capacitor C_S , see the figure below.

*2: When it is used exceeding $T_A = 125^{\circ}C$, contact your sales representative.

C Pin Connection Diagram



WARNING: The recommended operating conditions are required in order to ensure the normal operation of the semiconductor device. All of the device's electrical characteristics are warranted when the device is operated within these ranges.

Always use semiconductor devices within their recommended operating condition ranges. Operation outside these ranges may adversely affect reliability and could result in device failure. No warranty is made with respect to uses, operating conditions, or combinations not represented on the data sheet. Users considering application outside the listed conditions are advised to contact their representatives beforehand.

12.3 DC characteristics

(T_A: Recommended operating conditions, V_{CC}=5.0V±10%, V_{SS}= AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
"H" level input voltage	V _{IH1}	P000 to P002, P011 to P017, P020 to P027, P030 to P037, P040 to P042, P043 to P047*, P050 to P057*, P060 to P067, P070 to P077, P080 to P087, P090 to P097, P100 to P107, P110 to P117, P120 to P127, P130 to P134, P136 to P137	When CMOS schmitt input level is selected	0.7 × V _{CC}	-	V _{CC} +0.3	V	
	V _{IH2}	P000 to P007, P010 to P017, P020 to P027, P030 to P037, P040 to P042, P043 to P047*, P050 to P057*, P060 to P067, P070 to P077, P080 to P087, P090 to P097, P100 to P107, P110 to P117, P120 to P127, P130 to P134, P136 to P137	When Automotive input level is selected	0.8 × V _{CC}	-	V _{CC} +0.3	V	
	V _{IH3}	P003 to P007, P010	When FlexRay input level is selected	0.7 × V _{CC}	-	V _{CC} +0.3	V	
	V _{IH4}	RSTX, NMIX	-	0.7 × V _{CC}	-	V _{CC} +0.3	V	
	V _{IH5}	MD0, MD1	-	0.7 × V _{CC}	-	V _{CC} +0.3	V	
	V _{IH6}	DEBUGIF	-	2.0	-	V _{CC} +0.3	V	

*: Only available with MB91F585LB/F586LB/F587LB, MB91F585LD/F586LD/F587LD

(T_A: Recommended operating conditions, V_{CC}=5.0V±10%, V_{SS}= AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
"L" level input voltage	V _{IL1}	P000 to P002, P011 to P017, P020 to P027, P030 to P037, P040 to P042, P043 to P047*, P050 to P057*, P060 to P067, P070 to P077, P080 to P087, P090 to P097, P100 to P107, P110 to P117, P120 to P127, P130 to P134, P136 to P137	When CMOS schmitt input level is selected	V _{SS} -0.3	-	0.3 × V _{CC}	V	
	V _{IL2}	P000 to P007, P010 to P017, P020 to P027, P030 to P037, P040 to P042, P043 to P047*, P050 to P057*, P060 to P067, P070 to P077, P080 to P087, P090 to P097, P100 to P107, P110 to P117, P120 to P127, P130 to P134, P136 to P137	When Automotive input level is selected	V _{SS} -0.3	-	0.5 × V _{CC}	V	
	V _{IL3}	P003 to P007, P010	When FlexRay input level is selected	V _{SS} -0.3	-	0.3 × V _{CC}	V	
	V _{IL4}	RSTX, NMIX	-	V _{SS} -0.3	-	0.3 × V _{CC}	V	
	V _{IL5}	MD0, MD1	-	V _{SS} -0.3	-	0.3 × V _{CC}	V	
	V _{IL6}	DEBUGIF	-	V _{SS} -0.3	-	0.8	V	

*: Only available with MB91F585LB/F586LB/F587LB, MB91F585LD/F586LD/F587LD

(T_A: Recommended operating conditions, V_{CC}=5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
"H" level output voltage	V _{OH1}	P000 to P007, P010 to P017, P020 to P027, P030 to P037, P040 to P042, P043 to P047*, P050 to P057*, P060 to P067, P070 to P077, P080 to P087, P090 to P097, P100 to P107, P110 to P117, P120 to P127, P130 to P134, P136 to P137	V _{CC} =4.5V I _{OH} =-2.0mA	V _{CC} -0.5	-	V _{CC}	V	
	V _{OH2}	P003 to P007, P010	V _{CC} =4.5V I _{OH} =-4.0mA	V _{CC} -0.5	-	V _{CC}	V	When FlexRay is selected
	V _{OH3}	P000 to P002, P011 to P017, P020 to P027, P030 to P037, P040 to P042, P043 to P047*, P050 to P057*, P060 to P067, P070 to P077, P080 to P087, P090 to P097, P100 to P107, P110 to P117, P120 to P127, P130 to P134, P136 to P137	V _{CC} =4.5V I _{OH} =-5.0mA	V _{CC} -0.5	-	V _{CC}	V	

*: Only available with MB91F585LB/F586LB/F587LB, MB91F585LD/F586LD/F587LD

(T_A: Recommended operating conditions, V_{CC}=5.0V±10%, V_{SS}= AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
"L" level output voltage	V _{OL1}	P000 to P007, P010 to P017, P020 to P027, P030 to P037, P040 to P042, P043 to P047*, P050 to P057*, P060 to P067, P070 to P077, P080 to P087, P090 to P097, P100 to P107, P110 to P117, P120 to P127, P130 to P134, P136 to P137	V _{CC} =4.5V I _{OL} =2.0mA	0	-	0.4	V	
	V _{OL2}	P003 to P007, P010	V _{CC} =4.5V I _{OL} =4.0mA	0	-	0.4	V	When FlexRay is selected
	V _{OL3}	P000 to P002, P011 to P017, P020 to P027, P030 to P037, P040 to P042, P043 to P047*, P050 to P057*, P060 to P067, P070 to P077, P080 to P087, P090 to P097, P100 to P107, P110 to P117, P120 to P127, P130 to P134, P136 to P137	V _{CC} =4.5V I _{OL} =5.0mA	0	-	0.4	V	
	V _{OL4}	P001,P002, P021,P022, P025,P026, P073,P074, P076,P077, P127,P130	V _{CC} =4.5V I _{OL} =3.0mA	0	-	0.4	V	I ² C shared pin (when I ² C is selected)

*: Only available with MB91F585LB/F586LB/F587LB, MB91F585LD/F586LD/F587LD

(T_A: Recommended operating conditions, V_{CC}=5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value				Unit
				Min	Typ	Max	Min	
"L" level output voltage	V _{OL5}	DEBUGIF	V _{CC} =2.7V I _{OL} =25.0mA	0	-	0.25	V	
Input Leak Current	I _{IL}	All input pins	V _{CC} = AV _{CC} =5.5V V _{SS} < V _I < V _{CC}	-5	-	+5	μA	
Pull-up resistance	R _{UP1}	RSTX, NMIX	-	25	-	100	kΩ	
	R _{UP2}	P000 to P007, P010 to P017, P020 to P027, P030 to P037, P040 to P042, P043 to P047*, P050 to P057*, P060 to P067, P070 to P077, P080 to P087, P090 to P097, P100 to P107, P110 to P117, P120 to P127, P130 to P134, P136 to P137	When pull-up resistance is selected	25	-	100	kΩ	
Input Capacitor	C _{IN}	Other than VCC, VSS, AVCC, AVSS, C	-	-	5	15	pF	

*: Only available with MB91F585LB/F586LB/F587LB, MB91F585LD/F586LD/F587LD

(T_A: Recommended operating conditions, V_{CC}=5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
Power supply current	I _{CC}	VCC5	Normal operations F _{CP} =128MHz, F _{CPP} =32MHz	-	85	110	mA	*1, *3 RDC=OFF, FlexRay =ON
				-	82	105	mA	*1, *3 RDC=ON, FlexRay =OFF
				-	85	110	mA	*2, *4 FlexRay =ON
				-	79	104	mA	*2, *4 FlexRay =OFF
			Normal operations F _{CP} =80MHz, F _{CPP} =40MHz	-	69	91	mA	*1, *3 RDC=OFF, FlexRay =ON
				-	67	89	mA	*1, *3 RDC=ON, FlexRay =OFF
				-	69	91	mA	*2, *4 FlexRay =ON
				-	64	87	mA	*2, *4 FlexRay =OFF
			Flash write F _{CP} =128MHz, F _{CPP} =32MHz	-	100	125	mA	*1, *3, *5
				-	100	125	mA	*2, *4, *5
			Flash erase F _{CP} =128MHz, F _{CPP} =32MHz	-	100	125	mA	*1, *3, *5
				-	100	125	mA	*2, *4, *5

*1: MB91F585LA/F586LA/F587LA

*2: MB91F585LB/F586LB/F587LB

*3: MB91F585LC/F586LC/F587LC

*4: MB91F585LD/F586LD/F587LD

*5: This series has 2 types of flash; main flash and WorkFlash; however, this is the specification when only one of those is written/erased.

(T_A: Recommended operating conditions, V_{CC}=5.0V±10%, V_{SS}= AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
Power supply current	I _{CCS}	VCC5	CPU sleep F _{CP} =128MHz, F _{CPP} =32MHz	-	46	68	mA	*1, *2, *3, *4
	I _{CCBS}		Bus sleep F _{CP} =128MHz, F _{CPP} =32MHz	-	31	54	mA	*1, *2, *3, *4
	I _{CCT}		Clock mode 4MHz source oscillation	-	1.2	1.8	mA	When using external clock*6 T _A =25°C, *1, *2, *3, *4
				-	2.7	3.3	mA	When using crystal T _A =25°C, *1, *2, *3, *4
	I _{CCTS}		Clock mode shutdown 4MHz source oscillation	-	0.7	0.8	mA	When using external clock*6 T _A =25°C, *3, *4
				-	2.2	2.3	mA	When using crystal T _A =25°C, *3, *4
				-	0.3	0.4	mA	When using external clock*6 T _A =25°C, *1, *2
				-	1.8	1.9	mA	When using crystal T _A =25°C, *1, *2
	I _{CCH}		STOP mode	-	1.0	1.6	mA	T _A =25°C, *3, *4
				-	0.6	1.1	mA	T _A =25°C, *1, *2
	I _{CCHS}		STOP mode shutdown	-	0.5	0.6	mA	T _A =25°C, *3, *4
				-	0.1	0.2	mA	T _A =25°C, *1, *2

*1: MB91F585LA/F586LA/F587LA

*2: MB91F585LB/F586LB/F587LB

*3: MB91F585LC/F586LC/F587LC

*4: MB91F585LD/F586LD/F587LD

*6: The power supply current is the current value when the external clock is supplied from the X1 pin. Note that the power supply current value when using the external clock is different from that using the oscillator.

12.4 AC characteristics

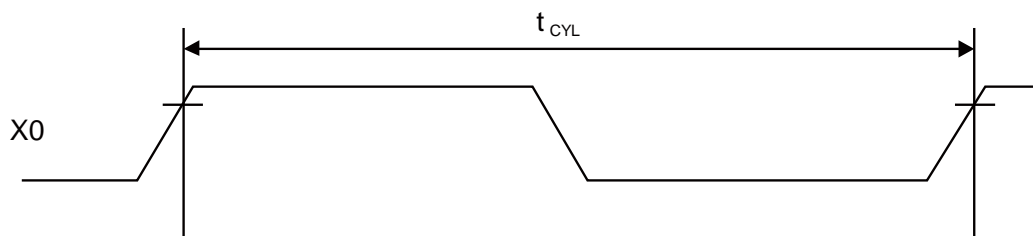
12.4.1 Main Clock Timing

(T_A: Recommended operating conditions, V_{CC} = 5.0V±10%, V_{SS} = AV_{SS} = 0.0V)

Parameter	Symbol	Pin name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
Source oscillation clock frequency	F _C	X0, X1	-	4	-	20	MHz	
Source oscillation clock cycle time	t _{CYL}	X0, X1	-	50	-	250	ns	
Internal operating clock frequency	F _{CP}	-	-	-	-	128	MHz	CPU clock
	F _{CPP}	-	-	-	-	40	MHz	Peripheral bus clock
	F _{CPT}	-	-	-	-	40	MHz	External bus clocks
Internal operating clock cycle time	t _{CP}	-	-	7.82	-	-	ns	CPU clock
	t _{CPP}	-	-	25	-	-	ns	Peripheral bus clock
	t _{CPT}	-	-	25	-	-	ns	External bus clocks
CAN PLL jitter (during lock)	t _{PJ}	-	-	-10	-	+10	ns	
Built-in CR oscillation frequency	F _{CCR}	-	-	50	100	150	kHz	

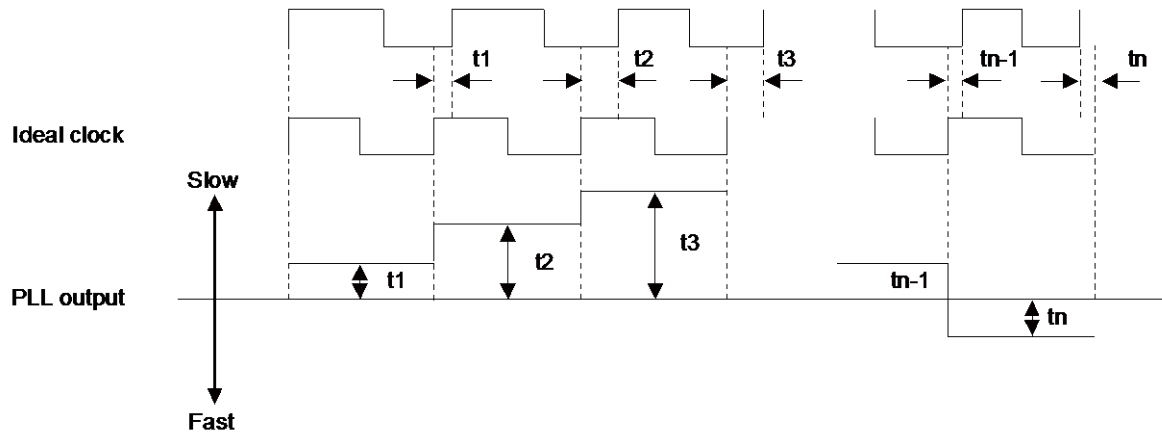
*: The maximum/minimum value is defined when using the main clock and PLL clock.

X0,X1 clock timing



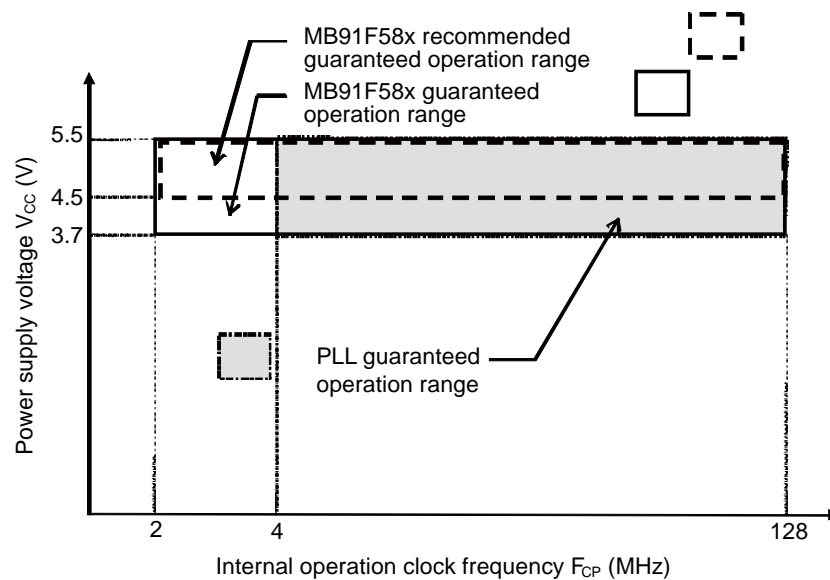
CAN PLL jitter

Deviation time from the ideal clock is assured per cycle out of 20,000 cycles.



Guaranteed operation range

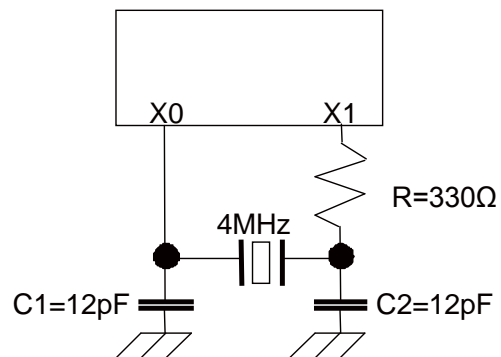
Internal operation clock frequency vs. Power supply voltage



Note: The CPU will be reset at the power supply voltage of the low-voltage detection setting voltage or less.

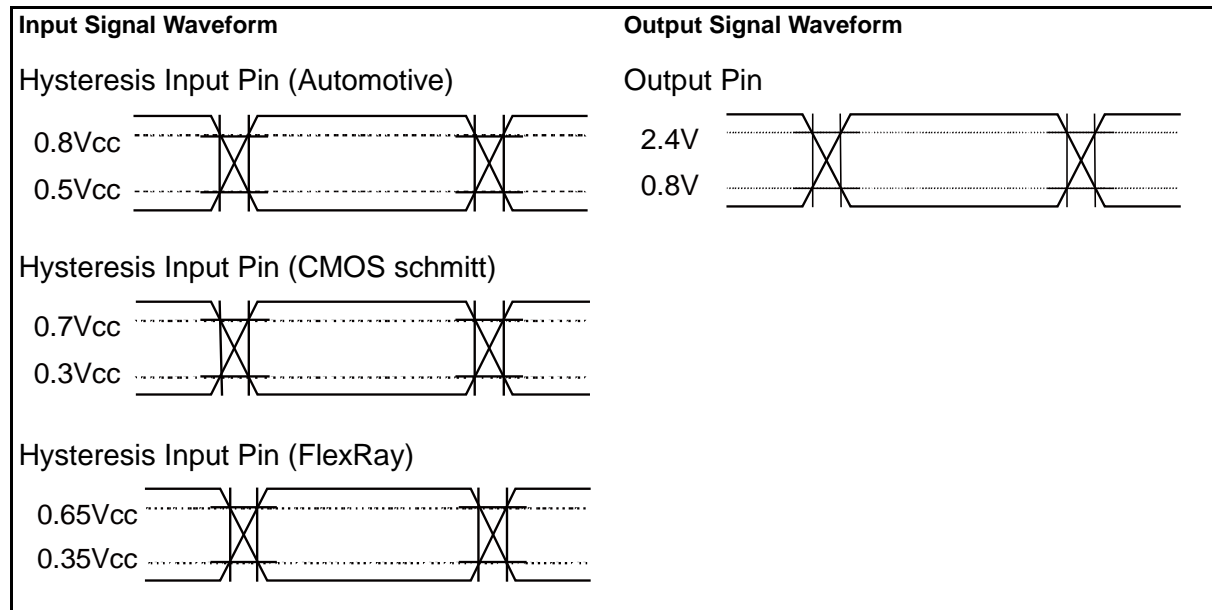
Oscillation clock frequency vs. Internal operation clock frequency

		Internal operation clock frequency								
		Main clock	PLL clock							
			Multiplied by 1	Multiplied by 2	Multiplied by 3	Multiplied by 4	...	Multiplied by 20	...	Multiplied by 32
Oscillation clock frequency	4MHz	2MHz	4MHz	8MHz	12MHz	16MHz	...	80MHz	...	128MHz

Example of oscillation circuit


Note: If it is impossible to start the oscillation within or equal to 20ms when starting from the oscillation stop state, the clock supervisor performs a detection of oscillation stop and moves to the fail safe operation. Design your print circuit board so that the oscillator can start oscillation within 20ms. In addition, when configuring the oscillator circuit, it is recommended to ask matching evaluation of the circuit to oscillator manufacturers for the design.

AC characteristics are specified by the following measurement reference voltage values.

