

Features

- High speed
 - t_{AA} = 10 ns/15 ns
- Low active power
 - I_{CC} = 90 mA at 100 MHz
- Low CMOS standby current
 - I_{SB2} = 20 mA (typ)
- Operating voltages of 2.2 V to 3.6 V
- 1.0 V data retention
- Automatic power down when deselected
- TTL compatible inputs and outputs
- Easy memory expansion with $\overline{CE}_1$ and CE_2 features
- Available in Pb-free 48-pin TSOP I, 54-pin TSOP II, and 48-ball VFBGA packages
- Offered in dual Chip Enable options

Functional Description

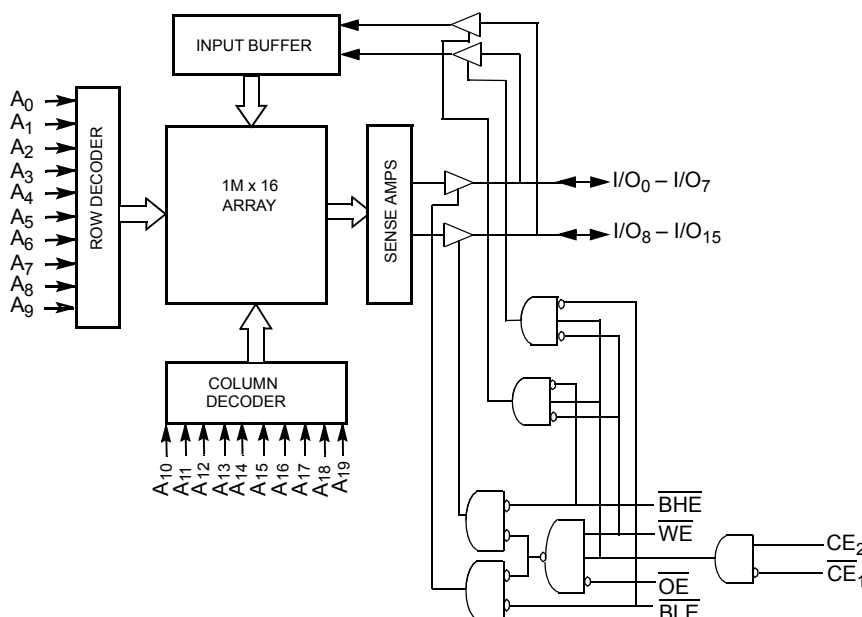
The CY7C1061GN/CY7C10612GN is a high performance CMOS Static RAM organized as 1,048,576 words by 16 bits.

To write to the device, take Chip Enables ($\overline{CE}_1$ LOW and CE_2 HIGH) and Write Enable (WE) input LOW. If Byte Low Enable (BLE) is LOW, then data from I/O pins (I/O_0 through I/O_7), is written into the location specified on the address pins (A_0 through A_{19}). If Byte High Enable (BHE) is LOW, then data from I/O pins (I/O_8 through I/O_{15}) is written into the location specified on the address pins (A_0 through A_{19}).

To read from the device, take Chip Enables ($\overline{CE}_1$ LOW and CE_2 HIGH) and Output Enable ($\overline{OE}$) LOW while forcing the Write Enable (WE) HIGH. If Byte Low Enable (BLE) is LOW, then data from the memory location specified by the address pins appears on I/O_0 to I/O_7 . If Byte High Enable (BHE) is LOW, then data from memory appears on I/O_8 to I/O_{15} . See [Truth Table on page 13](#) for a complete description of Read and Write modes.

The input or output pins (I/O_0 through I/O_{15}) are placed in a high impedance state when the device is deselected ($\overline{CE}_1$ HIGH/ CE_2 LOW), the outputs are disabled ($\overline{OE}$ HIGH), the BHE and BLE are disabled (BHE, BLE HIGH), or during a write operation (CE_1 LOW, CE_2 HIGH, and WE LOW).

Logic Block Diagram



Contents

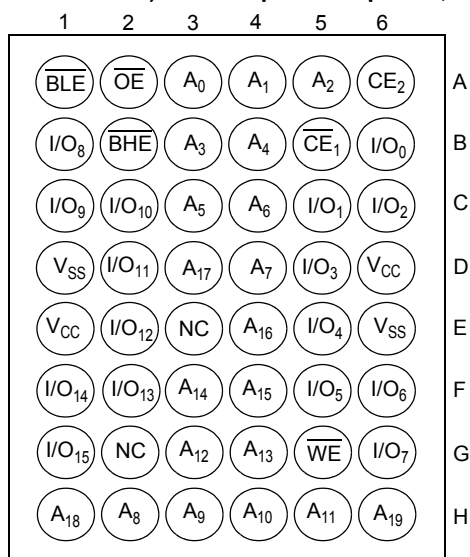
Selection Guide	3	Ordering Information	14
Pin Configurations	3	Ordering Code Definitions	14
Maximum Ratings	6	Package Diagrams	15
Operating Range	6	Acronyms	18
DC Electrical Characteristics	6	Document Conventions	18
Capacitance	7	Units of Measure	18
Thermal Resistance	7	Document History Page	19
AC Test Loads and Waveforms	7	Sales, Solutions, and Legal Information	21
Data Retention Characteristics	8	Worldwide Sales and Design Support	21
Over the Operating Range	8	Products	21
Data Retention Waveform	8	PSoC@Solutions	21
AC Switching Characteristics	9	Cypress Developer Community	21
Switching Waveforms	10	Technical Support	21
Truth Table	13		

Selection Guide

Description	-10	-15	Unit
Maximum access time	10	15	ns
Maximum operating current	110	80	mA
Maximum CMOS standby current	30	30	mA

Pin Configurations

Figure 1. 48-ball VFBGA (8 × 9.5 × 1 mm) Dual Chip Enable pinout, Package/Grade ID: BVXI^[1]



Note

1. NC pins are not connected internally to the die.

Pin Configurations (continued)

Figure 2. 48-ball VFBGA (6 × 8 × 1.0 mm)
Single Chip Enable pinout, Package/Grade ID: BV1XI [2]

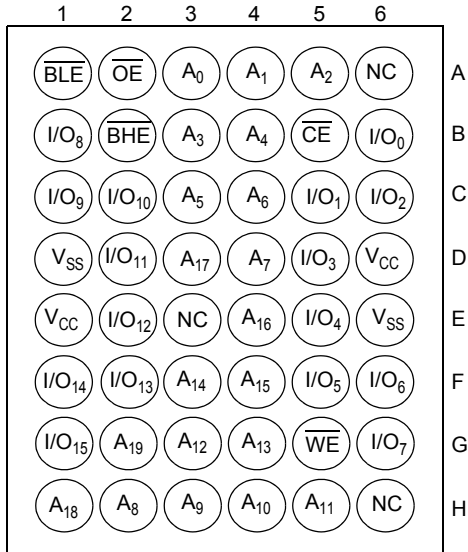


Figure 3. 48-ball VFBGA (6 × 8 × 1.0 mm)
Dual Chip Enable pinout, Package/Grade ID: BVJXI [2]

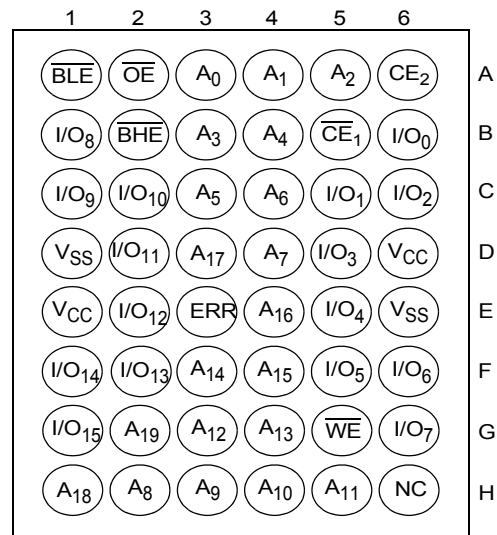


Figure 4. 54-pin TSOP II (22.4 × 11.84 × 1.0 mm)
Dual Chip Enable pinout (Top View) [2]

