MIP

Marketing Innovative Products

2017/04

SMART SENSING
IOT NODES
INDUSTRY 4.0
MEMS
SENSOR FUSION
WIRELESS
SAFETY

EBV Elektronik
An Avnet Company

Smarter Nodes for a Smarter IoT

Data is the most important asset in our interconnected world. The more information we are able to collect and analyse the more accurate, effective and successful will decisions and actions based on this data be. In order to stay ahead of the competition and to be innovative in the future we will need to access, collect, process and analyse an increasing amount of relevant information. Bandwidth, processing and analytics power in the cloud as well as energy supply to remote and hard-to-access sensors and IoT nodes are limiting factors that we need to overcome in this process. EBV is able to provide you with design support and technology that will enable you to solve those challenges.

Sophisticated processing technology makes it feasible to add intelligence to the sensor node in order to perform analytics locally and send only relevant data points to the cloud. This strategy is of great advantage if bandwidth, security and latency are critical. The advanced portfolio of low-power and energy harvesting solutions in EBV's linecard further creates the freedom to develop applications that are independent of external power.

In addition, EBV's broad portfolio of long range wireless transceivers and connectivity modules enables the connection of remote nodes to the cloud.

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by Manufacturer

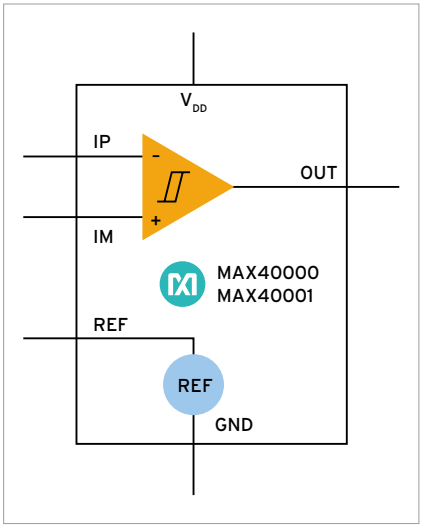
maxim integrated

100-up price	1-up price
MAX40000ANT12	MAX40000EVKIT#
€ 0.49	€ 48.-

MAX40000

1.7 V, 0.9 µA, Comparators with Built-in Reference

CLICK OR SCAN



MAX40000

EBV presents the MAX40000/ MAX40001 low power, small footprint comparators for a voltage threshold detection.

The MAX40000/MAX40001 are tiny, single comparators with built-in voltage references that are ideal for a wide variety of portable electronics applications, such as cell phones, portable instruments, and notebooks that have extremely tight board space and power constraints. The MAX40000/ MAX40001 are available in a 6-bump wafer-level package (WLP) with 1.11 × 0.76 mm² footprint and a 6-pin SOT23 package. The MAX40000 has a push-pull output and the MAX40001 has an open-drain output.

The devices offer a supply voltage range from 1.7…5.5 V and consume only 0.9 µA of supply current. They also feature internal filtering to provide high RF immunity, important in many portable applications.

The devices have a high-precision integrated reference that is factory trimmed to an initial accuracy of 1 % and better than 2.5 % over the entire temperature range. Internal reference voltage options include 1.252 V, 1.66 V, 1.94 V, and 2.22 V. See Ordering Information for help with ordering a MAX40000/MAX40001 with a particular voltage reference value and package type. The reference output is stable for capacitive loads up to 100 pF.

These devices are fully specified over -40…+125 °C automotive temperature range.

KEY FEATURES

- Micropower Operating Current (0.9 µA typ., 1.7 µA max.) Preserves Battery Power
- Tiny 1.11 × 0.76 mm² 6-Bump WLP and SOT23 Packages Save Board Space
- Internal Precision Reference Saves Space and Cost of an External Reference
  - <1 % at Room Temperature, <2.5 % Over Temp Reference
  - Multiple Reference Voltages (1.252 V, 1.66 V, 1.94 V, and 2.22 V)
- Input Voltage Range = -0.2…5.7 V
- Supply Voltage Range (1.7…5.5 V) Allows Operation from 1.8 V, 2.5 V, 3 V, and 5 V Supplies
- <10 µs Propagation Delay
- Push-Pull (MAX40000) or Open-Drain (MAX40001) Outputs

APPLICATION EXAMPLES

- Cell Phones
- Electronic Toys
- Level Detectors
- Notebook Computers
- Portable Medical Instruments/ Wearables
- Tablets and Consumer Accessories

TOSHIBA
Leading Innovation

1000-up price
TB67S508FTG(Z,EL)
€ 1.19

TB67S508FTG

Stepper Motor Driver, ACDS (Advanced Current Detect System), 40 V/3 A

CLICK OR SCAN

Toshiba TB67S508FTG

Latest-Generation Stepper-Motor Controller from Toshiba saves Space and Ensures Cooler, Quieter Running.

Toshiba has begun sampling a new 40 V/3.0 A stepper motor control IC that requires no external current-sense resistors. The Advanced Current Detection System (ACDS), integrated into the new 5 × 5 mm TB67S508FTG stepper-motor controller eliminates the effects of resistor-tolerance errors, ensuring greater accuracy (+/-5 %) and uniformity. Compared to the typical 7 × 7 mm control IC with external resistors the TB67S508FTG saves component costs and minimizes footprint by using 66 % of the board real-estate only.

In addition, the built-in power stage leverages the latest DMOS technology to boost energy efficiency, which aids space-saving design and eases thermal management by reducing internal heat generation. The transistors of the output bridge have very low on-resistance ($R_{DS(ON)}$) of 0.45 Ω (typical, high-side + low-side).

Moreover, Toshiba's Advanced Dynamic Mixed Decay (ADMD) mode, which controls current more closely than conventional mixed-decay modes, ensures smooth and quiet movement over a wider speed range by maintaining accurate step control up to high speeds.

The TB67S508FTG for 2-phase bipolar stepper-motor applications supports full-, half- and quarter-step resolution modes, and is delivered in a space-saving VQFN36 package optimised for high heat-radiation to allow superior reliability. All the usual protection features are built-in, including thermal shutdown, overcurrent detection, low-power and under-voltage detection, and terminal-component open/short-circuit detection (OSCM).

KEY FEATURES

On-chip current detection, low-$R_{DS(ON)}$ output stage and advanced mixed-decay mode minimize footprint and heat generation, boost accuracy and high-speed control.

- Capable of controlling one two-phase bipolar stepping motor
- Allows full, half(a)(b), quarter step operation
- Low on-resistance
  (High + Low side=0.45 Ω (typ.))
  MOSFET output stage
- ACDS (Advanced Current Detect System) is applied
- It realizes current sense resistor less system
- ADMD (Advanced Dynamic Mixed Decay Mode) improves the current follow-up, achieving high-efficiency motor control even in high-speed rotation
- High voltage and current, maximum ratings 40 V/3.0 A
- Interface: selectable by pin, either CLOCK-type or PHASE-type is possible.
- Built-in error detection circuits with signal output:
  - Thermal shutdown (TSD)
  - over-current shutdown (ISD)
  - under voltage lock out (UVLO))
- VQFN36 package, only 5 × 5 mm^2 body size.

APPLICATION EXAMPLES

- Office equipment
- Surveillance cameras
- Point-of-sales, Banking Terminals
- 3D-printer
- Robots
- Banknote identification machines
- Home Appliances

maxim integrated

100-up price	100-up price	1-up price
MAX32625ITK+	MAX32626ITK+	MAX32625-EVKIT#
€ 5.54	€ 6.12	€ 149.–

MAX32625

Ultra-Low Power, High-Performance ARM® Cortex®-M4F Microcontroller for Wearables

CLICK OR SCAN

The MAX32625/MAX32626 is a 32-bit RISC ARM® Cortex®-M4 with FPU-based microcontroller, ideal for the emerging category of wearable medical and fitness applications.

The architecture combines ultra-low power, high-efficiency signal processing functionality and ease of use.

KEY FEATURES

High-Efficiency Microcontroller for Wearable Devices

- Internal Oscillator Operates Up to 96 MHz
- Low Power 4 MHz Oscillator System Clock Option for Always-On Monitoring Applications
- 512 KB Flash Memory (256 KB "L" Version)
- 160 KB SRAM (128 KB "L" Version)
- 8 KB Instruction Cache
- 1.2 V Core Supply Voltage
- 1.8…3.3 V I/O
- Optional 3.3 V ±5 % USB Supply Voltage
- Wide Operating Temperature: -30…+85 °C

Power Management Maximizes Uptime for Battery Applications

- 106 µA/MHz Active Current Executing from Cache
- 49 µA/MHz Active Current Executing from Flash
- Wakeup to 96 MHz Clock or 4 MHz Clock
- 600 nA Low Power Mode (LP0) Current with RTC Enabled
- 2.56 µW Ultra-Low Power Data Retention Sleep Mode (LP1) with Fast 5 µs Wakeup on 96 MHz Clock Source
- 27 µA/MHz Low Power Mode (LP2) Current

Optimal Peripheral Mix Provides Platform Scalability

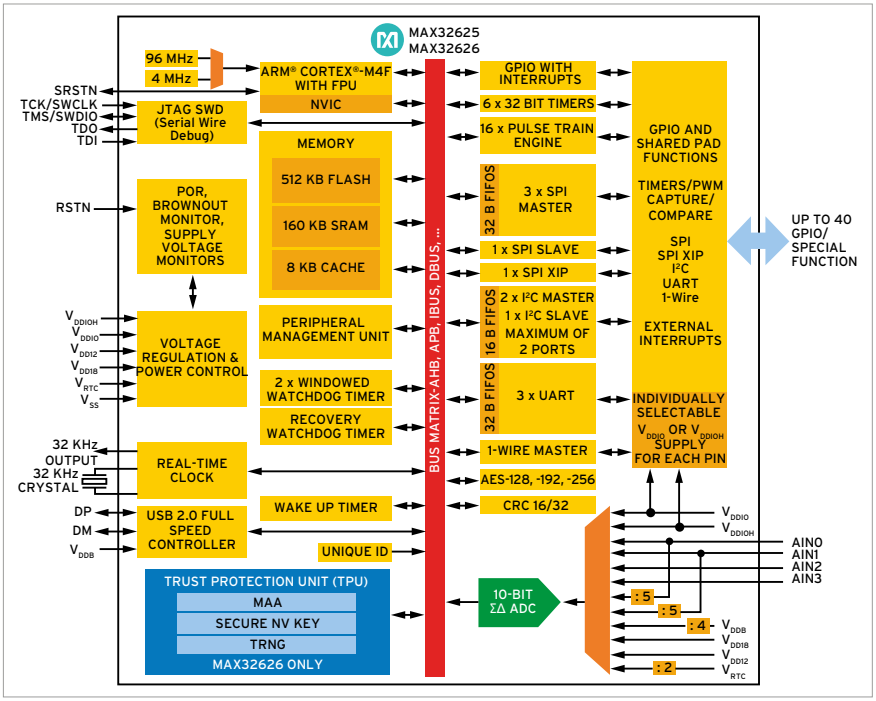
- SPI Execute in Place (SPIX) Engine for Memory Expansion with Minimal Footprint
- Three SPI Masters, One SPI Slave
- Three UARTs
- Up to Two I²C Masters, One I²C Slave
- 1-Wire Master
- Full-Speed USB 2.0 Device with Internal Transceiver
- Sixteen Pulse Train (PWM) Engines
- Six 32-Bit Timers and 3 Watchdog Timers
- Up to 40 General-Purpose I/O Pins
- 10-Bit Delta-Sigma ADC Operating at 7.8 ksps
- AES -128, -192, -256
- CMOS-Level 32 kHz RTC Output Available in All Power Modes

Secure Valuable IP and Data with Robust Internal Hardware Security (MAX32626 Only)

- Trust Protection Unit (TPU)
- PRNG Seed Generator
- Secure Boot Loader

APPLICATION EXAMPLES

- Fitness Monitors
- Portable Medical Devices
- Sensor Hubs
- Sports Watches
- Wearable Medical Patches



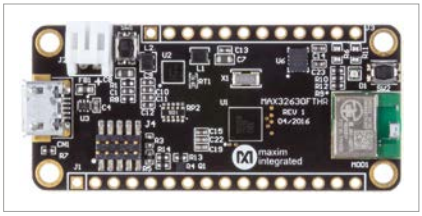
maxim integrated

1-up price
MAX32630FTHR#
€ 24.-

MAX32630FTHR

MAX32630FTHR Application Platform

CLICK OR SCAN



MAX32630FTHR

MAX32630FTHR board – a rapid development platform for microcontroller MAX32630

The MAX32630FTHR board is a rapid development platform designed to help engineers to quickly implement battery optimized solutions with the MAX32630 ARM® Cortex®-M4F microcontroller. The board also includes the MAX14690 wearable PMIC to provide optimal power conversion and battery management.

The form factor is a small 0.9 × 2.0 in² dual row header footprint that is compatible with breadboards and off-the-shelf peripheral expansion boards.