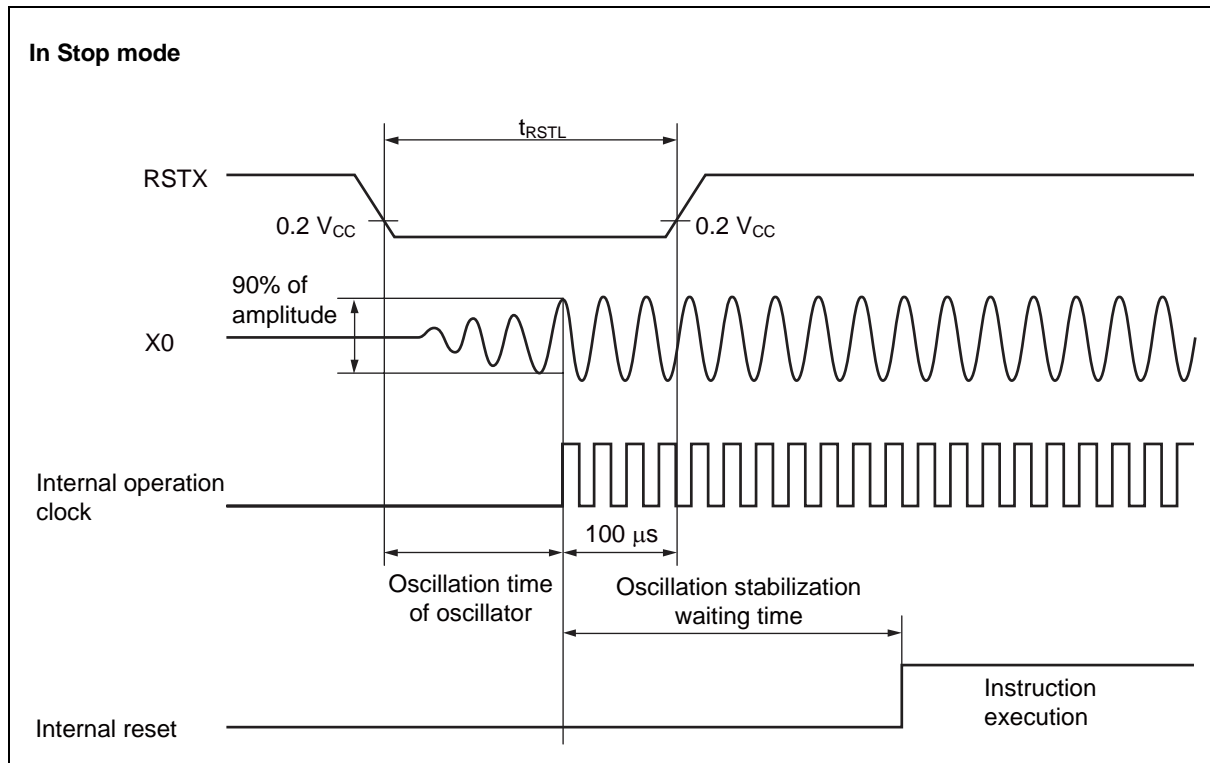
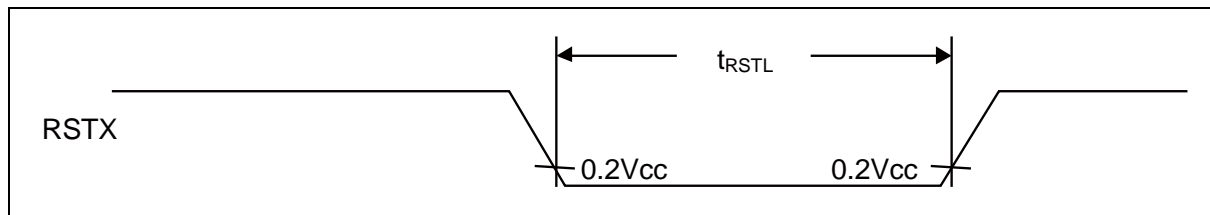


12.4.2 Reset input

(T_A: Recommended operating conditions, V_{CC} = 5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
Reset input time	t _{RSTL}	RSTX	-	10	-	μs	During normal operation
				Oscillation time of oscillator +0.1	-	ms	At Stop mode
				100	-	μs	At Clock mode
Width for reset input removal				1	-	μs	

*:The oscillation time of the oscillator is the time it takes for the amplitude of the oscillations to reach 90%. For crystal oscillators, this time is between several ms and several tens of ms, for ceramic oscillators the time is between several hundred μs and several ms, and for an external clock, the time is 0 ms.



12.4.3 Power-on Conditions

 (T_A: Recommended operating conditions, V_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
Level detection voltage	-	VCC5	-	2.1	2.3	2.5	V	When turning on power
Level detection hysteresis width	-	VCC5	-	-	-	125	mV	During voltage drop
Level detection time	-	-	-	-	-	30	μs	*1
Slope detection undetected standard	-	VCC5	V _{CC} = at level detection release level	-	-	4	mV/μs	*2
Power off time	t _{OFF}	VCC5	-	50	-	-	ms	*3

*1: If the fluctuation of the power supply is faster than the low-voltage detection time, there is the possibility to generate or release after the power supply voltage has exceeded the detection voltage range.

*2: When setting the power supply fluctuation to this standard or less, it is possible to suppress the slope detection. This is the standard when the power supply fluctuation is stable.

*3: This time is to start the slope detection at next power on after power down and internal charge loss.

12.4.4 Multi-function Serial

CSIO timing (SMR:MD2-0="010"b)

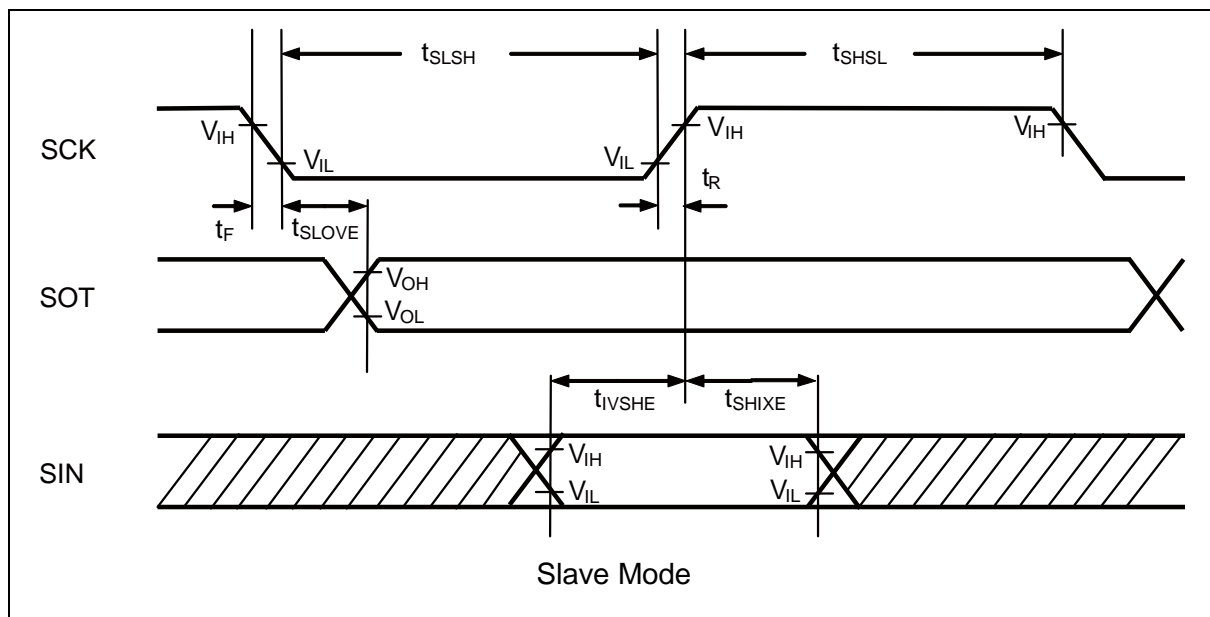
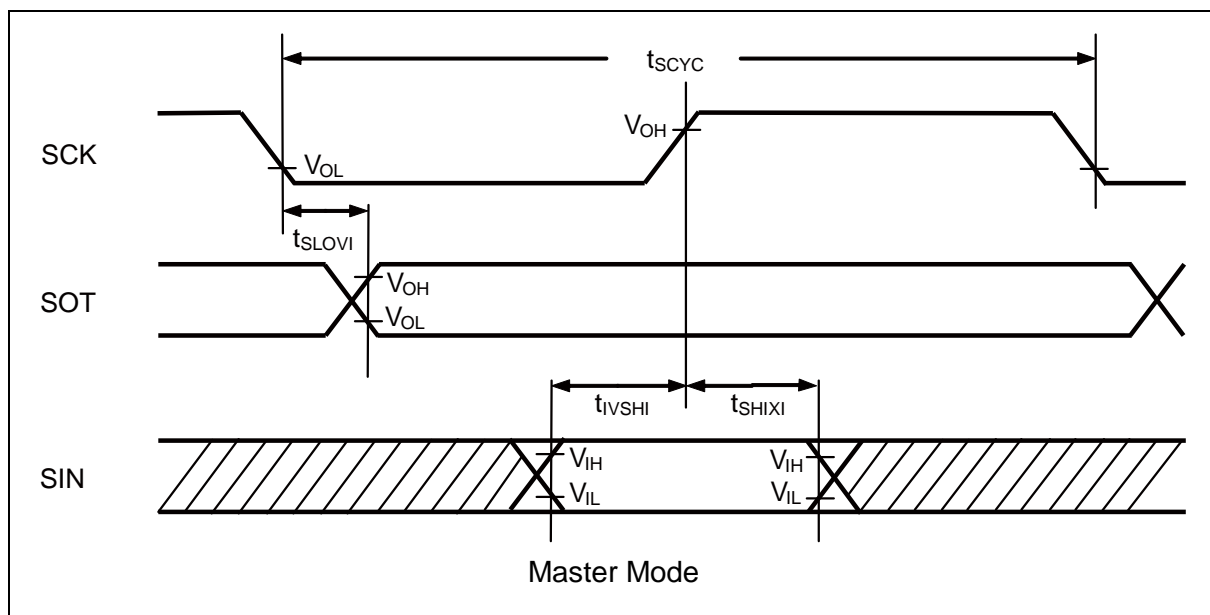
Normal synchronous transfer (SCR:SPI=0) and serial clock output signal detect level "H" (SMR:SCINV=0)

(T_A: Recommended operating conditions, V_{CC} =5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
Serial clock cycle time	t _{SCYC}	SCK0 to SCK4, SCK3_1, SCK4_1	Master mode C _L =50pF	4t _{CPP}	-	ns	
SCK ↓ ⇒ SOT delay time	t _{SLOVI}	SCK0 to SCK4, SCK3_1, SCK4_1, SOT0 to SOT4, SOT3_1, SOT4_1		-30	+30	ns	
Valid SIN ⇒ SCK ↑ setup time	t _{IVSHI}	SCK0 to SCK4, SCK3_1, SCK4_1,		30	-	ns	
SCK ↑ ⇒ Valid SIN hold time	t _{SHIXI}	SIN0 to SIN4, SIN3_1, SIN4_1		0	-	ns	
Serial clock "H" pulse width	t _{SHSL}	SCK0 to SCK4, SCK3_1, SCK4_1	Slave mode C _L =50pF	t _{CPP} +10	-	ns	
Serial clock "L" pulse width	t _{SLSH}			2t _{CPP} -10	-	ns	
SCK ↓ ⇒ SOT delay time	t _{SLOVE}	SCK0 to SCK4, SCK3_1, SCK4_1, SOT0 to SOT4, SOT3_1, SOT4_1		-	30	ns	
Valid SIN ⇒ SCK ↑ setup time	t _{IVSHE}	SCK0 to SCK4, SCK3_1, SCK4_1,		10	-	ns	
SCK ↑ ⇒ Valid SIN hold time	t _{SHIXE}	SIN0 to SIN4, SIN3_1, SIN4_1		20	-	ns	
SCK fall time	t _F	SCK0 to SCK4, SCK3_1, SCK4_1		-	5	ns	
SCK rise time	t _R	SCK0 to SCK4, SCK3_1, SCK4_1		-	5	ns	

Notes:

- This is the AC characteristic in CLK synchronized mode.
- C_L is the load capacitance applied to pins during testing.
- The maximum baud rate is limited by the internal operation clock used and other parameters. See Hardware Manual for details.

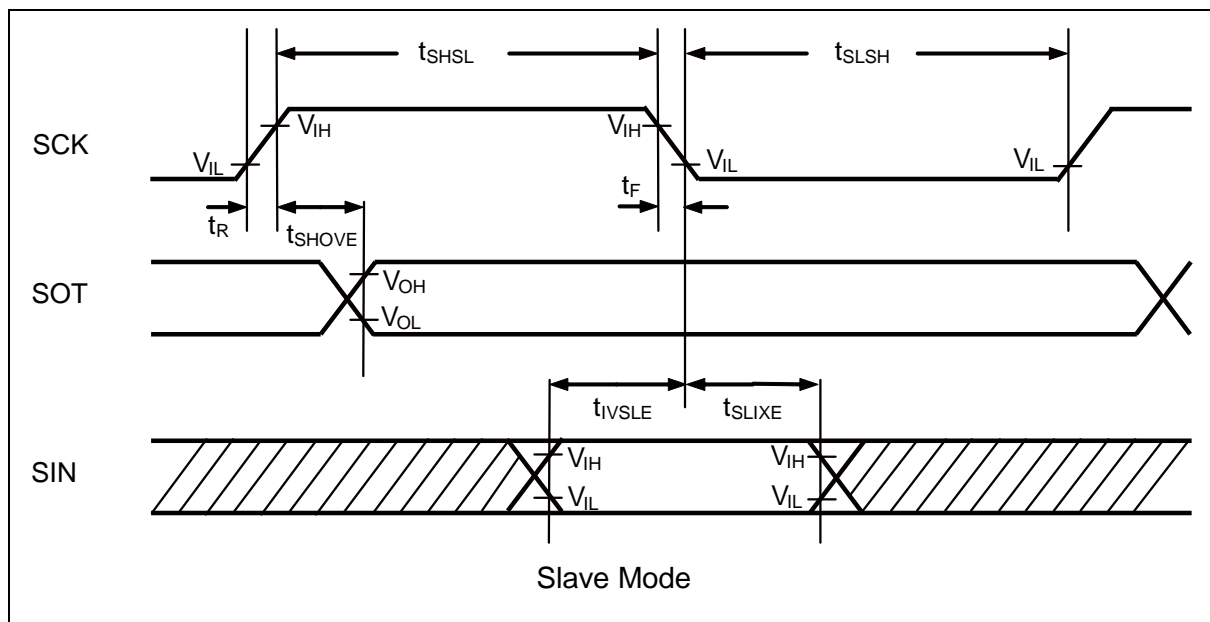
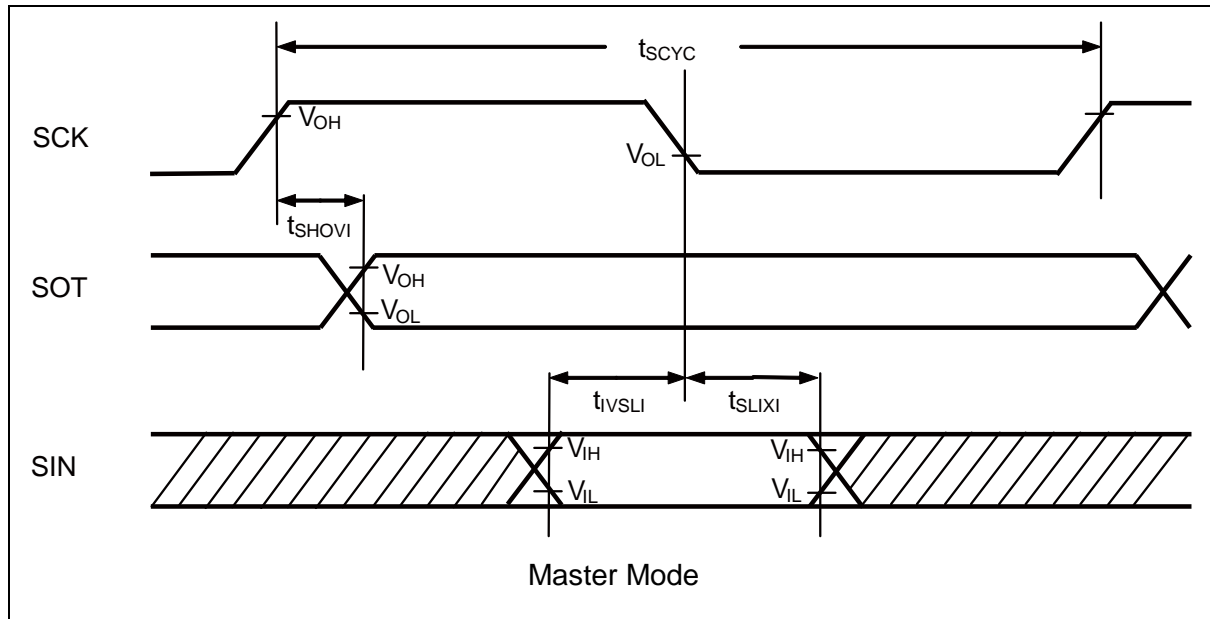


Normal synchronous transfer (SCR:SPI=0) and serial clock output signal detect level "L"(SMR:SCINV=1)

(T_A: Recommended operating conditions, V_{CC} =5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
Serial clock cycle time	t _{SCYC}	SCK0 to SCK4, SCK3_1,SCK4_1	Master mode C _L =50pF	4t _{CPP}	-	ns	
SCK ↑ ⇒ SOT delay time	t _{SHOVI}	SCK0 to SCK4, SCK3_1,SCK4_1, SOT0 to SOT4, SOT3_1,SOT4_1		-30	+30	ns	
Valid SIN ⇒ SCK ↓ setup time	t _{IVSLI}	SCK0 to SCK4, SCK3_1, SCK4_1,		30	-	ns	
SCK ↓ ⇒ Valid SIN hold time	t _{SLIXI}	SIN0 to SIN4, SIN3_1, SIN4_1		0	-	ns	
Serial clock "H" pulse width	t _{SHSL}	SCK0 to SCK4, SCK3_1, SCK4_1	Slave mode C _L =50pF	t _{CPP} +10	-	ns	
Serial clock "L" pulse width	t _{SLSH}	SCK0 to SCK4, SCK3_1, SCK4_1		2t _{CPP} -10	-	ns	
SCK ↑ ⇒ SOT delay time	t _{SHOVE}	SCK0 to SCK4, SCK3_1,SCK4_1, SOT0 to SOT4, SOT3_1,SOT4_1		-	30	ns	
Valid SIN ⇒ SCK ↓ setup time	t _{IVSLE}	SCK0 to SCK4, SCK3_1, SCK4_1,		10	-	ns	
SCK ↓ ⇒ Valid SIN hold time	t _{SLIXE}	SIN0 to SIN4, SIN3_1, SIN4_1		20	-	ns	
SCK fall time	t _F	SCK0 to SCK4, SCK3_1, SCK4_1		-	5	ns	
SCK rise time	t _R	SCK0 to SCK4, SCK3_1, SCK4_1		-	5	ns	

- Notes:
- This is the AC characteristic in CLK synchronized mode.
 - C_L is the load capacitance applied to pins during testing.
 - The maximum baud rate is limited by the internal operation clock used and other parameters.
See Hardware Manual for details.

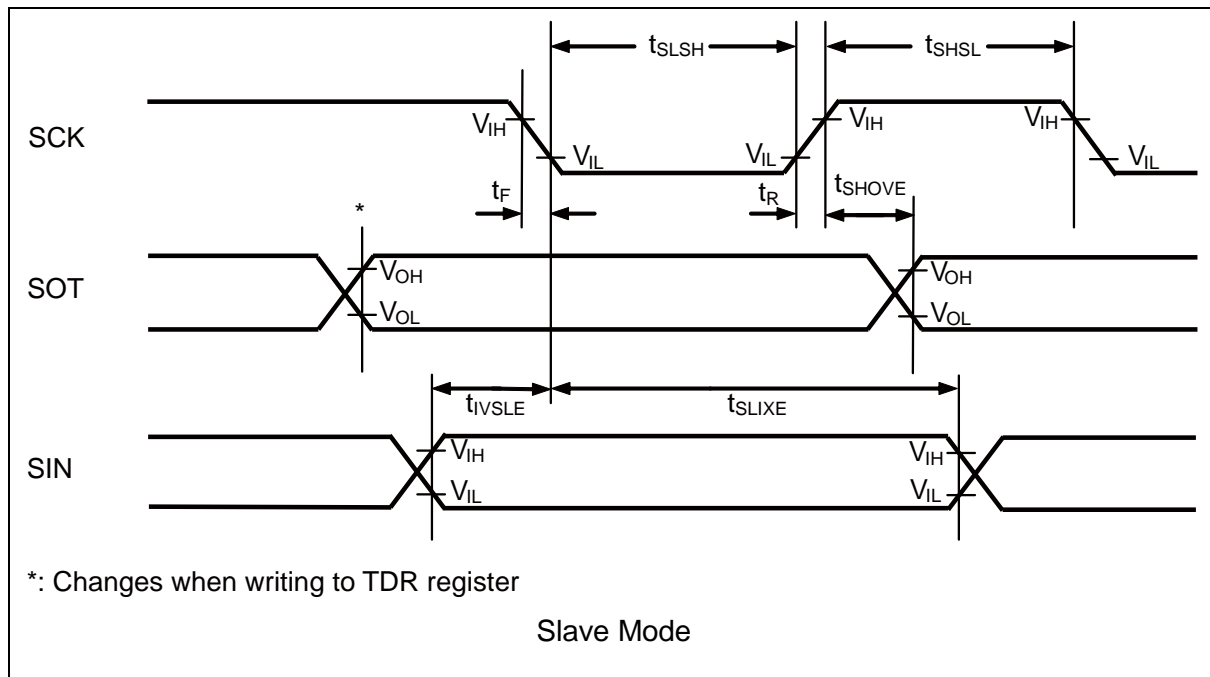
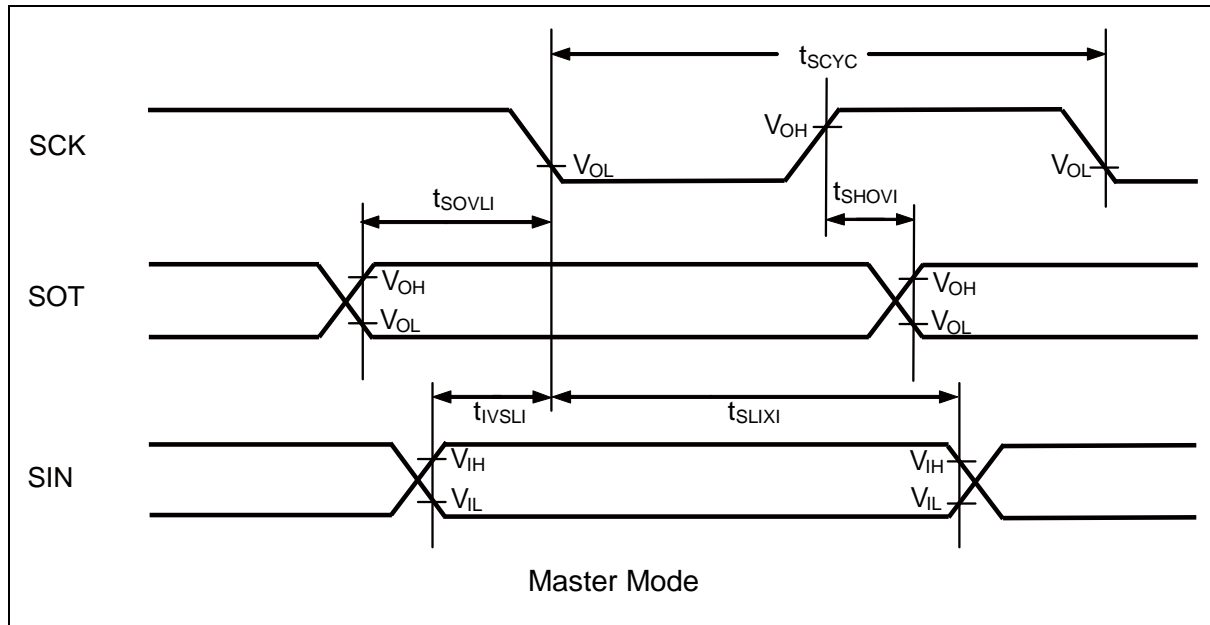