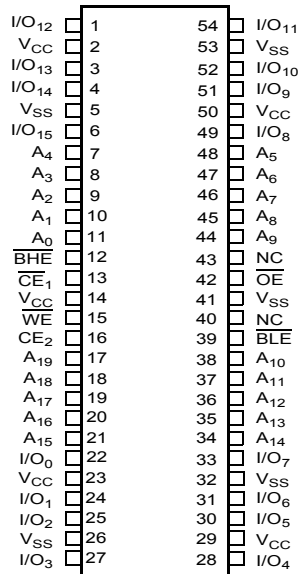
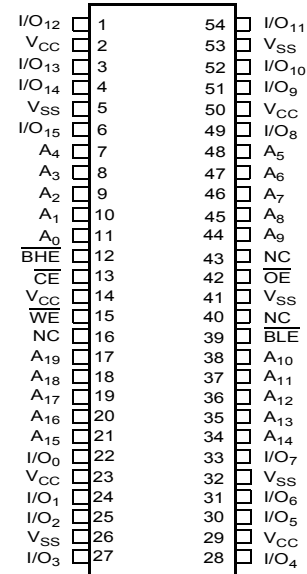


Figure 5. 54-pin TSOP II (22.4 × 11.84 × 1.0 mm)
Single Chip Enable pinout (Top View) [2]

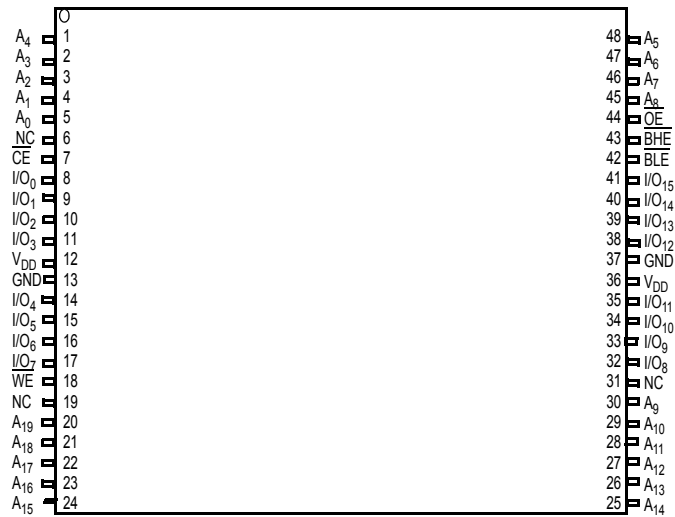


Note

- NC pins are not connected internally to the die.

Pin Configurations (continued)

Figure 6. 48-pin TSOP I (12 × 18.4 × 1 mm) pinout (Top View) ^[3]



Note

- NC pins are not connected internally to the die.

Maximum Ratings

Exceeding maximum ratings may impair the useful life of the device. These user guidelines are not tested.

Storage Temperature -65 °C to +150 °C

Ambient Temperature
with Power Applied -55 °C to +125 °C

Supply Voltage
on V_{CC} relative to GND ^[4] -0.5 V to $V_{CC} + 0.5$ V

DC Voltage Applied to Outputs
in High Z State ^[4] -0.5 V to $V_{CC} + 0.5$ V

DC Input Voltage ^[4] -0.5 V to $V_{CC} + 0.5$ V

Current into Outputs (LOW) 20 mA

Static Discharge Voltage
(MIL-STD-883, Method 3015) >2001 V

Latch Up Current >200 mA

Operating Range

Range	Ambient Temperature	V_{CC}
Industrial	-40 °C to +85 °C	1.65 V to 2.2 V, 2.2 V to 3.6 V

DC Electrical Characteristics

Over the Operating Range

Parameter	Description	Test Conditions	10 ns/15 ns			Unit
			Min	Typ ^[5]	Max	
V_{OH}	Output HIGH voltage	1.65 V to 2.2 V $V_{CC} = \text{Min}, I_{OH} = -0.1 \text{ mA}$	1.4	—	—	V
		2.2 V to 2.7 V $V_{CC} = \text{Min}, I_{OH} = -0.1 \text{ mA}$	2.0	—	—	
		2.7 V to 3.0 V $V_{CC} = \text{Min}, I_{OH} = -4.0 \text{ mA}$	2.2	—	—	
		3.0 V to 3.6 V $V_{CC} = \text{Min}, I_{OH} = -4.0 \text{ mA}$	2.4	—	—	
V_{OL}	Output LOW voltage	1.65 V to 2.2 V $V_{CC} = \text{Min}, I_{OL} = 0.1 \text{ mA}$	—	—	0.2	V
		2.2 V to 2.7 V $V_{CC} = \text{Min}, I_{OL} = 2 \text{ mA}$	—	—	0.4	
		2.7 V to 3.6 V $V_{CC} = \text{Min}, I_{OL} = 8 \text{ mA}$	—	—	0.4	
V_{IH}	Input HIGH voltage ^[4]	1.65 V to 2.2 V —	1.4	—	$V_{CC} + 0.2$	V
		2.2 V to 2.7 V —	2.0	—	$V_{CC} + 0.3$	
		2.7 V to 3.6 V —	2.0	—	$V_{CC} + 0.3$	
V_{IL}	Input LOW voltage ^[4]	1.65 V to 2.2 V —	-0.2	—	0.4	V
		2.2 V to 2.7 V —	-0.3	—	0.6	
		2.7 V to 3.6 V —	-0.3	—	0.8	
I_{IX}	Input leakage current	$GND \leq V_I \leq V_{CC}$	-1	—	+1	μA
I_{OZ}	Output leakage current	$GND \leq V_{OUT} \leq V_{CC}$, Output disabled	-1	—	+1	μA
I_{CC}	V_{CC} operating supply current	$V_{CC} = \text{Max}, I_{OUT} = 0 \text{ mA}$, CMOS levels	—	90	110	mA
		$f = 100 \text{ MHz}$ $f = 66.7 \text{ MHz}$	—	70	80	
I_{SB1}	Automatic CE power down current – TTL inputs ^[6]	$\text{Max } V_{CC}$, $CE_1 \geq V_{IH}$, $CE_2 \leq V_{IL}$, $V_{IN} \geq V_{IH}$ or $V_{IN} \leq V_{IL}$, $f = f_{MAX}$	—	—	40	mA
I_{SB2}	Automatic CE power down current – CMOS inputs ^[6]	$\text{Max } V_{CC}$, $\overline{CE}_1 \geq V_{CC} - 0.3 \text{ V}$, $CE_2 \leq 0.3 \text{ V}$, $V_{IN} \geq V_{CC} - 0.3 \text{ V}$ or $V_{IN} \leq 0.3 \text{ V}$, $f = 0$	—	20	30	mA

Notes

4. $V_{IL(\text{min})} = -2.0 \text{ V}$ and $V_{IH(\text{max})} = V_{CC} + 2 \text{ V}$ for pulse durations of less than 20 ns.

