

AM273x Sitara™ Microcontrollers

1 Features

Processor Cores:

- **Dual-core Arm® Cortex®-R5F MCU** subsystem operating up to 400 MHz, highly-integrated for real-time processing
 - Dual-core Arm® Cortex®-R5F cluster supports dual-core and single-core operation
 - 32KB ICache and 32KB DCache per R5F core with SECEDED ECC on all memories
 - Single-core: 128KB TCM per cluster (128KB TCM per R5F core)
 - **Dual-core: 128KB TCM per cluster (64KB TCM per R5F core)**
- **TMS320C66x DSP core**
 - Single core, 32-bit, floating point DSP
 - Operating at 450 MHz (14.4 GMAC)

Memory subsystem:

- Up to **5.0 MB On Chip RAM** (OCSRAM)
 - Memory space sharable between DSP, MCU, and shared L3
 - **3.5625MB shared L3 memory**
 - **960KB dedicated to Main subsystem**
 - **384KB dedicated to DSP subsystem**
- External Memory Interfaces (EMIF)
 - QSPI interface operating up to 67 MHz

System on Chip (SoC) Services and Architecture:

- 12x EDMA for various subsystems, MCU, DSP and Accelerator cores
- 5x Real-Time Interrupt (RTI) modules
- **Mailbox system for Interprocessor Communication (IPC)**
- JTAG/Trace interfaces for device debugging
- Clock source
 - 40.0 MHz crystal with internal oscillator
 - Supports external oscillator at 40/50 MHz
 - Supports externally driven clock (Square/Sine) at 40/50 MHz

High-speed Serial Interfaces:

- **10/100 Mbps Ethernet (RGMII/RMII/MII)**
- **Input: 2x 4-lane MIPI D-PHY CSI 2.0 Data**
- **Output: 4-lane Aurora/LVDS**

General Connectivity Peripherals:

- General Purpose Analog to Digital Converters (GPADC)
 - 1x 9-channel ADC supporting up to 625 Ksps

- Digital Connectivity
 - **4x Serial Peripheral Interface (SPI)** controllers operating up to 25 MHz
 - **3x Inter-Integrated Circuit (I2C)** ports
 - **4x Universal Asynchronous Receiver-Transmitters (UART)**

Industrial and control interfaces:

- 3x Enhanced Pulse-Width Modulator (ePWM)
- 1x Enhanced Capture Module (eCAP)
- 2x Modular Controller Area Network (MCAN) modules with CAN-FD support

Power Management:

- Simplified power sequencing and reduced number of power supply rails
- Dual voltage digital I/O supporting 3.3V and 1.8V operation

Security:

- Device Security
 - Programmable embedded Hardware Security Module (HSM)
 - Secure authenticated and encrypted boot support
 - Customer programmable root keys, symmetric keys (256 bit), Asymmetric keys (up to RSA-4K or ECC-512) with Key revocation capability
 - Crypto hardware accelerators - PKA with ECC, AES (up to 256 bit), TRNG/DRBG

Functional Safety:

- **Functional Safety-Compliant** targeted
 - Developed for functional safety applications
 - Documentation will be available to aid ISO 26262 functional safety system design
 - Hardware integrity up to ASIL B targeted
 - Safety-related certification
 - ISO 26262 certification by TÜV SÜD planned
- AEC-Q100 qualification targeted
- Operating Conditions
 - Automotive grade temperature range supported
 - Industrial grade temperature range supported

Package options:

- ZCE (285-pin) nFBGA package 13mm x 13mm, 0.65 mm pitch
- 45-nm technology
- Compact solution size



5 Device Comparison

Table 5-1. Device Comparison

FUNCTION	AM2732	AM2732-Q1
On-chip memory	3.625 Mbytes	3.625 Mbytes
ASIL	B-Targeted	
PROCESSORS		
MCU Arm Cortex (R5F)	Yes	
DSP (C66x)	Yes	
RADAR FEATURES		
Hardware Accelerator 2.0	No	
PERIPHERALS		
Ethernet Interface RGMII, RMII, MII (10/100 ONLY)	Yes	
Serial Peripheral Interface (SPI) ports	4	
Quad Serial Peripheral Interface (QSPI)	1	
Inter-Integrated Circuit (I ² C) Interface	3	
Modular Controller Area Network (MCAN) modules with CAN-FD	2	
Universal Asynchronous Receiver-Transmitters (UART)	4	
Enhanced Pulse-Width Modulator (ePWM)	3	
Enhanced Capture Module (eCAP)	Yes	
Hardware in Loop (HIL/DMM)	Yes	
General Purpose ADC (9 Channels)	1	
4-lane Aurora/LVDS Debug	Yes	
4-lane MIPI D-PHY CSI2.0 (CSI2_RX0 and CSI2_RX1)	2	
JTAG/Trace	Yes	