SPI compatible (SCR:SPI=1) and serial clock output signal detect level "H"(SMR:SCINV=0)

(T_A: Recommended operating conditions, V_{CC} =5.0V±10% , V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
Serial clock cycle time	t _{SCYC}	SCK0 to SCK4, SCK3_1,SCK4_1	Master mode C _L =50pF	4t _{CPP}	-	ns	
SCK ↑ ⇒ SOT delay time	t _{SHOVI}	SCK0 to SCK4, SCK3_1,SCK4_1, SOT0 to SOT4, SOT3_1,SOT4_1		-30	+30	ns	
Valid SIN ⇒ SCK ↓ setup time	t _{IVSLI}	SCK0 to SCK4, SCK3_1, SCK4_1,		30	-	ns	
SCK ↓ ⇒ Valid SIN hold time	t _{SLIXI}	SIN0 to SIN4, SIN3_1, SIN4_1		0	-	ns	
SOT ⇒ SCK ↓ delay time	t _{SOVLI}	SCK0 to SCK4, SCK3_1,SCK4_1, SOT0 to SOT4, SOT3_1,SOT4_1		2t _{CPP} -30	-	ns	
Serial clock "H" pulse width	t _{SHSL}	SCK0 to SCK4, SCK3_1,SCK4_1	Slave mode C _L =50pF	t _{CPP} +10	-	ns	
Serial clock "L" pulse width	t _{SLSH}			2t _{CPP} -10	-	ns	
SCK ↑ ⇒ SOT delay time	t _{SHOVE}	SCK0 to SCK4, SCK3_1,SCK4_1, SOT0 to SOT4, SOT3_1,SOT4_1		-	30	ns	
Valid SIN ⇒ SCK ↓ setup time	t _{IVSLE}	SCK0 to SCK4, SCK3_1, SCK4_1,		10	-	ns	
SCK ↓ ⇒ Valid SIN hold time	t _{SLIXE}	SIN0 to SIN4, SIN3_1, SIN4_1		20	-	ns	
SCK fall time	t _F	SCK0 to SCK4, SCK3_1, SCK4_1		-	5	ns	
SCK rise time	t _R	SCK0 to SCK4, SCK3_1,SCK4_1		-	5	ns	

- Notes:
- This is the AC characteristic in CLK synchronized mode.
 - C_L is the load capacitance applied to pins during testing.
 - The maximum baud rate is limited by the internal operation clock used and other parameters.
See Hardware Manual for details.

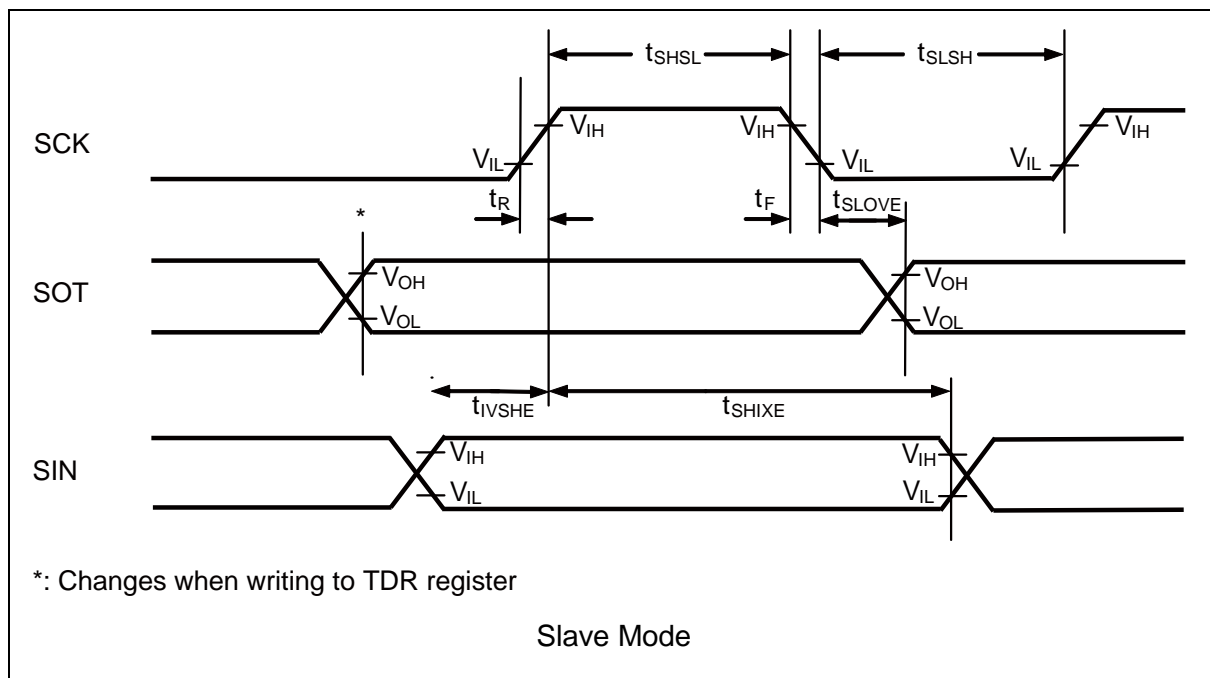
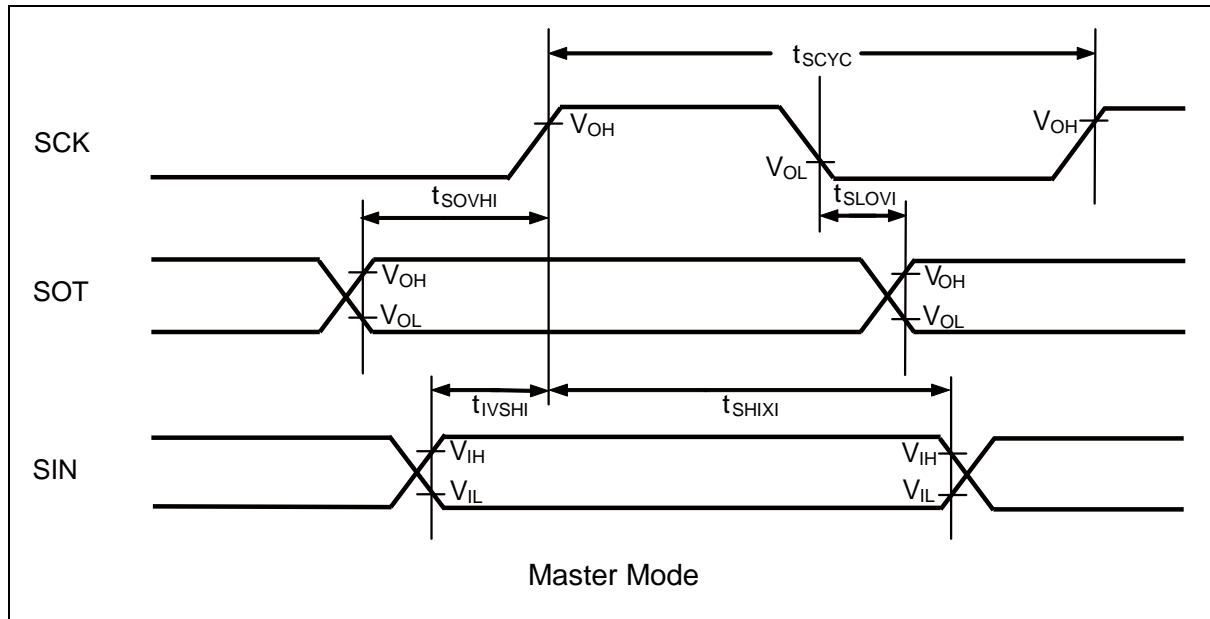


SPI compatible (SCR:SPI=1) and serial clock output signal detect level "L"(SMR:SCINV=1)

(T_A: Recommended operating conditions, V_{CC} =5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
Serial clock cycle time	t _{SCYC}	SCK0 to SCK4, SCK3_1,SCK4_1	Master mode C _L =50pF	4t _{CPP}	-	ns	
SCK ↓ ⇒ SOT delay time	t _{SLOVI}	SCK0 to SCK4, SCK3_1,SCK4_1, SOT0 to SOT4, SOT3_1,SOT4_1		-30	+30	ns	
Valid SIN ⇒ SCK ↑ setup time	t _{IVSHI}	SCK0 to SCK4, SCK3_1, SCK4_1,		30	-	ns	
SCK ↑ ⇒ Valid SIN hold time	t _{SHIXI}	SIN0 to SIN4, SIN3_1, SIN4_1		0	-	ns	
SOT ⇒ SCK ↑ delay time	t _{SOVHI}	SCK0 to SCK4, SCK3_1,SCK4_1, SOT0 to SOT4, SOT3_1,SOT4_1		2t _{CPP} -30	-	ns	
Serial clock "H" pulse width	t _{SHSL}	SCK0 to SCK4, SCK3_1,SCK4_1,	Slave mode C _L =50pF	t _{CPP} +10	-	ns	
Serial clock "L" pulse width	t _{SLSH}	SOT0 to SOT4, SOT3_1,SOT4_1		2t _{CPP} -10	-	ns	
SCK ↓ ⇒ SOT delay time	t _{SLOVE}	SCK0 to SCK4, SCK3_1,SCK4_1, SOT0 to SOT4, SOT3_1,SOT4_1		-	30	ns	
Valid SIN ⇒ SCK ↑ setup time	t _{IVSHE}	SCK0 to SCK4, SCK3_1, SCK4_1,		10	-	ns	
SCK ↑ ⇒ Valid SIN hold time	t _{SHIXE}	SIN0 to SIN4, SIN3_1, SIN4_1		20	-	ns	
SCK fall time	t _F	SCK0 to SCK4, SCK3_1, SCK4_1		-	5	ns	
SCK rise time	t _R	SCK0 to SCK4, SCK3_1,SCK4_1		-	5	ns	

- Notes:
- This is the AC characteristic in CLK synchronized mode.
 - C_L is the load capacitance applied to pins during testing.
 - The maximum baud rate is limited by the internal operation clock used and other parameters.
See Hardware Manual for details.



When the serial chip select is used (SCSCR:CSEN=1)

- Serial clock output signal detect level "H"(SMR,SCSFR:SCINV=0)
- Serial chip select inactive level "H"(SCSCR,SCSFR:CSLVL=1)

(T_A: Recommended operating conditions, V_{CC} =5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
SCS ↓ ⇒ SCK ↓ setup time	t _{CSSI}	SCK1 to SCK4, SCK3_1,SCK4_1,	Master mode C _L =50pF	t _{CSSU} ^{*1} +0	t _{CSSU} ^{*1} +50	ns	
SCK ↑ ⇒ SCS ↑ hold time	t _{CSHI}	SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		t _{CSHD} ^{*2} -50	t _{CSHD} ^{*2} +0	ns	
SCS deselect time	t _{CSDI}	SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		-50+5t _{CPP} ^{*3} +t _{CSDS}	+50+5t _{CPP} ^{*3} +t _{CSDS}	ns	
SCS ↓ ⇒ SCK ↓ setup time	t _{CSSE}	SCK1 to SCK4, SCK3_1,SCK4_1,	Slave mode C _L =50pF	3t _{CPP} +30	-	ns	
SCK ↑ ⇒ SCS ↑ hold time	t _{CSHE}	SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		0	-	ns	
SCS deselect time	t _{CSDE}	SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		3t _{CPP} +30	-	ns	
SCS ↓ ⇒ SOT delay time	t _{DSE}	SCS1 to SCS3, SCS3_1,		-	40	ns	
SCS ↑ ⇒ SOT delay time	t _{DEE}	SCS40 to SCS43 SCS40_1 to SCS43_1, SOT0 to SOT4, SOT3_1,SOT4_1		0	-	ns	

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
SCK ↓ ⇒ SCS ↓ clock switch time	t_{SCC}	SCK1 to SCK4, SCK3_1, SCK4_1, SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1	Master mode round operation $C_L=50pF$	$3t_{C_{PP}}+0$	$3t_{C_{PP}}+50$	ns	

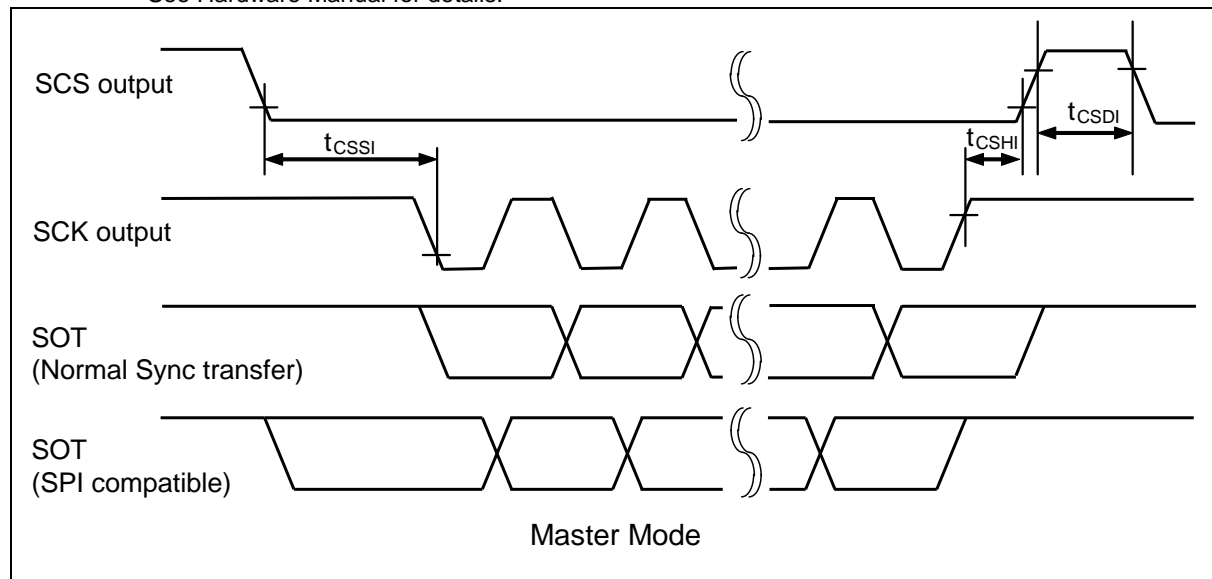
*1: $t_{CSSU} = SCSTR:CSSU7-0 \times \text{Serial chip select timing operation clock}$

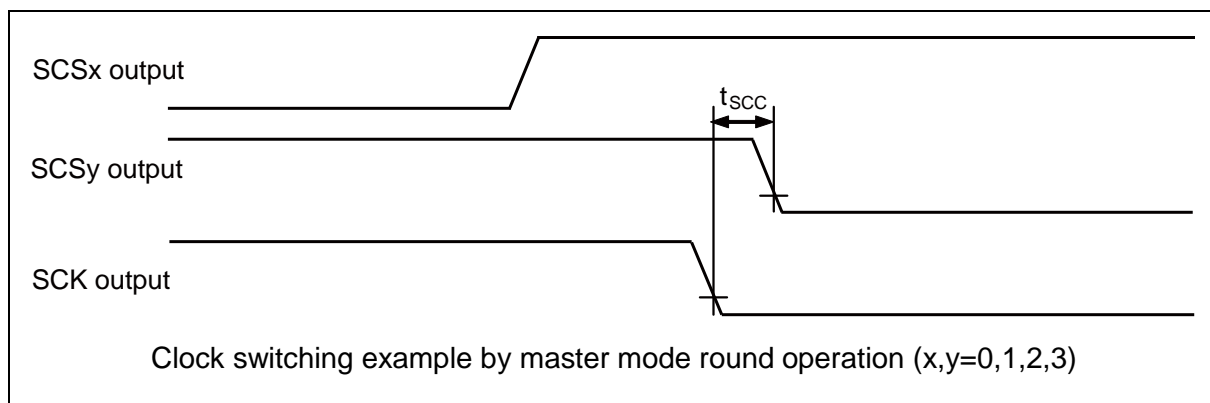
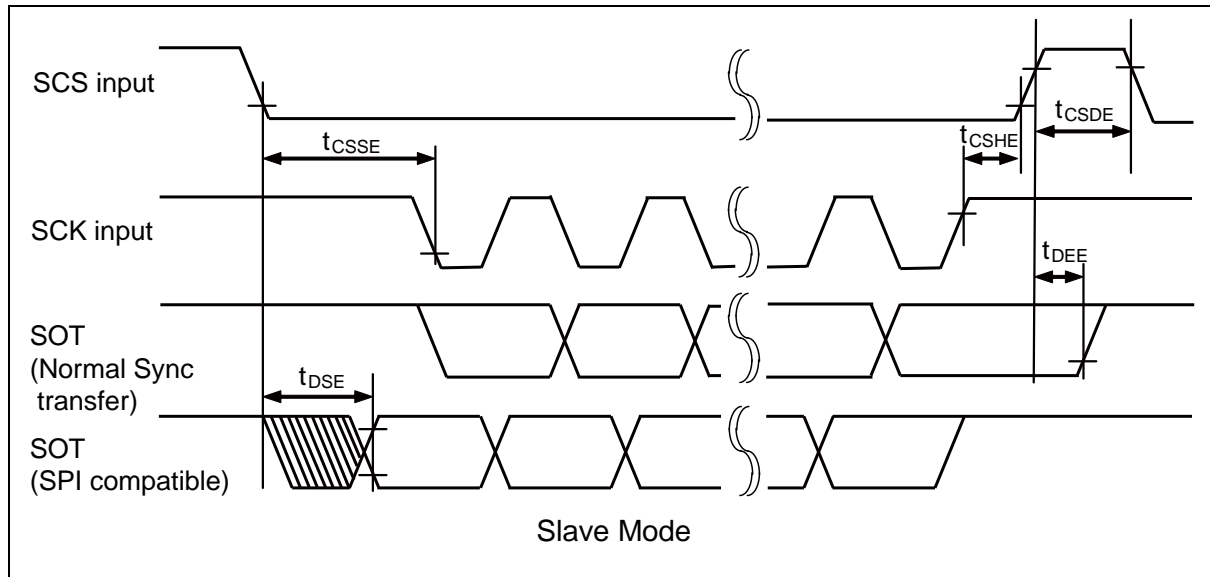
*2: $t_{CSHD} = SCSTR:CSHD7-0 \times \text{Serial chip select timing operation clock}$

*3: $t_{CSDS} = SCSTR:CSDS15-0 \times \text{Serial chip select timing operation clock}$
 For details of *1, *2 and *3 above, see Hardware Manual.

Notes:

- This is the AC characteristic in CLK synchronized mode.
- C_L is the load capacitance applied to pins during testing.
- The maximum baud rate is limited by the internal operation clock used and other parameters.
See Hardware Manual for details.