5. Typical values are included only for reference and are not guaranteed or tested. Typical values are measured at $V_{CC} = 1.8 \text{ V}$ (for a V_{CC} range of 1.65 V–2.2 V), $V_{CC} = 3 \text{ V}$ (for a V_{CC} range of 2.2 V–3.6 V) at $T_A = 25^\circ\text{C}$.

6. For all dual chip enable devices, $\overline{CE}$ is the logical combination of $\overline{CE}_1$ and CE_2 . When $\overline{CE}_1$ is LOW and CE_2 is HIGH, $\overline{CE}$ is LOW; when $\overline{CE}_1$ is HIGH or CE_2 is LOW, $\overline{CE}$ is HIGH.

Capacitance

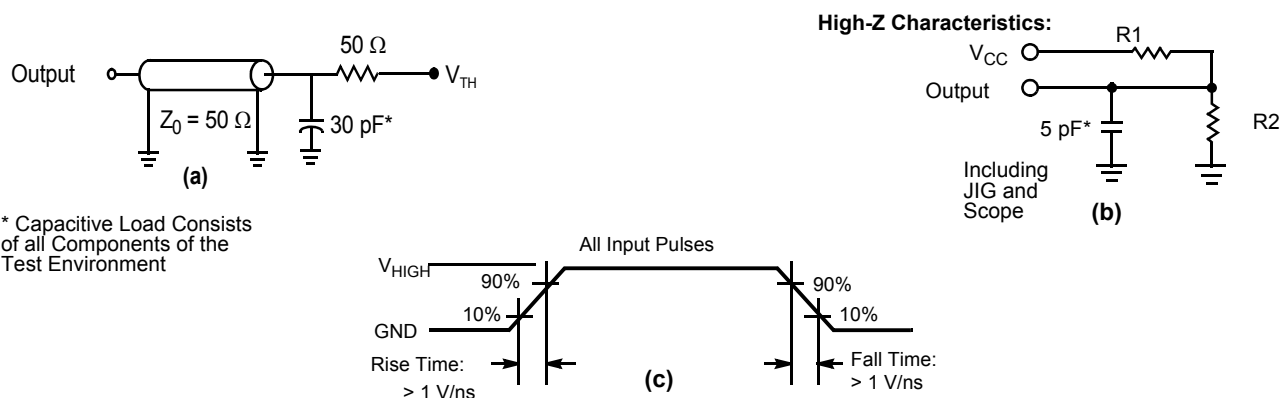
Parameter ^[7]	Description	Test Conditions	48-pin TSOP I	54-pin TSOP II	48-ball VFBGA	Unit
C_{IN}	Input capacitance	$T_A = 25^\circ\text{C}$, $f = 1\text{ MHz}$, $V_{CC} = 3.3\text{ V}$	10	10	10	pF
C_{OUT}	I/O capacitance		10	10	10	pF

Thermal Resistance

Parameter ^[7]	Description	Test Conditions	48-pin TSOP I	54-pin TSOP II	48-ball VFBGA	Unit
Θ_{JA}	Thermal resistance (junction to ambient)	Still air, soldered on a 3×4.5 inch, four layer printed circuit board	57.99	93.63	31.50	$^\circ\text{C/W}$
Θ_{JC}	Thermal resistance (junction to case)		13.42	21.58	15.75	$^\circ\text{C/W}$

AC Test Loads and Waveforms

Figure 7. AC Test Loads and Waveforms ^[8]



Parameters	1.8 V	3.0 V	Unit
R1	1667	317	Ω
R2	1538	351	Ω
V_{TH}	0.9	1.5	V
V_{HIGH}	1.8	3	V

Notes

- Tested initially and after any design or process changes that may affect these parameters.
- Full-device AC operation assumes a 100- μs ramp time from 0 to V_{CC} (min) and 100- μs wait time after V_{CC} stabilizes to its operational value.

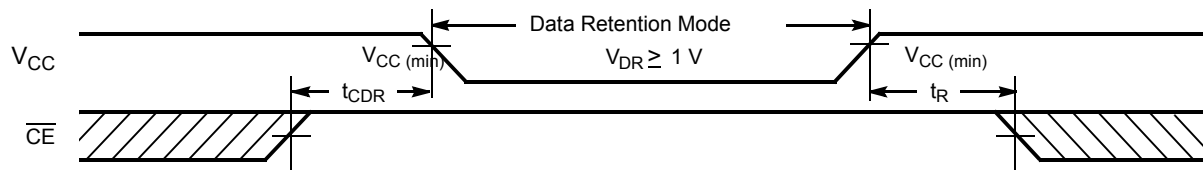
Data Retention Characteristics

Over the Operating Range

Parameter	Description	Conditions	Min	Max	Unit
V_{DR}	V_{CC} for data retention	–	1	–	V
I_{CCDR}	Data retention current	$V_{CC} = 1.2 \text{ V}$, $\overline{CE}_1 \geq V_{CC} - 0.2 \text{ V}$, $CE_2 \leq 0.2 \text{ V}$, $V_{IN} \geq V_{CC} - 0.2 \text{ V}$ or $V_{IN} \leq 0.2 \text{ V}$	–	30	mA
$t_{CDR}^{[9]}$	Chip deselect to data retention time	–	0	–	ns
$t_R^{[10]}$	Operation recovery time	$V_{CC} \geq 2.2 \text{ V}$	10	–	ns
		$V_{CC} < 2.2 \text{ V}$	15	–	

Data Retention Waveform

Figure 8. Data Retention Waveform ^[11]



Notes

9. Tested initially and after any design or process changes that may affect these parameters.
10. Full device operation requires linear V_{CC} ramp from V_{DR} to $V_{CC(min.)} \geq 100 \mu\text{s}$ or stable at $V_{CC(min.)} \geq 100 \mu\text{s}$.
11. $\overline{CE}$ is the logical combination of $\overline{CE}_1$ and CE_2 . When $\overline{CE}_1$ is LOW and CE_2 is HIGH, $\overline{CE}$ is LOW; when $\overline{CE}_1$ is HIGH or CE_2 is LOW, $\overline{CE}$ is HIGH.

AC Switching Characteristics

Over the Operating Range

Parameter ^[12]	Description	-10		-15		Unit
		Min	Max	Min	Max	
Read Cycle						
t _{power}	V _{CC} (typical) to the first access ^[13]	100	–	100	–	μs
t _{RC}	Read cycle time	10	–	15	–	ns
t _{AA}	Address to data valid	–	10	–	15	ns
t _{OHA}	Data hold from address change	3	–	3	–	ns
t _{ACE}	$\overline{\text{CE}}_1$ LOW/CE ₂ HIGH to data valid	–	10	–	15	ns
t _{DOE}	$\overline{\text{OE}}$ LOW to data valid	–	5	–	8	ns
t _{LZOE}	$\overline{\text{OE}}$ LOW to low Z ^[14]	0	–	1	–	ns
t _{HZOE}	$\overline{\text{OE}}$ HIGH to high Z ^[14, 15]	–	5	–	8	ns
t _{LZCE}	$\overline{\text{CE}}_1$ LOW/CE ₂ HIGH to low Z ^[14]	3	–	3	–	ns
t _{HZCE}	$\overline{\text{CE}}_1$ HIGH/CE ₂ LOW to high Z ^[14, 15]	–	5	–	8	ns
t _{PU}	$\overline{\text{CE}}_1$ LOW/CE ₂ HIGH to power-up ^[16]	0	–	0	–	ns
t _{PD}	$\overline{\text{CE}}_1$ HIGH/CE ₂ LOW to power-down ^[16]	–	10	–	15	ns
t _{DBE}	Byte enable to data valid	–	5	–	8	ns
t _{LZBE}	Byte enable to low Z	0	–	1	–	ns
t _{HZBE}	Byte disable to high Z	–	6	–	8	ns
Write Cycle ^[17, 18]						
t _{WC}	Write cycle time	10	–	15	–	ns
t _{SCE}	$\overline{\text{CE}}_1$ LOW/CE ₂ HIGH to write end ^[19]	7	–	12	–	ns
t _{AW}	Address setup to write end	7	–	12	–	ns
t _{HA}	Address hold from write end	0	–	0	–	ns
t _{SA}	Address setup to write start	0	–	0	–	ns
t _{PWE}	$\overline{\text{WE}}$ pulse width	7	–	12	–	ns
t _{SD}	Data setup to write end	5	–	8	–	ns
t _{HD}	Data hold from write end	0	–	0	–	ns
t _{LZWE}	$\overline{\text{WE}}$ HIGH to low Z ^[14]	3	–	3	–	ns
t _{HZWE}	$\overline{\text{WE}}$ LOW to high Z ^[14, 15]	–	5	–	8	ns
t _{BW}	Byte Enable to End of Write	7	–	12	–	ns