Additionally, on board are a variety of peripherals including a dual-mode Bluetooth® module, micro SD card connector, 6-axis accelerometer/gyro, RGB indicator LED, and pushbutton.

This provides a power-optimized flexible platform for quick proof-of-concepts and early software development to enhance time to market.

Go to:
https://developer.mbed.org/platforms/MAX32630FTHR/
to get started developing with this board.

KEY FEATURES

MAX32630 Microcontroller
- ARM® Cortex®-M4F, 96 MHz
- 2048 KB Flash Memory
- 512 KB SRAM
- 8 KB Instruction Cache
- Full-Speed USB 2.0
- Three SPI Masters, One Slave
- Three I²C Masters, One Slave
- Four UARTS
- 1-Wire Master
- 66 GPIO
- 4 Input 10-Bit ADC

MAX14690 Wearable PMIC
- Battery Charger with Smart Selector
- Dual Micro IQ Buck Regulators
- Three Micro IQ Linear Regulators
- Power-On/Off Sequencing Controller
- Voltage Monitor Multiplexer

Expansion Connections
- Breadboard-Compatible Headers
- Micro SD Card Connector
- Battery Connector
- Micro USB Connector

Integrated Peripherals
- RGB Indicator LED
- 6-Axis Accelerometer/Gyro
- Dual-Mode Bluetooth Module
- User Pushbutton

mbed® HDK Debug Interface
- Drag-and-Drop Programming
- SWD Debugger
- Virtual UART Console

APPLICATION EXAMPLES

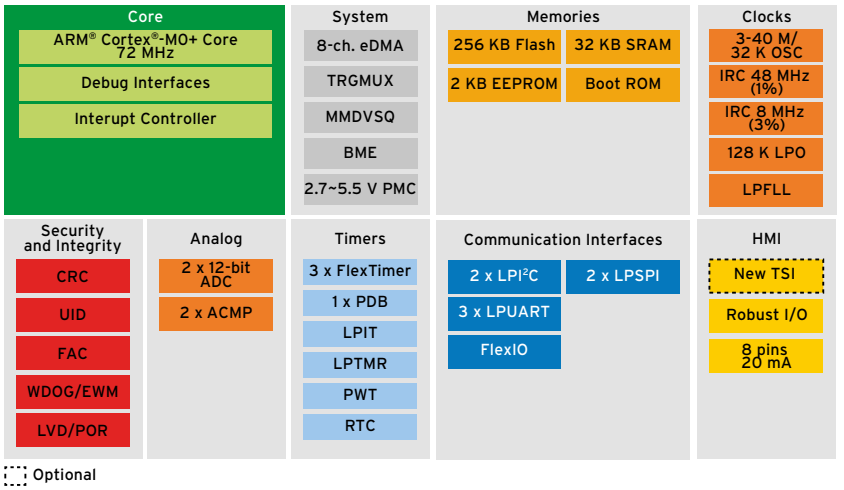
- Fitness Monitors
- Portable Medical Devices
- Sensor Hubs
- Sports Watches
- Wearable Medical Patches

100-up price	10-up price	1-up price	1-up price
MKE15Z256VLH7	MKE15Z256VLL7	FRDM-TOUCH	FRDM-KE15Z
€ 2.47	€ 2.64	€ 16.-	€ 39.-

KINETIS TOUCH SOLUTION

Complete and robust touch sensing solution working simply and seamlessly on Kinetis KE15Z

CLICK OR SCAN



Robust MCU with 256KB Flash and TSI

The user interface of a product is a key element that design engineers need to address to provide a compelling user experience.

Touch pads, slides, and rotaries offer a more intuitive and effective way of user interaction than traditional buttons.

Designing a touch-based user interface is simplified with the NXP Touch solution. This solution includes software that is designed to work simply and seamlessly with NXP's capacitive touch sensing hardware IP that's available on Kinetis KE15Z MCUs.

KEY FEATURES

Key benefits of the NXP Touch solution include:

- Robust EMC performance, noise immunity with IEC61000-4-6 standard certification with the 3 V and 10 V tests
- Self-cap and mutual-cap modes supporting up to 6 × 6 matrix touchpads
- Effective performance even with liquid substances such as water, salt water, oil, cold steam, etc.
- High sensitivity with a boost feature to use when the touch overlay on the user interface is thick (acrylic, glass)

For easy starting and designing, NXP does lots of work in SW enablement – NXP Touch Library, which is based on the MCUXpresso SDK:

- APIs for high-level touch applications
- Typical design examples
- Advanced filtering and integrating detection (AFID)/Signal Adaptive Filtering Algorithm (SAFA) key detectors, robustness guarantee
- Automatic touch IP registers configuration, robustness guarantee
- GUI visibility, make debug and test easy

APPLICATION EXAMPLES

Consumer

- Cooking Products
- Dish Washer
- Refrigerator
- Room Air Conditioning System

Health

- Activity and Wellness Monitor
- Continuous Glucose Monitor

Home and Building Control

- Smart Lighting

Infrastructure and Industry

- Thermostat

FRDM-KE15Z: Freedom Development Platform

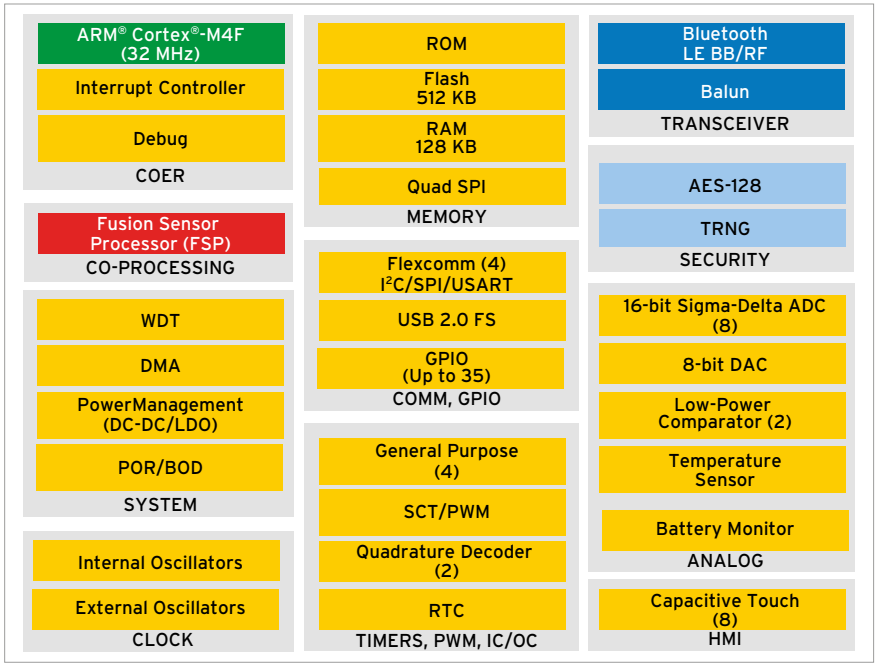
FRDM-Touch with FRDM-KE15Z

100-up price	1-up price
QN9080CHNY	QN9080-DK
€ 2.42	€ 111.-

QN908X MCU FAMILIES

Based on ARM® Cortex®-M4 core, Low-power, Bluetooth® 5 compliant MCUs with high sensitivity

CLICK OR SCAN



QN908x Block Diagram

QN908x is an ultra-low power, high performance and highly integrated Bluetooth® 5 Compliant Low Energy solution for Bluetooth Smart applications

The QN908x MCUs perform well in areas such as sports and fitness, human interface devices, and app-enabled smart accessories. The MCU family is specially designed for wearable electronics with a small capacity battery.

The QN908x devices integrate a Bluetooth® Low Energy radio, controller, protocol stack and profile software on a single chip, providing a flexible and easy to use Bluetooth® Low Energy SoC solution.

KEY FEATURES

Power efficient

- 32 MHz (max) ARM® Cortex®-M4F
- Fusion Signal co-Processor (FSP) hardware acceleration for sensor fusion
- 3.5 mA Rx current @ DC-DC, 3 V
- 3.5 mA Tx current with 0 dBm Tx power @ DC-DC, 3 V

Large and expandable embedded memory

- 512 kB embedded program flash and 128 kB SRAM
- Quad-SPI interface to external flash for XIP

Complete Bluetooth Low Energy protocol stack and application profiles

- Bluetooth® Low Energy v4.2 full feature support
- LE 2M PHY with Bluetooth® 5 compatibility

High Integration

- 2 × I²C, 2 × SPI, 2 × USART
- USB 2.0 FS device
- 8-channel 16-bit high-resolution ADC
- Up to 8 touch buttons

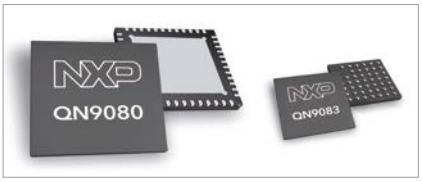
Reliable and secure

- True Random Number Generator
- Cyclic Redundancy Check
- AES-128

APPLICATION EXAMPLES

- Wearables
- Health devices
- Sports and fitness trackers
- HID devices such as keyboards, mice, and remote control units
- Smart home nodes
- Building and home automation
- Retail and advertising beacons

QN9080DK dongle



QN908x Family Packages

100-up price	100-up price	1-up price
MC9S08SU8VFK	MC9S08SU16VFK	S08SU16-EVK
€ 1.58	€ 1.69	€ 33.-

MC9S08SUX

High-voltage and high-integration 8-bit S08 family member for low-end motor-control

CLICK OR SCAN

MC9S08SUx

The MC9S08SUx is a low-cost, ultra-high-voltage processor family, offering a single-chip solution for low-end 4.5...18 V motor control applications with low BOM cost and high integration.

Based on the HSC08 core, the MC9S08SUx family is tightly integrated into the 4 × 4 mm² QFN package, which enables easy layout for space-constrained applications. Compared against discrete device solutions for motor control, using the S08SU family can save up to 50 % PCB size and layer.

Additionally, NXP has integrated virtually all of the necessary features in BLDC motor control, including zero crossing point detection, pulse width measurement, over voltage protection and over current protection, enabling developers to simply configuring registers and easily use the functions in applications.

The MC9S08SUx family also includes amplifiers for current measurement and supports three high-side PMOSes as well as three low-side NMOSes. Full software support for the MC9S08SUx MCU family is provided by CodeWarrior and IAR.

KEY FEATURES

Single Voltage Supply Up to 18 V

- 40 MHz HCS08 core frequency with 4.5...18 V operation voltage

High integration

- Up to 16 KB non-volatile flash, 768 bytes internal system RAM
- 2 × 12-bit ADC with up to 10 channels
- 1 × ACMP with up to 4 inputs and internal 6-bit DAC
- High Voltage Gate Driver Unit which includes 3 × high-side PMOS pre-driver, 3 × low side NMOS pre-driver, 2 × current sensing Op-Amp & OCP, V_{SUP} OVP
- 1 × 16-bit FlexTimer (FTM)
- 1 × 16-bit Modulo Timer (MTIM)
- 2 × 16-bit Pulse Width Timers (PWT)
- 1 × 16-bit 6-channel PWM (MCPWM)
- 1 × SCI, 1 × IIC

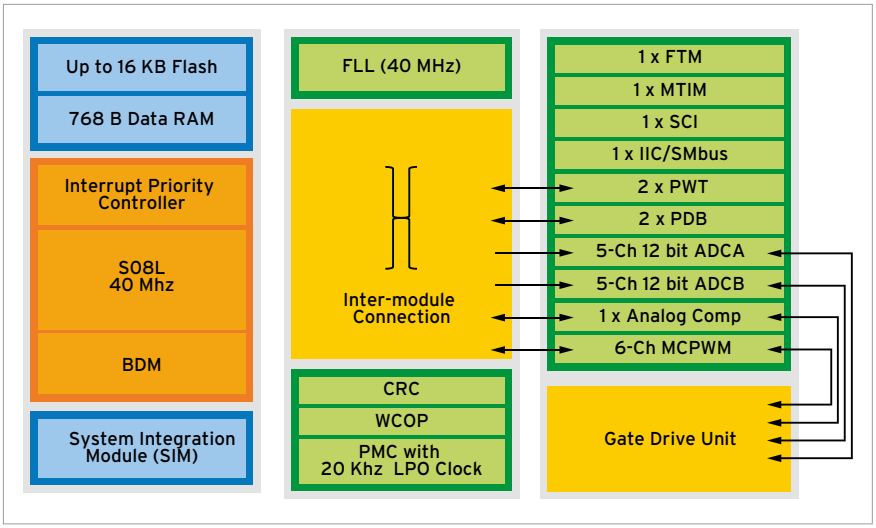
Cost effective and Small Footprint

- Single chip solution offers low BOM cost.
- 4 × 4 mm² 24-pin QFN is an ideal fit for space-constrained applications

APPLICATION EXAMPLES

- Drone ESC
- BLDC power tool
- BLDC step motor
- Cordless power tool
- Healthcare
- Robots