When the serial chip select is used (SCSCR:CSEN=1)

- Serial clock output signal detect level "L"(SMR,SCSFR:SCINV=1)
- Serial chip select inactive level "H"(SCSCR,SCSFR:CSLVL=1)

(T_A: Recommended operating conditions, V_{CC} =5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
SCS ↓ ⇒ SCK ↑ setup time	t _{CSSI}	SCK1 to SCK4, SCK3_1,SCK4_1,	Master mode C _L =50pF	t _{CSSU} ^{*1} +0	t _{CSSU} ^{*1} +50	ns	
SCK ↓ ⇒ SCS ↑ hold time	t _{CSHI}	SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		t _{CSHD} ^{*2} -50	t _{CSHD} ^{*2} +0	ns	
SCS deselect time	t _{CSDI}	SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		-50+5t _{CPP} ^{*3} +t _{CSDS}	+50+5t _{CPP} ^{*3} +t _{CSDS}	ns	
SCS ↓ ⇒ SCK ↑ setup time	t _{CSSE}	SCK1 to SCK4, SCK3_1,SCK4_1,	Slave mode C _L =50pF	3t _{CPP} +30	-	ns	
SCK ↓ ⇒ SCS ↑ hold time	t _{CSHE}	SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		0	-	ns	
SCS deselect time	t _{CSDE}	SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		3t _{CPP} +30	-	ns	
SCS ↓ ⇒ SOT delay time	t _{DSE}	SCS1 to SCS3, SCS3_1,		-	40	ns	
SCS ↑ ⇒ SOT delay time	t _{DEE}	SCS40 to SCS43 SCS40_1 to SCS43_1, SOT0 to SOT4, SOT3_1,SOT4_1		0	-	ns	

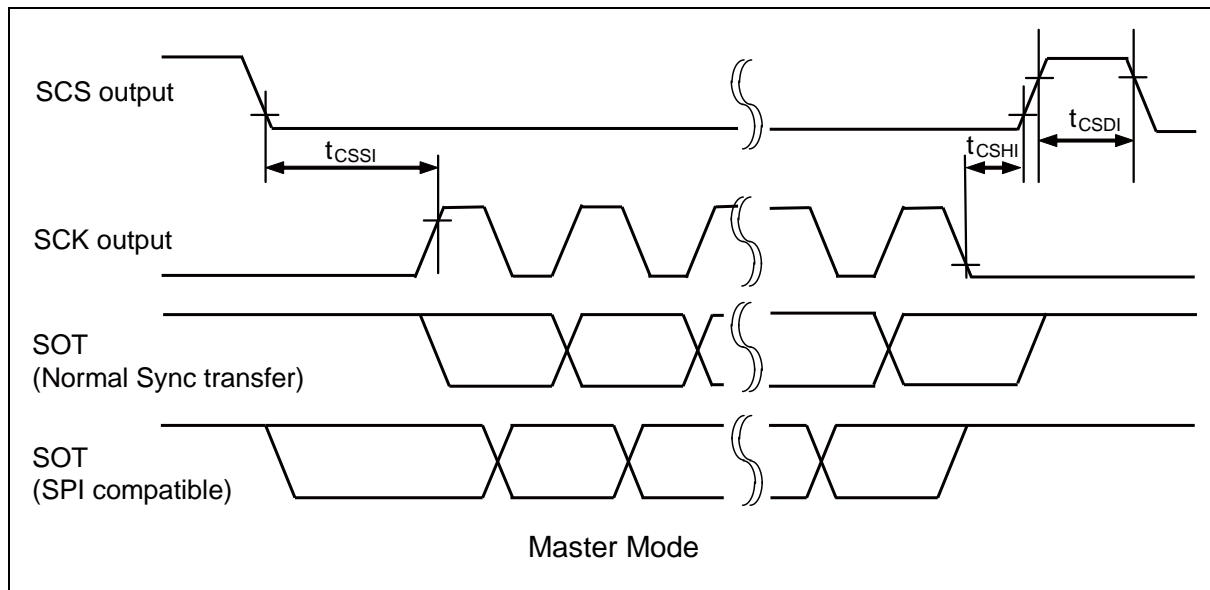
Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
SCK $\uparrow \Rightarrow$ SCS \downarrow clock switch time	t_{SCC}	SCK1 to SCK4, SCK3_1,SCK4_1, SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1	Master mode round operation $C_L=50\text{pF}$	$3t_{CPP}+0$	$3t_{CPP}+50$	ns	

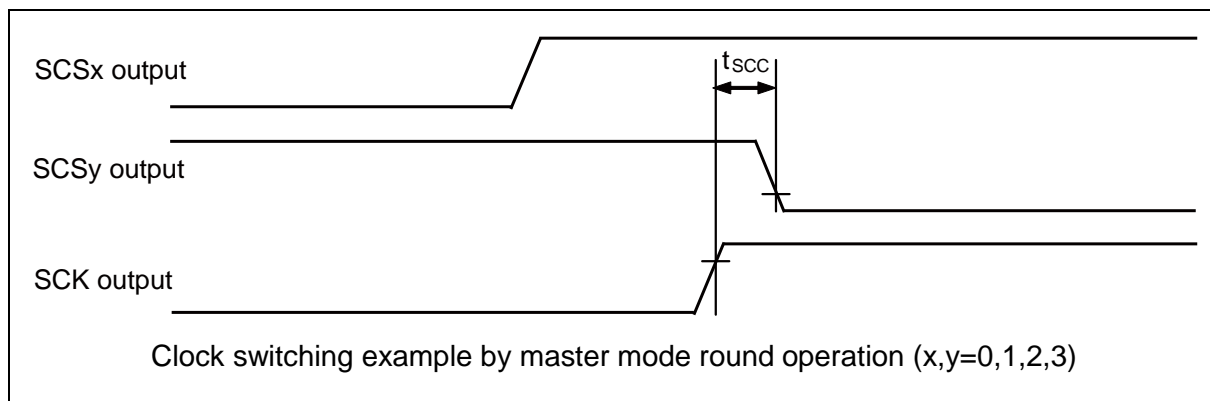
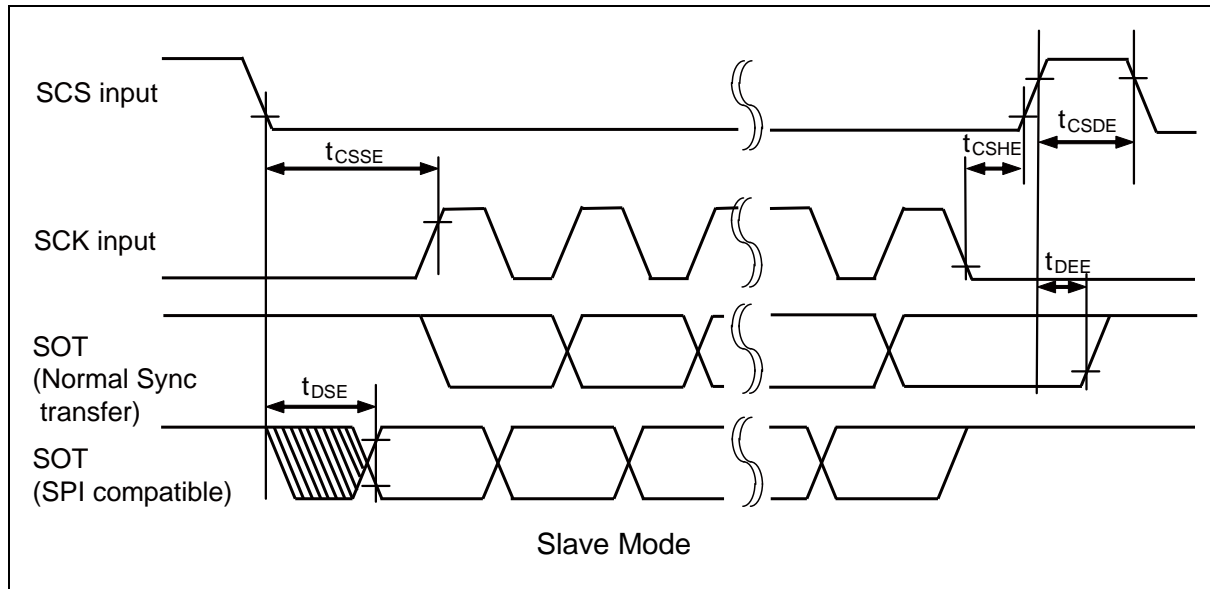
*1: $t_{CSSU} = \text{SCSTR:CSSU7-0} \times \text{Serial chip select timing operation clock}$

*2: $t_{CSHD} = \text{SCSTR:CSHD7-0} \times \text{Serial chip select timing operation clock}$

*3: $t_{CSDS} = \text{SCSTR:CSDS15-0} \times \text{Serial chip select timing operation clock}$
 For details of *1, *2 and *3 above, see Hardware Manual.

- Notes:
- This is the AC characteristic in CLK synchronized mode.
 - C_L is the load capacitance applied to pins during testing.
 - The maximum baud rate is limited by the internal operation clock used and other parameters.
See Hardware Manual for details.





When the serial chip select is used (SCSCR:CSEN=1)

- Serial clock output signal detect level "H"(SMR,SCSFR:SCINV=0)
- Serial chip select inactive level "L"(SCSCR,SCSFR:CSLVL=0)

(T_A: Recommended operating conditions, V_{CC} =5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
SCS ↑ ⇒ SCK ↓ setup time	t _{CSSI}	SCK1 to SCK4, SCK3_1,SCK4_1,	Master mode C _L =50pF	t _{CSSU} ^{*1} +0	t _{CSSU} ^{*1} +50	ns	
SCK ↑ ⇒ SCS ↓ hold time	t _{CSHI}	SCS0 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		t _{CSHD} ^{*2} -50	t _{CSHD} ^{*2} +0	ns	
SCS deselect time	t _{CSDI}	SCS0 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		-50+5t _{CPP} ^{*3} +t _{CSDS}	+50+5t _{CPP} ^{*3} +t _{CSDS}	ns	
SCS ↑ ⇒ SCK ↓ setup time	t _{CSSE}	SCK1 to SCK4, SCK3_1,SCK4_1,	Slave mode C _L =50pF	3t _{CPP} +30	-	ns	
SCK ↑ ⇒ SCS ↓ hold time	t _{CSHE}	SCS0 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		0	-	ns	
SCS deselect time	t _{CSDE}	SCS0 to SCS3, SCS3_1, SCS40 to SCS43, SCS40_1 to SCS43_1		3t _{CPP} +30	-	ns	
SCS ↑ ⇒ SOT delay time	t _{DSE}	SCS0 to SCS3, SCS3_1,		-	40	ns	
SCS ↓ ⇒ SOT delay time	t _{DEE}	SCS40 to SCS43 SCS40_1 to SCS43_1, SOT0 to SOT4, SOT3_1,SOT4_1		0	-	ns	

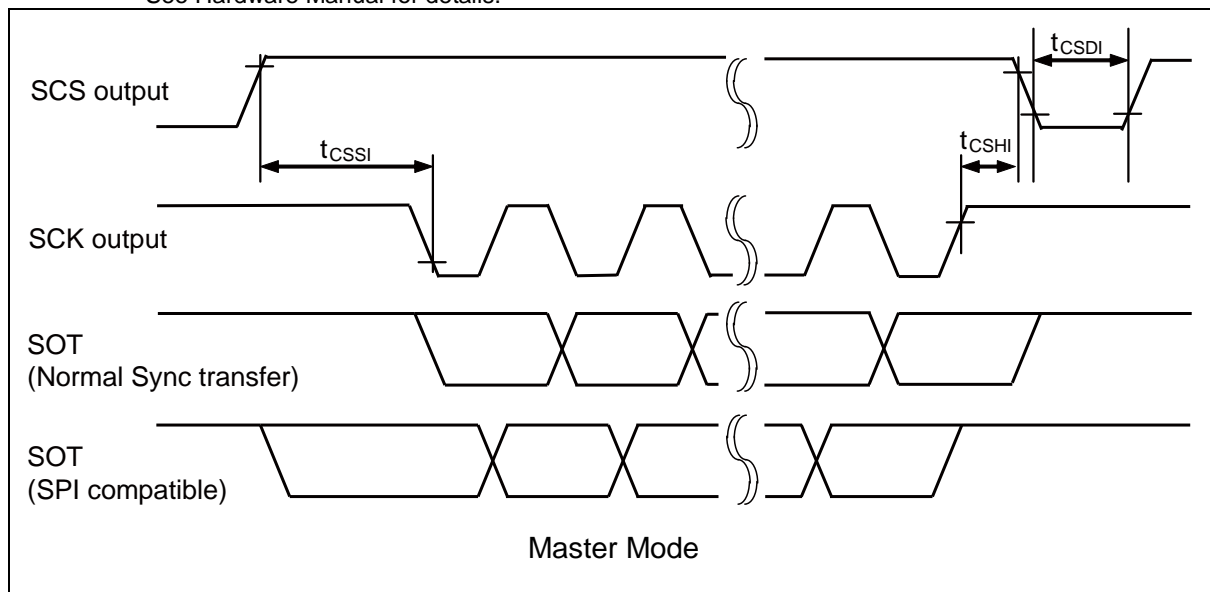
Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
SCK ↓ ⇒ SCS ↑ clock switch time	t_{SCC}	SCK1 to SCK4, SCK3_1, SCK4_1, SCS0 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1	Master mode round operation $C_L=50\text{pF}$	$3t_{CPP}+0$	$3t_{CPP}+50$	ns	

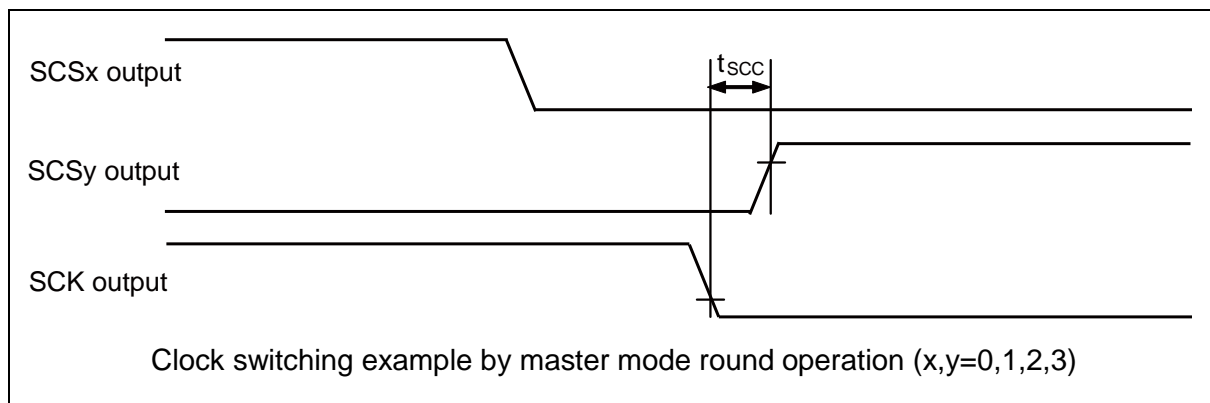
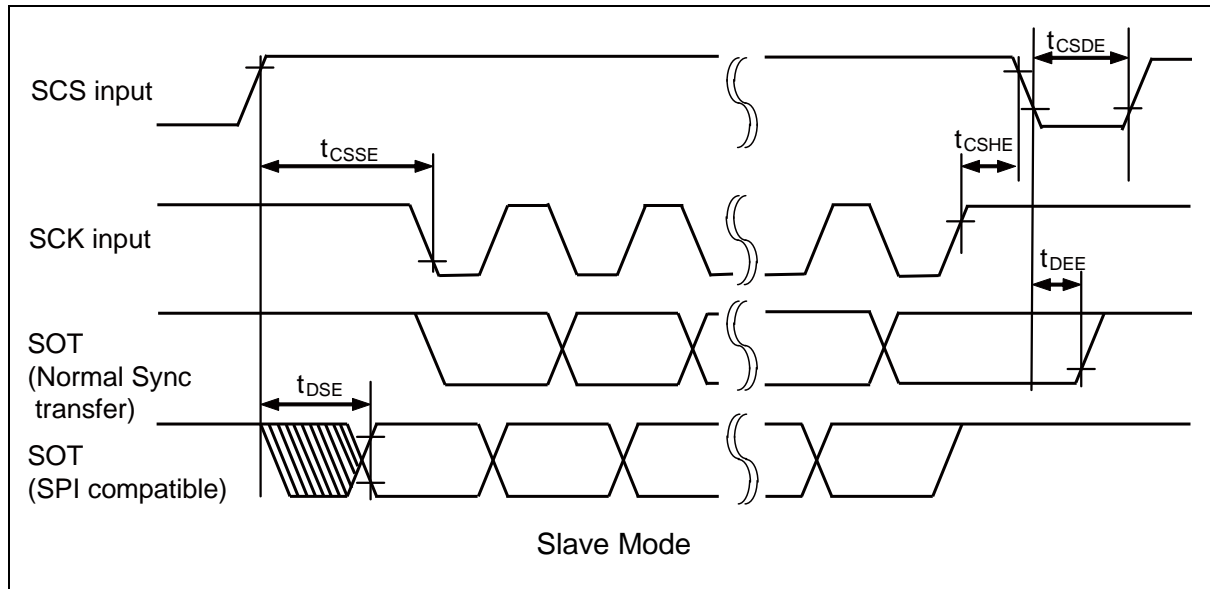
*1: $t_{CSSU} = \text{SCSTR:CSSU7-0} \times \text{Serial chip select timing operation clock}$

*2: $t_{CSHD} = \text{SCSTR:CSHD7-0} \times \text{Serial chip select timing operation clock}$

*3: $t_{CSDS} = \text{SCSTR:CSDS15-0} \times \text{Serial chip select timing operation clock}$
 For details of *1, *2 and *3 above, see Hardware Manual.

- Notes:
- This is the AC characteristic in CLK synchronized mode.
 - C_L is the load capacitance applied to pins during testing.
 - The maximum baud rate is limited by the internal operation clock used and other parameters.
See Hardware Manual for details.





When the serial chip select is used (SCSCR:CSEN=1)

- Serial clock output signal detect level "L"(SMR,SCSFR:SCINV=1)
- Serial chip select inactive level "L"(SCSCR,SCSFR:CSLVL=0)

(TA: Recommended operating conditions, V_{CC} =5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
SCS ↑ ⇒ SCK ↑ setup time	t _{CSSI}	SCK1 to SCK4, SCK3_1,SCK4_1,	Master mode C _L =50pF	t _{CSSU} ^{*1} +0	t _{CSSU} ^{*1} +50	ns	
SCK ↓ ⇒ SCS ↓ hold time	t _{CSHI}	SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		t _{CSHD} ^{*2} -50	t _{CSHD} ^{*2} +0	ns	
SCS deselect time	t _{CSDI}	SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		-50+5t _{CPP} ^{*3} +t _{CSDS}	+50+5t _{CPP} ^{*3} +t _{CSDS}	ns	
SCS ↑ ⇒ SCK ↑ setup time	t _{CSSE}	SCK1 to SCK4, SCK3_1,SCK4_1,	Slave mode C _L =50pF	3t _{CPP} +30	-	ns	
SCK ↓ ⇒ SCS ↓ hold time	t _{CSHE}	SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		0	-	ns	
SCS deselect time	t _{CSDE}	SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1		3t _{CPP} +30	-	ns	
SCS ↑ ⇒ SOT delay time	t _{DSE}	SCS1 to SCS3, SCS3_1,		-	40	ns	
SCS ↓ ⇒ SOT delay time	t _{DEE}	SCS40 to SCS43 SCS40_1 to SCS43_1, SOT0 to SOT4, SOT3_1,SOT4_1		0	-	ns	

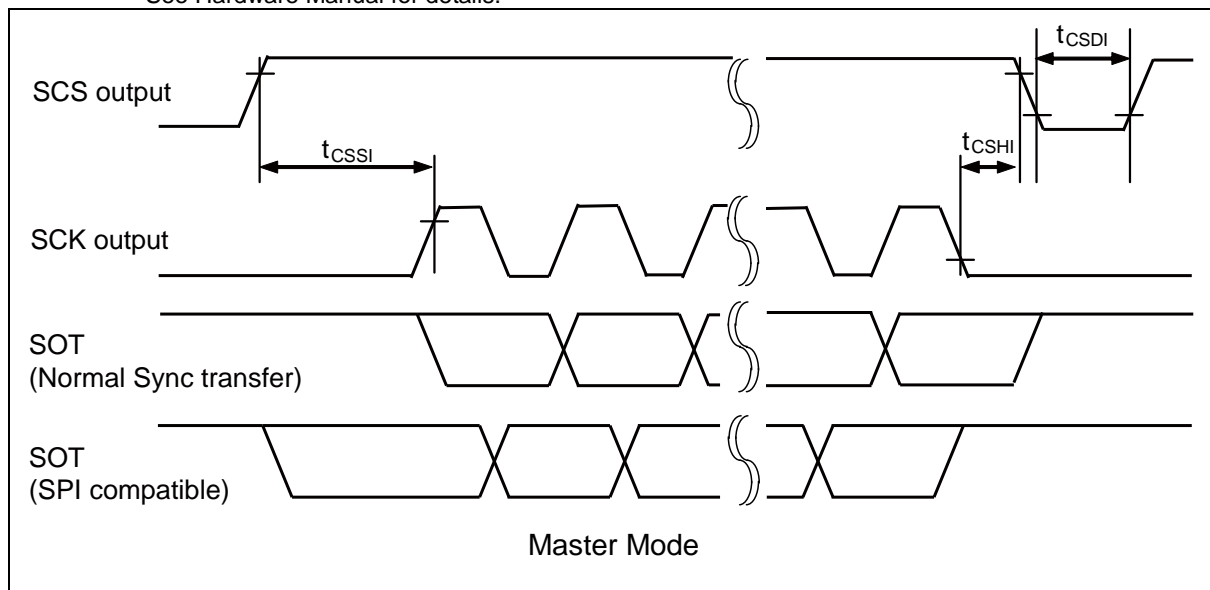
Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
SCK $\uparrow \Rightarrow$ SCS \uparrow clock switch time	t_{SCC}	SCK1 to SCK4, SCK3_1, SCK4_1, SCS1 to SCS3, SCS3_1, SCS40 to SCS43 SCS40_1 to SCS43_1	Master mode round operation $C_L=50pF$	$3t_{C_{PP}}+0$	$3t_{C_{PP}}+50$	ns	