Notes

12. Test conditions assume signal transition time (rise/fall) of 3 ns or less, timing reference levels of 1.5 V (for $V_{\text{CC}} \geq 3$ V) and $V_{\text{CC}}/2$ (for $V_{\text{CC}} < 3$ V), and input pulse levels of 0 to 3 V (for $V_{\text{CC}} \geq 3$ V) and 0 to V_{CC} (for $V_{\text{CC}} < 3$ V). Test conditions for the read cycle use the output loading, shown in part (a) of Figure 7 on page 7, unless specified otherwise.
13. t_{POWER} gives the minimum amount of time that the power supply is at typical V_{CC} values until the first memory access is performed.
14. At any temperature and voltage condition, t_{HZCE} is less than t_{LZCE} , t_{HZBE} is less than t_{LZBE} , t_{HZOE} is less than t_{LZOE} , and t_{HZWE} is less than t_{LZWE} for any device.
15. t_{HZOE} , t_{HZCE} , t_{HZWE} , and t_{HZBE} are specified with a load capacitance of 5 pF, as shown in part (b) of Figure 7 on page 7. Hi-Z, Lo-Z transition is measured ± 200 mV from steady state voltage.
16. These parameters are guaranteed by design and are not tested.
17. The internal write time of the memory is defined by the overlap of $\overline{\text{WE}}$, $\overline{\text{CE}}_1 = V_{\text{IL}}$, and $\text{CE}_2 = V_{\text{IH}}$. Chip enables must be active and $\overline{\text{WE}}$ and byte enables must be LOW to initiate a write, and the transition of any of these signals can terminate. The input data setup and hold timing should be referenced to the edge of the signal that terminates the write.
18. The minimum write cycle time for Write Cycle No. 2 ($\overline{\text{WE}}$ Controlled, $\overline{\text{OE}}$ LOW) is the sum of t_{HZWE} and t_{SD} .
19. For all dual chip enable devices, $\overline{\text{CE}}$ is the logical combination of $\overline{\text{CE}}_1$ and CE_2 . When $\overline{\text{CE}}_1$ is LOW and CE_2 is HIGH, $\overline{\text{CE}}$ is LOW; when $\overline{\text{CE}}_1$ is HIGH or CE_2 is LOW, $\overline{\text{CE}}$ is HIGH.

Switching Waveforms

Figure 9. Read Cycle No. 1 (Address Transition Controlled) [20, 21]

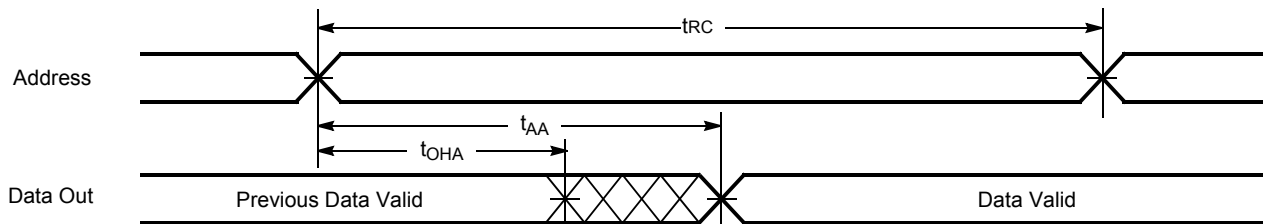
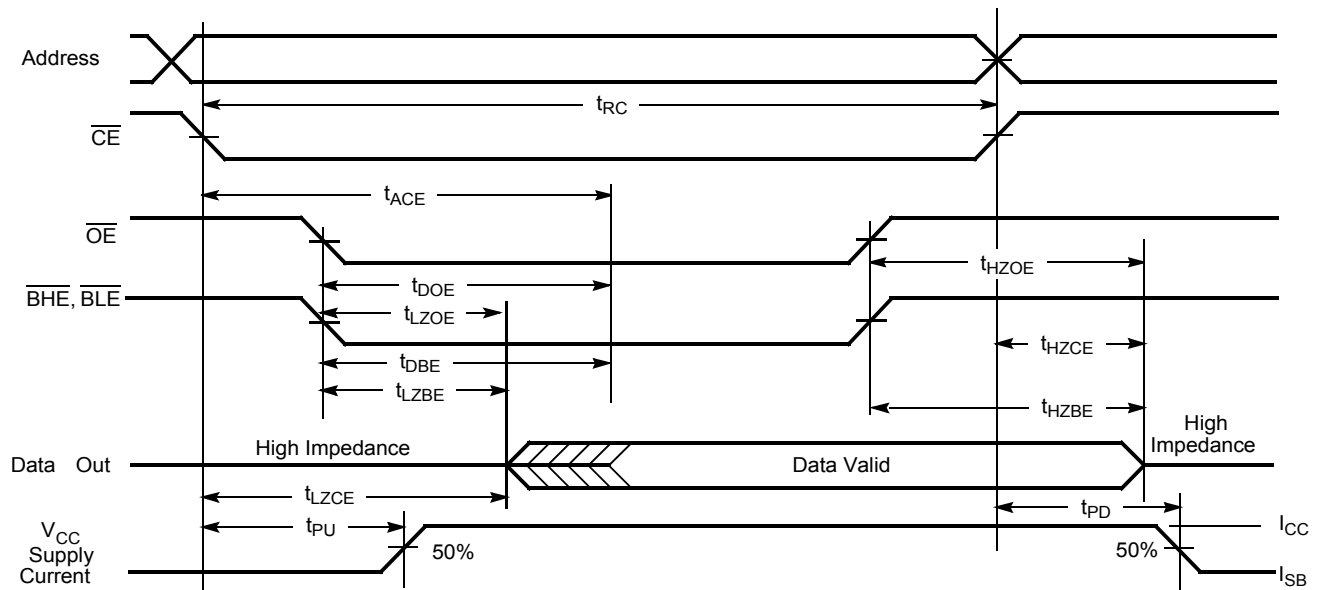


Figure 10. Read Cycle No. 2 ($\overline{OE}$ Controlled) [21, 22, 23]



Notes

20. The device is continuously selected. $\overline{OE}$, $\overline{CE}$ = V_{IL} , $\overline{BHE}$, $\overline{BLE}$ or both = V_{IL} .

21. $\overline{WE}$ is HIGH for read cycle.

22. $\overline{CE}$ is the logical combination of $\overline{CE}_1$ and CE_2 . When $\overline{CE}_1$ is LOW and CE_2 is HIGH, $\overline{CE}$ is LOW; when $\overline{CE}_1$ is HIGH or CE_2 is LOW, $\overline{CE}$ is HIGH.