Sensor-less BLDC Control Reference Design: S08SU16-EVK



MC9S08SUx Block Diagram

1-up price
P912ZVMAL3F0MLF
€ 16.-

1-up price
X-S12ZVMAEVB
€ 224.-

S12ZVMA

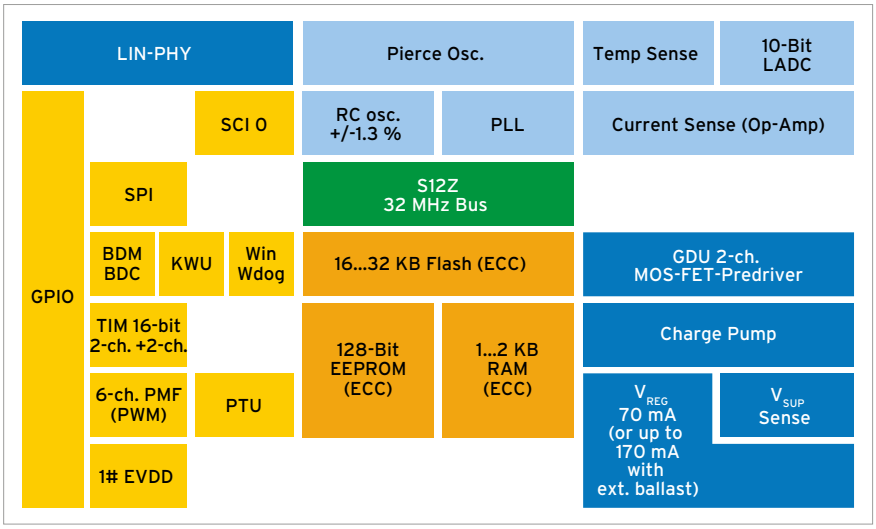
Mixed-Signal MCU for Automotive & Industrial Motor Control Applications

CLICK OR SCAN

The S12ZVMA MCU family is a programmable single chip solution for simple loads needed to be controlled in the car remotely via LIN or PWM command.

Integrated LIN-PHY, 12 V-V_{REG} and half bridge gate driver allow building extremely compact solutions for DC-motors, solenoids or resistive loads. The S12ZVM family gives one of the smallest, most efficient and scalable 3-phase motor control solutions for industrial and automotive applications (BLDC, PMSM or SR-motor).

It integrates a sophisticated S12Z 16bit MCU together with a 12…5 V voltage regulator, LIN physical layer or CAN physical layer and gate driver unit (GDU) in order to control six power MOSFETs for automotive and industrial applications such as blowers, fans or pumps for fuel, oil or water.



S12ZVMA Block Diagram

KEY FEATURES

- S12Z CPU @ 32 MHz bus speed
- V_{REG} +5 V/70 mA; nominal 6…18 V; extended (with degradation) down to 3.5 V with boost option (fuelpump)
- HV-PHY/LIN PHY, LIN2.1/2.2/J2602 compliant
- HV-PHY allows control directly through 12 V PWM command (with error/tack response)
- 16/32 kB Flash, 2 kB RAM, 128 B EEPROM
- Half-Bridge Gate Pre-Driver for 2-NMOS control (1 × LS, 1 × HS; Gate Charge 50…80 nC)
- Integrated Bootstrap Diode (to charge the external bootstrap capacitor)

APPLICATION EXAMPLES

- DC-motors (unidirectional) such as pumps, fans
- Electromechanic actuators (eg. Valves)
- Any kind of automotive load that remotely needs to get switched by a FET (via a LIN or PWM-signal) like horn, aux. heating, lighting, smart junction box, ...

10-up price	10-up price	10-up price	10-up price
STM32L496VGT6	STM32L496RGT6	STM32L496AGi6	STM32L496ZGT6
€ 5.15	€ 5.80	€ 6.70	€ 6.85

STM32L496

Graphics with Power Efficiency

CLICK OR SCAN

STM32L496 Discovery Kit

The STM32L496xx devices are ultra-low-power microcontrollers based on the high-performance ARM® Cortex®-M4 32-bit RISC core operating at a frequency of up to 80 MHz.

The Cortex-M4 core features a Floating point unit (FPU) single precision which supports all ARM single-precision data-processing instructions and data types. It has a full set of DSP instructions and a memory protection unit (MPU) which enhances security. The STM32L496xx embed high-speed memories (up to 1 Mbyte of Flash memory, 320 Kbyte of SRAM), a flexible external memory controller (FSMC) for static memories, and a Quad SPI flash memories interface.

KEY FEATURES

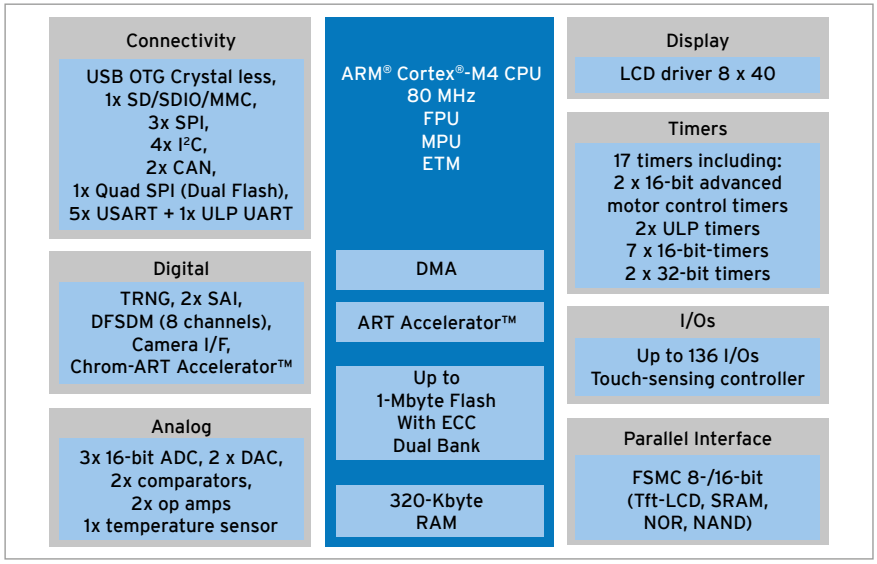
For more detailed descriptions please visit the ST home page, for example http://www.st.com/en/microcontrollers/stm32l496ae.html

- Core: ARM® 32-bit Cortex®-M4 CPU with FPU,
  - Adaptive real-time accelerator (ART Accelerator™) allowing 0-waitstate execution from Flash memory, frequency up to 80 MHz, MPU, and DSP instructions
- Ultra-low-power with FlexPowerControl
- Benchmarks:
  - Performance benchmark: 100 DMIPS/1.25 DMIPS/MHz (Drystone 2.1)
  - Energy benchmark: 217 ULPbench™ score
- 16 different timers
- RTC with HW calendar, alarms and calibration
- Up to 136 fast I/Os, most 5 V-tolerant
- Dedicated Chrom-ART Accelerator™ for enhanced graphic content creation
- 8- to 14-bit camera interface up to 32 MHz (B&W) or 10 MHz (color)
- Memories
  - Up to 1 MB Flash,
  - 2 banks read-while-write,
  - proprietary code readout protection
- Various Clock Sources, PLLs, etc.
- LCD 8 × 40 or 4 × 44 with step-up
- Up to 24 capacitive sensing channels
- 4x digital filters for sigma delta modulator
- Rich analogue peripherals (independent supply)
- 20 communication interfaces
- 14-channel DMA controller
- True Random Number generator
- CRC calculation unit, 96-bit unique ID

Development support: serial wire debug (SWD), JTAG, Embedded Trace Macrocell™

APPLICATION EXAMPLES

- Every wearable with graphics display
- Embedded applications requiring a lot of RAM



BROADCOM
connecting everything

100-up price	100-up price
ACNT-H87A-000E	ACNT-H87B-000E
€ 4.89	€ 6.09

ACNT-H87B/H87A/H870

Precision Optically Isolated Voltage Sensor in a 15-mm Stretched SO-8 Package

CLICK OR SCAN

ACNT-H87B/H87A/H870

The ACNT-H87B/H87A/H870 voltage sensors are optical isolation amplifiers designed specifically for voltage sensing.

Its 2-V input range and high 1-GΩ input impedance, make it well suited for isolated voltage sensing requirements in electronic power converters applications including motor drives and renewable energy systems. In a typical voltage sensing implementation, a resistive voltage divider is used to scale the DC-link voltage to suit the input range of the voltage sensor.

A differential output voltage that is proportional to the input voltage is created on the other side of the optical isolation barrier. For general applications, the ACNT-H87A (±1 % gain tolerance) and the ACNT-H870 (±3 % gain tolerance) are recommended. For high precision requirements, the ACNT-H87B (±0.5 % gain tolerance) can be used.

The ACNT-H87B/H87A/H870 family operates from a single 5 V supply and provides excellent linearity. An active-high shutdown pin is available, which reduces the I_{DD1} current to only 15 µA, making the devices suitable for battery-powered and other power-sensitive applications. The high common-mode transient immunity (15 kV/µs) of the ACNT-H87B/H87A/H870 provides the precision and stability needed to accurately monitor DC-link voltage in high noise environments.

Combined with superior optical coupling technology, the ACNT-H87B/H87A/H870 implement sigma-delta (∑–Δ) modulation, chopper stabilized amplifiers, and differential outputs to provide unequaled isolation-mode noise rejection, low offset, high gain accuracy, and stability. This performance is delivered in a compact, auto-insertable 15-mm Stretched SO-8 (SSO-8) package that meets worldwide regulatory safety standards.

KEY FEATURES

- Advanced sigma-delta (∑–Δ) modulation technology
- Unity gain 1 V/V, ±0.5 % high gain accuracy (ACNT-H87B)
- 1-GΩ input impedance
- 0…2 V nominal input range
- 35 ppm/°C low gain drift
- 21 µV/°C offset voltage drift
- 0.1 % non-linearity maximum
- Active-high shutdown pin
- 100-kHz wide bandwidth
- 3…5.5-V wide supply range for output side
- -40…+110 °C operating temperature range
- 15 kV/µs common-mode transient immunity
- Compact, auto-insertable 15-mm Stretched SO-8 package
- Safety and regulatory approvals:
  - IEC/EN/DIN EN 60747-5-5: 2262 V_{PEAK} working insulation voltage
  - UL 1577: 7500 V_{RMS}/1 min double protection rating
  - CSA: Component Acceptance Notice #5

APPLICATION EXAMPLES

- Isolated voltage sensing in AC and servo motor drives
- Isolated DC-bus voltage sensing in solar inverters, wind turbine inverters
- Isolated sensor interfaces
- Signal isolation in data acquisition systems
- General-purpose voltage isolation

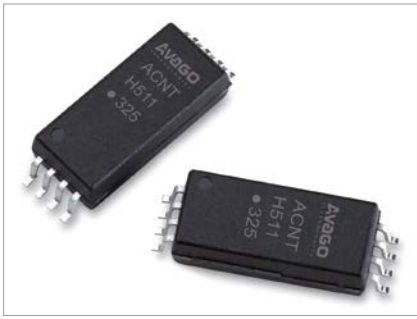
EBV Elektronik
An Avnet Company

1000-up price ACNT-H511-500E	1000-up price ACNT-H511-000E
€ 1.72	€ 1.69

ACNT-H511-000E

Open Collector Output Optocoupler in 15 mm Stretched SO8 Package

CLICK OR SCAN



ACNT-H511-000E

The ACNT-H511 is well suited for isolated communication logic interfaces and control in high-voltage power systems such as 1500 V PV systems, 690 V_{AC} drives, renewable inverters and medical equipment.

ACNT-H511 is a single-channel open collector optocoupler device in 15 mm stretched SO8 package. The device is equipped with an insulating layer between the light emitting diode and integrated photon detector to provide electrical insulation between the input and output. Having separate connections for the photodiode bias and output transistor collector reduces the base-collector capacitance and enhances the data speed up to a hundred times compared to a conventional phototransistor coupler.

