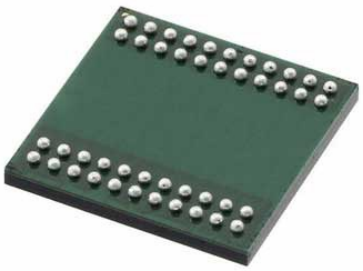
ATSAM3X4EA-CU

Data Sheet

MCU 32Bit SAM3X ARM Cortex M3 RISC 256KB Flash 1.8V/2.5V/3.3V 144Pin LFBGA

Manufacturers	Microchip Technology, Inc
Package/Case	LFBGA-144
Product Type	Embedded Processors & Controllers
RoHS	Green
Lifecycle	



Images are for reference only

Please submit RFQ for ATSAM3X4EA-CU or Email to us: sales@ovaga.com We will contact you in 12 hours. RFQ

General Description

Based on the ARM® Cortex®-M3 processor, the Microchip'sSAM3X4E runs at 84MHz and features 256KB of flash memory in 2 x 128KB banks and 68KB of SRAM in 2 x 32KB banks, with an additional 4KB as NFC (NAND Flash controller) SRAM.

Its highly-integrated peripheral set includes Ethernet, dual CAN, High Speed USB MiniHost and device with on-chip PHY, high-speed SD/SDIO/MMC, and multiple USARTs, SPIs, TWIs (I2C), and one I2S. The SAM3X4E also features a 12-bit ADC/DAC, temperature sensor, 32-bit timers, PWM timer and RTC.

The 16-bit external bus interface supports SRAM, PSRAM, NOR and NAND Flash with error code correction.

The Microchip QTouch Library is available for the SAM3X4E for easy implementation of buttons, sliders and wheels.

The device operates from 1.62V to 3.6V and is available in 144-pin QFP and BGA packages.

Features

Microcontroller Features

Core

ARM Cortex-M3 revision 2.0 running at up to 84 MHz

Memory Protection Unit (MPU)

24-bit SysTick Counter

Thumb®-2 instruction set

Nested Vector Interrupt Controller

Memories

2 x 128 Kbytes embedded Flash, 128-bit wide access, memory accelerator, dual bank

2 x 32 Kbytes embedded SRAM with dual banks

16 Kbytes ROM with embedded bootloader routines (UART, USB) and IAP routines

Static Memory Controller (SMC): SRAM, NOR, NAND support.

NAND Flash controller with 4 Kbytes RAM buffer and ECC

External Bus Interface - 16 bits, 8 chip selects, 23-bit address

System

Embedded voltage regulator for single-supply operation

POR, BOD and Watchdog for safe reset

Quartz or resonator oscillators: 3 to 20 MHz main and optional low power 32.768 kHz for RTC or device clock

High precision 8/12 MHz factory trimmed internal RC oscillator with 4 MHz Default Frequency for fast device startup

Slow Clock Internal RC oscillator as permanent clock for device clock in low power mode

One PLL for device clock and one dedicated PLL for USB 2.0 High Speed Mini Host/Device

Temperature Sensor

17 peripheral DMA (PDC) channels and 6-channel central DMA plus dedicated DMA for High-Speed USB Mini Host/Device and Ethernet MAC

Low Power modes

Sleep, Wait and Backup modes, down to 2.5 µA in Backup mode with RTC, RTT, and GPBR

Package

144-lead LQFP – 20 x 20 mm, pitch 0.5 mm

144-ball LFBGA – 10 x 10 mm, pitch 0.8 mm

Temperature operating range

Industrial (-40° C to +85° C)

Peripheral Features

USB 2.0 Device/Mini Host: 480 Mbps, 4 Kbyte FIFO, up to 10 bidirectional Endpoints, dedicated DMA

4 USARTs (ISO7816, IrDA®, Flow Control, SPI, Manchester and LIN support) and one UART

2 TWI (I2C compatible), up to 6 SPIs, 1 SSC (I2S), 1 HSMCI (SDIO/SD/MMC) with up to 2 slots

9-channel 32-bit Timer Counter (TC) for capture, compare and PWM mode, Quadrature Decoder Logic and 2-bit Gray Up/Down Counter for Stepper Motor

32-bit low-power Real-time Timer (RTT) and low-power Real-time Clock (RTC) with calendar and alarm features

256-bit General Purpose Backup Registers (GPBR)

Ethernet MAC 10/100 (EMAC - MII/RMII) with dedicated DMA

2 CAN Controllers with 8 Mailboxes

True Random Number Generator (TRNG)

I/O

103 I/O lines with external interrupt capability (edge or level sensitivity), debouncing, glitch filtering and on-die Series Resistor Termination

Six 32-bit Parallel Input/Output Controllers

Analog Features

16-channel 12-bit 1 msps ADC with differential input mode and programmable gain stage

2-channel 12-bit 1 msps DAC

Debugger Development Support

Serial Wire/JTAG Debug Port(SWJ-DP)

Debug access to all memories and registers in the system, including Cortex-M4 register bank when the core is running, halted, or held in reset.

Serial Wire Debug Port (SW-DP) and Serial Wire JTAG Debug Port (SWJ-DP) debug access.

Flash Patch and Breakpoint (FPB) unit for implementing breakpoints and code patches.

Data Watchpoint and Trace (DWT) unit for implementing watchpoints, data tracing, and system profiling.

Instrumentation Trace Macrocell (ITM) for support of printf style debugging.

IEEE1149.1 JTAG Boundary-scan on all digital pins.

Integrated Software Libraries and Tools

ASF-Atmel software Framework – SAM software development framework

Integrated in the Atmel Studio IDE with a graphical user interface or available as standalone for GCC, IAR compilers.

DMA support, Interrupt handlers Driver support

USB, TCP/IP, Wi-Fi and Bluetooth, Numerous USB classes, DHCP and Wi-Fi encryption Stacks

RTOS integration, FreeRTOS is a core component

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]

Microchip Technology, Inc

SOIC-20

[ATMEGA64M1-15AZ]

Microchip Technology, Inc

TQFP-32

[ATMEGA16L-8PU]

Microchip Technology, Inc

PDIP-40

[ATTINY48-MU]

Microchip Technology, Inc

VQFN-32

[ATTINY4-TSHR]

Microchip Technology, Inc

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