23. Address valid before or similar to $\overline{CE}$ transition LOW.

Switching Waveforms (continued)

Figure 11. Write Cycle No. 1 ($\overline{\text{CE}}$ Controlled) [24, 25, 26]

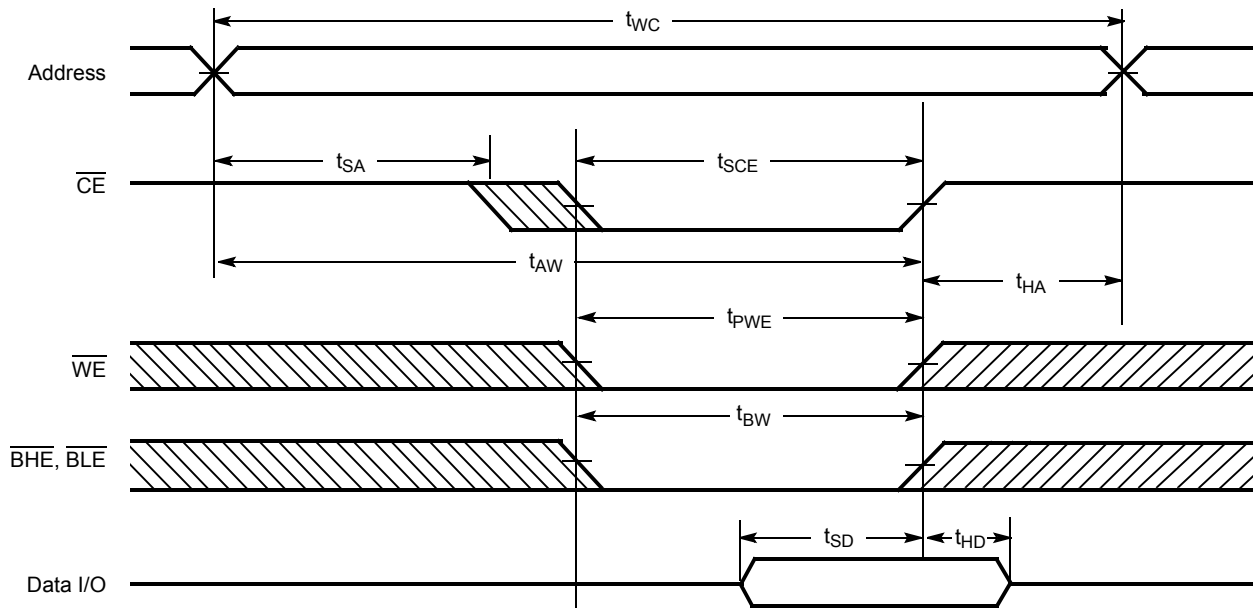
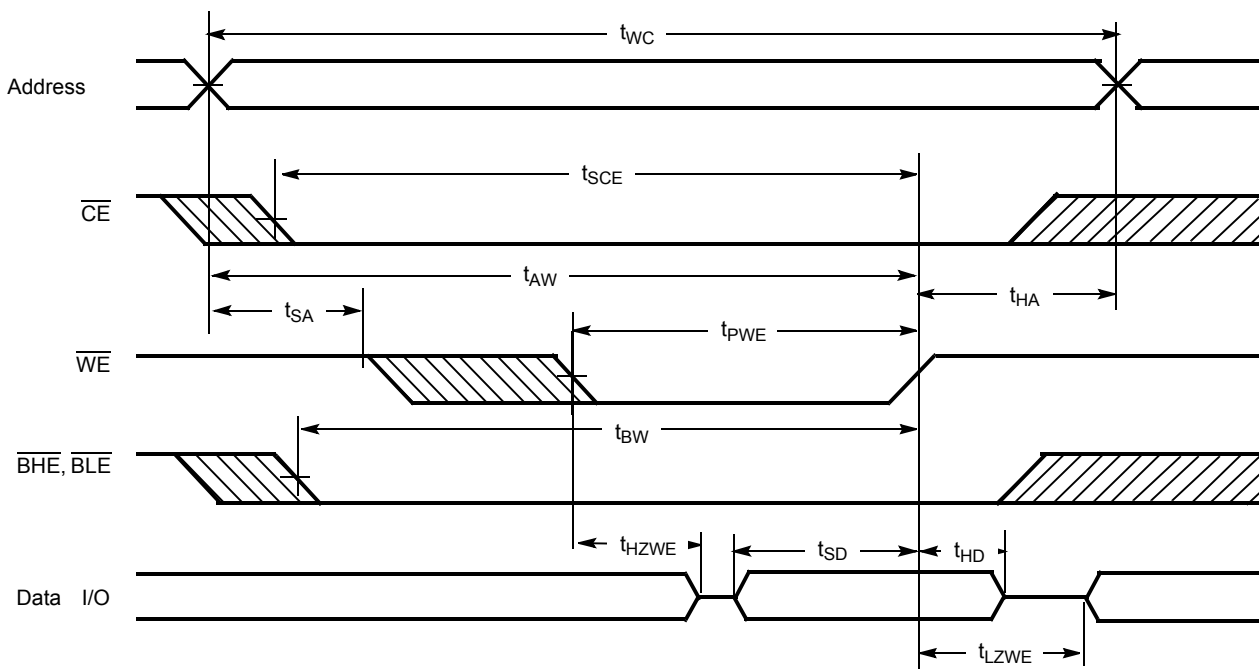


Figure 12. Write Cycle No. 2 ($\overline{\text{WE}}$ Controlled, $\overline{\text{OE}}$ LOW) [24, 25, 26]



Notes

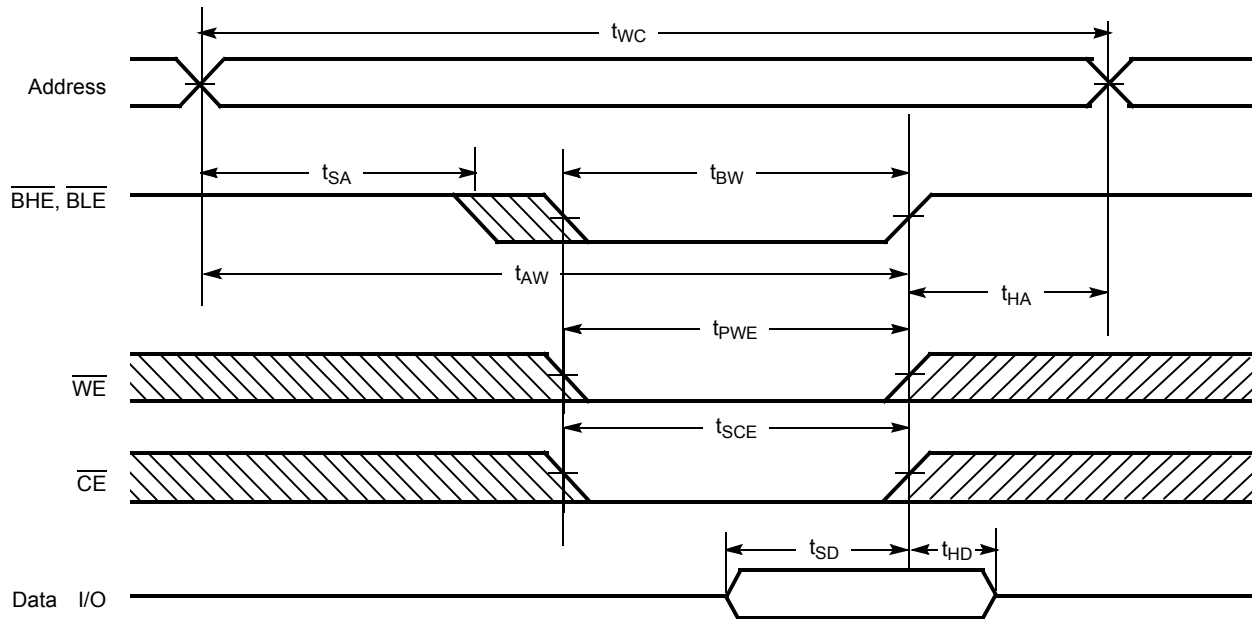
24. $\overline{\text{CE}}$ is the logical combination of $\overline{\text{CE}}_1$ and CE_2 . When $\overline{\text{CE}}_1$ is LOW and CE_2 is HIGH, $\overline{\text{CE}}$ is LOW; when $\overline{\text{CE}}_1$ is HIGH or CE_2 is LOW, $\overline{\text{CE}}$ is HIGH.