KEY FEATURES

- TTL Compatible
- Open-Collector output
- Guaranteed AC and DC performance over wide temperature: -40…+105° C
- Wide operating V_{CC} range: 4.5…24 V
- 15mm stretched SO8 package
- Internal clearance (DTI): 0.5 mm
- 40 kV/µs typical common mode rejection (CMR) at V_{CM} = 1500 V
- Safety and regulatory approvals
- UL 1577 Recognized: 7,500 V_{RMS} for 1 minute
- CSA Approved
- IEC/EN 60747-5-5 Approved for Reinforced Insulation: V_{IORM} = 2,262 V_{PEAK} and V_{IOTM} = 12,000 V_{PEAK}

APPLICATION EXAMPLES

- High voltage power systems, for example, 690 V_{AC} drives
- Renewable energy inverters
- Feedback elements in switching power supplies
- Digital isolation for A/D, D/A conversion digital field
- Communications interface
- MCU interface

BROADCOM
connecting everything

10-up price
AFBR-57B4APZ
€ 33.99

AFBR-57B4APZ

DC-50 MBaud 850 nm Multimode LC Duplex SFP Transceiver

CLICK OR SCAN

AFBR-57B4APZ

DC-50 MBaud data transmission over 2 km with (62.5 µm/125 µm) multimode fibers

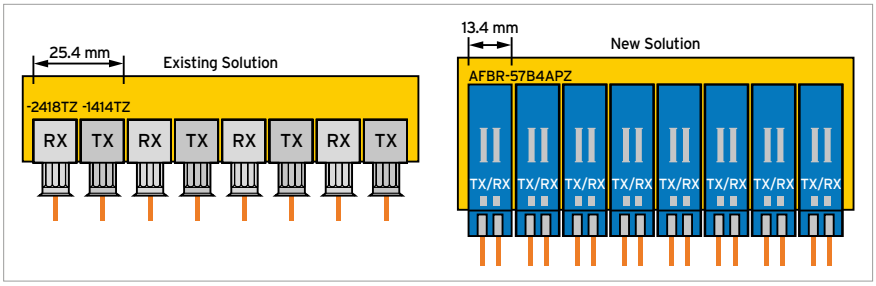
The SFP transceiver provides system designers the ability to implement DC-50 MBaud data transmission over 2 km with (62.5 µm/125 µm) multimode fibers. The transceiver supports LC duplex connector and is lead free, and RoHS compliant. Using the 2-wire serial interface defined in the SFF-8472 MSA, the AFBR-57B4APZ provides real-time information on module temperature, transmitter supply voltage, and receiver average input power.

KEY FEATURES

- Data rate support from DC to 50 MBaud
- Single 3.3 V power supply
- Manufactured in an ISO 9001 certified facility
- 850 nm VCSEL transmitter
- Link Distance up to 2 km with 62.5 µm/125 µm multimode fiber
- Low current and low power dissipation
- Hot pluggable SFP connector
- Compatible with SFP MSA specification
- Class 1 FDA IEC60825-1 laser safety compliant
- Operating temperature -40…+85 °C
- Excellent EMI and EMC behavior
- Integrated 850 nm VCSEL and driver IC with LVTTL input logic transmitter
- Integrated PIN diode and digitalizing IC with LVTTL output logic receiver

APPLICATION EXAMPLES

- Power substation automation
- HVDC
- Industrial networking over multimode fiber



New AFBR-57B4APZ Solution doubles fiber density per board

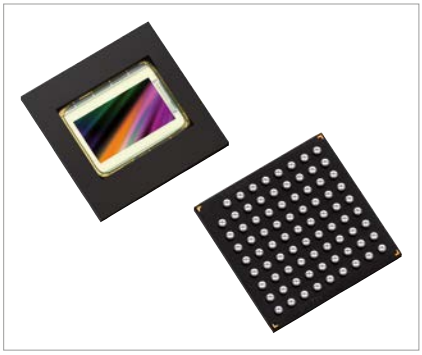
ON Semiconductor®

1000-up price	1000-up price
AR0230ATSC00XUEA0-DRBR	AR0230ATSC12XUEA0-DRBR
€ 17.60	€ 17.60

AR0230AT

2 MP 1/3" CMOS Image Sensor

CLICK OR SCAN



AR0230AT

The AR0230AT is a 1/2.7-inch CMOS digital image sensor with an active-pixel array of 1928 H × 1088 V.

It captures images in either linear or high dynamic range modes, with rolling-shutter readout. The device includes sophisticated camera functions such as in-pixel binning, windowing and both video and single frame modes. The AR0230AT is designed for both low light and high dynamic range scene performance.

It is programmable through a simple two-wire serial interface. This new image sensor produces extraordinarily clear, sharp digital pictures, and its ability to capture both continuous video and single frames make it the perfect choice for a wide range of applications.

KEY FEATURES

- Outstanding low-light performance
- High Quality HD Video
- Flexible Interface Options
- High and Standard Dynamics Range Capture
- Complete Solution with Co-Processor

APPLICATION EXAMPLES

- 1080 p Backup Camera
- 1080 p Ethernet Surround Cam

TOSHIBA
Leading Innovation

1000-up price	1000-up price	1000-up price	1000-up price
TLX9185A(TEEGBTF(O	TLX9291A(TEEGBTF(O	TLX9304(TEE-TL,F(O	TLX9906(TEE-TL,F(O
€ 0.69	€ 0.69	€ 1.13	€ 1.33

TLX9xxx AUTOMOTIVE PHOTOCOUPLERS

AEC-Q101 qualified photocoupler line-up

CLICK OR SCAN

Toshiba TLX9

Toshiba Electronics Europe has introduced a range of 10 AEC Q101-qualified photocouplers designed to address the demanding isolation, interface, switching and form factor requirements of automotive applications.

Supplied in low-profile SO6 packages, the TLX9304, TLX9378 and TLX9376 are IC output photocouplers offering respective data rates of 1 Mbps, 10 Mbps and 20 Mbps. Also in S06 packaging are the TLX9300 and TLX9185A transistor output and TLX9905 and TLX9906 photovoltaic output devices. TheTLX9000 and TLX9291A also offer transistor outputs but are supplied in half-pitch SO4 packages. An SO6-packaged photo-relay – the TLX9175J – is also available.

Toshiba's new photocouplers offer solutions that can operate at temperatures from -40…125°C (except TLX9175J: T_{OPR} -55 ~ 105°C) and suit inverter control and intelligent power module (IPM) interface applications in conventional, EV (electric vehicle) and HEV (hybrid electric vehicle) applications. The photorelay is ideally suited to the needs of automotive battery control. Despite their small size, all of the devices have creepage/clearance distances of 5 mm and offer a minimum isolation voltage of 3750 V_{rms}.

The TLX9304, TLX9378 and TLX9376 integrate a GaAlAs infrared light emitting diode and high-gain, high-speed photodetectors. An internal Faraday shield provides a common-mode transient immunity of 15 kV/µs. In the case of the TLX9175J photo-relay, the LED technology is based on a gallium arsenide construction. A high-voltage MOSFET between the relay's output terminals meets the needs of battery control systems.

KEY FEATURES

- Wide range of AEC Q qualified couplers with extended temp. range from -40…+125°C
- Extensive range of data rate options up to 20 Mbps
- Optical isolation with guaranteed internal galvanic isolation distance of min. 0.4 mm
- Leading edge technology for highest reliability and lowest power consumption
- Packages with clearance and creepage distances of 5 mm

APPLICATION EXAMPLES

- EV (electric vehicle) and HEV (hybrid electric vehicle)
- BMSDC-DC Converter
- Inverter

EBV Elektronik
An Avnet Company

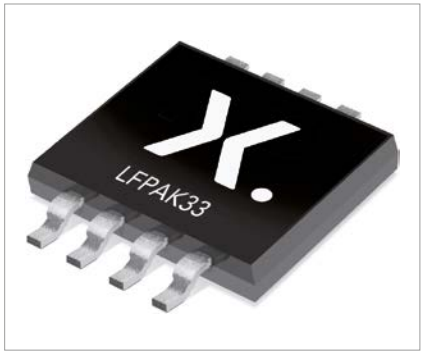
nexperia

1000-up price
BUK7M10-40EX
€ 0.17

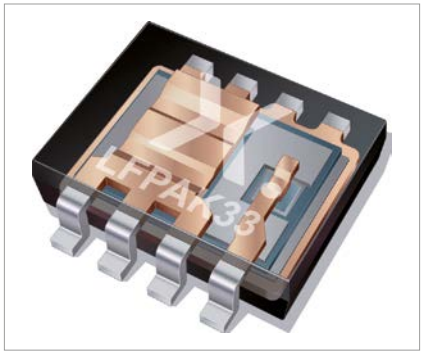
AUTOMOTIVE MOSFETS IN LFPAK33

Trench 6 Portfolio, AEC-Q101 Qualified to 175 °C – The Ultimate Automotive MOSFET

CLICK OR SCAN



LFPAK33



LFPAK33 package

Bringing Nexperia's robust and reliable copper clip technology to the Power33 (3.3 × 3.3 mm²) footprint.

The LFPAK33 is the ultimate in automotive MOSFET performance within a compact power footprint and extends the LFPAK family into smaller power systems. This new package uses advanced copper clip technology and the LFPAK33 portfolio can address a wide range of automotive applications. Supporting easy optical inspection and enhanced board level reliability, the LFPAK33 is also footprint compatible with alternative packages in the power33 footprint.

Portfolio extract N-Channel LFPAK33 (fully automotive qualified)

Type number	Package name	VDS [max.] (V)	$R_{DS(ON)}$ [max.] @ VGS = 10 V (mΩ)	ID [max.] (A)	QGD [typ.] (nC)
BUK9M156-100E	LFPAK33	100	150	9.3	3.2
BUK9M34-100E	LFPAK33	100	34	29	10.3
BUK7M17-80E	LFPAK33	80	17	43	9.7
BUK7M27-80E	LFPAK33	80	27	30	6.2
BUK9M35-80E	LFPAK33	80	31	26	4.9
BUK7M19-60E	LFPAK33	60	19	36	5.9
BUK7M67-60E	LFPAK33	60	67	14	2.5
BUK7M9R9-60E	LFPAK33	60	9.9	60	10.4
BUK7M10-40E	LFPAK33	40	10	56	6.7
BUK7M45-40E	LFPAK33	40	45	19	2.2
BUK7M6R3-40E	LFPAK33	40	6.3	70	9.5
BUK9M17-30E	LFPAK33	30	14	37	3.7
BUK9M6R6-30E	LFPAK33	30	5.3	70	7.8

KEY FEATURES

- Ultra-compact footprint – 10.9 mm²
- Thermal performance – copper clip technology, no wires, no glue, 175 °C Tj max.
- Electrical performance – low package resistance and inductance, up to 70 A I_D max. rating
- Mechanical robustness – Exposed leads absorb thermal and mechanical stresses
- Manufacturability – Exposed leads allow for easy optical inspection

APPLICATION EXAMPLES

Automotive applications:

- Braking (ABS/ESP)
- Engine management
- Transmission
- Automotive lighting
- Water pump
- Oil pump
- Fuel pump
- Electric park brake

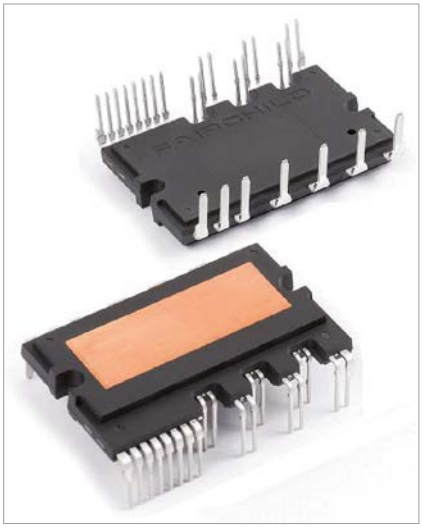
ON Semiconductor®

10-up price	100-up price	100-up price
FSBB30CH60CT	FNB33060T	FSBB10CH120D
€ 14.24	€ 17.70	€ 18.80

SPM 3 SERIES MODULES

600 V & 1200 V SPM® 3 Series Modules

CLICK OR SCAN



SPM3 Package

600 V & 1200 V SPM 3 Series Modules are an advanced Motion SPM® 3 module providing a fully-featured, high-performance inverter output stage for AC Induction, BLDC, and PMSM motors.

These modules integrate optimized gate drive of the built-in IGBTs to minimize EMI and losses, while also providing multiple on-module protection features including under-voltage lockouts, over-current shutdown, and fault reporting. The built-in, high-speed HVIC requires only a single supply voltage and translates the incoming logic-level gate inputs to the high-voltage, high-current drive signals required to properly drive the module's internal IGBTs. Separate negative IGBT terminals are available for each phase to support the widest variety of control algorithms.

KEY FEATURES

- Transfer molded modules with very high power cycling capability
- Low thermal resistance with DBC Substrate
- Built-in real NTC thermistor on DBC
- Low-loss, short-circuit rated IGBTs
- Built-In bootstrap diodes and dedicated Vs pins simplify PCB layout
- Separate open-emitter pins from low-side IGBTs for three-phase current sensing

APPLICATION EXAMPLES

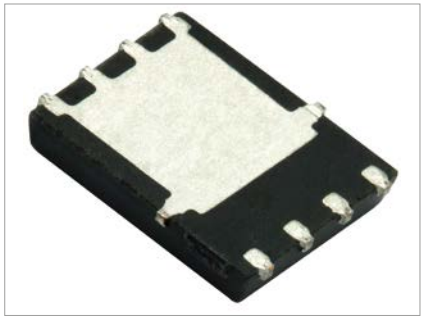
- Servo Drives
- Industrial Inverters
- Industrial Pumps
- Industrial Fans

1000-up price
SIR626DP-T1-RE3
€ 0.85

SIR626DP

New High-End Class 60 V 1.7 mΩ MOSFET SiR626DP in PowerPAK® SO8

CLICK OR SCAN



Product image bottom view

Product image top view

Vishay Intertechnology introduces a new, very high end 60 V, 1.7 mΩ MOSFET SiR626DP In PowerPAK® SO8.

