Product Brief

TC1791-AUDO MAX family

Automotive 32-bit TriCore™ Microcontroller

The TC1791 is one of three premium derivatives of the AUDO MAX family. It's 240MHz award-winning TriCore™ CPU provides high-end microcontroller performance combined with sophisticated DSP capabilities and dedicated safety features. The new TriCore™ version 1.6 offers a significantly increased Floating Point Unit performance and an Integer Division Unit in Hardware. Furthermore memory protection is optimized and Branch prediction is enhanced by a new buffer system. Equipped with up to 4.0 MByte of embedded flash and a total of up to 288 KByte SRAM (which now comes with Error Code Correction ECC), the TC1791 is one of the highest performing microcontrollers for embedded real-time automotive applications. As the TC1791 (package BGA292) is inner pin-compatible to the highest-end TC1798 (package BGA516) it is the ideal high-end entry device with the option for later performance upgrade. The comprehensive and consistent tool support known from earlier TriCore™ families will also be provided for AUDO MAX family.

Applications

- Engine and transmission control
- 4-6-8 cylinder diesel or gasoline direct injection
- Double clutch transmission
- Hybrid and electric vehicle
- Suspension systems

Features

- High performance 32-bit super-scalar TriCoreTM V1.6 CPU with 6 stage pipeline
  - -240/200MHz at full automotive temperature range
  - Superior real-time performance
  - Strong bit handling
  - Fully integrated DSP capabilities
  - Single precision floating point unit
- 32-bit Peripheral Control Processor with single cycle instruction (PCP2)
  -48Kbyte on-chip SRAM

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Features

- Memories:
  - 3.0/4,0MB embedded program flash with ECC
  - 192KByte data flash
  - 288KByte on-chip SRAM
  - 16KByte Data cache (dedicated)
  - 16KByte Instruction cache (dedicated)
- 24 DMA channels
- 2 General Purpose Timer Arrays (GPTA)
- 4 Capture/Compare Units (CCU)
- 2 FlexRay™ channels
- 2 Micro Second bus interfaces (MSC)
- 2 asnchronous/synchronous serial interfaces (ASC)
- 4 high speed synchronous serial Interfaces (SSC)
- 2 High-speed Micro Link Interfaces (MLI)
- MultiCAN module with 4 CAN nodes & 128 message objects
- 4 channel fast analog-to-digital converter (FADC)
- 48 channel analog-to-digital converter (ADC) (5/3,3V)
- 8 SENT channels
- Secure HW Extension (SHE)
- On-chip debug support (OCDS)
- Dedicated emulation device (ED-Device) chip for multicore debugging, tracing and calibration
- Core voltage 1,3V
- Extensive set of safety features
- Full automotive temperature range -40°C to 125°C
- BGA292 package

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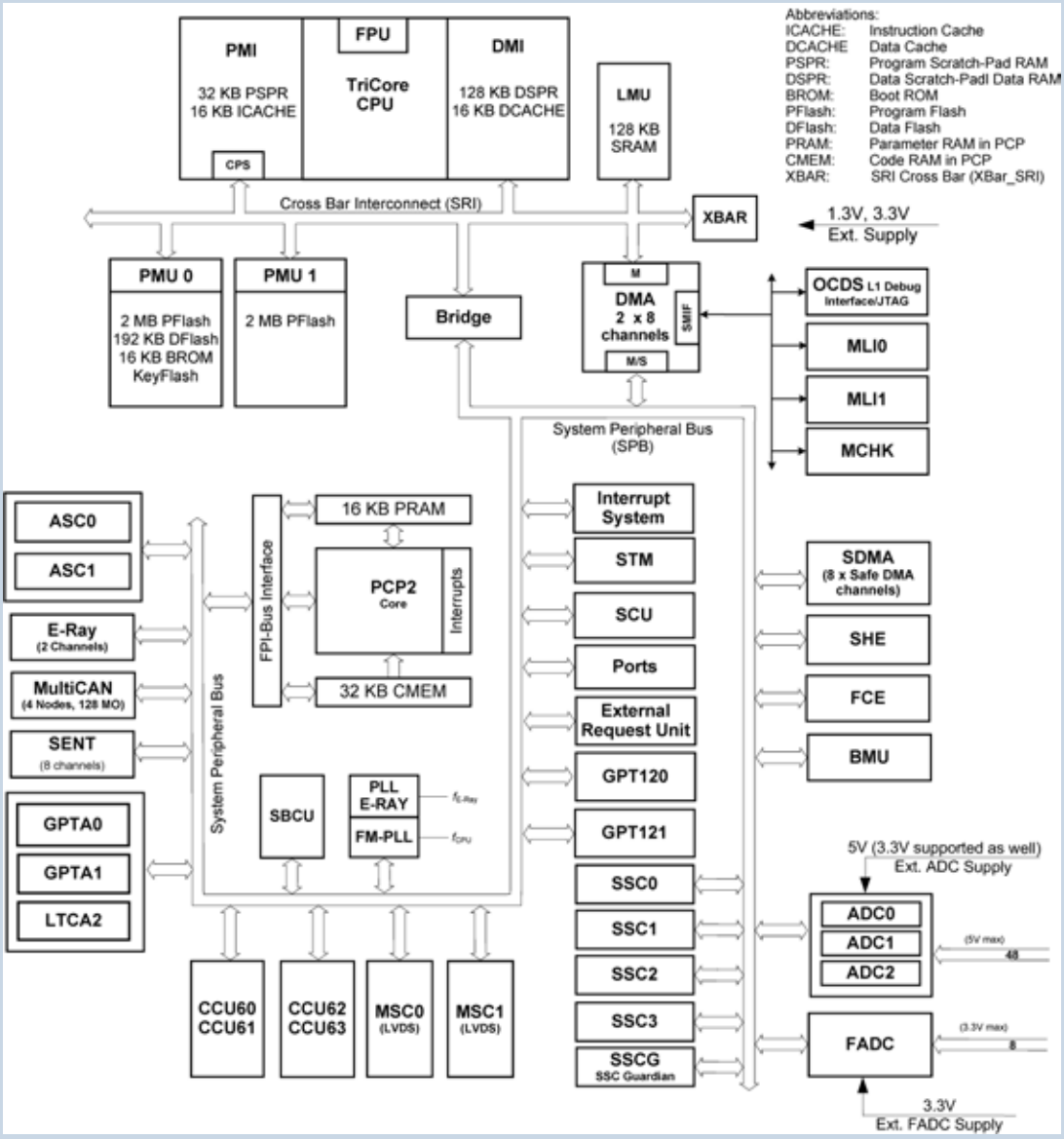
Block Diagram



Type	eFlash	DateFlash	Frequency	SRAM	Package	Temp.Range
SAK-TC1791F-384F200EL	3,0 MB	192 KB*	200 MHz	288 KB	LFBGA292	-40°C....+125°C
SAK-TC1791F-512F240EL	4,0 MB	192 KB*	240 MHz	288 KB	LFBGA292	-40°C....+125°C

*EEPROM emulation (up to 60k w/e cycles)

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