



## KSTR-SAMA5D27 - SINGLE BOARD COMPUTER

**Extremely small form factor Single Board Computer.**  
**Based on Microchip ATSAMA5D27 SoC.**  
**Featuring Arm® Cortex®-A5 500 MHz.**

All in one SBC, smaller than a credit card. Rich feature set with efficient power consumption. Ideal for secure node computing and IoT solutions.  
Advanced security with hardware cryptographic acceleration and on-chip RAM. Protects your code and data at all times.

Operates directly from a Li-Ion or Li-Poly battery, provides charging and temperature monitoring of the cell.

Capable of several low-power states to ensure long off-grid operation.

10/100 Mbit/s Ethernet, 96 Mbit/s Wi-Fi b/g/n, Bluetooth 4.1 LE, Stackable GPIO headers.

USB Type-C connector providing power and access to the USB OTG controller.

### Dimensions:

- 50 x 70 mm

### Software support:

- Ubuntu 20.04 LTSU
- Boot
- Linux 4.14-5.6 (Buildroot and Yocto)
- FreeBSD 13 (on request)

### Applicable for:

- Secure IoT with physical tamper protection
- Low power IoT devices
- Machine Control
- Smart Grid
- Human Habitat Automation
- Handheld Devices and Human Interfaces
- Network Gateways

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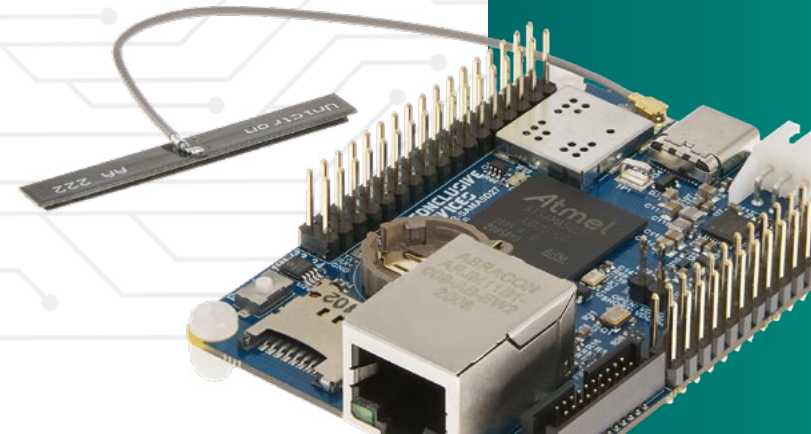
Small and efficient  
Single Board Computer

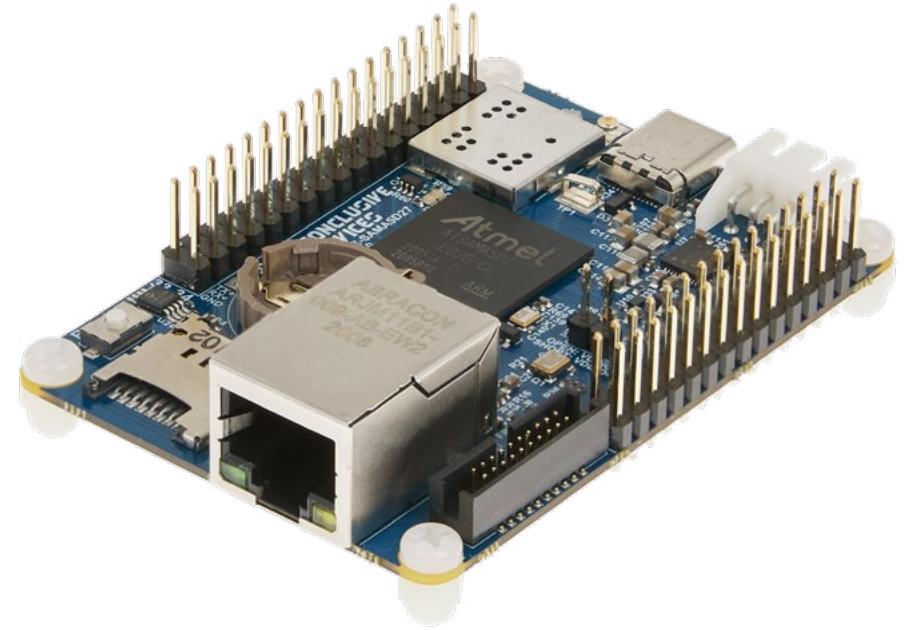
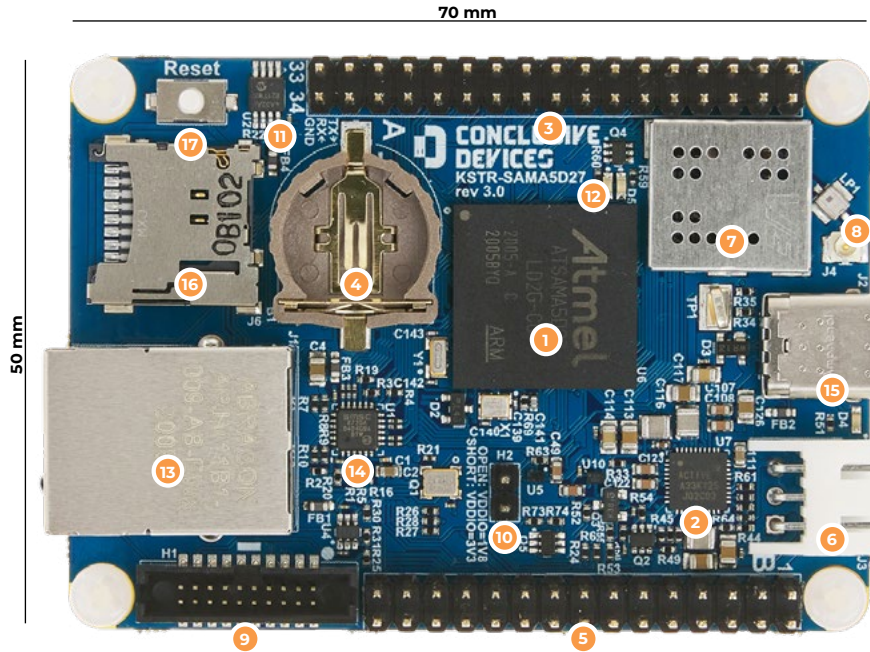