Designing in this part, you will elevate efficiency and performance instantly with minimum circuit rework.

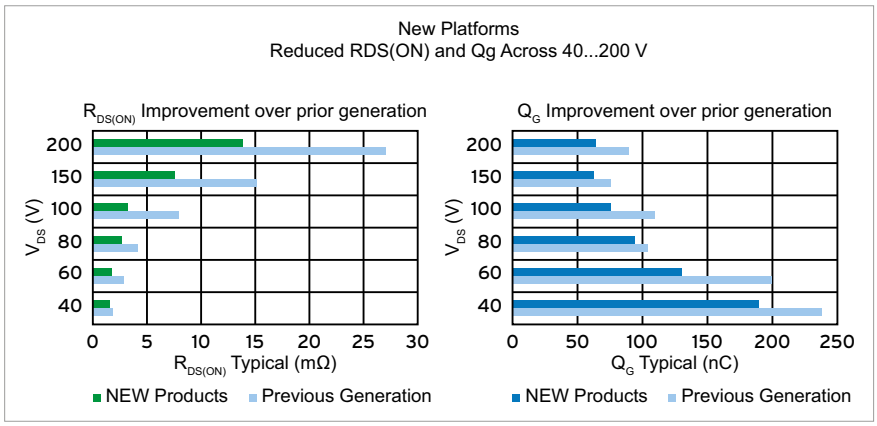
It enables very high system efficiency, increasing both, power density and output current per device. SiR626DP is ideal for high power output designs such as synchronous rectification, 24 V systems, Motor drive control, DC/DC topologies, Solar micro inverters and more.

KEY FEATURES

- Superior R_{DS}-C_{oss} FOM
- 40 % lower $R_{DS(ON)}$ than the prior generation
- Reduces I^2R conduction loss
- Achieves similar $R_{DS(ON)}$ in an 80 % smaller package footprint comparing to the last generation

Advanced Package Construction

- Optimized interconnection design reduces package resistance by 66 %
- Maximize the performance of silicon and minimizes conduction loss, operating temperature



APPLICATION EXAMPLES

- Synchronous rectification
- 24 V systems
- Motor drive control
- DC/DC topologies
- Solar micro inverters
- Power tools and industrial

KEY BENEFITS

- New next generation technology provides very low on-resistance and ultra-low figure of merit (FOM)
- Q_{GD}/Q_{GS} ratio <1 improves immunity to C*dV/dt gate coupling
- Very low Q_{GD} "miller" charge reduces power loss from charging through plateau voltage
  - Reduce switching related power loss and "miller" time
- Selective products have logic level and standard gate drive capabilities
  - Can lower losses by enabling lower gate drive
  - Allows use of lower-voltage, lower cost 5 V PWM ICs
  - Low FOM helps reduce switching losses
- Wide package variety including TO packages and thermally advanced, space saving PowerPAK®
- Devices in TO packages have maximum junction temperature rated up to 175 °C

maxim integrated

100-up price	100-up price
MAX17242ETPA+	MAX17243ETPA+
€ 2.14	€ 2.54

MAX17242/3

3.5…36 V, 2 A/3 A, Synchronous Buck Converter with 1 mA Quiescent Current and Reduced EMI

CLICK OR SCAN

The MAX17242/MAX17243 are high-efficiency, synchronous converters with integrated MOSFETs that help to minimize external component count and reduce total cost of solutions for a variety of applications.

The MAX17242/MAX17243 high-efficiency, synchronous step-down DC-DC converters with integrated MOSFETs operate over a 3.5…36 V input voltage range and can operate in drop-out condition by running at 99 % duty cycle. The converters deliver up to 2 A (MAX17242) and 3 A (MAX17243) output current and generate fixed output voltages of 3.3 V/5 V, along with the ability to program the output voltage between 1…10 V.

The devices use a current-mode-control architecture and can be operated in the pulse-width modulation (PWM) or pulse-frequency modulation (PFM) control schemes. PWM operation provides constant frequency operation at all loads and is useful in applications sensitive to switching frequency. PFM operation disables negative inductor current and additionally skips pulses at light loads for high-efficiency operation. The low-resistance, on-chip MOSFETs ensure high efficiency at full load and simplify the layout.

The devices are available in a compact 20-pin (5 × 5 mm²) TQFN package with exposed pad. These parts are rated for -40…+85 °C operation.

KEY FEATURES

Eliminates External Components and Reduces Total Cost

- No Schottky-Synchronous Operation for High Efficiency and Reduced Cost
- Simple external RC Compensation for Stable Operation at Any Output Voltage
- All-Ceramic Capacitor Solution: Ultra-Compact Layout with as Few as Eight External Components
- PGOOD Output and High-Voltage EN Input Simplify Power Sequencing

Reduces Number of DC-DC Converters to Stock

- Pin Compatibility for 2 A/3 A Options
- Fixed Output Voltage with ±2 % Accuracy (5 V/3.3 V) or Externally Resistor Adjustable (1…10 V) with ±1 % FB Accuracy
- 220 kHz…2.2 MHz Adjustable Frequency with External Synchronization

Reduces Power Dissipation

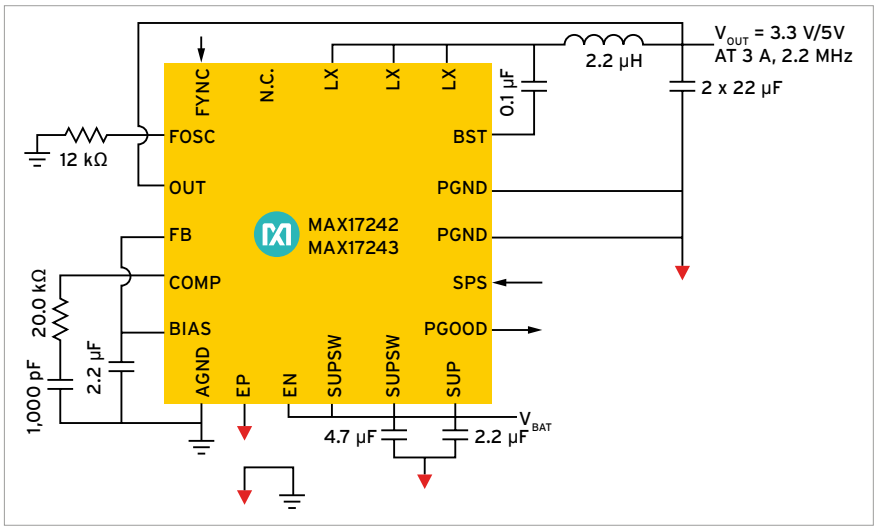
- 93 % Peak Efficiency
- Shutdown Feature Blocks Current Flow from Input-to-Output or Vice-Versa
- Less Than 5 µA (typ.) in Shutdown
- Low 15 µA (typ.) Quiescent Current in Standby Mode

Operates Reliably

- 42 V Input Voltage Transient Protection
- Fixed 8ms Internal Software Start Reduces Input Inrush Current
- Cycle-by-Cycle Current Limit, Thermal Shutdown with Automatic Recovery
- Reduced EMI Emission with Spread-Spectrum Control

APPLICATION EXAMPLES

- Distributed Supply Regulation
- General-Purpose Point-of-Load
- Wall Transformer Regulation



MAX17242/MAX17243

EBV Elektronik
An Avnet Company

1000-up price	1000-up price	1000-up price	1000-up price
NCP137AFCT105T2G	NCP137AFCTADJT2G	NCP137BFCTADJT2G	NCP137AFCT120T2G
€ 0.15	€ 0.15	€ 0.15	€ 0.15

NCP137

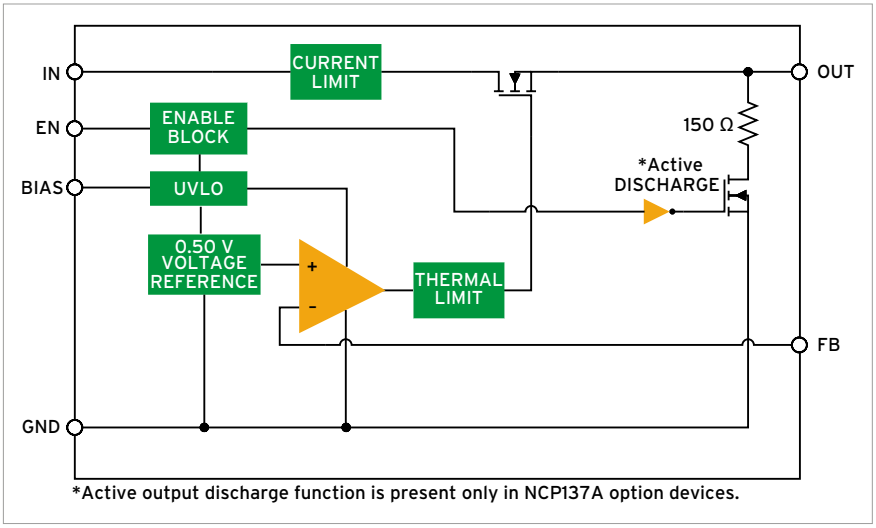
CMOS Linear Voltage Regulator (LDO) with Bias Rail, 700 mA Very Low Dropout

CLICK OR SCAN

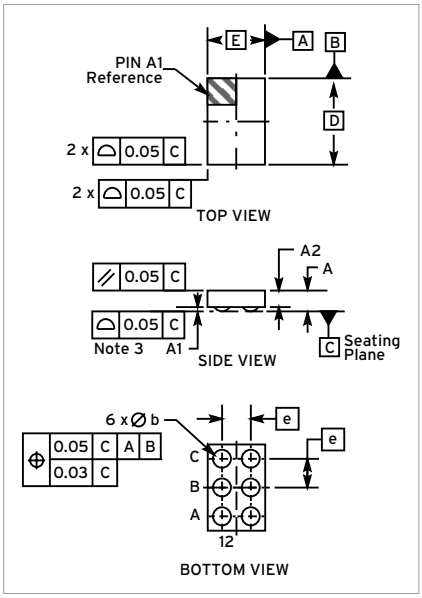
NCP137 is a 700 mA LDO equipped with NMOS pass transistor and a separate bias supply voltage (VBIAS).

The device provides very stable, accurate output voltage with low noise suitable for space constrained, noise sensitive applications. In order to optimize performance for battery operated portable applications, the NCP137 features low IQ consumption.

The WLCSP6 1.2 × 0.8 mm² package is optimized for use in space-constrained applications.



Block Diagram Adjustable Version



NCP137 dimensions

KEY FEATURES

- Ultra-Low Dropout of Typ. 40 mV
- 0.5 % Typical Outout Voltage Accuracy
- Guaranteed Output Current from 0…700 mA

APPLICATION EXAMPLES

- Battery-powered and Portable Equipment
- Smartphones, Tablets
- Cameras, DVRs, Camcorders
- Technical Documentation & Design Resources

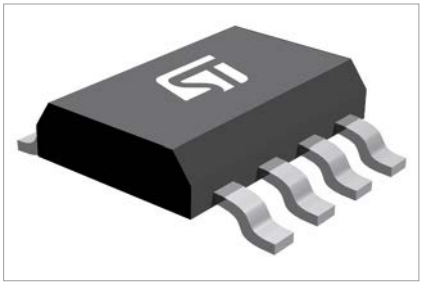
life.augmented

100-up price
ST1S40IDR
€ 0.55

ST1S40

3 A DC Step-Down Switching Regulator

CLICK OR SCAN

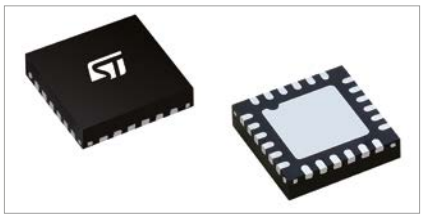


SO-8 Package

The ST1S40 device is an internally compensated 850 kHz fixed-frequency PWM synchronous step-down regulator. The ST1S40 operates from 4.0…18 V input, while it regulates an output voltage as low as 0.8 V and up to V_{IN}.

The ST1S40 integrates a 95 mΩ high side switch and 69 mΩ synchronous rectifier allowing very high efficiency with very low output voltages. The peak current mode control with internal compensation delivers a very compact solution with a minimum component count.

The device is available in HSOP-8, VFQFPN 4 × 4 mm² – 8 lead, and standard SO8 package.