25. Data I/O is high impedance if $\overline{\text{OE}}$, $\overline{\text{BHE}}$, and/or $\overline{\text{BLE}} = V_{IH}$.

26. If $\overline{\text{CE}}$ goes HIGH simultaneously with $\overline{\text{WE}}$ going HIGH, the output remains in a high-impedance state.

Switching Waveforms (continued)

Figure 13. Write Cycle No. 3 ($\overline{\text{BLE}}$ or $\overline{\text{BHE}}$ Controlled) ^[27]



Note

27. $\overline{\text{CE}}$ is the logical combination of $\overline{\text{CE}}_1$ and CE_2 . When $\overline{\text{CE}}_1$ is LOW and CE_2 is HIGH, $\overline{\text{CE}}$ is LOW; when $\overline{\text{CE}}_1$ is HIGH or CE_2 is LOW, $\overline{\text{CE}}$ is HIGH.

Truth Table

$\overline{CE}_1$	CE_2	$\overline{OE}$	$\overline{WE}$	$\overline{BLE}$	$\overline{BHE}$	I/O ₀ –I/O ₇	I/O ₈ –I/O ₁₅	Mode	Power
H	X	X	X	X	X	High Z	High Z	Power down	Standby (I _{SB})
X	L	X	X	X	X	High Z	High Z	Power down	Standby (I _{SB})
L	H	L	H	L	L	Data out	Data out	Read all bits	Active (I _{CC})
L	H	L	H	L	H	Data out	High Z	Read lower bits only	Active (I _{CC})
L	H	L	H	H	L	High Z	Data out	Read upper bits only	Active (I _{CC})
L	H	X	L	L	L	Data in	Data in	Write all bits	Active (I _{CC})
L	H	X	L	L	H	Data in	High Z	Write lower bits only	Active (I _{CC})
L	H	X	L	H	L	High Z	Data in	Write upper bits only	Active (I _{CC})
L	H	H	H	X	X	High Z	High Z	Selected, outputs disabled	Active (I _{CC})

Ordering Information

Speed (ns)	Ordering Code	Package Diagram	Package Type (Pb-free)	Operating Range
10	CY7C1061GN30-10ZSXI	51-85160	54-pin TSOP II, Dual Chip Enable	Industrial
	CY7C1061GN30-10ZSXIT	51-85160	54-pin TSOP II, Dual Chip Enable, Tape and Reel	
	CY7C10612GN30-10ZSXI	51-85160	54-pin TSOP II, Single Chip Enable	
	CY7C10612GN30-10ZSXIT	51-85160	54-pin TSOP II, Single Chip Enable, Tape and Reel	
	CY7C1061GN30-10ZXI	51-85183	48-pin TSOP I, Single Chip Enable	
	CY7C1061GN30-10ZXIT	51-85183	48-pin TSOP I, Single Chip Enable, Tape and Reel	
	CY7C1061GN30-10BV1XI	51-85150	48-ball VFBGA, Single Chip Enable, Address MSB A19 at ball G2	
	CY7C1061GN30-10BV1XIT	51-85150	48-ball VFBGA, Single Chip Enable, Address MSB A19 at ball G2, Tape and Reel	
	CY7C1061GN30-10BVJXI	51-85150	48-ball VFBGA, Dual Chip Enable, Address MSB A19 at ball G2	
	CY7C1061GN30-10BVJXIT	51-85150	48-ball VFBGA, Dual Chip Enable, Address MSB A19 at ball G2, Tape and Reel	
	CY7C1061GN30-10BVXI	51-85150	48-ball VFBGA, Dual Chip Enable, Address MSB A19 at ball H6	
	CY7C1061GN30-10BVXIT	51-85150	48-ball VFBGA, Dual Chip Enable, Address MSB A19 at ball H6, Tape and Reel	
15	CY7C1061GN18-15ZSXI	51-85160	54-pin TSOP II	
	CY7C1061GN18-15ZSXIT	51-85160	54-pin TSOP II, Tape and Reel	

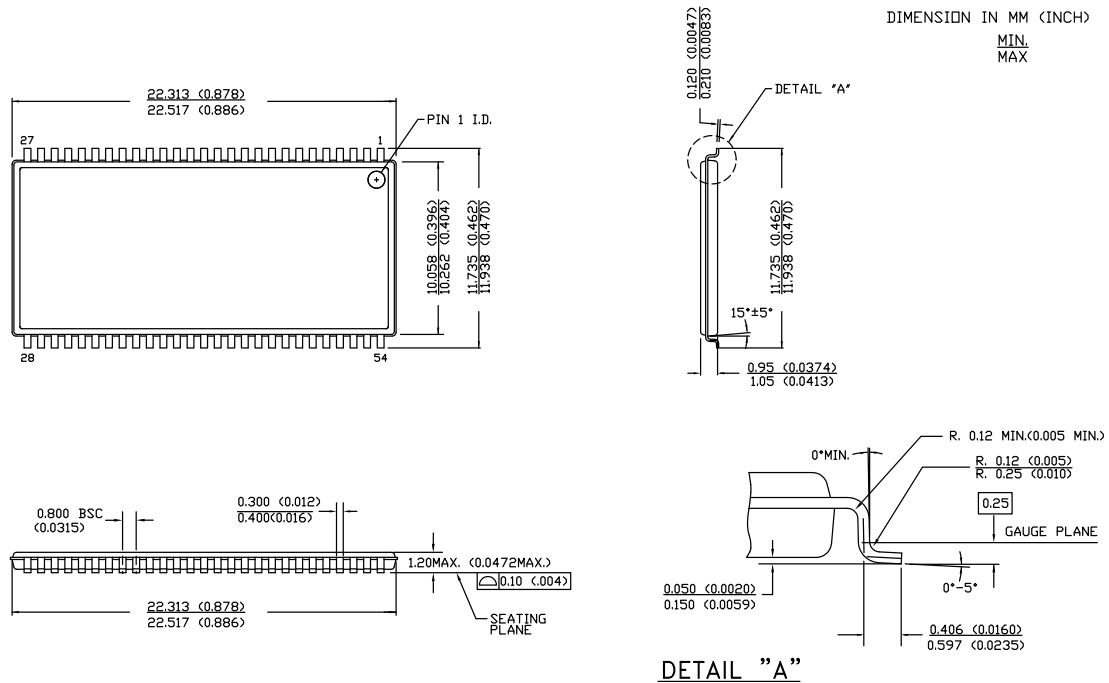
Ordering Code Definitions

CY 7 C 1 06 1 X G N XX - X XX X I X

- X = blank or T
blank = Bulk; T = Tape and Reel
- Temperature Range:
I = Industrial
- Pb-free
- Package Type: XX = ZS or ZX or BV1 or BVJ or BV
ZS = 54-pin TSOP II;
ZX = 48-pin TSOP I;
BV1 = 48-ball VFBGA, Single Chip Enable, Address MSB A19 at ball G2;
BVJ = 48-ball VFBGA, Dual Chip Enable, Address MSB A19 at ball G2;
BV = 48-ball VFBGA, Dual Chip Enable, Address MSB A19 at ball H6
- Speed: X = 10 or 15
10 = 10 ns; 15 = 15 ns
- Voltage Range: XX = 30 or 18
30 = 2.2 V to 3.6 V; 18 = 1.65 V to 2.2 V
- N = No ECC
- Process Technology: G = 65 nm Technology
- Chip Enable: X = blank or 2
- Data Width: 1 = × 16-bits
- Density: 06 = 16-Mbit density
- Family Code: 1 = Fast Asynchronous SRAM family
- Technology Code: C = CMOS
- Marketing Code: 7 = SRAM
- Company ID: CY = Cypress