# KESTREL

## KSTR-SAMA5D27

<p>500 MHz single core</p> <p>Arm® MPU</p>	<p><b>256 MB</b> RAM</p>	<p>Extremely small form factor</p>	<p>Built-in battery management</p>
<p>Long off-grid operation</p>	<p>Arm® TrustZone®</p>	<p>Stackable GPIO headers</p>	<p>Ethernet Wi-Fi Bluetooth USB-C</p>





### 1 System on Chip

- Microchip SAMA5D27
- Arm® Cortex®-A5
- 500 MHz, 1 Core, 32-Bit
- L1 Cache 32 KB
- L2 Cache 128 KB
- 256 MB LPDDR2 SDRAM
- Arm® TrustZone®
- Secure Boot
- Hardware encryption engine
- Memory Integrity Monitor
- Real-time clock on-die
- Less than 200 µA low power state with fast wake up
- 5 µA backup mode

### 2 Battery management IC

- Powers board from battery
- Monitors battery charge level
- Charges battery
- Monitors battery temperature

### 3 I/O expansion header A

- 2 x 17 pins, 34 pins total
- 2.54 mm (0.1") pitch
- PDMIC audio input
- Timer I/O pins
- PWM pins
- FLEXCOM interface
- Image Sensor Controller (ISC) for 10-bit and 12-bit sensors.
- Serial console UART

### 4 Coin battery holder

- Type CR1220
- Upkeep for:
  - Real-time clock
  - Slow Clock Oscillator
  - System Controller

### 5 I/O expansion header B

- 2 x 15 pins, 30 pins total,
- 2.54 mm (0.1") pitch
- Power supply pins:
  - 3.3 V, 2.5 V, 1.8 V
  - 5.0 V directly from USB-C
- Battery power output
- I²C
- CAN
- 4-channel PWM
- USB
- FLEXCOM
- 6 channel ADC with Vref

### 6 2.5mm XHP-3 battery connector

- Li-Ion / Li-Poly battery
- Direct connection to cell, no BMS required
- Temperature monitor pin
- Provides cell charging
- Solder pads on reverse

### 7 Wireless communication module

- 2.4 GHz WLAN IEEE 802.11 b/g/n (CYW4343W)
- Bluetooth 4.1

### 8 Wireless antenna u.fl connector

### 9 Conclusive Developer Cable connector

- 1.27 mm pitch 20-pin connector
- Provides access to:
  - System UART
  - JTAG port
  - System I²C bus

### 10 VDDIO voltage switch pins

- 3.3 V or 1.8 V selection

### 11 EEPROM

- 4 KB
- Available via I²C
- Pre-programmed with MAC address and unique serial number

### 12 Status LEDs

- Power indicator
- System Heartbeat
- User programmable

### 13 Ethernet

- 10/100 Mbit/s
- RJ45 Connector

### 14 10/100 Ethernet PHY IC

- Device Mode
- Power Supply

### 15 USB Type-C connector

- SDHC and SDXC supported
- up to UHS-I SDR104
- Boot source

### 17 Reset switch

- Full hard reset of all power sections