VFQFPN 4 × 4 Package

KEY FEATURES

- 3 A DC output current
- 4.0…18 V input voltage
- Output voltage adjustable from 0.8 V
- 850 kHz switching frequency
- Internal soft-start
- Integrated 95 mΩ and 69 mΩ Power MOSFETs
- All ceramic capacitor
- Enable
- Cycle-by-cycle current limiting
- Current fold back short-circuit protection
- Available in HSOP-8, VFQFPN4×4-8L, and SO8 packages

APPLICATION EXAMPLES

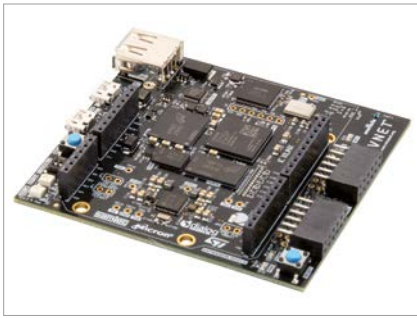
- Industrial power supplies
- Factory and building automation
- µP/ASIC/DSP/FPGA core and I/O supplies
- smart city/home: metering, appliances, automation

1-up price	1-up price
JTAG HS3 HIGH SPEED CABLE	AES-MINIZED-7Z007-G
€ 49.-	€ 74.-

MINIZED ZYNQ DEVELOPMENT BOARD

Xilinx programmable SOC Platform for Embedded Vision and Industrial IoT Systems

CLICK OR SCAN



MiniZed

MiniZed represents a low cost entry point to the scalable Xilinx Zynq-7000 All Programmable SoC development platform.

This compact design features on-board connectivity through USB, Wi-Fi and Bluetooth. Peripherals can be plugged into dual Pmod-compatible connectors, the Arduino-compatible shield interface or the USB 2.0 host interface. JTAG circuitry is incorporated onto the MiniZed base board, so with a single micro- USB cable to your laptop you are already up and running. User LED's, a button and a switch allow for a physical board interface.

Micron memory solutions are presented for QSPI flash, DDR3L memory and on-board eMMC instead of an external SD card. The Murata Type 1DX wireless solution incorporates 802.11b/g/n Wi-Fi as well as Bluetooth 4.1, which provides both Bluetooth Classic and Low Energy (BLE). The integrated power supply generates all on-board voltages, while an auxiliary supply input can be used to power designs that require additional current. From ST Micro there is an on-board motion and temperature sensor, as well as a digital microphone.

MiniZed provides for an efficient hardware reference design, while it is also an inexpensive board that can be used to run workshops and tutorials. The board aims to showcase the power of Zynq, where the Cortex A9 processor core integrates seamlessly with the programmable fabric to provide signal processing and control solutions. The on-board digital microphone serves as an input for a variety of illustrations of how to implement FIR filters, FFT's and direct memory access.

KEY FEATURES

- On-board connectivity through the Murata "Type 1DX" wireless module that provides
  - Wi-Fi 802.11b/g/n
  - Bluetooth 4.1 plus EDR and BLE (Bluetooth Low Energy)
- On-board memory from Micron
  - 512 MB DDR3L
  - 128 Mb QSPI flash
  - 8 GB eMMC
- Peripherals can be plugged into
  - Dual Pmod-compatible connectors (16 GPIO)
  - Arduino-compatible shield interface (22 GPIO)
  - USB 2.0 host interface
- Physical interface
  - Two bi-element user LED's
  - User pushbutton
  - Reset pushbutton
  - User switch
- The integrated power supply from Dialog generates all on-board voltages. An auxiliary microUSB supply input can be used to power designs that require additional current.
- On-board MEMS sensors from ST Micro
  - LIS2DS12 Motion and temperature sensor
  - MP34DT05 Digital Microphone
- JTAG circuitry is incorporated onto the MiniZed base board. Only a single microUSB cable is required for power, programming, JTAG emulation, and serial terminal debug output.

APPLICATION EXAMPLES

- Embedded Vision
- Industrial IoT Systems

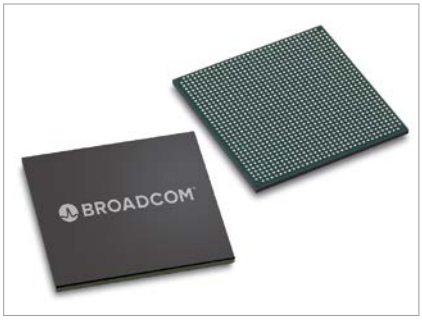
BROADCOM
connecting everything

10-up price	10-up price	10-up price
BCM53161XMB0ILFBG	BCM53161XMB0KLFBG	BCM53161XUB0KLFBG
€ 9.07	€ 9.07	€ 9.07

BCM53161

A 2.5GE Multi-Port Switch Series with High-Speed 10GE Uplinks

CLICK OR SCAN



BCM53161

Broadcom's BCM53161/BCM53162 is a family of 2.5GE switches designed for high-end and cost-effective multi-GE applications in the SMB, Industrial, and service provider markets.

The BCM53161/BCM53162 switches support four 2.5GE SGMII+ ports and two 2.5GE/5GE/10GE XFI/SFI ports. BCM53162 also supports eight 10/100/1000Base-T ports with integrated GPHYs.

This switch family is based on the 28 nm RoboSwitch™ architecture, also known as Robo II. Products in this family integrate the powerful ARM® Cortex®-M7 CPU that enables customers to design switching platforms without adding an external processor. They are also equipped with high-end forwarding mechanisms that are required in many advanced applications.

The BCM53161/BCM53162 family of switches is supported by multiple software packages designed for different applications. Basic unmanaged software can be used to construct unmanaged switches with basic functionalities and no VLAN segregation.

Web-managed software, also known as Robo-OS™, can be used to build web-controlled switches, and fully-featured SDK software can be used to construct managed devices that are controlled by an external CPU, for example, home-gateways and MDUs where BCM53161/BCM53162 chips are connected to an external PON or DSL SoC.

Broadcom's BCM53161/BCM53162 chips can be used to construct standalone platforms with low port-count configuration (up to 15 ports), or to construct, using a cascaded design, a double port-count switch by connecting two chips back to back.

BCM53161/BCM53162 switches are offered to customers in commercial-grade as well as Industrial-grade temperature ambient.

There are two different types:

- BCM53161: 2.5 Gig-Ethernet Robo II switch with 4 x 1000FX/2500FX SGMII+ ports + 2 x 10000FX XFI/SFI ports
- BCM53162: 2.5 Gig-Ethernet Robo II switch with 8 × 10/100/1000Base-T ports with Integrated GPHYs

KEY FEATURES

- Four 1GE/2.5GE SGMII+ ports.
- Two 2.5GE/5GE/10GE XFI/SFI ports.
- Up to Eight 10/100/1000Base-T ports with Integrated GPHYs.
- RGMII, MII, and RvMII interface to an external CPU (can also be used as a 1GE customer-facing port).
- Integrated ARM®-Cortex® M7 CPU for cost-effective applications.
- Support for cascading mode that enables the creation of a unified, single CPU, managed 16-26 port switch.
- Support high-end QoS capabilities with hierarchical scheduling, eight egress buffer queues per port each with its own shaper, WRED and Tail-drop congestion avoidance, and dual-leaky bucket ingress rate-limiters (also known as policers).
- Advanced Compact Filter Processor (CFP), also known as the Access-List engine that can classify L1-L4 headers.
- Support for Virtual Switching Instances (VSI) for explicit segregation of bridging domains with advanced VLAN translation and encapsulation (for example, Mac-in-Mac).
- Port-Extender support per 802.1BR for design of modular chassis devices or pizza box platforms with remote port extensions.
- Advanced Time Sensitive Networking (TSN) protocol support such as 802.1AS to synchronize traffic transmission across entire network domain.
- Power-saving green technology per IEEE 802.3az Energy Efficient Ethernet.

APPLICATION EXAMPLES

- Unmanaged/Web-Managed/Managed SMB Switch
- Home Gateway MDU
- Port Extender
- Industrial Ethernet

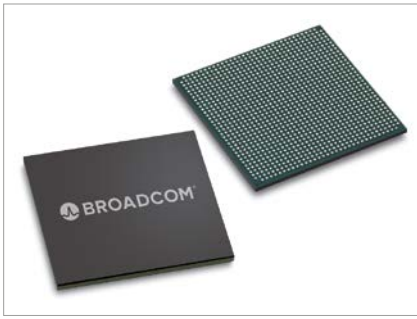
EBV Elektronik
An Avnet Company

10-up price	10-up price
BCM54210SB0KMLG	BCM54210SB0IMLG
€ 7.99	€ 9.49

BCM54210S

Single-Port Copper/Fiber Gigabit Ethernet Transceiver

CLICK OR SCAN



BCM54210S

The Broadcom® BCM54210S is a fully integrated Gigabit copper/fiber transceiver with support for Energy Efficient Ethernet (EEE), Synchronous Ethernet (SyncE), and IEEE 1588v2 standards.

The PHY performs all of the physical layer functions for 10BASE-T, 100BASE-FX, 100BASE-TX, 1000BASE-T, 1000BASE-X, SGMII-Slave, and on standard Category 5 unshielded twisted-pair (UTP) cable. The BCM54210S supports both the SGMII and RGMII industry standards. The BCM54210S is based on Broadcom's proven digital-signal processor technology, combining digital adaptive equalizers, ADCs, phase-locked loops (PLL), line drivers, encoders, decoders, echo cancelers, crosstalk cancelers, and all other required support circuitry integrated into a single, monolithic CMOS chip. Designed for reliable operation over worst-case Category 5 cable plants, the BCM54210S automatically negotiates with any transceiver on the opposite end of the wire to agree on an operating speed. The PHY can also evaluate the condition of the twisted-pair wiring to ensure that the wiring can support operation at gigabit speeds, as well as detect and correct most common wiring problems. The device continually monitors both the wiring and the opposing transceiver and alerts the system if it detects potential problems with reliable operation.

KEY FEATURES

- SGMII or RGMII interfaces
- RGMII: 1.8 V HSTL, 2.5 V CMOS, or 3.3 V CMOS
- Supports two power supplies (3.3 V and 1.0 V) or one 3.3 V power supply using an internal voltage regulator
- Supports IEEE 802.3-compliant copper-line interfaces:
  - 1000BASE-T
  - 100BASE-TX
  - 10BASE-T
- Supports the following fiber line interfaces:
  - 1000BASE-X
  - 100BASE-FX
  - SGMII-slave
- Support for Media Converter mode
- IEEE 802.3az compliant (EEE)
  - Supports native EEE MACs
  - Supports legacy non-EEE MACs using
- AutogrEEEn® mode
- IEEE 1588v2 compliant
  - One-step or two-step clock
  - On-chip timestamping
- ITU-T Y.1731 delay measurement support
  - On-chip timestamping
  - One-way and two-way in both directions
- SyncE support
  - Recovered clock and clock lock outputs
  - SyncE+
- IEEE 802.3bf latency data
- Supports jumbo packets up to 18 KB
- Low-cost 25 MHz crystal option
- Ethernet@Wirespeed™
- Cable plant diagnostics that detect cable plant impairments
- Wake-on-LAN (WOL)
- Voltage and temperature monitors
- Programmable LEDs
- Robust Cable ESD (CESD) tolerance
- Low EMI emissions
- IEEE 1149.1 and 1149.6 (AC-JTAG) boundary scan
- Package: 64-pin QFN

APPLICATION EXAMPLES

- Ethernet switches and routers for Enterprise and Carrier-Class Networking
- Small and medium business (SMB)
- Industrial automation
- Smart grid markets

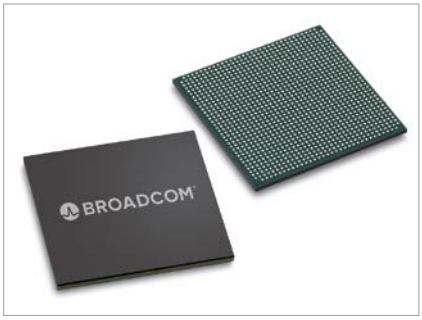
BROADCOM
connecting everything

10-up price
BCM89811B1AWMLG
€ 4.29

BCM89811

BroadR-Reach® Single-Port Automotive Ethernet Transceiver

CLICK OR SCAN



BCM89811

Integrated internal regulators provide on-chip power and eliminate the need for external regulators.

BCM89811 is Broadcom's next generation BroadR-Reach® automotive 100Base-T1 compliant Ethernet chip, optimized for use in low-power automotive applications.

Delivering 100 megabit-per-second (Mb/s) performance over a single, unshielded twisted-pair wire, the highly integrated chip combines the functionality of multiple discrete devices in an ultra-small package (6 × 6 mm^2) and meets stringent automotive EMC and ESD requirements.