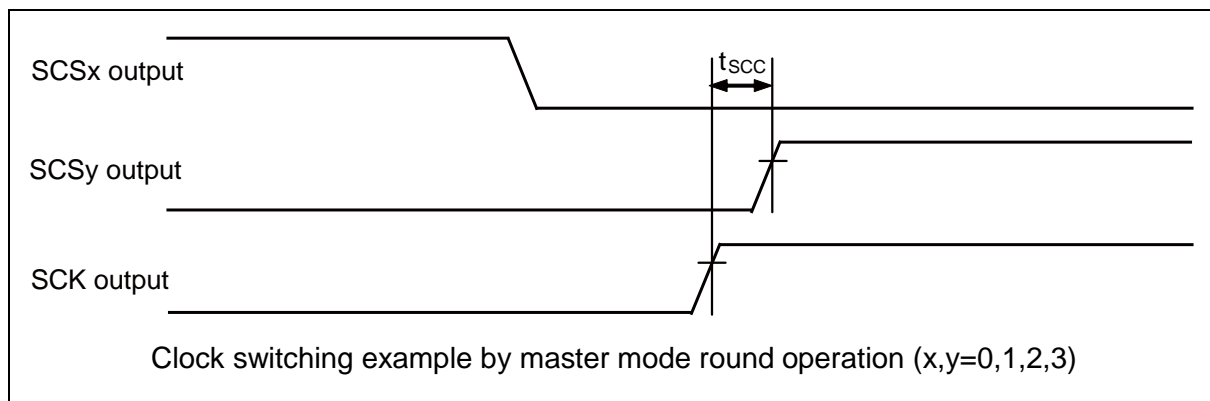
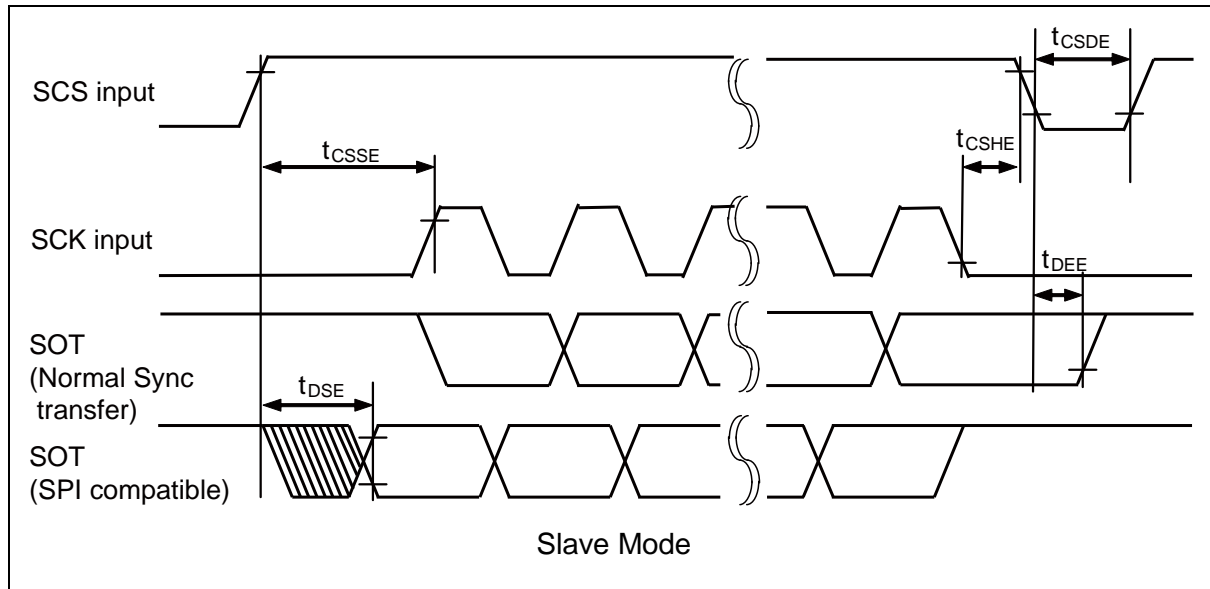
*1: $t_{CSSU} = SCSTR:CSSU7-0 \times \text{Serial chip select timing operation clock}$

*2: $t_{CSHD} = SCSTR:CSHD7-0 \times \text{Serial chip select timing operation clock}$

*3: $t_{CSDS} = SCSTR:CSDS15-0 \times \text{Serial chip select timing operation clock}$
 For details of *1, *2 and *3 above, see Hardware Manual.

- Notes:
- This is the AC characteristic in CLK synchronized mode.
 - C_L is the load capacitance applied to pins during testing.
 - The maximum baud rate is limited by the internal operation clock used and other parameters.
See Hardware Manual for details.



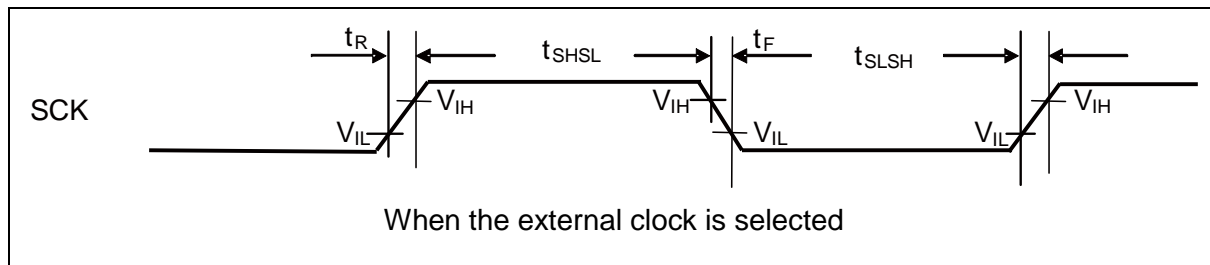


UART (Async Serial Interface) timing (SMR:MD2-0="000"b, "001"b)

When the external clock is selected (BGR:EXT=1)

(T_A: Recommended operating conditions, V_{CC} =5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
Serial clock "L" pulse width	t _{SLSH}	SCK0 to SCK4, SCK3_1,SCK4_1	C _L =50pF	t _{CPP} +10	-	ns	
Serial clock "H" pulse width	t _{SHSL}			t _{CPP} +10	-	ns	
SCK fall time	t _F			-	5	ns	
SCK rise time	t _R			-	5	ns	

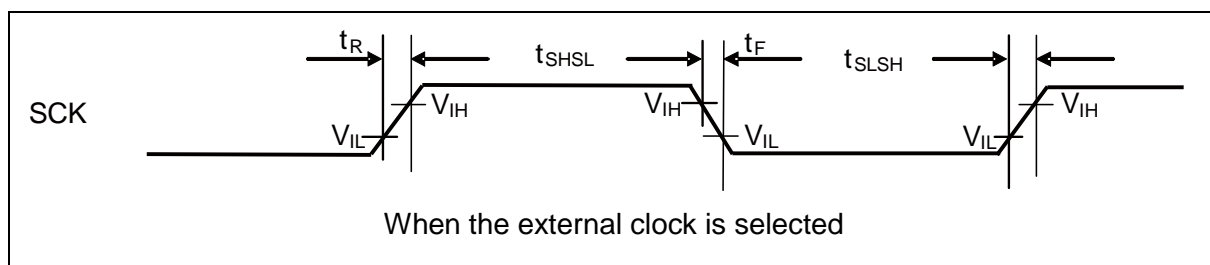


LIN interface (v2.1) (LIN Communication Control Interface (v2.1)) timing (SMR:MD2-0="011"b)

When the external clock is selected (BGR:EXT=1)

(T_A: Recommended operating conditions, V_{CC} =5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
Serial clock "L" pulse width	t _{SLSH}	SCK0 to SCK4, SCK3_1,SCK4_1	C _L =50pF	t _{CPP} +10	-	ns	
Serial clock "H" pulse width	t _{SHSL}			t _{CPP} +10	-	ns	
SCK fall time	t _F			-	5	ns	
SCK rise time	t _R			-	5	ns	



I²C timing (SMR:MD2-0="100"b)

(T_A: Recommended operating conditions, V_{CC}=5.0V±10%, V_{SS}=AV_{SS}=0.0V)

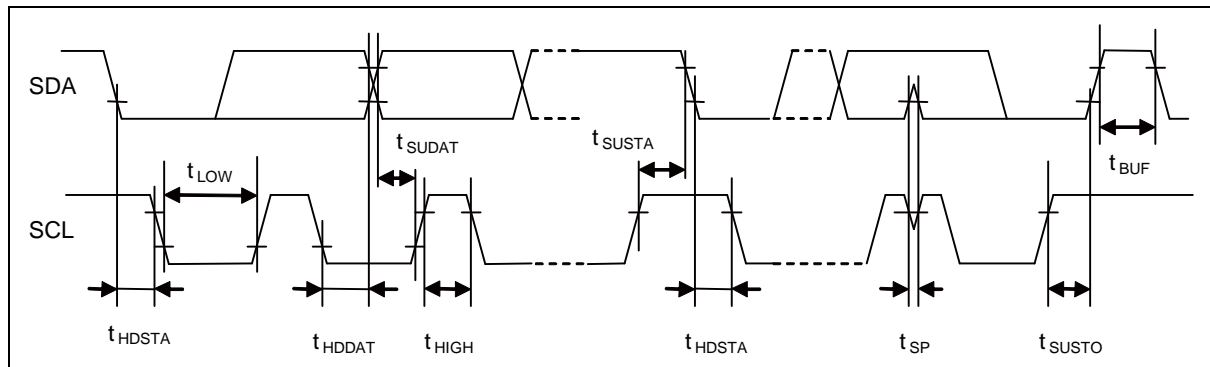
Parameter	Symbol	Pin name	Conditions	Standard mode		High-speed mode ³		Unit	Remarks
				Min	Max	Min	Max		
SCL clock frequency	f _{SCL}	SCK0,SCK1, SCK3,SCK4, SCK3_1,SCK4_1 (SCL)	C _L =50pF R=(V _P /I _{OL}) ^{*1}	0	100	0	400	kHz	
"Repeat START condition" hold time SDA ↓ → SCL ↓	t _{HSTA}	SCK0,SCK1, SCK3,SCK4, SCK3_1,SCK4_1 (SCL) SOT0,SOT1, SOT3,SOT4, SOT3_1,SOT4_1 (SDA)		4.0	-	0.6	-	μs	
"L" width for SCL clock	t _{LOW}	SCK0,SCK1, SCK3,SCK4,		4.7	-	1.3	-	μs	
"H" width for SCL clock	t _{HIGH}	SCK3_1,SCK4_1 (SCL)		4.0	-	0.6	-	μs	
"Repeat START condition" setup time SCL ↑ → SDA ↓	t _{SUSTA}	SCK0,SCK1, SCK3,SCK4, SCK3_1,SCK4_1 (SCL)		4.7	-	0.6	-	μs	
Data hold time SCL ↓ → SDA ↓ ↑	t _{HDDAT}	SOT0,SOT1, SOT3,SOT4, SOT3_1,SOT4_1 (SDA)		0	3.45 ^{*2}	0	0.90 ^{*3}	μs	
Data setup time SDA ↓ ↑ → SCL ↑	t _{SUDAT}			250	-	100	-	ns	
"STOP condition" setup time SCL ↑ → SDA ↑	t _{SUSTO}			4.0	-	0.6	-	μs	
Bus free time between "STOP condition" and "START condition"	t _{BUF}	-		4.7	-	1.3	-	μs	
Noise filter	t _{SP}	-		2t _{CPP} ^{*4}	-	2t _{CPP} ^{*4}	-	ns	

*1: R and C_L represent the pull-up resistance and load capacitance of the SCL and SDA output lines, respectively. V_P shows that the power supply voltage of the pull-up resistor and I_{OL} shows the V_{OL} guarantee current.

*2: The maximum t_{HDDAT} only has to be met if the device does not extend the "L" width (t_{LOW}) of the SCL signal.

*3: A high-speed mode I^2C bus device can be used on a standard mode I^2C bus system as long as the device satisfies the requirement of " $t_{SUDAT} \geq 250$ ns".

*4: t_{CPP} is the peripheral clock cycle time. Adjust the clock of the peripheral bus to 8MHz or more when use I^2C .

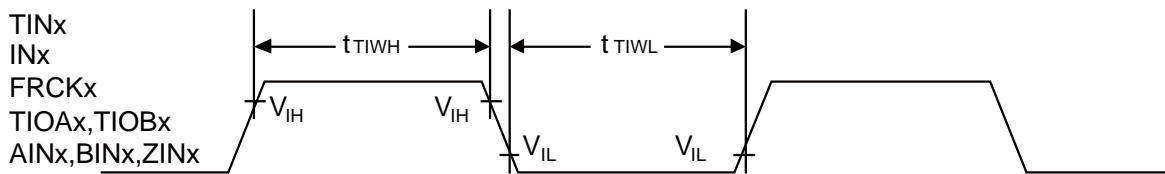


12.4.5 Timer input timing

(T_A: Recommended operating conditions, V_{CC} = 5.0V ± 10%, V_{SS} = AV_{SS} = 0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
Input pulse width	t _{TIWH} , t _{TIWL}	TIN0 to TIN3, IN0 to IN7, FRCK0 to FRCK5, TIOA0, TIOA1, TIOB0, TIOB1	-	4t _{CPP}	-	ns	
		AIN0, AIN1, BIN0, BIN1, ZIN0, ZIN1	-	2t _{CPP}	-	ns	

Timer input timing

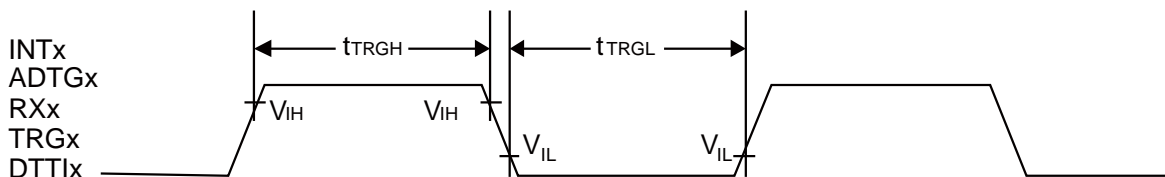


12.4.6 Trigger input timing

(T_A: Recommended operating conditions, V_{CC} = 5.0V ± 10% V_{SS} = AV_{SS} = 0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
Input pulse width	t _{TRGH} , t _{TRGL}	INT0 to INT7, ADTG0 to ADTG2, RX0 to RX2, TRG0 to TRG5, DTTI0.DTTI1	-	5t _{CPP}	-	ns	
				1	-	μs	At Stop mode

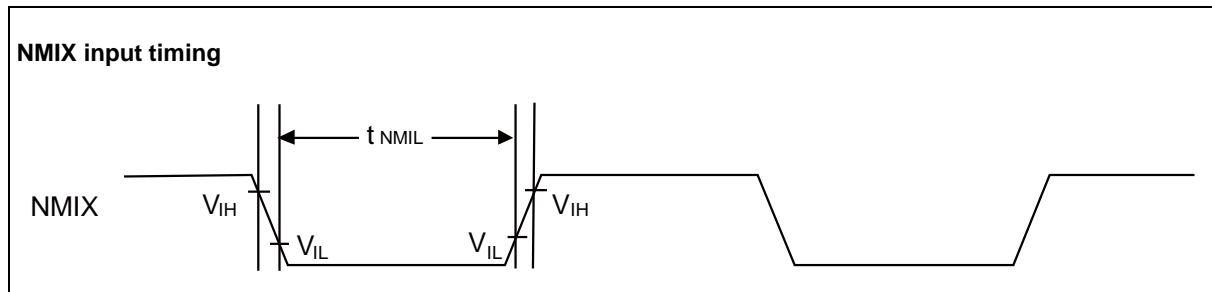
Trigger input timing



12.4.7 NMI input timing

(T_A: Recommended operating conditions, V_{CC} = 5.0V ± 10%, V_{SS} = AV_{SS} = 0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
Input pulse width	t _{NMIL}	NMIX	-	4t _{CPP}	-	ns	



12.4.8 Low-voltage detection (External low-voltage detection)

 (T_A: Recommended operating conditions, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
Power supply voltage range	V _{DP5}	VCC5	-	-	-	5.5	V	
Detection voltage	V _{DL}	VCC5	*1	3.7	3.9	4.1	V	When power supply voltage falls and detection level is set initially
Hysteresis width	V _{HYS}	VCC5	-	-	-	125	mV	When power supply voltage rises
Low-voltage detection time	T _d	-	-	-	-	30	μs	
Power supply voltage fluctuation rate	-	VCC5	-	-2	-	2	V/ms	*2

*1: If the fluctuation of the power supply has exceeded the detection voltage range within the time less than the low-voltage detection time (T_d), there is the possibility to generate or release after the power supply voltage has exceeded the detection voltage range.

*2: In order to perform the low-voltage detection at the detection voltage (V_{DL}), be sure to suppress fluctuation of the power supply within the limits of the power supply voltage fluctuation rate.

12.4.9 Low-voltage detection (Internal low-voltage detection)

 (T_A: Recommended operating conditions, V_{SS}=AV_{SS}=0.0V)

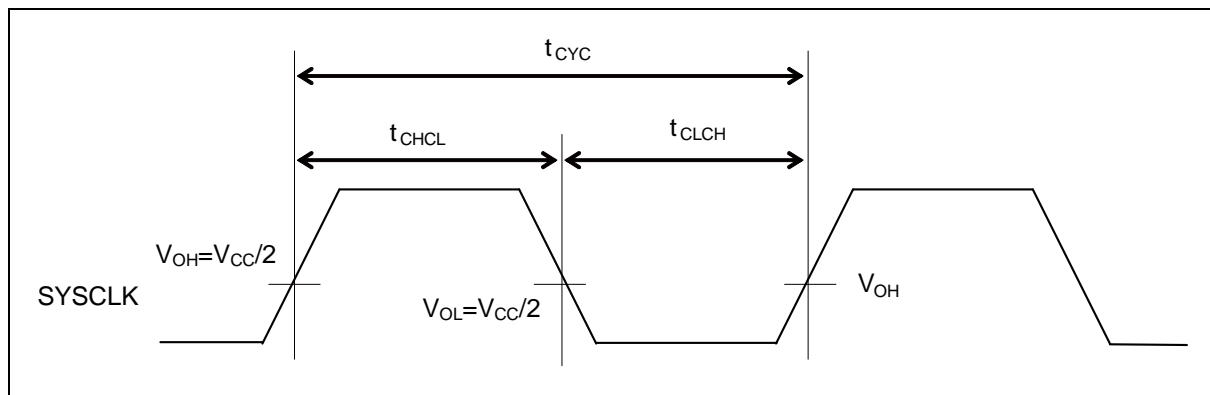
Parameter	Symbol	Pin name	Conditions	Value			Unit	Remarks
				Min	Typ	Max		
Power supply voltage range	V _{RDP5}	-	-	-	-	1.3	V	
Detection voltage	V _{RDL}	-	*	0.8	0.9	1.0	V	When power supply voltage falls
Hysteresis width	V _{RHYS}	-	-	-	-	50	mV	When power supply voltage rises
Low-voltage detection time	-	-	-	-	-	30	μs	

*: If the fluctuation of the power supply is faster than the low-voltage detection time (T_d), there is a possibility to generate or release after the power supply voltage has exceeded the detection voltage range.

