ATSAMD21E17 ☆

Status: In Production

View Datasheet View CAD Symbols

Features:

- 128KB in-system self-programmable Flash
- 16KB SRAM Memory
- Four Serial Communication Interfaces (SERCOM), each configurable to operate as either:
- 12-bit, 350ksps Analog-to-Digital Converter (ADC) with up to 10 channels
- 10-bit, 350ksps Digital-to-Analog Converter (DAC)
- 256-channel capacitive touch and proximity sensing

View More

Recommended for Automotive Designs | View Code Examples | Functional Safety Ready | Programming Services Available | Sampling Options | Buy Now


Device Overview

Summary

A low-power, high-performance Microchip's ARM® Cortex®-M0+ based flash microcontroller, the ATSAMD21E17 is ideal for a wide range of home automation, consumer, metering, and industrial applications. It features:

- 128KB of flash and 16KB of SRAM
- 4K RWW support on MRL D version
- Up to 48MHz operating frequency
- Four serial communication modules (SERCOM) configurable as UART/USART, SPI or I^2C, three 16-bit timer/counters, 32-bit Real-Time Clock and calendar, 18 PWM channels, one 14-channel 12-bit ADC, one 10-bit DAC
- Full Speed USB Device and embedded Host
- Support for up to 60 touch channels
- 1.62V to 3.63V power supply
- Easy pin migration to SAMD21G and SAMD21J devices
- Supported by Atmel Studio, ASF and the SAM D21 Xplained Pro kit

Supported by MPLAB X IDE and MPLAB Harmony.

Functional Safety

This device supports the ISO 26262 (ASIL B), IEC 61508 (SIL 2) and IEC 60730

Additional Features

Processor

- ARM Cortex-M0+ CPU running at up to 48MHz
- Single-cycle hardware multiplier
- Micro Trace Buffer

Memories

- 128KB in-system self-programmable Flash
- 4K RWW Support for device variant D
- 16KB SRAM Memory

System

- Power-on reset (POR) and brown-out detection (BOD)
- Internal and external clock options with 48MHDigital Frequency Locked Loop (DFLL48M) and 48MHto 96MHFractional
- External Interrupt Controller (EIC)
- 16 external interrupts
- One non-maskable interrupt
- Two-pin Serial Wire Debug (SWD) programming, test and debugging interface
- Drop in compatible with SAM D20

Low Power

- Idle and standby sleep modes
- SleepWalking peripherals

Peripherals

- One 32-bit TC with compare/capture channels, by using two TCs
- Up To Four 24-bit Timer/Counters for Control (TCC), with extended functions:
- Up to four compare channels with optional complementary output
- Generation of synchronized pulse width modulation (PWM) pattern across port pins
- Deterministic fault protection, fast decay and configurable dead-time between complementary output
- Dithering that increase resolution with up to 5 bit and reduce quantization error
- 32-bit Real Time Counter (RTC) with clock/calendar function
- Watchdog Timer (WDT)
- CRC-32 generator
- One full-speed (12Mbps) Universal Serial Bus (USB) 2.0 interface
- Embedded device function
- Eight endpoints
- Four Serial Communication Interfaces (SERCOM), each configurable to operate as either:
- USART with full-duplex and single-wire half-duplex configuration
- I2C Bus up to 3.4MHz
- SMBUS/PMBUS
- SPI
- LIN slave
- 12-bit, 350ksps Analog-to-Digital Converter (ADC) with up to 10 channels
- Differential and single-ended input
- 1/2x to 16x programmable gain stage

- 256-channel capacitive touch and proximity sensing

I/O

- 26 GPIO pins

Packages

- 32-pin TQSP, QFN, WLCSP

Operating Voltage

- 1.62V – 3.63V

Parametrics

Name	Value
Part Family	SAMD21
Max CPU Speed MHz	48
Program Memory Size (KB)	128
SRAM (KB)	16
Auxiliary Flash (KB)	0.064
Temperature Range (C)	-40 to 85
Operating Voltage Range (V)	1.62 to 3.63
Direct Memory Access Channels	12
SPI	4
I2C	4
Hardware Touch Peripheral	PTC
Peripheral Pin Select / Pin Muxing	Yes

Standalone Output Compare/Standa...	6
Motor Control PWM Channels	18
Max 16-bit Digital Timers	5
Parallel Port	GPIO
Number of Comparators	2
Internal Oscillator	32khz, 32Khz ULP, 8Mhz
Hardware RTCC/RTC	Yes
Max I/O Pins	26
Pincount	32
Low Power	Yes