

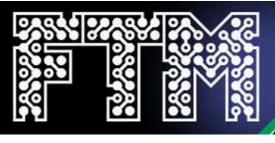




NPI's, DESIGN & TECHNOLOGY NEWS







Compact, low-power magnetometer provides precision heading data in small battery-powered devices

Featuring innovative TMR technology, the BMM350 from Bosch Sensortec enables new applications such as eliminating motion sickness in VR headsets, while providing a huge reduction in power consumption compared to the previous generation device.



Bosch Sensortec has introduced a magnetometer, the BMM350, which combines excellent performance with low power consumption, making it ideal for use in portable and wearable devices powered by a small battery. Its slim chip-scale package has a footprint of just 1.28 mm x 1.28 mm, enabling its integration into space-constrained products such as augmented or virtual reality (AR/VR) headsets.

The 16-bit, three-axis BMM350 magnetometer provides the position data required in emerging applications such as detecting head orientation for 3D audio, and pixel latency reduction in AR/VR, which improves the user experience and prevents motion sickness.

In indoor navigation, the BMM350 can be used to improve positioning accuracy when no satellite signal is available. It also provides position and speed measurement in e-bikes and other vehicles.

The BMM350, based on innovative tunnel magnetoresistance (TMR) technology, includes a field shock recovery feature. This capability, developed by Bosch, makes the device highly immune to external magnetic fields, ensuring that it maintains high accuracy at all times.

The average operating current of the BMM350 is only 200 μ A at a 100 Hz data rate, which is 20 times lower than the previous generation device, the BMM150. Noise is also three times lower on the x,y axis, and sensitivity is four times higher.



FEATURES

- ±2,000 µT magnetic field range
- Output noise:
 - o ±190 nTrms on the x,y axis
- ±450 nTrms on the z axis
- 400 Hz maximum sampling rate
- Operating-temperature range: -40°C to 85°C

APPLICATIONS

- Wearable devices
- Personal audio products
- Smartphones
- Tablets
- AR/VR

FREE DEV BOARD

The BMM350 Shuttle Board provides access to the pins on the BMM350 magnetometer via a simple socket, for convenient application development.

Orderable Part Number Shuttle Board 3.0 BMM350

APPLY HERE NOW

















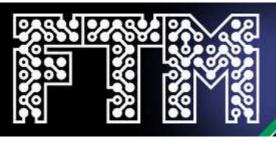












Rail-to-rail op amp combines high bandwidth and low offset voltage

Featuring 30 MHz bandwidth, the TSV782 from STMicroelectronics is highly immune to noise and input bias current. This makes it ideal for use in high-performance sensor interfaces in both industrial and automotive applications.



Ilifa guamentod

life.augmented

FEATURES

- 20 V/µs slew rate
- 2 pA input bias current
- 7 nV/√Hz input voltage noise density at 10 kHz
- Rail-to-rail input and output
- Operating-temperature range: 40°C to 125°C

APPLICATIONS

- Industrial equipment
- Automotive systems

The TSV782 from STMicroelectronics is a unity-gain-stable operational amplifier which provides excellent conditioning of high-frequency signals. The amplifier offers gain-bandwidth product of 30 MHz, and its outputs are almost completely unaffected by noise or input bias current. Input offset voltage is just $50 \, \mu V$.

The high performance and low power consumption of the TSV782 mean that it is ideal for use in sensor-interface circuits performing functions such as:

- High-bandwidth current sensing on the low or high side
- Transimpedance amplifier for a photodiode
- Input buffer for an ADC
- Power management in solar-powered systems
- Power management in electric vehicles (EVs) and hybrid EVs

The TSV782 operates from a single supply voltage ranging between 2.0 V and 5.5 V, and is fully specified on a load of 47 pF.

The device is backed by the ST eDSIm electrical simulation tool for switch-mode power supplies and analog ICs, which is integrated in the eDesignSuite tool. The TSV782 op amp is available in an automotive-grade version.



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10110

INFORMATION



DATASHEET





















Environmental sensor node provides integrated solution for indoor air quality monitoring

The Sensirion SEN55 sensor module performs accurate measurement of various parameters that affect air quality, including VOCs, NOx, and particulate matter, as well as relative humidity and temperature.



The SEN55 from Sensirion is an all-in-one sensor solution for the accurate measurement of environmental parameters that affect air quality, such as particulate matter, volatile organic compounds (VOCs), oxidizing gases including nitrogen oxides (NOx), as well as relative humidity and temperature.

The SEN55 features proprietary on-chip algorithms that convert raw gas measurement signals into useful information. Outputs supplied over an I2C interface by the SEN55 include:

- VOC and NOx index scores on a scale of 0 to 500
- Concentration of particulate matter to a precision of $\pm 10\%$. The sensor detects PM1.0, PM2.5, PM4 and PM10 particles
- Relative humidity, accurate to within ±4.5%
- Temperature over a range between -10°C and 50°C

These easy-to-use outputs make for straightforward integration into various applications for measuring air quality. Research suggests that measurement of indoor air quality, and the implementation of measures such as smart ventilation to clean contaminated air, can lead to outcomes such as improved cognitive performance, reduced airborne transmission of disease, and a reduced rate of premature death.