12.4.10 Clock output timing

(T_A: Recommended operating conditions, V_{CC}=AV_{CC}=5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Conditions	Value		Unit	Remarks
				Min	Max		
Cycle time	t _{CYC}	SYSCLK	-	t _{CPT}	-	ns	
SYSCLK ↑ → SYSCLK ↓	t _{CHCL}	SYSCLK		(1/2 t _{CYC}) - 7	(1/2 t _{CYC}) + 7	ns	
SYSCLK ↓ → SYSCLK ↑	t _{CLCH}	SYSCLK		(1/2 t _{CYC}) - 7	(1/2 t _{CYC}) + 7	ns	



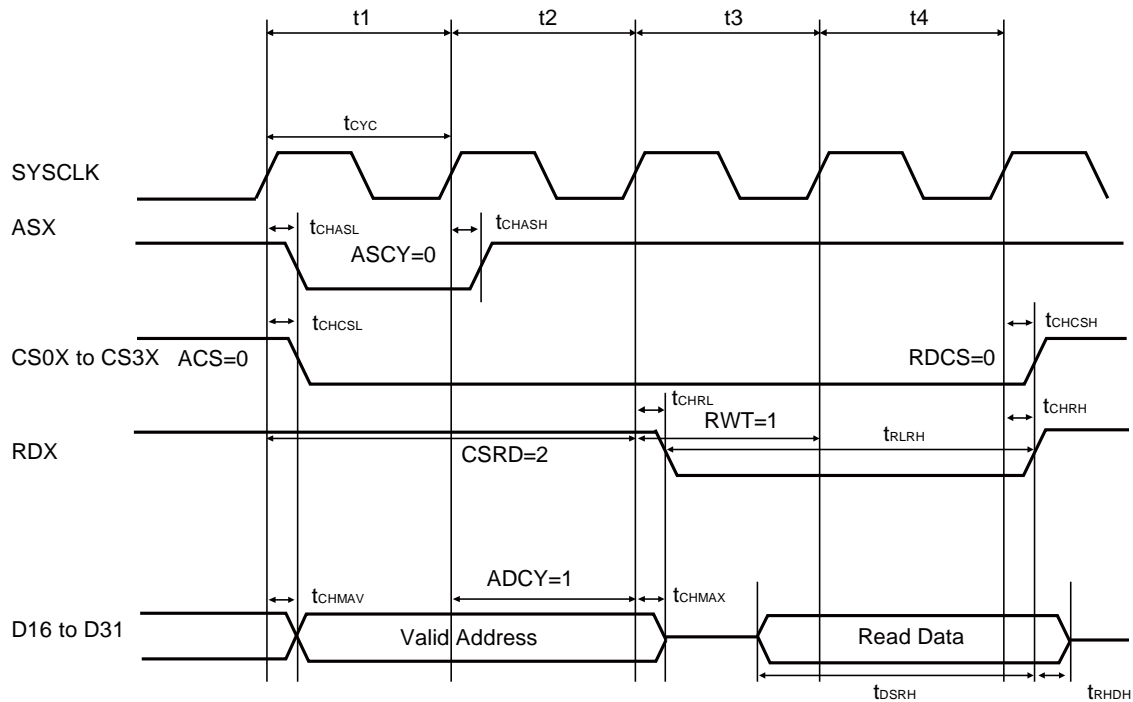
12.4.11 External bus I/F (synchronous mode) timing

(T_A: Recommended operating conditions, V_{CC} = AV_{CC} = 5.0V ± 10%, V_{SS} = AV_{SS} = 0.0V)
 (External load capacitance 50pF)

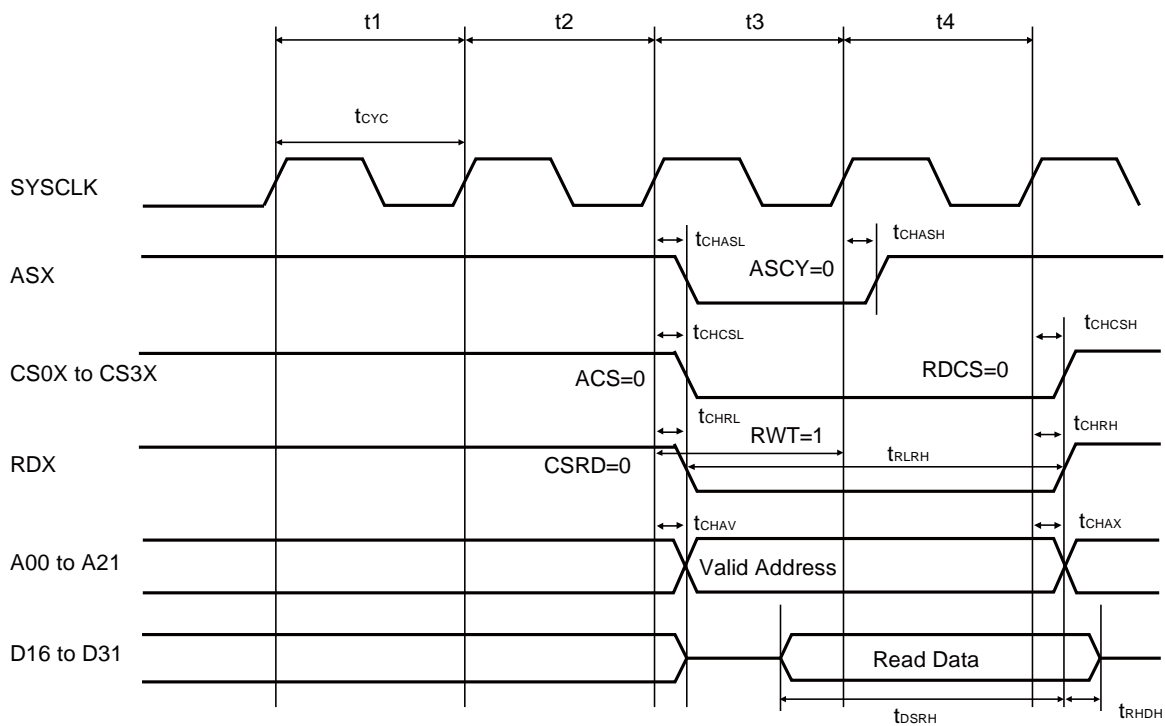
Parameter	Symbol	Pin name	Value		Unit	Remarks
			Min	Max		
Cycle time	t _{CYC}	SYSCLK	25	-	ns	
ASX delay time	t _{CHASL} , t _{CHASH}	SYSCLK, ASX	0.5	18.0	ns	
CS0X to CS3X delay time	t _{CHCSL} , t _{CHCSH}	SYSCLK, CS0X to CS3X	0.5	18.0	ns	
A00 to A21 delay time	t _{CHAV} , t _{CHAX}	SYSCLK, A00 to A21	0.5	18.0	ns	
RDX delay time	t _{CHRL} , t _{CHRH}	SYSCLK, RDX	0.5	18.0	ns	
RDX minimum pulse	t _{RLRH}	RDX	t _{CYC} × 2 - 20	-	ns	RWT=1, set RWT to 1 or more. *
Data setup → RDX ↑ time	t _{DSRH}	RDX, D16 to D31	18 + t _{CYC}	-	ns	RWT=1, set RWT to 1 or more. *
RDX ↑ → data hold	t _{RHDH}		0	-	ns	
WRnX delay time	t _{CHWL} , t _{CHWH}	SYSCLK, WR0X, WR1X	0.5	18.0	ns	
WRnX minimum pulse width	t _{WLWH}	WR0X, WR1X	t _{CYC} - 10	-	ns	WWT=0*
SYSCLK ↑ → data output time	t _{CHDV}	SYSCLK, D16 to D31	0.5	18.0	ns	
SYSCLK ↑ → data hold time	t _{CHDX}		-	18	ns	Set WRCS to 1 or more.
SYSCLK ↑ → address output time	t _{CHMAV}	SYSCLK, D16 to D31	0.5	18.0	ns	
SYSCLK ↑ → address hold time	t _{CHMAX}		-	18	ns	In multiplex mode, set as follows: Set CSWR and CSRD to 2 or more. Set to ADCY > ASCY. To prevent protocol violation, satisfy the following conditions: ADCY + 1 ≤ ACS + CSRD ADCY + 1 ≤ ACS + CSWR ASCY + 1 ≤ ACS + CSRD ASCY + 1 ≤ ACS + CSWR For details, see Hardware Manual.

*: If the bus is expanded by automatic wait insertion or RDY input, add time (t_{CYC} × the number of expanded cycles) to the rated value.

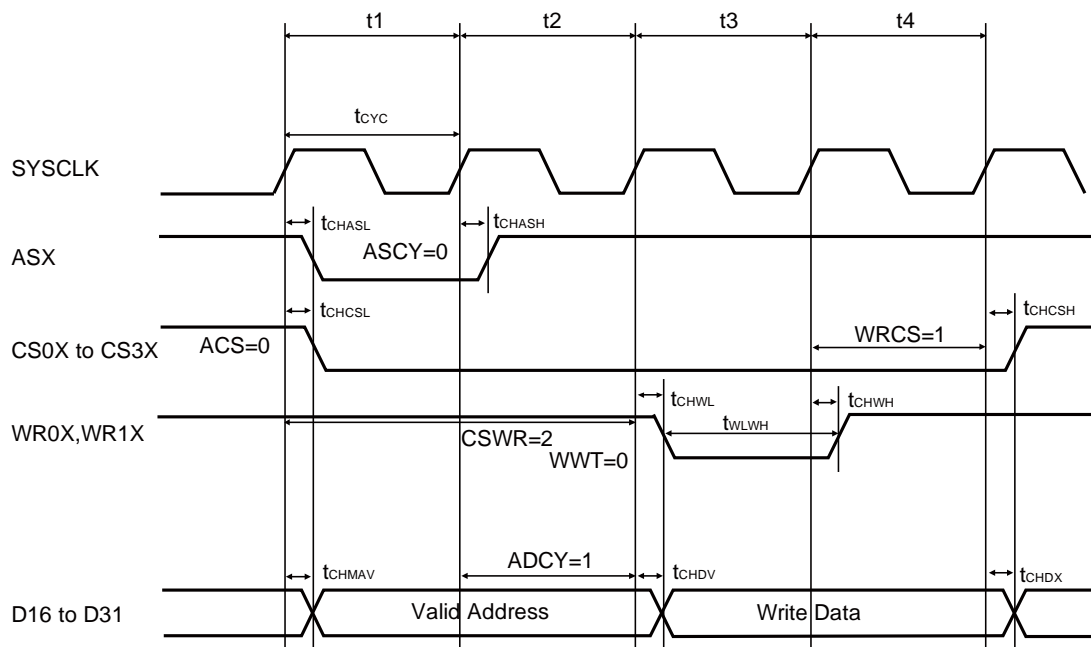
External bus I/F (synchronous mode, read operation, and multiplex mode) timing



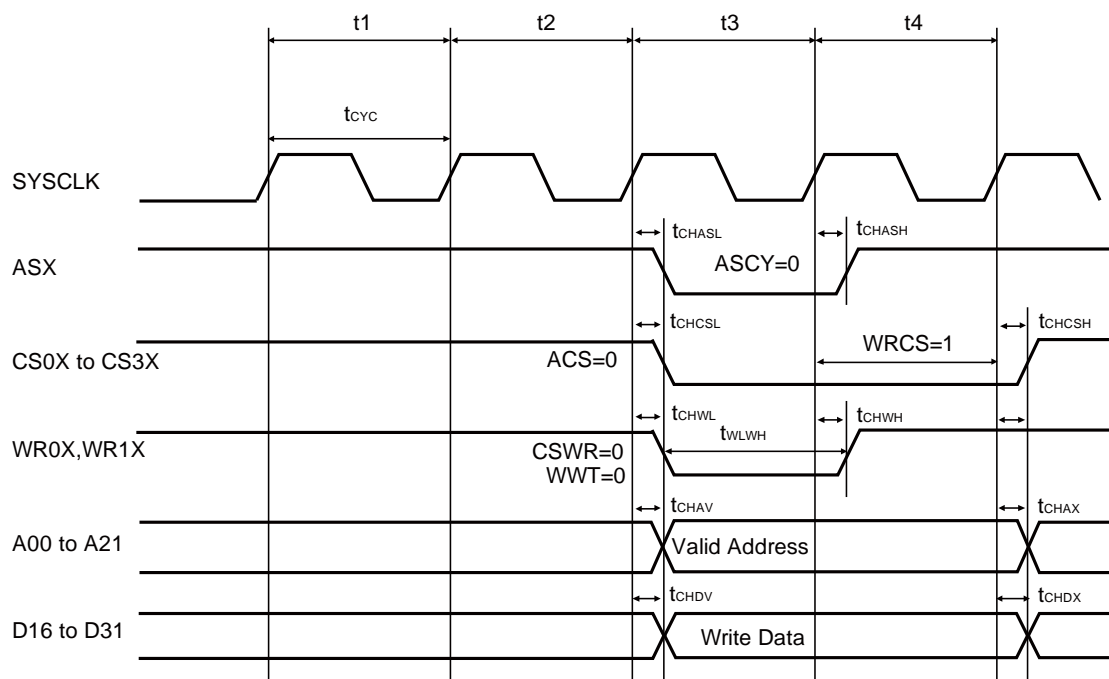
External bus I/F (synchronous mode, read operation, and split mode) timing



External bus I/F (synchronous mode, write operation, and multiplex mode) timing



External bus I/F (synchronous mode, write operation, and split mode) timing



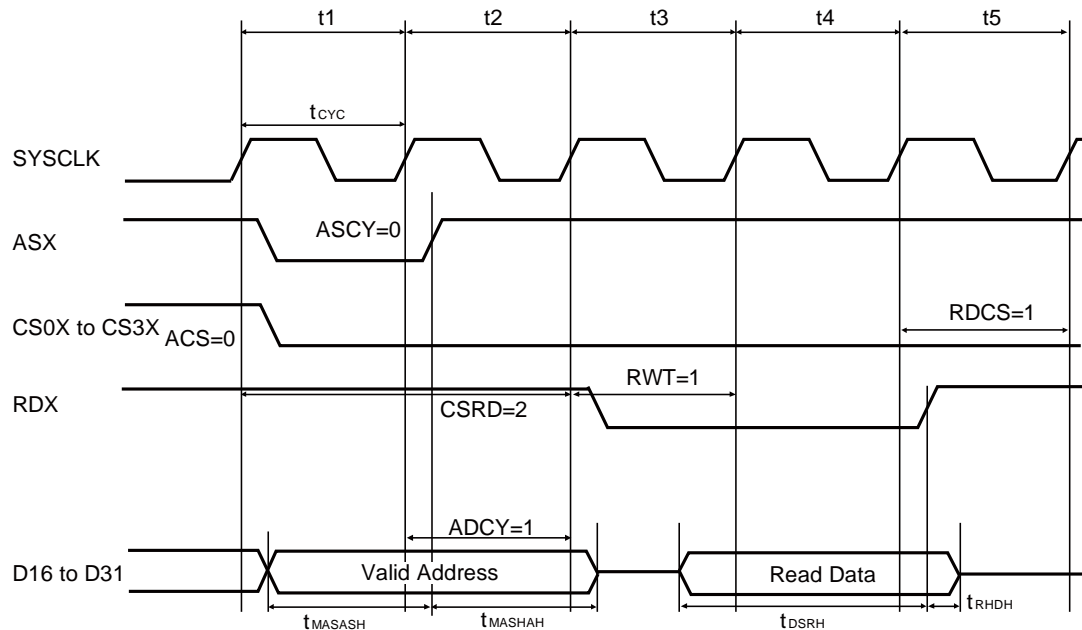
12.4.12 External bus I/F (Asynchronous mode) timing

(T_A: Recommended operating conditions, V_{CC} = AV_{CC}=5.0V±10%, V_{SS}=AV_{SS}=0.0V)
 (External load capacitance 50pF)

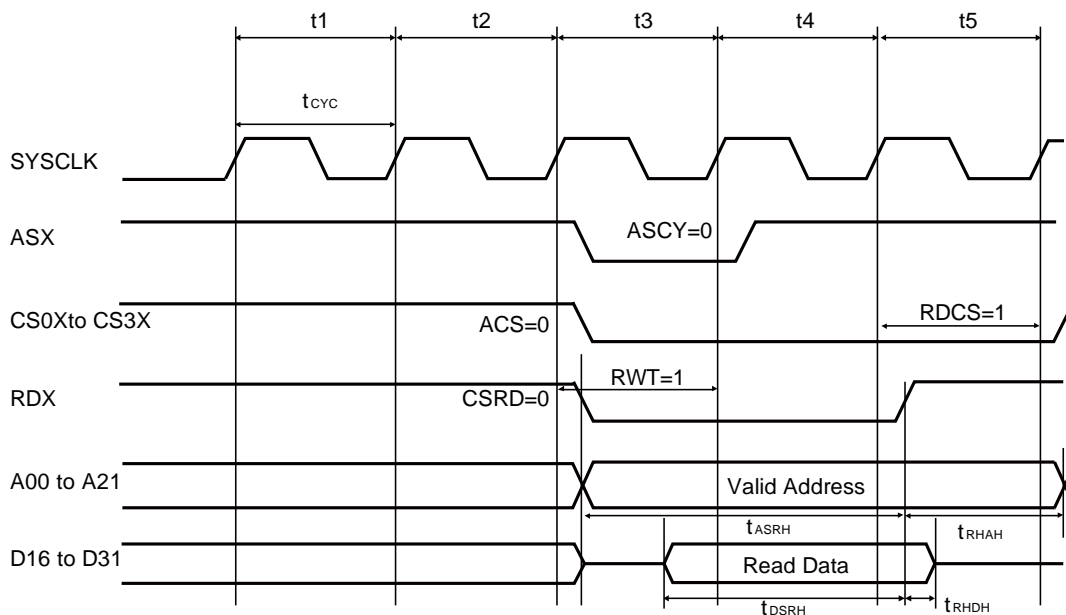
Parameter	Symbol	Pin name	Value		Unit	Remarks
			Min	Max		
Cycle time	t _{CYC}	SYSCLK	25	-	ns	
Address setup → RDX ↑ time	t _{ASRH}	RDX, A00 to A21	2 × t _{CYC} - 12	2 × t _{CYC} + 12	ns	RWT=1, set RWT to 1 or more.*
RDX ↑ → Address hold	t _{RHAH}		t _{CYC} - 12	t _{CYC} + 12	ns	Set RDCS to 1 or more.
Data setup → RDX ↑ time	t _{DSRH}	RDX, D16 to D31	18 + t _{CYC}	-	ns	RWT=1, set RWT to 1 or more.
RDX ↑ → Data hold	t _{RHDH}		0	-	ns	
Address setup → WRnX ↑ time	t _{ASWH}	WR0X to WR1X, A00 to A21	t _{CYC} - 12	t _{CYC} + 12	ns	WWT=0.*
WRnX ↑ → Address hold	t _{WHAH}		t _{CYC} - 12	t _{CYC} + 12	ns	Set WRCS to 1 or more.
Data setup → WRnX ↑ time	t _{DSWH}	WR0X to WR1X, D16 to D31	t _{CYC} - 16	t _{CYC} + 16	ns	WWT=0.*
WRnX ↑ → Data hold	t _{WHDH}		t _{CYC} - 16	t _{CYC} + 16	ns	Set WRCS to 1 or more.
Address setup → ASX ↑ time	t _{MASASH}	ASX, D16 to D31	t _{CYC} - 16	t _{CYC} + 16	ns	ASCY=0.
ASX ↑ → Address hold	t _{MASHAH}		t _{CYC} - 16	t _{CYC} + 16	ns	In multiplex mode, set as follows: Set CSWR and CSRD to 2 or more. Set to ADCY>ASCY. To prevent protocol violation, satisfy the following conditions: ADCY + 1 ≤ ACS + CSRD ADCY + 1 ≤ ACS + CSWR ASCY + 1 ≤ ACS + CSRD ASCY + 1 ≤ ACS + CSWR For details, see Hardware Manual.

*: If the bus is expanded by automatic wait insertion or RDY input, add time (t_{CYC} × the number of expanded cycles) to the rated value.