KEY FEATURES

- Automotive-qualified low-power design reduces power consumption by up to 30 percent compared to previous generation
- On-chip integrated low-pass filters emissions (to meet automotive EMC requirements))
- Integrated internal regulators provide on-chip power and eliminate the need for external regulators
- Exceeds automotive specifications for noise cancellation and transmission jitter
- Delivers 100 Mb/s over single, unshielded twisted-pair wiring, delivering up to an 80 percent reduction in connectivity cost and 30 percent reduction in cabling weight

APPLICATION EXAMPLES

- Automotive

1000-up price	1000-up price
F2972NEGK	F2976NEGK
€ 0.70	€ 0.97

F2972 & F2976, SPDTR, RF SWITCH

Reflective RF Switches with Wide Frequency Range, Low Distortion, and Low Insertion Loss

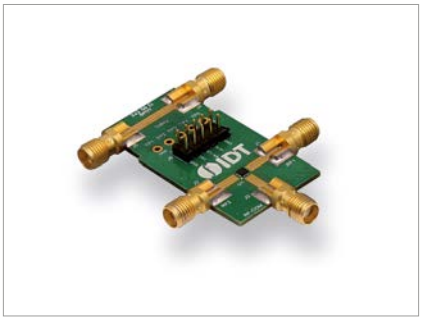
CLICK OR SCAN

F2972 & F2976

F2972 and F2976 are the first in a family of single pole double throw reflective RF switches in small 2 × 2 mm² packages.

These devices have a wide frequency range of 5 MHz…10 GHz, and offer an excellent combination of low insertion loss, low distortion, and high isolation. Due to the reflective termination on the unused RF port, these devices have been specified for the use in either 50 or 75 Ω systems making them ideal for a wide range of markets and applications.

The F2972 and F2976 have similar RF performance and pin out with the exception of a unique feature pin. F2972 has an enable/disable pin for green, low power consumption applications. F2976 has a logic select feature pin that allows the user to invert the switch control logic enabling the control of multiple switches with a single control line that need to be in different states.



F2972

F2976

KEY FEATURES

- Low insertion loss of 0.36 dB and isolation of 42 dB at 2000 MHz
- Extremely low distortion allows these devices to be used in a wide range of applications
  - IIP2/IIP3: 120/77 dBm
  - H2/H3: -100/-110 dBc
  - CSO/CTB: >100/>100 dBc
- Datasheet supports both 50 Ω and 75 Ω specifications
  - F2972 has Enable/Dis-able (EN) feature to conserve power consumption
  - F2976 has Logic Select (LS) feature for maximum control logic flexibility
  - Silicon based semiconductor technology
  - Wide 3.3/5 V V_{DD} and 1.8/3.3 V control voltage ranges
  - Wide -40…105 °C temperature range with excellent thermal characteristics

APPLICATION EXAMPLES

- 3G/4G Small cells
- DOCSIS 3.1 CATV applications; Headend, HFC, Set-top box
- Fiber Infrastructure
- Drones
- Communication Equipment
- Harmonic filter switching
- General purpose consumer applications

life.augmented

10-up price	1-up price
ST25R3911B-AQFT	ST25R3911B-DISCO Kit
€ 3.80	€ 48.-

ST25R3911B

NFC/HF RFID Reader IC

CLICK OR SCAN

ST25R3911B

The ST25R3911B is a highly integrated NFC Initiator/HF Reader IC, including the analog front end (AFE) and a highly integrated data framing system for ISO 18092 (NFCIP-1) initiator, ISO 18092 (NFCIP-1) active target.

ISO 18092 (NFCIP-1) active target, ISO 14443A and B reader (including high bit rates) and FeliCa™ reader. Implementation of other standard and custom protocols like MIFARE™ Classic is possible using the AFE and implementing framing in the external microcontroller (Stream and Transparent modes).

The ST25R3911B is positioned perfectly for the infrastructure side of the NFC system, where users need optimal RF performance and flexibility combined with low power.

Thanks to automatic antenna tuning (AAT) technology, the device is optimized for applications with directly driven antennas. The ST25R3911B is alone in the domain of HF reader ICs as it contains two differential low impedance (1 Ω) antenna drivers.

The ST25R3911B includes several features that make it well suited for low power applications. It contains a low power capacitive sensor that can be used to detect the presence of a card without switching on the reader field. The presence of a card can also be detected by performing a measurement of amplitude or phase of signal on antenna LC tank, and comparing it to the stored reference. It also contains a low power RC oscillator and wake-up timer that can be used to wake up the system after a defined time period, and to check for the presence of a tag using one or more low power detection techniques (capacitive, phase or amplitude).

The ST25R3911B is designed to operate from a wide (2.4…5.5 V) power supply range; peripheral interface IO pins support power supply range from 1.65…5.5 V.

KEY FEATURES

- ISO 18092 (NFCIP-1) Active P2P
- ISO 14443A, ISO14443B and FeliCa™
- Supports VHBR (3.4 Mbit/s PICC to PCD framing, 6.8 Mbit/s AFE and PCD to PICC framing)
- Capacitive sensing – Wake-up
- Automatic antenna tuning system providing tuning of antenna LC tank
- Automatic modulation index adjustment
- AM and PM (I/Q) demodulator channels with automatic selection
- DPO (Dynamic Power Output)
- Up to 1.4 W in case of differential output
- User selectable and automatic gain control
- Transparent and Stream modes to implement MIFARE™ Classic compliant or other custom protocols
- Possibility of driving two antennas in single ended mode
- Oscillator input capable of operating with 13.56 MHz or 27.12 MHz crystal with fast start-up
- 6 Mbit/s SPI with 96 bytes FIFO
- Wide supply voltage range from 2.4…5.5 V
- Wide temperature range: -40…125° C
- QFN32, 5 × 5 mm² package

APPLICATION EXAMPLES

- Parameter setting
- Device maintenance
- Barcode replacement
- IoT devices

EBV Elektronik
An Avnet Company

XILINX
ALL PROGRAMMABLE

1-up price
XC7S50-1FGGA484IES9886
€ 53.-

SPARTAN-7 FPGAS

I/O Optimization with High Performance-Per-Watt

CLICK OR SCAN

Based on the efficient 7 series CLB architecture, enhanced DSP, and block RAM, Spartan®-7 devices offer roughly a 50 % power reduction vs. previous Spartan families, while at the same time delivering a 30 % performance improvement.

Spartan-7 FPGAs offer a small form factor connectivity solution with high performance-per-watt. Manufactured with TSMC's 28 nm HPL process, the Spartan-7 FPGA family brings together capabilities of the Xilinx 28 nm FPGA architecture with small form factor and RoHS-compliant packaging for an optimized connectivity solution.

Spartan-7 devices enable key connectivity and processing applications in industrial, automotive, infotainment, consumer, and communications markets, among others. They are supported by the free Vivado® HL WebPACK™ Edition to help increase design productivity. Vivado IP Integrator provides correct-by-construction block-level design with a catalog of over 200 available IP solutions, while proven place and route technology enables faster timing closure and higher utilization.

KEY FEATURES

28 nm TSMC HPL Process Technology

- Scalable 7 series CLB architecture
- Look-up tables are configurable as logic, distributed RAM, or shift registers
- From 6…102 K logic cells for system-level integration

Cost-Optimized

- Multiple efficient integrated blocks, including XADC dual 12-bit analog-to-digital converters with supply voltage and thermal monitoring
- Optimized selection of I/O standards

Embedded Processing

- MicroBlaze™ soft processor with 32-bit Microblaze soft processor capable of running over 200 DMIPs with 3 presets including: micro-controller, real-time and application processors

Integrated Memory Block Capacity up to 4.2 Mb

- Efficient and high-performance block RAM with byte write enables optional FIFO configuration. Split 36 k to 2 × 18 k

Soft Memory Controller

- DDR3/DDR3L/DDR2/LPDDR2 support
- Data rates up to 800 Mb/s (25.6 Gb/s peak bandwidth)
- Ultimate pinout flexibility
- Software wizard

SelectIO™ Interface Technology

- Up to 1.25 Gb/s LVDS data rate, with up to 240 Gb/s aggregate bandwidth
- 3.3…1.2 V I/O standards and protocols
- HSTL/SSTL memory interfaces
- Adjustable slew rates

Efficent DSP48E1 Slices

- Fast 18 × 25 wide multiplier with 48-bit accumulator and 25-bit pre-add per slice
- Up to 176 GMACs at 551 MHz
- Pipelining, balancing, cascading, SIMD support, integrated pattern detect and ALU

Design Security

- Device DNA serial number and eFUSE identifier
- AES256 decryption and SHA-256 authentication for bitstream
- Tamper monitoring and response

Small, RoHS 6/6 Compliant Packaging

- 8…27 mm package footprints
- Extensive footprint-compatible package migration

APPLICATION EXAMPLES

Machine Vision Interfacing

- Support of multiple sensors and connectivity options
- Programmable system integration
- MicroBlaze soft processor as host

Single-Axis Motor Control

- Supporting multiple communication standards
- Single-chip design for high reliability
- MicroBlaze soft processor for system control and comm.
- Full suite of production ready IP for fast design productivity

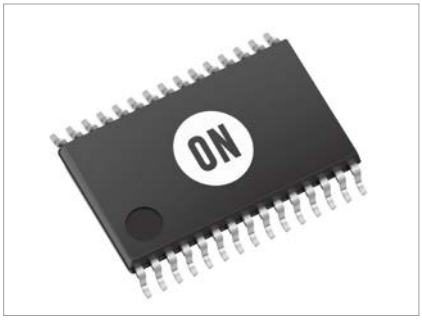
ON Semiconductor®

1000-up price
LC717A30UJ-AH
€ 1.90

LC717A30UJ

Capacitance-Digital-Converter for Electrostatic Capacitive Touch Sensors

CLICK OR SCAN



LC717A30UJ

The LC717A30UJ is a high performance and cost-effective capacitance converter for electrostatic capacitive touch and proximity sensors.

The device offers 8 capacitance-sensing input channels, ideal for use in systems that require an array of switches. The LC717A30J reduces design time via an automatic calibration function and minimal external components. The detection result (ON/OFF) for each sensor is read out by the serial interface (I^2C or SPI).

KEY FEATURES

- Detection system: Differential capacitive detection using mutual capacitance
- Sensor input pads: Operates with small to large capacitance sensor input pads
- Input capacitance resolution: Capacitance detection down to femto-Farad level
- Measurement time 16 ms for 8 sensors
- Minimal external components
- Selectable interface : I^2C or SPI
- Current consumption : 0.8 mA (V_{DD} = 5.5 V)
- Supply voltage : 2.6…5.5 V
- AEC-Q100 qualified and PPAP capable

APPLICATION EXAMPLES

- Automotive
- Consumer
- Industrial
- Computing
- Lighting

100-up price
LIS2DW12TR
€ 0.90

LIS2DW12

High-Performance Ultra-Low-Power 3-Axis Acceleration Sensor

CLICK OR SCAN

LIS2DW12

LIS2DW12 in application

The LIS2DW12 is an ultra-low-power high-performance three-axis linear accelerometer belonging to the "femto" family which leverages on the robust and mature manufacturing processes already used for the production of micromachined accelerometers.

The LIS2DW12 has user-selectable full scales of ±2 g/±4 g/±8 g/±16 g and is capable of measuring accelerations with output data rates from 1.6…1600 Hz. The device has an integrated 32-level first-in, first-out (FIFO) buffer allowing the user to store data in order to limit intervention by the host processor.

The embedded self-test capability allows the user to check the functioning of the sensor in the final application.

The LIS2DW12 has a dedicated internal engine to process motion and acceleration detection including free-fall, wakeup, highly configurable single/double-tap recognition, activity/inactivity, portrait/landscape detection and 6D/4D orientation.

The sensor is available in a small thin plastic land grid array package (LGA) and it is guaranteed to operate over an extended temperature range from -40…+85° C.

KEY FEATURES

- Ultra-low power consumption: 50 nA in power-down mode
- Down to 380 nA in active low-power mode
- Very low noise: down to 1.3 mg RMS in low-power mode
- Multiple operating modes with multiple bandwidths
- Supply voltage, 1.62…3.6 V
- Independent IO supply
- ±2 g/±4 g/±8 g/±16 g full scale
- High-speed I²C/SPI digital output interface
- Single data conversion on demand
- 14-bit resolution
- Embedded temperature sensor
- Self-test
- 32-level FIFO
- 10000 g high shock survivability

APPLICATION EXAMPLES

- Motion detection for wearables
- Gesture recognition and gaming
- Motion-activated functions and user interfaces
- Display orientation
- Tap/double-tap recognition
- Free-fall detection
- Smart power saving for handheld devices

1000-up price	1000-up price	1000-up price	1000-up price
HERACLES2GSM250	HERACLES2GMD250	HERACLES2GLG250	HERACLES2GXL250
€ 22.-	€ 29.-	€ 35.-	€ 44.-

HERACLES

A Complete Quad-Band Ready to Use 2G Module with Embedded SIM Card and Prepaid Data Plan

CLICK OR SCAN

The Heracles Module

Heracles is a complete Quad-band GSM/GPRS in an LGA type with embedded M2M GSM card. It transmits voice, SMS and data information with low-power consumption. With tiny size of 15,8 × 17,8 × 2,4 mm³, it can fit into slim and compact customer designs.

Designed to simplify the IoT device making process, Heracles provides a ready to use 2G cellular module embedding a SIM card with a prepaid data plan, valid for a long-term period up to the year 2025, at no additional cost and without any monthly fee.

The device is utilizing Orange's high-quality cellular network and a large tier one roaming network covering 33 European countries through an extensive count of operators.

