MCU 32-bit ARM Cortex M4F RISC 1MB Flash 3.3V 128-Pin TQFP T/R

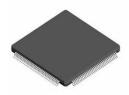|	
Manufacturer:	Microchip Technology, Inc
Package/Case:	TQFP-128
Product Type:	Embedded Processors & Controllers
RoHS:	RoHS Compliant/Lead free
Lifecycle:	Active

Images are for reference only

Inquiry

General Description

The SAM E54 high performance micro-controller series features a 32-bit ARM® Cortex®-M4 processor with Floating Point Unit (FPU), running up to 120 MHz ,up to 1 MB Dual Panel Flash with ECC, and up to 256 KB of SRAM with ECC .It also adds a 10/100 Ethernet MAC and 2 CAN-FD ports targeted for industrial automation ,automotive applications and general purpose applications requiring Wired connectivity.

Series offers excellent features with class leading power performance and integrated hardware security.

Key features

· Quad Serial Peripheral Interface(QSPI) with Execute in Place (XIP) Support.

· Up to 2 Secure Digital Host Controller (SDHC)

· 10/100 Ethernet MAC with IEEE 1588 support.

· Up to 2 CAN-FD Interface.

· Inter-IC Sound(I2S)Controller for Audio

· Peripheral Touch Controller (PTC) supporting up to 256 channels of capacitive touch .

· Full speed USB with embedded Host/device.

· Supports 5 Low power modes with class leading 65μA/MHz Active Power Performance.

· Integrated security including Asymmetric and Symmetric Crypto hardware acceleration

· Serial communication (SERCOM) ports configurable as UART/USART, ISO 7816, SPI or I^2C

Supported by MPLAB X IDE and MPLAB Harmony.

Functional Safety

This device supports the **ISO 26262 (ASIL B)** functional safety standard.

· The Functional Safety Manual, FMEDA and information on the Diagnostic Software are available under NDA through the request form on the 32-bit Microcontrollers Functional Safety web page.

· Learn more about 32-bit MCUs with Functional Safety capabilities including device hardware and certified software libraries.

Key Features

ARM Cortex-M4F CPU running at up to 120 MHz

Floating Point Unit (FPU)

Embedded Trace Module (ETM) with instruction trace stream

Core Sight Embedded Trace Buffer (ETB)

Error Correction Code (ECC)

Dual bank with Read-While-Write (RWW) support

EEPROM hardware emulation

Error Correction Code (ECC) RAM option

Up to 4 KB of Tightly Coupled Memory (TCM)

Up to 8 KB additional SRAM with backup retention capability

Power-on Reset (POR) and Brown-out detection (BOD)

Internal and external clock options

External Interrupt Controller (EIC)

Two-pin Serial Wire Debug (SWD) programming, test, and debugging interface

Five Low Power Modes (Idle, Standby, Hibernate, Backup, and Off)

Sleep Walking peripherals.

Battery backup support

Embedded Buck/LDO regulator supporting on-the-fly selection.

65μA/MHz active power consumption.

Five confidential modes of operation (ECB, CBC, CFB, OFB, CTR)

True Random Number Generator (TRNG)

RSA, DSA

Elliptic Curves Cryptography (ECC) ECC GF(2n), ECC GF(p)

Integrity Check Module (ICM) based on Secure Hash Algorithm (SHA1, SHA224, SHA256), DMA

32-channel Direct Memory Access Controller (DMAC)

Compatibility with SD and SDHC Memory Card Specification Version 3.01

Compatibility with SDIO Specification Version 3.0

Compliant with JDEC specification, MMC memory cards V4.51

eXecute-In-Place (XIP) support

Up to 75 MHz SDR operation and DDR support

Embedded host and device function

10/100 Mbps in MII and RMII with dedicated DMA

IEEE 1588 Precision Time Protocol (PTP) , Time Stamping Unit (TSU) support

IEEE802.3AZ/AF/PoE energy efficiency support

Support for 802.1AS and 1588 precision clock synchronization protocol

Wake on LAN support

supporting CAN2.0 A/B and CAN-FD 1.0

USART with full-duplex and single-wire half-duplex configuration

ISO7816

I2C up to 3.4MHz

SPI

LIN master/slave

RS485

SPI inter-byte space

One two-channel Inter-IC Sound Interface (I2S)

Up to 14-bit parallel capture mode

Up to 256 channel capacitive touch and proximity sensing

32-channel Event System

16-bit ,32-bit or 8-bit TC with two compare/capture channels

Two 24-bit Timer/Counters for Control (TCC), with extended functions

Three 16-bit Timer/Counters for Control (TCC), with extended functions

Up to 5 wake-up pins with tamper detection and de-bouncing filter

Watchdog Timer (WDT) with Window mode

CRC-32 generator

Position Decoder (PDEC)

Frequency meter (FREQM)

One Configurable Custom Logic (CCL)

Differential and single-ended input

Automatic offset and gain error compensation

Oversampling and decimation in hardware to support 13-, 14-, 15-, or 16-bit resolution

Dual 12-bit, 1 MSPS Output Digital-to-Analog Converter (DAC)

Two Analog Comparators (AC) with Window Compare function

One temperature sensor

99 programmable I/O pins

1.71V – 3.6V

128-pin TQFP,120-pin TFBGA

Recommended For You

ATmega8-16PU

Microchip Technology, Inc

DIP

ATmega162-16PU

Microchip Technology, Inc

DIP40

AT91RM9200-CJ-002

Microchip Technology, Inc

BGA

AT89C2051-12PU

Microchip Technology, Inc

DIP

ATmega8515L-8PU

Microchip Technology, Inc

DIP

AT91SAM9G20B-CFU

Microchip Technology, Inc

247-TFBGA

ATtiny20-XUR

Microchip Technology, Inc

TSSOP14

AT89LS52-16PU

Microchip Technology, Inc

DIP

ATtiny12L-4SUR

Microchip Technology, Inc

SOP8

ATmega324PA-PU

Microchip Technology, Inc

PDIP

ATmega8535-16JU

Microchip Technology, Inc

PLCC44

ATtiny44A-PU

Microchip Technology, Inc

DIP

AT89C5131A-S3SUM

Microchip Technology, Inc

PLCC52

ATmega162V-8PU

Microchip Technology, Inc

DIP40

AT89C5115-SISUM

Microchip Technology, Inc

PLCC-28