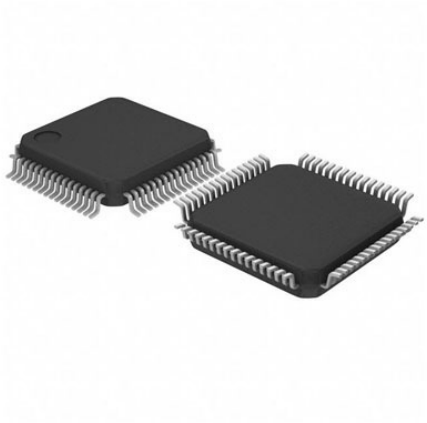
ATSAMG55J19A-AUT

Data Sheet

MCU 32-bit ARM Cortex M4 RISC 512KB Flash 1.8V/2.5V/3.3V 64-Pin LQFP T/R

Manufacturers	Microchip Technology, Inc
Package/Case	LQFP-64
Product Type	Embedded Processors & Controllers
RoHS	
Lifecycle	



Images are for reference only

Please submit RFQ for ATSAMG55J19A-AUT or Email to us: sales@ovaga.com We will contact you in 12 hours. RFQ

General Description

For new designs, please consider Revision B ATSAMG55J19B.

The Microchip'sSAM G55 embeds a Cortex-M4 CPU with an FPU (floating point unit). This ensures maximum throughput. This is very important as it allows you to minimize the active power consumption and get to sleep faster in order to reduce the overall power consumption. Additionally, the devices have 30 DMA channels, which give extremely high throughput.

The combination of ultra-low power consumption, fast wake-up time and high throughput is what gives the SAM G the edge in space- and power-constrained consumer applications such as sensor hubs. It wakes up quickly, has the throughput needed to reduce the amount of time spent in active mode, and then goes back to sleep with SRAM retention to conserve energy.

This gives the best performance and longest battery lifetime. It is fully-functional all the way down to 1.6V; including flash reads and writes, as well as full ADC operation. This allows for a more flexible power supply scheme that will squeeze extra runtime out of a battery.

Supported by MPLAB X IDE and MPLAB Harmony.

Features

picoPower

Down to 100 µA/MHz in active

Below 7 µA in deep sleep with SRAM retention

Down to 3 µs wake-up from deep sleep to executing the first instruction in active mode

Increased throughput

Cortex-M4

FPU

Small package

3x3 mm w/ 0.4mm pitch, WLCSP 7x7 pins

Pin compatibility across the family

Microcontroller Features

Core

ARM Cortex-M4 with up to 16 Kbytes SRAM on I/D bus providing 0 wait state execution at up to 120 MHz

Memory Protection Unit (MPU)

DSP Instructions, Floating Point Unit (FPU), Thumb®-2 instruction set

Memories

Up to 512 Kbytes embedded Flash

Up to 176 Kbytes embedded SRAM

8 Kbytes ROM with embedded boot loader, single-cycle access at full speed

System

Embedded voltage regulator for single-supply operation

Power-on reset (POR) and Watchdog for safe operation

Quartz or ceramic resonator oscillators: 3 to 20 MHz with clock failure detection and 32.768 kHz for RTT or system clock

High-precision 8/16/24 MHz factory-trimmed internal RC oscillator. In-application trimming access for frequency adjustment

Slow clock internal RC oscillator as permanent low-power mode device clock

PLL range from 48 MHz to 120 MHz for device clock

PLL range from 24 MHz to 48 MHz for USB device and USB OHCI

Up to 30 peripheral DMA (PDC) channels

256-bit General-Purpose Backup Registers (GPBR)

16 external interrupt lines

Package

49-lead WLCSP, 64-lead LQFP, 64-lead QFN

Temperature operating range

Industrial (-40° C to +85° C)

Peripheral Features

8 flexible communication units supporting:

USART, SPI, or Two-wire Interface (TWI)

USB 2.0 Device and USB Host OHCI with On-chip Transceiver

2 Inter-IC Sound Controllers (I2S)

2 three-channel 16-bit Timer/Counters (TC) with capture, waveform, compare and PWM modes

1 48-bit Real-Time Timer (RTT) with 16-bit prescaler and 32-bit counter

1 RTC with calendar and alarm features

1 32-bit Cyclic Redundancy Check Calculation Unit (CRCCU)

I/O

Up to 48 I/O lines with external interrupt capability (edge or level), debouncing, glitch filtering and on-die series resistor termination. Individually programmable open-drain, pull-up and pull-down resistor and synchronous output

Two PIO Controllers provide control of up to 48 I/O lines

Audio Features

1 Pulse Density Modulation Interface (PDMIC) (supports up to two microphones)

Advanced Analog Features

12-bit ADC Module:

One 8-channel ADC, 500 kSps Conversion Rate

12-bit Resolution with Enhanced Mode up to 16 bits

Digital Averaging Function providing Enhanced Resolution Mode up to 16 bits

Integrated Multiplexer Offering Up to 8 Independent Analog Inputs

Standby Mode for Fast Wakeup Time Response

Asynchronous Partial Wake-up (Sleepwalking) on external trigger

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

Image formats, file system & GUI library Middleware

RTOS integration, FreeRTOS 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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