The certified Heracles module offers a most miniaturized solution, ideal for ultra-compact designs and a best in class low power SoC. Due to its very small size of 15.8 × 17.8 × 2.4 mm³ it fits into slim and compact designs fulfilling the demands of any customer project.

Heracles supports quad-band 850/900/1800/1900 MHz, GPRS multi-slot class 12/10, as well as GPRS mobile station class B and is compliant to GSM phase 2/2+ Class 4 and 1.

The module's high quality and small form factor make it ideal for SMD assembly.

KEY FEATURES

General

- Quad-band 850/900/1800/1900 MHz
- GPRS multi-slot class 12/10 & mobile station class B
- GSM phase 2/2+ compliant
  - Class 4 (2 W @ 850/900 MHz)
  - Class 1 (1 W @ 1800/1900 MHz)
- Embedded industrial temperature SIM card
- 15.8 × 17.8 × 2.4 mm³
- AT cellular command interface
- Weight: 1.5 g
- Supply voltage range 3.4…4.4 V
- Low power consumption
- Operating temperature: -40…-85 °C

Specifications for GPRS Data

- GPRS class 12: max. 85.6 kbps (downlink/uplink)
- PBCCH support
- Coding schemes CS 1,2,3,4
- PPP-Stack

Software Features

- 07/10 MUX protocol
- Embedded TCP/UDP
- FTP/HTTP
- E-Mail
- DTMF
- Jamming Detection
- Audio Record
- SSL

Interfaces

- 88 LGA pads including:
- Analog audio interface
- PCM , USB, Keypad interface
- RTC Backup, GPIO, ADC
- GSM Antenna pad

Certifications

- CE, RoHS, REACH, RED, Orange Cellular Network

Prepaid Data plans guaranteed until 2025:

- Small: 10 MB
- Medium: 40 MB
- Large: 200 MB
- Extra-Large: 500 MB

Coverage in over 33 countries without roaming fees:		
Austria	Germany	Netherlands
Andorra	Greece	Norway
Belgium	Hungary	Poland
Bulgaria	Iceland	Portugal
Croatia	Ireland	Romania
Cyprus	Italy	Slovakia
Czech Republic	Lativa	Slovenia
Denmark	Liechtenstein	Spain
Estonia	Lithuania	Sweden
Finland	Luxembourg	Switzerland
France	Malta	United Kingdom

APPLICATION EXAMPLES

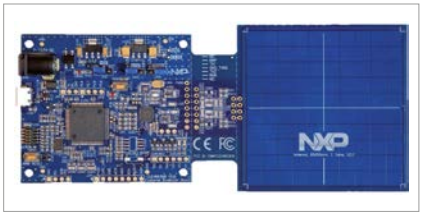
- Location tracking
- Automotive (aftermarket)
- Wearables
- IoT applications
- M2M applications
- Industrial applications

100-up price	1-up price
CLRC66303HNE	OM26630FDKM
€ 3.27	€ 59.-

CLRC663 PLUS

Push your NFC design further with NXP's next-gen multi-protocol NFC frontend

CLICK OR SCAN



CLEV6630B

The CLRC663 plus is the perfect choice for NFC applications with high performance requirements.

If you need excellent NFC performance or ultra-low power consumption, use this remarkably efficient yet highly flexible frontend to push your design further. It offers an extended temp range, pin-to-pin compatibility to CLRC663 family (MFRC630, SLRC610), and time-saving software tools.

nfc everywhere

The CLRC663 plus is a great choice for NFC applications with high performance requirements: access control, payment, gaming and industrial.

KEY FEATURES

- High performance and more flexible antenna design
  - Maximum transmitter current: 350 mA operating with 500 mA limiting value
  - Freely programmable 6 kByte EEPROM
- Longer battery life
  - Supply voltage: 2.5…5.5 V
  - Power-save modes: hard power-down, standby, extended LPCD options
- Industrial/Automotive temp range (-40…+105 °C)
- Multiple interfaces to support a broad range of microcontrollers and high-security reader implementations
  - Host interfaces: SPI, I²C, UART
  - Up to 8 GPIO
  - SAM interface
  - 512 byte FIFO buffer reduces performance requirements of host controller
- Fast development
  - Supports NFC Cockpit and NFC Reader Library
  - Complete development kits
- Included licenses
  - ISO/IEC14443-A/B, MIFARE Classic encryption in hardware with Crypto 1 IP licensing rights
- EMVCo ready
  - EMVCo 2.6 L1 analog & digital compliance
- Full RF standard compliance
  - ISO/IEC 14443A/MIFARE
  - ISO/IEC 14443B
  - JIS X 6319-4 (comparable with FeliCa1 scheme)
  - ISO/IEC 15693 (ICODE-SLIX and ICODE-DNA)
  - ISO/IEC 18000-3 mode 3 (ICODE-ILT)
  - Peer-to-Peer Mode: ISO/IEC 18092 passive initiator
- Compatible with all NXP smartcard products
  - Complete MIFARE® family: Ultralight, Classic 1K & 4K, DESFire EV1 & EV2 and Plus EV1
  - Complete NTAG® family incl. NTAG I²C plus
  - Complete SmartMX® family incl. SmartMX2 P40 & P60
- Compact, time-saving package
  - HVQFN32 with wettable flanks to support high production yield
  - Pin-compatible to CLRC663 makes it easy to upgrade from existing designs

Comparison: CLRC663 versus CLRC663 plus

	CLRC663	CLRC663 plus
Operating transmitter current	250 mA	350 mA (max.), 500 mA (lim.)
LPCD range (EMVCo RefPICC)	26 mm	66 mm
Temp range	-25…+85 °C	-40…+105 °C
RF transmitter supply voltage	3.0…5.5 V	2.5…5.5 V
Package	HVQFN32	HVQFN32 with wettable flanks

APPLICATION EXAMPLES

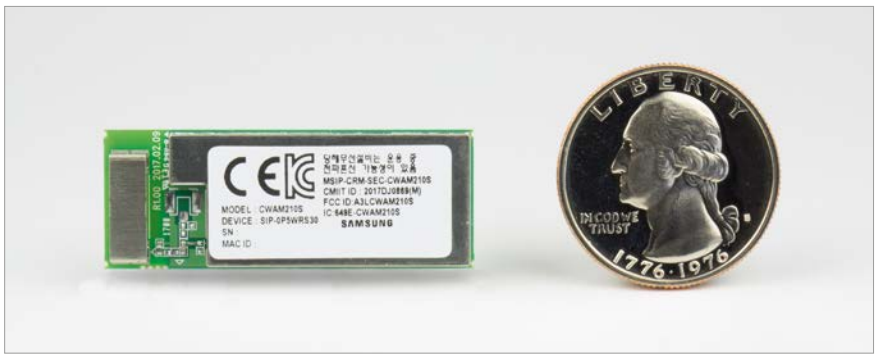
- Industrial
- Access control
- Payment
- Gaming

100-up price
SIP-0P5WRS301
€ 6.20

SIP-0P5WRS301

Samsung ARTIK 053 WiFi Based IoT Module

CLICK OR SCAN



Samsung ARTIK 053 Module Size Comparison

Samsung ARTIK 053 Module

The Samsung ARTIK Smart IoT platform brings hardware modules and cloud services together with an ecosystem of tools and partners to speed up your time-to-market.

The ARTIK 053 is a WiFi-based IoT module with built-in hardware security for low power, single function "things". It features a 320 MHz, 32-bit ARM® Cortex®-R4 and WiFi connectivity. It runs the Tizen RT real-time operating system and makes use of open source development tools.

ARTIK 053 brings Wi-Fi to things that need connectivity and low power consumption, but without sacrificing security. ARTIK 053 has a built-in security module that keeps its factory-installed certificates and keys safe.

ARTIK 053 runs Tizen RT, a compact RTOS with built-in support for IoTivity, Lightweight machine-to-machine (LWM2M) protocol, and JerryScript/IoT.js. This also means you can develop for ARTIK 053 using open source tools like Eclipse Classic Desktop (CDT), gcc, and OpenOCD.

KEY FEATURES

Performance and flexibility

- 32-bit ARM® Cortex®-R4 @ 320 MHz for applications
- 29 dedicated GPIO ports, 2 SPI, 4 UART (2-pint), 4 ADC, 1 JTAG, 2 I²C
- 5…12 VDC input voltage

Integrated security subsystem

- Secure cloud communication
- Secure bootSecure storage

Integrated and tested middleware

- Tizen RT with RTOS, Wi-Fi and networking software
- API interface to simplify development process
- LWM2M support

End-to-end with ARTIK Cloud

- Mobile app to add modules to ARTIK Cloud
- Manage devices, including OTA updates, with ARTIK Cloud

APPLICATION EXAMPLES

- Smart Lighting
- Industrial
- Retail
- Smart Building
- Manufacturing

SAMSUNG

100-up price
SIP-005AFS301
€ 38.50

SIP-005AFS301

Samsung ARTIK 530 802.11 Bluetooth® ZigBee Thread Module

CLICK OR SCAN

Samsung ARTIK 530 Module

Samsung ARTIK Smart IoT platform brings hardware modules and cloud services together with an ecosystem of tools and partners to speed up your time-to-market.

ARTIK 530 takes ARTIK 520's combination of power and multimedia and adds power while reducing cost.

We've bumped the dual-core processor up to a quad core, and replaced the connector-based interface with a solder-ball pattern, saving you BOM costs as well. Although the footprint is larger, you still get amazing multimedia capabilities and connectivity options.

The ARTIK 530 features a Quad-core processor for local data processing and a multimedia engine to handle audio and video processing. The modules also support most of the commonly used local area wireless standards such as 802.11, Bluetooth®, ZigBee®, and Thread.

KEY FEATURES

- High performance, 4-core, 32-bit ARM® Cortex® A-9 processor @ 1.2 GHz
- ARM MALI™ GPU for multimedia, graphics applications
- 512 MB RAM, 4 GB flash (eMMC)
- Support for WLAN, Bluetooth®, ZigBee, Thread
- Enterprise-class security with hardware secure element and Secure OS
- Fedora Linux package with multimedia, connectivity, graphics, power management and security libraries

APPLICATION EXAMPLES

- Factory automation
- Smart home gateway
- Building Automation controllers
- Multimedia applications

life.augmented

10-up price	10-up price	10-up price	10-up price
SPWF04SC.21	SPWF04SA.21	SPWF04SC.11	SPWF04SA.11
€ 9.40	€ 9.45	€ 10.10	€ 10.10

SPWF04SX

WiFi Module With and Without Integrated Antenna

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SPWF04SX

X-NUCLEO-IDW04A1

The SPWF04SA and the SPWF04SC are ready-to-use Wi-Fi modules conceived for Internet of Things (IoT) applications.

The modules integrate a Cortex-M4-based STM32 microcontroller and a powerful Wi-Fi transceiver, compliant with IEEE 802.11 b/g/n standard for the 2.4 GHz band. The modules are cloud compatible thanks to the complete protocol package, which includes application and security layers. They can operate in serial-to-Wi-Fi and standalone mode, with customer applications developed in the subsystem based on the MicroPython environment.

The modules are configured around a single-chip 802.11 transceiver with integrated PA and comprehensive power management subsystem, and an STM32F4 microcontroller with UART/SPI interface and an extensive GPIO suite; they also incorporate timing clocks and a voltage regulator.

The SPWF04Sx parts are released with an integrated full-featured TCP/IP protocol stack with added web server and additional application service capabilities, including REST API for accessing files on servers in the cloud and support for dynamic web pages with SSI functions to easily interact with the module and the host processor over the air. Application note AN4965 on www.st.com provides details on HTTP server capabilities.

ST may update the module firmware at any time; check regularly for documentation and firmware updates on www.st.com/wifimodules.

KEY FEATURES

- 2.4 GHz IEEE 802.11 b/g/n low power transceiver
- STM32 ARM® Cortex®-M4 with 2 MB Integrated Flash memory
- Certified RF (FCC, IC, CE)
- UART/SPI-to-WiFi or standalone supported with MicroPython script language
- TLS for End-to-End security integrated in all modules
- Security: WPS, WEP, WPA2, WPA-Enterprise
- HTTPS, MQTT, SMTP, WebSockets, IPv6 protocols and to easily connect applications to the cloud
- Over-The-Air firmware update
- System Modes: mini-AP mode, IBSS and Station
- Size: 26.92 × 15.24 × 2.35 mm^3
- Advanced low-power modes
  - Standby with RTC: 43 µA
  - Sleep = 3 mA
  - Idle connected (DTIM=1) = 5 mA
  - RX traffic 105 mA typical
  - TX traffic 260 mA typical @ 10 dBm
- Single voltage supply (3.3 V typical)
- Industrial temperature range: -40… 85° C

APPLICATION EXAMPLES

- Smart appliances
- Industrial control and data acquisition
- Home automation and security systems
- Wireless sensors
- Cable replacement
- Medical equipment
- Machine-to-machine communication

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