MCU 32-bit ARM Cortex M4F RISC 512KB Flash 3.3V 64-Pin TQFP Tray

Manufacturers	<u>Microchip Technology, Inc</u>
Package/Case	TQFP-64
Product Type	Embedded Processors & Controllers
RoHS	
Lifecycle	

Images are for reference only

Please submit RFQ for ATSAMD51J19A-AU or <u>Email to us: sales@ovaga.com</u> We will contact you in 12 hours.   RFQ

General Description

The SAM D51 high performance micro-controller series is targeted for general purpose applications using the 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 .

Series offers excellent features with class leading power performance ideal for multiple market segments.

Key features

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

·   Up to 2 Secure Digital Host Controller (SDHC)

·   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 I2C

Supported by MPLAB X IDE and MPLAB Harmony.

Features

Processor

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)

Memories

512 KB in-system self-programmable Flash with:

Error Correction Code (ECC)

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

EEPROM hardware emulation

192 KB SRAM Main Memory

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

System

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

Power Performance

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.

Integrated Security Features

One Advanced Encryption System (AES) with 256-bit key length and up to 2 MB/s data rate

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

True Random Number Generator (TRNG)

Public Key Cryptography Controller (PUKCC) and associated Classical Public Key Cryptography Library (PUKCL)

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

Peripherals

32-channel Direct Memory Access Controller (DMAC)

One SD(HC) Memory Card Interfaces (SDHC)

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

One Quad I/O Serial Peripheral Interface (QSPI)

eXecute-In-Place (XIP) support

Up to 75 MHz SDR operation and DDR support

One Full-Speed (12 Mbps) Universal Serial Bus (USB) 2.0 interface

Embedded host and device function

Six Serial Communication Interfaces (SERCOM), each configurable to operate as either:

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)

Parallel Capture Controller (PCC)

Peripheral Touch Controller (PTC)

System Features:

32-channel Event System

Up to Six 16-bit Timers/Counters (TC) each configurable as:

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

32-bit Real Time Counter (RTC) with clock/calendar function

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)

Dual 12-bit, 1 MSPS Analog-to-Digital Converter (ADC) with up to 16 channels each

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)

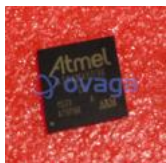One temperature sensor

I/O Pins

51 programmable I/O pins

Operating Voltage

1.71V – 3.6V

Packages

64-pin QFN,TQFP,WLCSP

Related Products

ATSAMA5D36A-CU

Microchip Technology, Inc

LFBGA-324
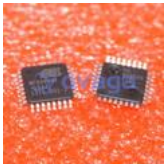
ATMEGA32M1-AU

Microchip Technology, Inc

TQFP-32

ATXMEGA128D3-AU

Microchip Technology, Inc

TQFP-64

ATTINY2313V-10SU

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SOIC-20

ATMEGA64M1-15AZ

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TQFP-32

ATMEGA16L-8PU

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PDIP-40

ATTINY48-MU

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VQFN-32

ATTINY4-TSHR

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SOT-23-6