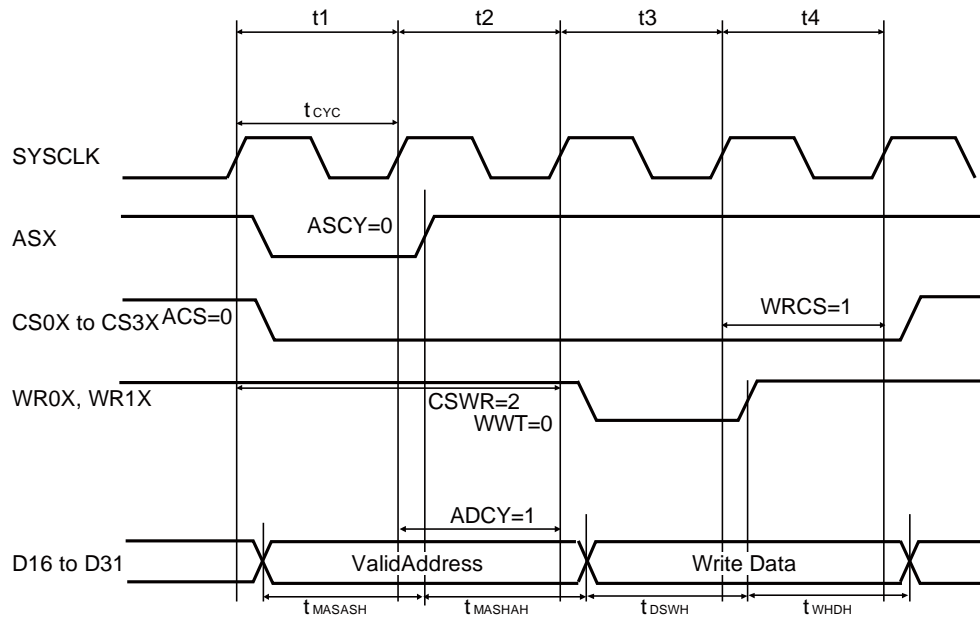
External bus I/F (asynchronous mode, read operation, and multiplex mode) timing



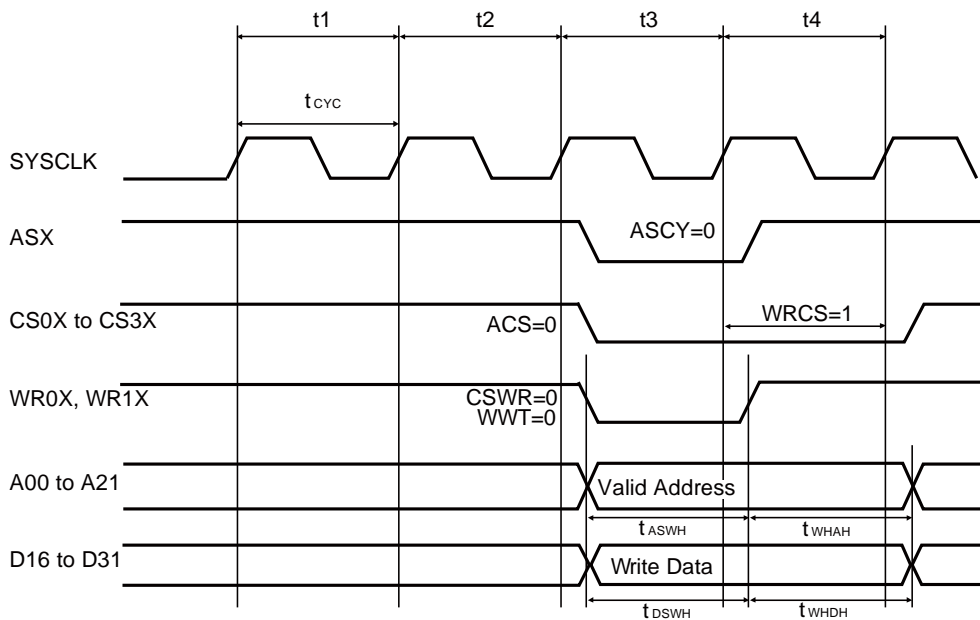
External bus I/F (asynchronous mode, read operation, and split mode) timing



External bus I/F (asynchronous mode, write operation, and multiplex mode) timing



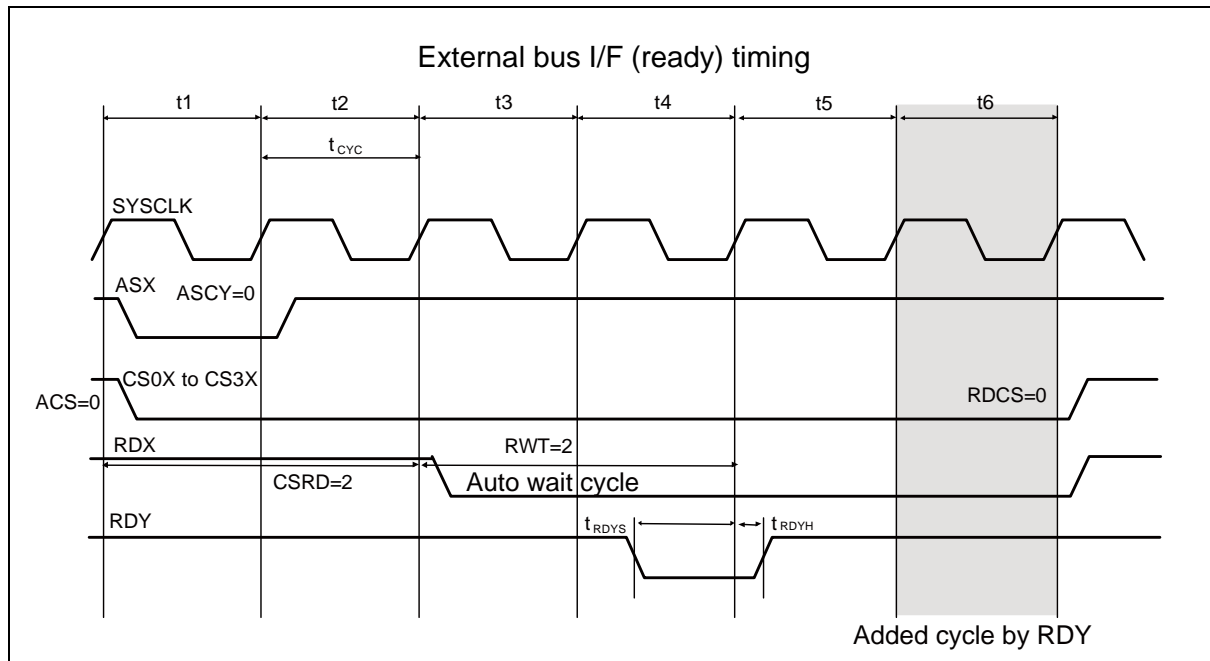
External bus I/F (asynchronous mode, write operation, and split mode) timing



12.4.13 External bus I/F (ready) timing

(T_A: Recommended operating conditions, V_{CC}=AV_{CC}=5.0V±10%, V_{SS}=AV_{SS}=0.0V)
 (External load capacitance 50pF)

Parameter	Symbol	Pin name	Value		Unit	Remarks
			Min	Max		
Cycle time	t _{CYC}	SYSCLK	50	-	ns	If using RDY, set SYSCLK to 20 MHz or less.
RDY setup time → SYSCLK ↑	t _{RDYS}	SYSCLK, RDY	28	-	ns	
SYSCLK ↑ → RDY hold time	t _{RDYH}	SYSCLK, RDY	0	-	ns	



12.5 A/D Converter

12.5.1 Electrical Characteristics

(T_A: Recommended operating conditions, V_{CC} = 5.0V±10%, AV_{CC}=5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Value			Unit	Remarks
			Min	Typ	Max		
Resolution	-	-	-	-	12	bit	
Non linearity error	-	-	-4.0	-	+4.0	LSB	
Differential linearity error	-	-	-1.9	-	+1.9	LSB	
Zero transition voltage	V _{OT}	AN0 to AN23	AVRL+ 0.5LSB-20	-	AVRL+ 0.5LSB+20	mV	1LSB= (VFST-VOT)/ 4094
Full-scale transition voltage	V _{FST}	AN0 to AN23	AVRH- 1.5LSB-20	-	AVRH- 1.5LSB+20	mV	
Sampling time	t _{SMP}	-	0.3	-	12	μs	*1
Compare time	t _{CMP}	-	0.7	-	28	μs	*1
A/D conversion time	t _{CNV}	-	1.0	-	40	μs	*1
Analog port input current	I _{AIN}	AN0 to AN23	-1.0	-	1.0	μA	V _{AVSS} ≤ V _{AIN} ≤ V _{AVCC}
Analog input voltage	V _{AIN}	AN0 to AN23	AV _{SS}	-	AVRH	V	
Reference voltage	AVRH	AVRH1, AVRH2, AVRH3	4.5	-	5.5	V	Avcc ≥ AVRH
	AVRL	AVRL1, AVRL2, AVRL3	-	0.0	-	V	
Power supply current	I _A	AVCC3	-	1.5	2.1	mA	3 units operating
	I _{AH}		-	-	25	μA	3/2 units operating
	I _R	AVRH1,	-	3	6	mA	3 units operating
	I _{RH}	AVRH2, AVRH3	-	-	4.8	μA	3/2 units operating
Variation between channels	-	AN0 to AN23	-	-	4	LSB	

*1: Time for each channel.

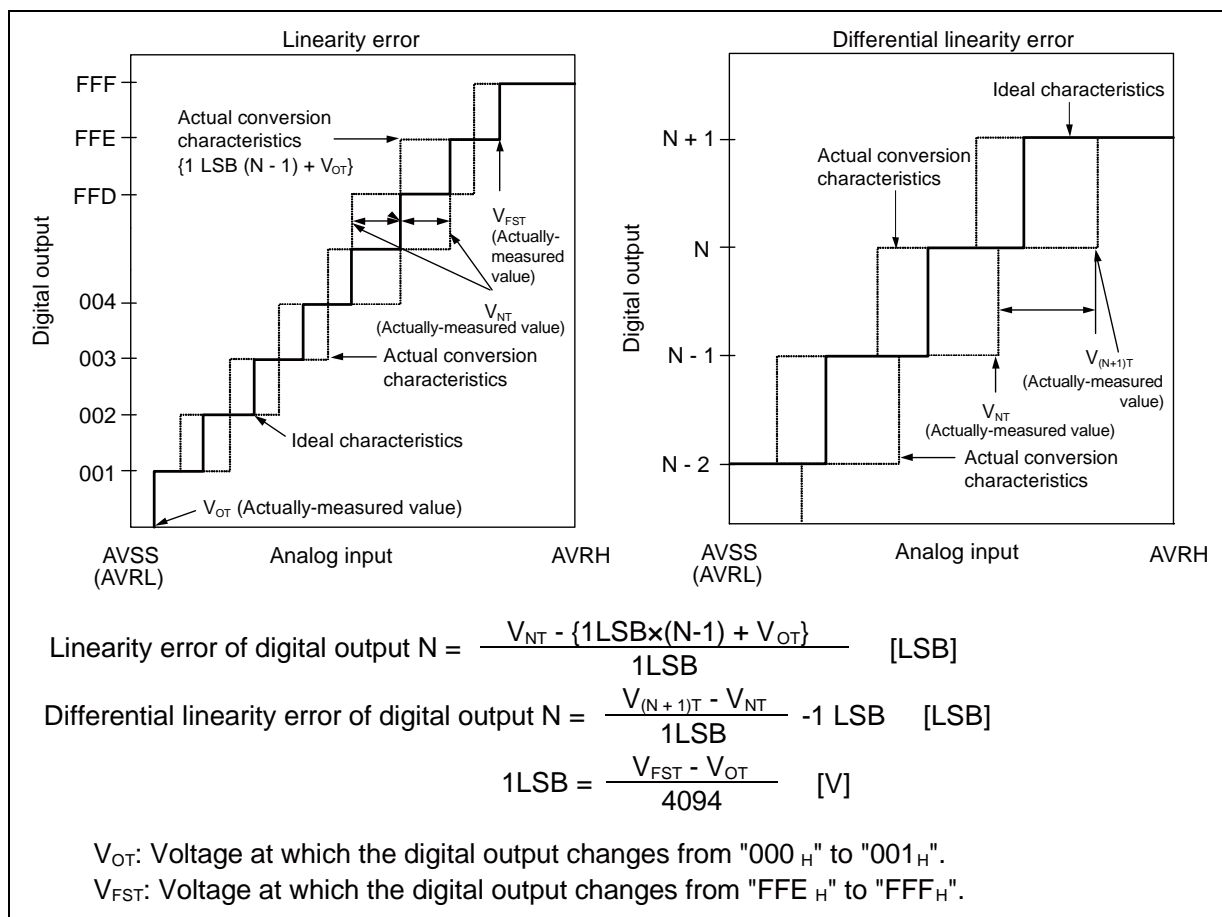
*2: The power supply current (V_{CC}=AV_{CC}=5.0V) is specified if the A/D converter is not operating and CPU is stopped.

12.5.2 Definition of Terms

Resolution: Analog variation that is recognized by an A/D converter.

Linearity error : Deviation of the actual conversion characteristics from a straight line that connects the zero transition point ("0000 0000 0000" ↔ "0000 0000 0001") to the full-scale transition point ("1111 1111 1110" ↔ "1111 1111 1111").

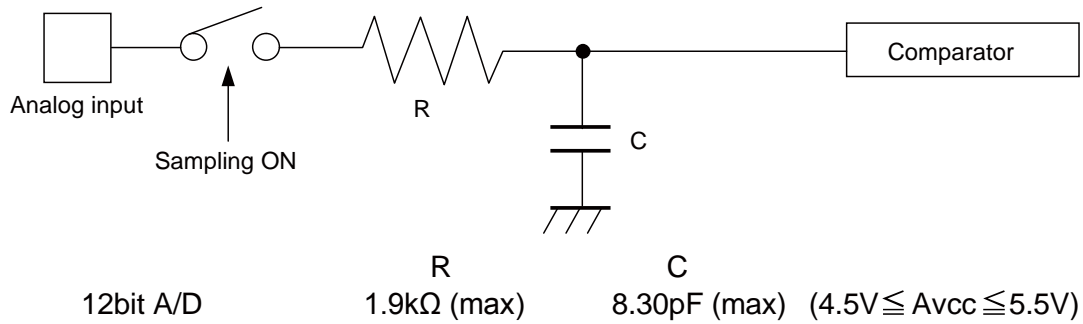
Differential linearity error: Deviation of the input voltage from the ideal value that is required to change the output code by 1LSB.



12.5.3 Notes on Using A/D Converter

<About the output impedance of the analog input of external circuit>

When the external impedance is too high, the sampling time for analog voltages may not be sufficient. In this case, it is recommended to connect the capacitor (approx. 0.1 μF) to the analog input pin.

Analog input circuit model


Note: Listed values must be considered as reference values.

12.6 D/A Converter

(T_A: Recommended operating conditions, V_{CC}=AV_{CC}=5.0V±10%, V_{SS}=AV_{SS}=0.0V)

Parameter	Symbol	Pin name	Value			Unit	Remarks
			Min	Typ	Max		
Resolution	-	-	-	-	10	bit	
Differential linearity error	-	-	-4.0	-	+4.0	LSB	When the analog output voltage is 0.5V to 4.5V

12.7 Flash memory

12.7.1 Electrical Characteristics

Parameter	Value			Unit	Remarks
	Min	Typ	Max		
Sector erase time	-	200	800	ms	8 Kbyte sector ^{*1} excluding internal preprogramming time
	-	300	1100	ms	8 Kbyte sector ^{*1} including internal preprogramming time
	-	400	2000	ms	64 Kbyte sector ^{*1} excluding internal preprogramming time
	-	700	3700	ms	64 Kbyte sector ^{*1} including internal preprogramming time
8-bit writing time	-	9	288	μs	Excluding overhead time at system level ^{*1}
16-bit writing time	-	12	384	μs	Excluding overhead time at system level ^{*1}
ECC writing time	-	9	288	μs	Excluding overhead time at system level ^{*1}
Erase cycle ^{*2} / Data retention time	1,000 cycles/20 years, 10,000 cycles/10 years, 100,000 cycles/5 years	-	-	-	Average temperature T _A =+85°C ^{*3}

*1: The guaranteed value for erase up to 100,000 cycles

*2: Number of erase cycles for each sector

*3: This value comes from the technology qualification (using Arrhenius equation to translate high temperature measurements into normalized value at +85°C).

12.7.2 Notes

While the Flash memory is written or erased, shutdown of the external power supply (V_{CC}) is prohibited.

In the application system where V_{CC} might disappear while writing, be sure to turn the power off by using an external low-voltage detector.

To put it concretely, after the external power supply voltage falls below the detection voltage (V_{DL}^{*}), hold V_{CC} at 2.7V or more within the duration calculated by the following expression:

$$T_d[\mu s] + (\text{period of PCLK}[\mu s] \times 257) + 50[\mu s]$$

*: See "12.4 AC characteristics 12.4.8 Low-voltage detection (External low-voltage detection)"

R/D Converter

 (T_A: Recommended operating conditions, V_{CC} = AV_{CC} = 5.0V±5%, V_{SS} = AV_{SS} = 0.0V)

Parameter		Value			Unit	Remarks
		Min	Typ	Max		
Excitation signal output	Output voltage (amplitude)	0.4V _{CC} -1%	0.4V _{CC}	0.4V _{CC} +1%	V	
	Output voltage (displacement)	-0.4V _{CC} +(V _{CC} /2)	-	0.4V _{CC} +(V _{CC} /2)	V	
	Output current	-	-	1	mA	
	Frequency	-	10 or 20	-	kHz	Setting with the register
Resolver response signal ¹	Amplitude	AREF2-2.0	-	AREF2+2.0	V	
	Maximum input frequency	-	-	24	kHz	
Excitation input signal ²	Amplitude	0	-	AVCC0	V	More than 2V _{p-p}
	Phase difference from resolver detection signal	-45	-	45	°	
Angle output	Angle accuracy (conversion accuracy)	-4	-	4	LSB	Variation when pausing: ±1LSB
	Resolution	-	12	-	bit	
	Output delay	1.1	-	2.1	μs	
Angular velocity output	Maximum angular velocity	-	-	4000	rps	When bandwidth 1.8kHz mode
		-	-	3000	rps	When bandwidth 600kHz mode
	Resolution	-	0.261	-	rps/LSB	
Reference output voltage	AREF2 output voltage	AVCC0/2-3%	-	AVCC0/2+3%	V	

Parameter		Value			Unit	Remarks
		Min	Typ	Max		
Operating characteristics	Tracking loop characteristics (0dB cross frequency)	-	-	1.2	kHz	When bandwidth 1.8kHz mode ^{*3}
		-	-	400	Hz	When bandwidth 600Hz mode ^{*3}
	Tracking loop characteristics (-3dB cross frequency)	-	-	1.8	kHz	When bandwidth 1.8kHz mode ^{*3}
		-	-	600	Hz	When bandwidth 600Hz mode ^{*3}
	Maximum tracking rate	-	-	4000	rps	When bandwidth 1.8kHz mode
		-	-	3000	rps	When bandwidth 600Hz mode
	Settling time (179° step).	-	-	4	ms	When bandwidth 1.8kHz mode
		-	-	12	ms	When bandwidth 600Hz mode
	Maximum angular velocity	-	-	1,000,000	rad/s2	When bandwidth 1.8kHz mode
		-	-	150,000	rad/s2	When bandwidth 600Hz mode

*1: Corresponding pin: COS_PLUS,COS_MINUS,SIN_PLUS,SIN_MINUS

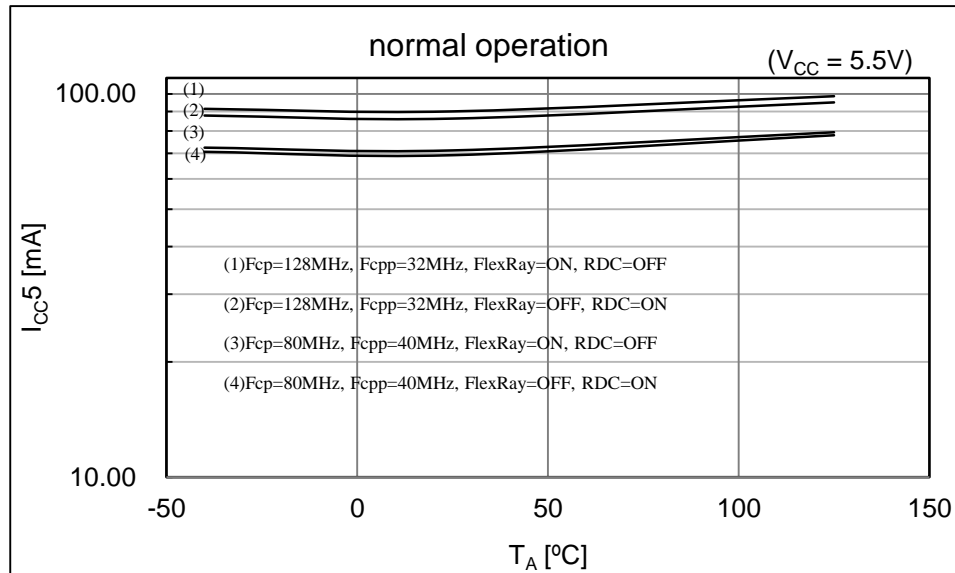
*2: Corresponding pin: MAG_PLUS,MAG_MINUS

*3: When signal amplitude is nominal

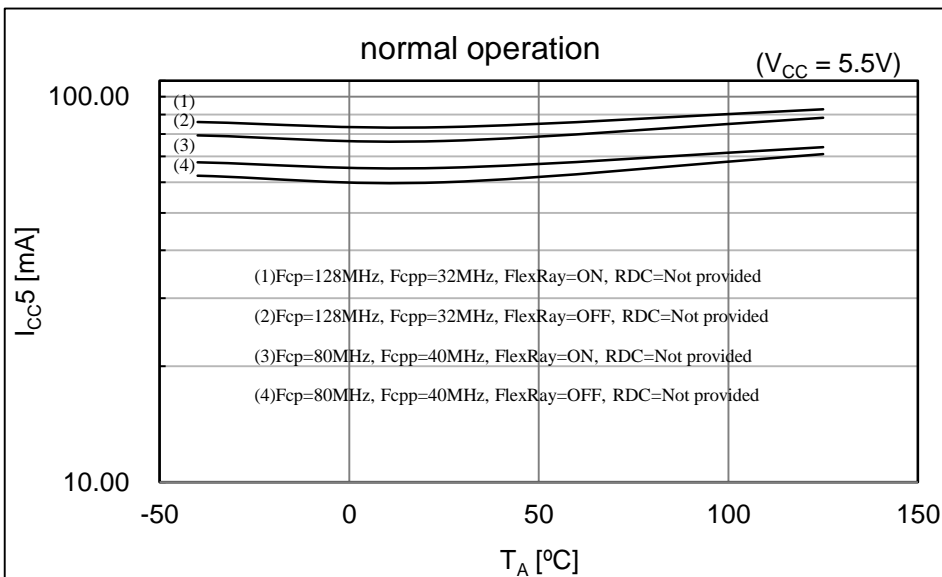
13. Example Characteristics

This characteristic is an actual value of the arbitrary sample. It is not the guaranteed value.