Package Diagrams

Figure 14. 54-pin TSOP II (22.4 × 11.84 × 1.0 mm) Z54-II Package Outline, 51-85160



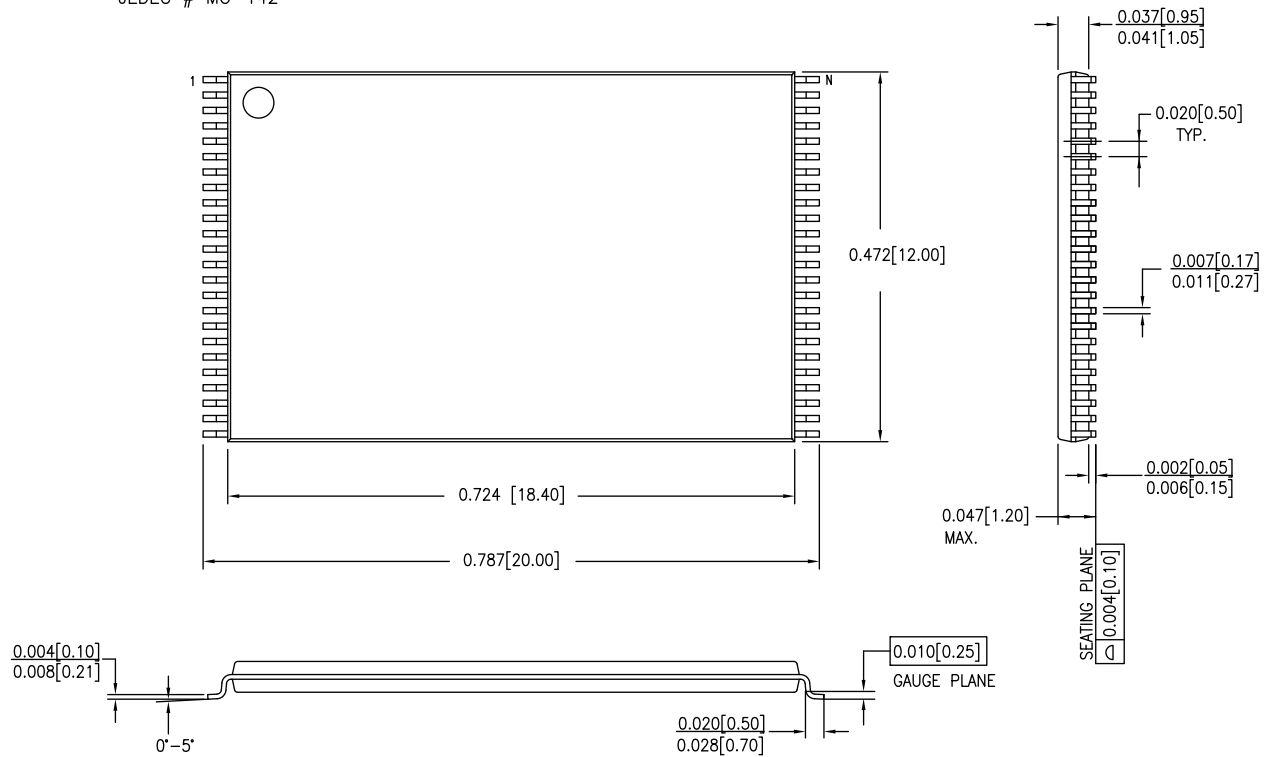
51-85160 *E

Package Diagrams (continued)

Figure 15. 48-pin TSOP I (12 × 18.4 × 1.0 mm) Z48A Package Outline, 51-85183

DIMENSIONS IN INCHES[MM] MIN.
MAX.

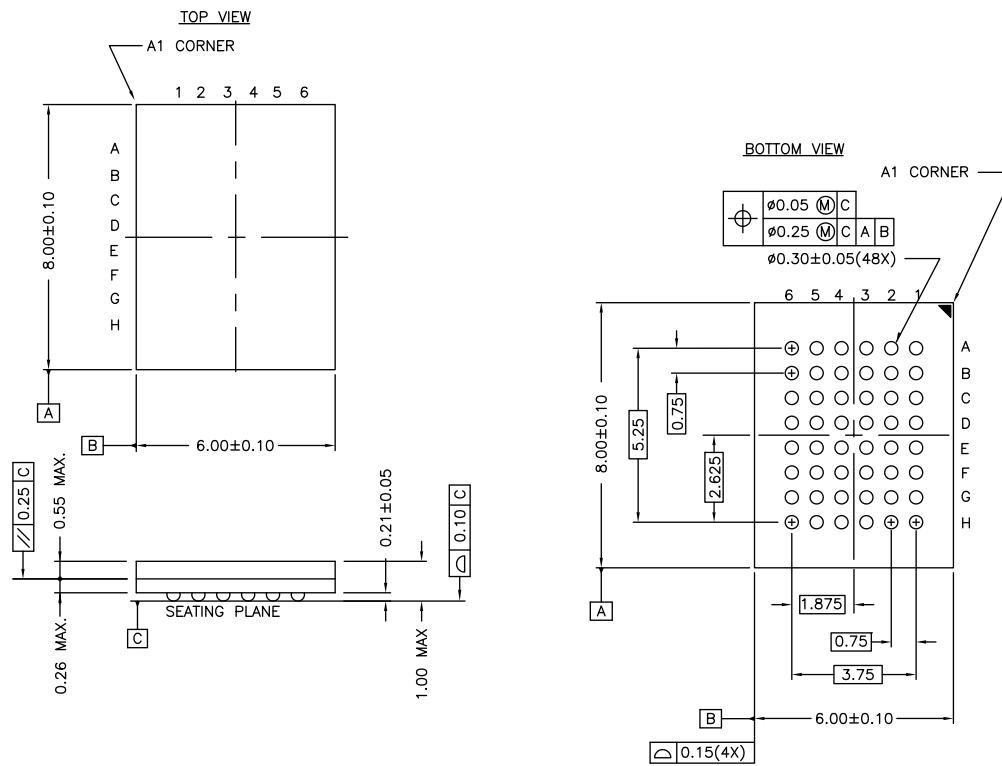
JEDEC # MO-142



51-85183 *D

Package Diagrams (continued)

Figure 16. 48-ball VFBGA (6 × 8 × 1.0 mm) BV48/BZ48 Package Outline, 51-85150



NOTE:

PACKAGE WEIGHT: See Cypress Package Material Declaration Datasheet (PMDD) posted on the Cypress web.