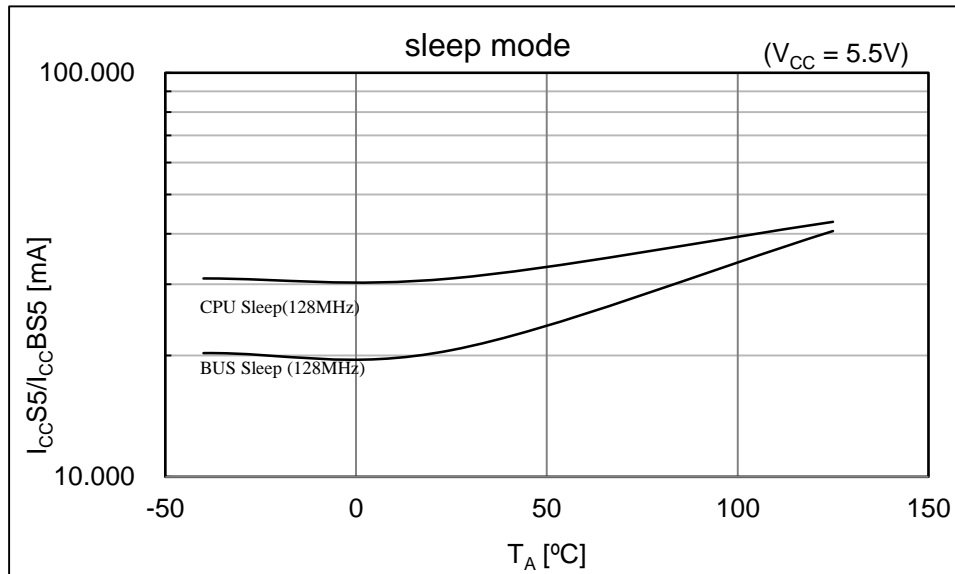
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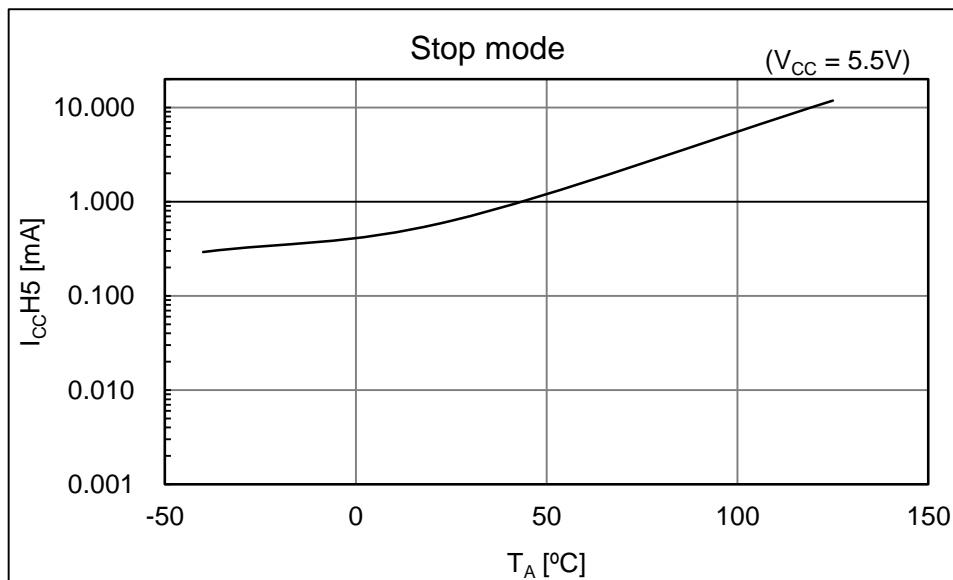
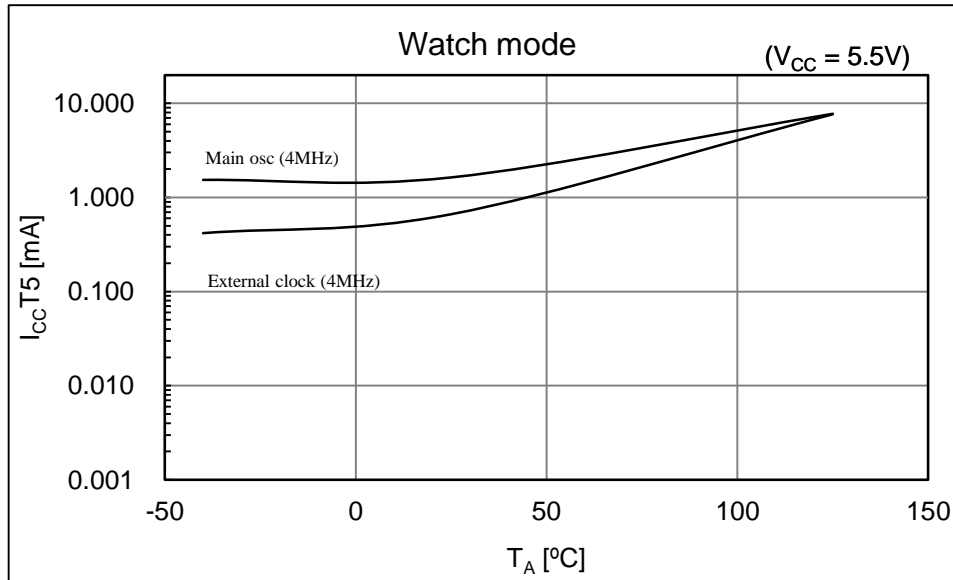
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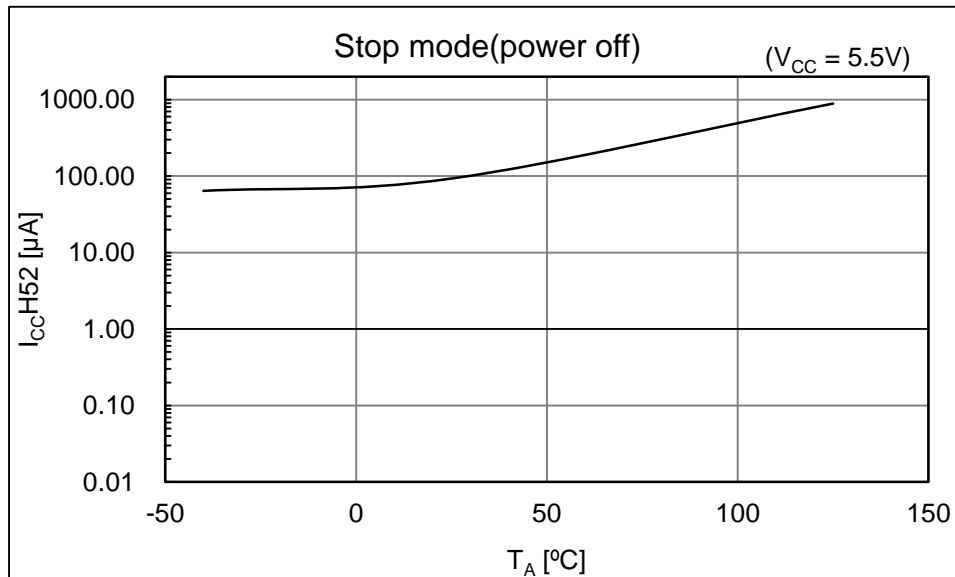
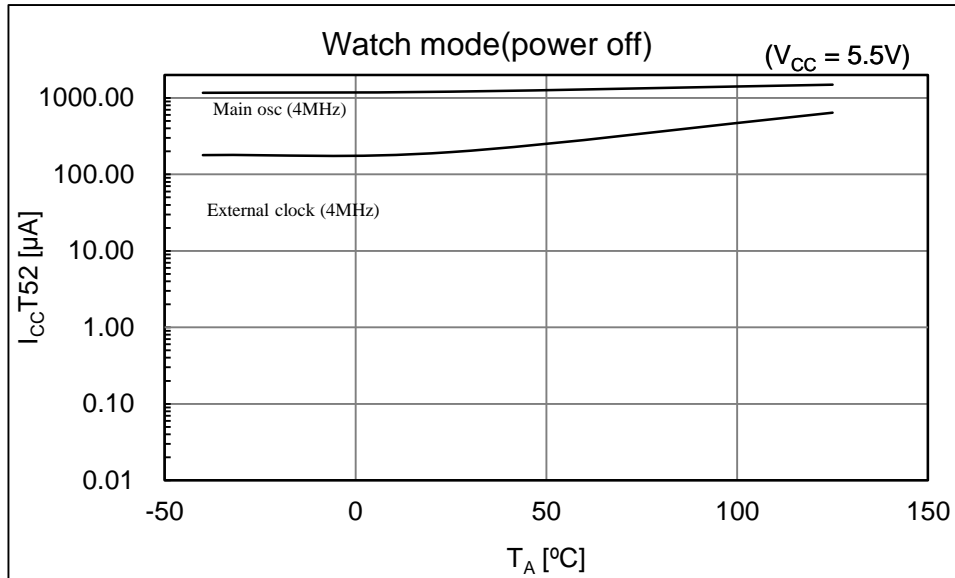
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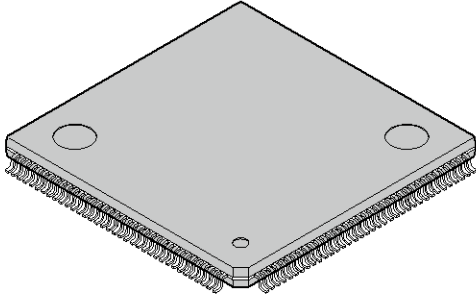


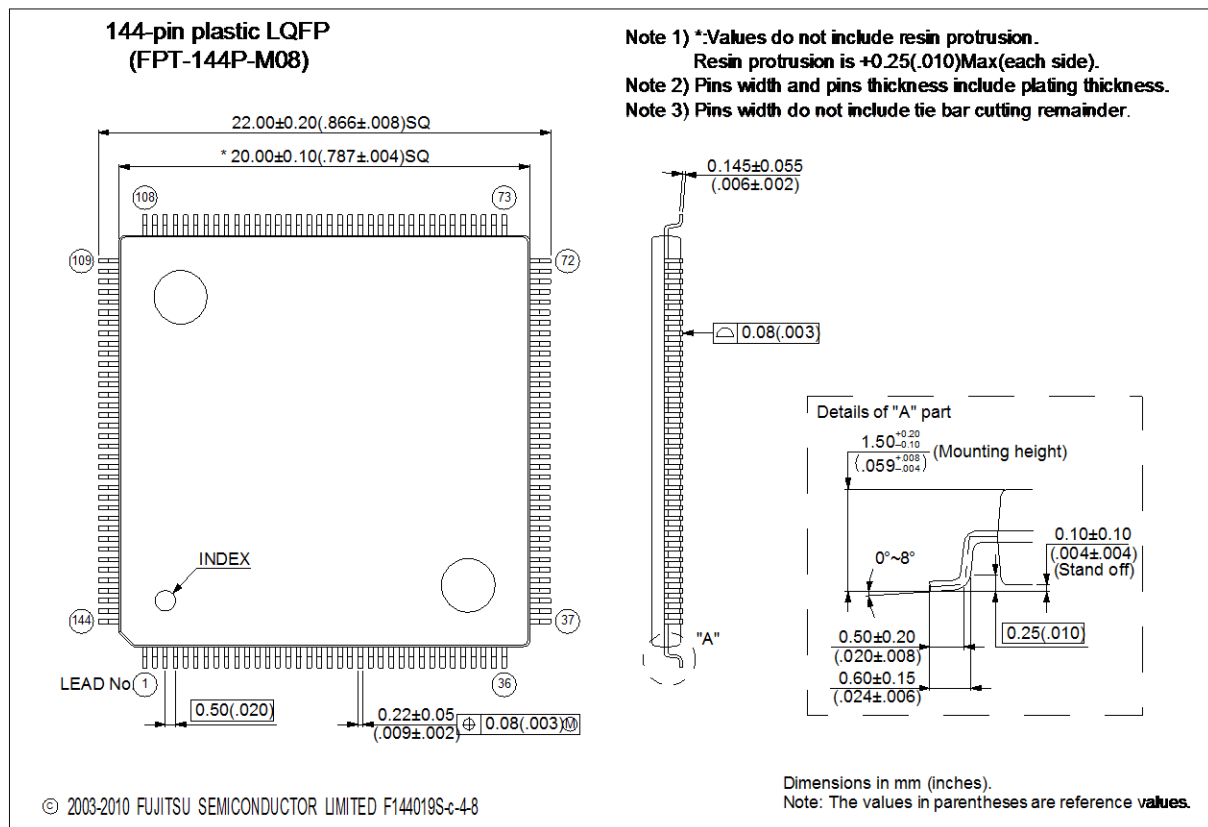
14. Ordering Information

Part number	Package*
MB91F585LAPMC-GTE1 MB91F586LAPMC-GTE1 MB91F587LAPMC-GTE1	144-pin plastic LQFP (FPT-144P-M08)
MB91F585LBPMC-GTE1 MB91F586LBPMC-GTE1 MB91F587LBPMC-GTE1	144-pin plastic LQFP (FPT-144P-M08)
MB91F585LCPMC-GTE1 MB91F586LCPMC-GTE1 MB91F587LCPMC-GTE1	144-pin plastic LQFP (FPT-144P-M08)
MB91F585LDPMC-GTE1 MB91F586LDPMC-GTE1 MB91F587LDPMC-GTE1	144-pin plastic LQFP (FPT-144P-M08)

*: For details of the package, see " Package Dimensions ".

15. Package Dimensions

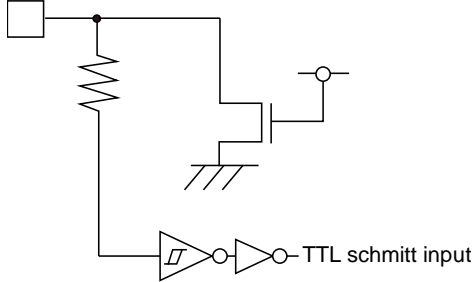
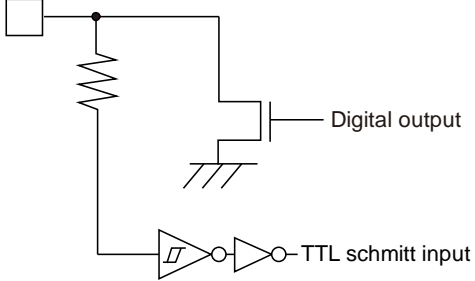
<p>144-pin plastic LQFP</p>  <p>(FPT-144P-M08)</p>	Lead pitch	0.50 mm
	Package width × package length	20.0 × 20.0 mm
	Lead shape	Gullwing
	Sealing method	Plastic mold
	Mounting height	1.70 mm MAX
	Weight	1.20 g
	Code (Reference)	P-LFQFP144-20×20-0.50



16. Major Changes

Spanion Publication Number: MB91F587LA_DS705-00012

Page	Section	Change Results
Revision 1.0		
-	-	Initial release.
Revision 1.1		
-	-	Company name and layout design change
Revision 2.0		
2	Features	<p>The feature of CR oscillation is corrected.</p> <p>Oscillation frequency: 100kHz, with frequency accuracy $\pm 10\%$</p> <p>↓</p> <p>Oscillation frequency: 100kHz, with frequency accuracy $\pm 50\%$ (pre-trimming)</p>
6, 7	Features	<p>The configuration of Waveform generator is corrected.</p> <p>1 unit (6 channels) + 1 channel</p> <p>↓</p> <p>2 unit (7channels)</p>

Page	Section	Change Results
28	I/O Circuit Type	<p>The figure of type "L" is corrected.</p>  <p>↓</p> 
28, 29	I/O Circuit Type	<p>The specification of "H" level input voltage and "L" level input voltage of FlexRay is corrected.</p> <p>FlexRay input (0.65Vcc/0.35Vcc)</p> <p>↓</p> <p>FlexRay input (0.7Vcc/0.3Vcc)</p>
39, 40	Memory Map	<p>The memory map is corrected.</p> <p>The address of "Reset vector table" and "Interrupt vector table" are added.</p>
62, 63, 64, 97, 98, 99	I/O map Address: 001504 _H , 001528 _H , 00154C _H , 001570 _H , 001594 _H ,	<p>The attribution of register is changed.</p> <p>B,H,W</p> <p>↓</p> <p>H,W</p>

Page	Section	Change Results
62, 97	I/O Map Address:00150C _H	The register name is corrected. STMCR00 → STMCR0
62, 97	I/O Map Address: 00150E _H , 001510 _H , 001511 _H , 001512 _H , 001513 _H	The registers are deleted. SCSCR0, SCSTR30, SCSTR20, SCSTR10, SCSTR00
73, 108	I/O Map Address:00D310 _H	The initial value of MHDS is corrected. -00000000 -00000000 -00000000 10000000 ↓ -00000000 -00000000 -00000000 00000000
114	Electrical Characteristics Absolute Maximum Ratings	The remark of "Operating temperature" is corrected. *10 ↓ *10, *11
115	Electrical Characteristics Absolute Maximum Ratings	The explanatory note *11 is added. *11: When it is used exceeding T _A =125°C, contact your sales representative.
116	Electrical Characteristics Recommended operating conditions	"Smoothing capacitor" is changed. Smoothing capacitor* ↓ Smoothing capacitor*1
116	Electrical Characteristics Recommended operating conditions	The remark of "Operating temperature" is added. *2
116	Electrical Characteristics Recommended operating conditions	The explanatory note is corrected. *: For connection of smoothing capacitor CS, see the figure below. ↓ *1: For connection of smoothing capacitor CS, see the figure below. *2: When it is used exceeding T _A =125°C, contact your sales representative.
117	Electrical Characteristics DC Characteristics	The specification of "H" level input voltage of P003 - P007, P010 is corrected. Min:0.65 × V _{CC} ↓ Min: 0.7 × V _{CC}

Page	Section	Change Results
118	Electrical Characteristics DC Characteristics	The specification of "L" level input voltage of P003 - P007, P010 is corrected. Max: $0.35 \times V_{CC}$ ↓ Max: $0.3 \times V_{CC}$
124	Electrical Characteristics AC Characteristics Main Clock Timing	The remark of "CAN PLL jitter" is deleted.
124	Electrical Characteristics AC Characteristics Main Clock Timing	The specification of "The Built-in CR oscillation frequency" is corrected. Min: 90kHz, Max: 110kHz ↓ Min: 50kHz Max: 150kHz,

Page	Section	Change Results
137, 139, 141, 143	Electrical Characteristics AC Characteristics Multi-function Serial CSIO timing (SMR:MD2-0="010"b) When the serial chip select is used (SCSCR:CSEN=1) Serial clock output signal detect level "H" (SMR,SCSFR:SCINV=0) Serial chip select inactive level "H" (SCSCR,SCSFR:CSLVL=1) When the serial chip select is used (SCSCR:CSEN=1) Serial clock output signal detect level "L" (SMR,SCSFR:SCINV=1) Serial chip select inactive level "H" (SCSCR,SCSFR:CSLVL=1) When the serial chip select is used (SCSCR:CSEN=1) Serial clock output signal detect level "H" (SMR,SCSFR:SCINV=0) Serial chip select inactive level "L" (SCSCR,SCSFR:CSLVL=0) When the serial chip select is used (SCSCR:CSEN=1) Serial clock output signal detect level "L" (SMR,SCSFR:SCINV=1) Serial chip select inactive level "L" (SCSCR,SCSFR:CSLVL=0)	The specifications of t_{CSSI} , t_{CSHI} and t_{CSDI} are corrected. $\cdot t_{CSSI}$ Min: $-50 - t_{CSSU}^{*1}$ Max: $+0 - t_{CSSU}^{*1}$ ↓ Min: $t_{CSSU}^{*1} + 0$ Max: $t_{CSSU}^{*1} + 50$ $\cdot t_{CSHI}$ Min: $+0 + t_{CHSD}^{*2}$ Max: $+50 + t_{CHSD}^{*2}$ ↓ Min: $t_{CHSD}^{*2} - 50$ Max: $t_{CHSD}^{*2} + 0$ $\cdot t_{CSDI}$ Min: $-50 + t_{CSDS}^{*3}$ Max: $+50 + t_{CSDS}^{*3}$ ↓ Min: $-50 + 5t_{CPP} + t_{CSDS}^{*3}$ Max: $+50 + 5t_{CPP} + t_{CSDS}^{*3}$

Page	Section	Change Results
146	Electrical Characteristics AC Characteristics Multi-function Serial I ² C timing (SMR:MD2-0="100"b)	The explanatory note *1 is corrected. *1: R and C represent the pull-up resistance and load capacitance of the SCL and SDA output lines, respectively. VP shows that the power supply voltage of the pull-up resistor and IOL shows the VOL guarantee current. ↓ *1: R and C _L represent the pull-up resistance and load capacitance of the SCL and SDA output lines, respectively. VP shows that the power supply voltage of the pull-up resistor and IOL shows the VOL guarantee current.
162	Electrical Characteristics Flash memory	Item name is changed. (1) Main Flash ↓ (1) Electrical Characteristics
162	Electrical Characteristics Flash memory	The remark of " Erase cycle ^{*2} / Data retention time " is corrected. Temperature at writing/erasing T _j <+105°C Average temperature T _A =+85°C ^{*3} ↓ Average temperature T _A =+85°C ^{*3}
164	Electrical Characteristics R/D Converter	The remark of " Amplitude" of "Resolver response signal" ^{*1} " is added. More than 2Vp-p
165-168	Example Characteristics	"Example Characteristics" is newly added.

NOTE: Please see "Document History" about later revised information.

Document History

Document Title: MB91F585LA/B/C/D, MB91F586LA/B/C/D, MB91F587LA/B/C/D, FR81S, MB91580L Series

Microcontroller Datasheet

Document Number: 002-04663

Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	—	KOJM	08/22/2014	Migrated to Cypress and assigned document number 002-04663. No change to document contents or format.
*A	5137994	KOJM	03/16/2016	Updated to Cypress template

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