51-85150 *H

Acronyms

Acronym	Description
$\overline{\text{BHE}}$	Byte High Enable
$\overline{\text{BLE}}$	Byte Low Enable
$\overline{\text{CE}}$	Chip Enable
CMOS	Complementary Metal Oxide Semiconductor
I/O	Input/Output
$\overline{\text{OE}}$	Output Enable
SRAM	Static Random Access Memory
TSOP	Thin Small Outline Package
TTL	Transistor-Transistor Logic
VFBGA	Very Fine-Pitch Ball Grid Array
$\overline{\text{WE}}$	Write Enable

Document Conventions

Units of Measure

Symbol	Unit of Measure
°C	degree Celsius
MHz	megahertz
μA	microampere
μs	microsecond
mA	milliampere
mm	millimeter
ns	nanosecond
Ω	ohm
%	percent
pF	picofarad
V	volt
W	watt

Document History Page

Document Title: CY7C1061GN/CY7C10612GN, 16-Mbit (1M words × 16 bit) Static RAM Document Number: 001-93680				
Rev.	ECN No.	Orig. of Change	Submission Date	Description of Change
**	4505531	VINI	01/02/2015	New data sheet.
*A	4900408	NILE	09/11/2015	Updated DC Electrical Characteristics : Updated details in "Test Conditions" column of V_{OH} and V_{OL} parameters. Updated Ordering Information : No change in part numbers. Replaced "51-85178" with "51-85150" in "Package Diagram" column. Replaced "8 × 9.5 × 1 mm" with "6 × 8 × 1.0 mm" in "Package Type" column. Updated Package Diagrams : Removed spec 51-85178 *C. Added spec 51-85150 *H. Updated to new template.
*B	5415385	NILE	09/07/2016	Updated Document Title to read as "CY7C1061GN/CY7C10612GN, 16-Mbit (1M words × 16 bit) Static RAM". Added CY7C10612GN part related information in all instances across the document. Added "1.65 V to 2.2 V" voltage range related information in all instances across the document. Added 48-pin TSOP I package related information in all instances across the document. Added 15 ns speed bin related information in all instances across the document. Updated Pin Configurations : Added Figure 2 . Added Figure 3 . Added Figure 4 . Added Figure 5 . Added Figure 6 . Removed figure "54-pin TSOP II (22.4 × 11.84 × 1.0 mm) pinout (Top View)". Updated DC Electrical Characteristics : Updated details in "Test Conditions" column of I_{CC} parameter (Added condition "f = 66.7 MHz" and added corresponding values). Added Note 6 and referred the same note in description of I_{SB1} and I_{SB2} parameters. Updated AC Test Loads and Waveforms : Updated Note 8 referred in Figure 7 . Updated AC Switching Characteristics : Updated Note 12. Added Note 14 and referred the same note in description of t_{LZOE} , t_{HZOE} , t_{LZCE} , t_{HZCE} parameters. Updated Note 15. Added Note 19 and referred the same note in description of t_{SCE} parameter. Updated Ordering Information : Updated part numbers. Updated Package Diagrams : Added spec 51-85183 *D. Updated to new template.

Document History Page (continued)

Document Title: CY7C1061GN/CY7C10612GN, 16-Mbit (1M words × 16 bit) Static RAM Document Number: 001-93680				
Rev.	ECN No.	Orig. of Change	Submission Date	Description of Change
*C	5454555	NILE	09/29/2016	Updated Maximum Ratings : Updated Note 4 (Replaced “2 ns” with “20 ns”). Updated DC Electrical Characteristics : Removed Operating Range “2.7 V to 3.6 V” and all values corresponding to V _{OH} parameter. Included Operating Ranges “2.7 V to 3.0 V” and “3.0 V to 3.6 V” and all values corresponding to V _{OH} parameter. Updated Ordering Information : Updated part numbers. Updated Ordering Code Definitions .

Sales, Solutions, and Legal Information

Worldwide Sales and Design Support

Cypress maintains a worldwide network of offices, solution centers, manufacturer's representatives, and distributors. To find the office closest to you, visit us at [Cypress Locations](#).

Products

ARM® Cortex® Microcontrollers	cypress.com/arm
Automotive	cypress.com/automotive
Clocks & Buffers	cypress.com/clocks
Interface	cypress.com/interface
Lighting & Power Control	cypress.com/powerpsoc
Memory	cypress.com/memory
PSoC	cypress.com/psoc
Touch Sensing	cypress.com/touch
USB Controllers	cypress.com/usb
Wireless/Rf	cypress.com/wireless

PSoC® Solutions

[PSoC 1](#) | [PSoC 3](#) | [PSoC 4](#) | [PSoC 5LP](#)

Cypress Developer Community

[Forums](#) | [Projects](#) | [Video](#) | [Blogs](#) | [Training](#) | [Components](#)

Technical Support

cypress.com/support

© Cypress Semiconductor Corporation, 2015–2016. This document is the property of Cypress Semiconductor Corporation and its subsidiaries, including Spansion LLC ("Cypress"). This document, including any software or firmware included or referenced in this document ("Software"), is owned by Cypress under the intellectual property laws and treaties of the United States and other countries worldwide. Cypress reserves all rights under such laws and treaties and does not, except as specifically stated in this paragraph, grant any license under its patents, copyrights, trademarks, or other intellectual property rights. If the Software is not accompanied by a license agreement and you do not otherwise have a written agreement with Cypress governing the use of the Software, then Cypress hereby grants you a personal, non-exclusive, nontransferable license (without the right to sublicense) (1) under its copyright rights in the Software (a) for Software provided in source code form, to modify and reproduce the Software solely for use with Cypress hardware products, only internally within your organization, and (b) to distribute the Software in binary code form externally to end users (either directly or indirectly through resellers and distributors), solely for use on Cypress hardware product units, and (2) under those claims of Cypress's patents that are infringed by the Software (as provided by Cypress, unmodified) to make, use, distribute, and import the Software solely for use with Cypress hardware products. Any other use, reproduction, modification, translation, or compilation of the Software is prohibited.

TO THE EXTENT PERMITTED BY APPLICABLE LAW, CYPRESS MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO THIS DOCUMENT OR ANY SOFTWARE OR ACCOMPANYING HARDWARE, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. To the extent permitted by applicable law, Cypress reserves the right to make changes to this document without further notice. Cypress does not assume any liability arising out of the application or use of any product or circuit described in this document. Any information provided in this document, including any sample design information or programming code, is provided only for reference purposes. It is the responsibility of the user of this document to properly design, program, and test the functionality and safety of any application made of this information and any resulting product. Cypress products are not designed, intended, or authorized for use as critical components in systems designed or intended for the operation of weapons, weapons systems, nuclear installations, life-support devices or systems, other medical devices or systems (including resuscitation equipment and surgical implants), pollution control or hazardous substances management, or other uses where the failure of the device or system could cause personal injury, death, or property damage ("Unintended Uses"). A critical component is any component of a device or system whose failure to perform can be reasonably expected to cause the failure of the device or system, or to affect its safety or effectiveness. Cypress is not liable, in whole or in part, and you shall and hereby do release Cypress from any claim, damage, or other liability arising from or related to all Unintended Uses of Cypress products. You shall indemnify and hold Cypress harmless from and against all claims, costs, damages, and other liabilities, including claims for personal injury or death, arising from or related to any Unintended Uses of Cypress products.

Cypress, the Cypress logo, Spansion, the Spansion logo, and combinations thereof, PSoC, CapSense, EZ-USB, F-RAM, and Traveo are trademarks or registered trademarks of Cypress in the United States and other countries. For a more complete list of Cypress trademarks, visit cypress.com. Other names and brands may be claimed as property of their respective owners.