The SEN55 dimensions are 52.8 mm x 43.6 mm x 22.3 mm.

SENSIRION

FEATURES

- 63 mA average operating current
- 4.5 V supply voltage
- ±0.45°C temperature measurement accuracy
- On-chip humidity compensation

APPLICATIONS

- Indoor air quality monitors
- Air purifiers
- HVAC systems

FREE DEV BOARD

The SEK-SEN5x kit provides a convenient format for evaluating the operation of the SEN5x air quality sensor module.

Orderable Part Number SEK-SEN5x

APPLY HERE NOW

























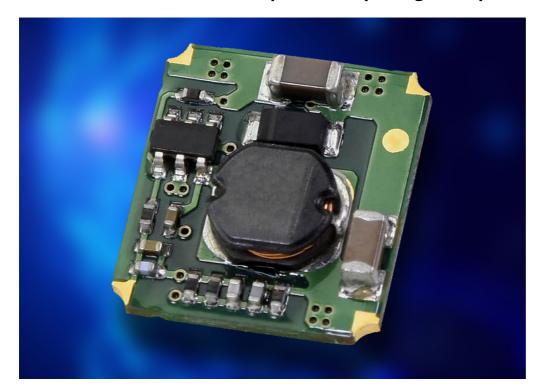


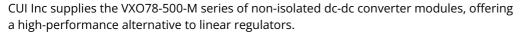




Compact dc-dc converter modules operate over wide input-voltage range

CUI Inc VXO78-500-M series converters provide accurate voltage outputs and tight line regulation to ease integration into demanding industrial applications. The module's surface-mount open-frame package occupies a small footprint.





The VXO78-500-M series converters are supplied in an open-frame package. Unlike linear regulators, the VXO78-500-M switching regulators are very efficient, up to 95%. The modules are ideal for applications in which board space is at a premium, and energy efficiency has to be maximized.

The compact four-pin surface-mount package dimensions are 12.5 mm \times 13.5 mm \times 3.5 mm.

Part Number	Input-voltage Range	Maximum Power Output	Output Voltage	Maximum Output Current
VXO7803-500-M	4.75 V to 36 V	1.65 W	3.3 V	0.5 A
VXO7805-500-M	6.5 V to 36 V	2.5 W	5 V	0.5 A
VXO7809-500-M	12 V to 36 V	4.5 W	9 V	0.5 A
VXO78012-500-M	15 V to 36 V	6 W	12 V	0.5 A
VXO78015-500-M	19 V to 36 V	7.5 W	15 V	0.5 A



FEATURES

- No-load input current as low as 0.2 mA
- ±2% voltage accuracy
- ±0.2% line regulation
- Short-circuit protection
- Supports compliance with EN/BS EN 62368 standard
- Operating-temperature range: 40°C to 85°C

APPLICATIONS

- Industrial equipment
- Instrumentation
- Electric power















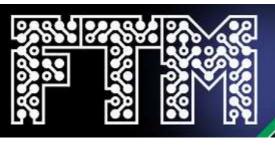














New 1,500 V relay in miniature DIP5 package ideal for industrial battery management systems

AQV258H5 HE series PhotoMOS[®] relays from Panasonic provide isolation of 5 kV, and offer unlimited lifetime and high immunity to shock and vibration, giving a valuable alternative to conventional electro-mechanical relays.



Panasonic Industry Europe has introduced a new version of its PhotoMOS relay series that extends its load voltage and provides improved ruggedness and stability.

Rated at 1,500 V/20 mA, the new AQV258H5 HE series offers 5 kV of I/O isolation and an increased clearance and creepage distance on the output side. Featuring a 1 Form A configuration and supplied in DIP5 packaging, the new relay is particularly suitable for battery management systems (BMS) in energy storage systems, and other high-voltage measurement and infrastructure control applications.

PhotoMOS relays have a MOSFET output and enjoy an almost unlimited lifetime if used according to the specifications. On-resistance remains stable throughout the device lifetime. Unlike electromechanical relays, the PhotoMOS relays are unaffected by shock or vibration, an important benefit in many industrial applications.

The AQV258H5 relays feature low control and leakage current, and produce no switching noise. The relay is supplied in a five-pin package that accommodates various creepage and clearance requirements. A six-pin version is also available.

Panasonic

INDUSTRY

FEATURES

- 20 mA continuous load current rating
- 410 mW total power dissipation
- 10 μA maximum off-state leakage current
- Available in through-hole and surface-mount versions
- Operating-temperature range: 40°C to 85°C

APPLICATIONS

- Energy storage systems
- Charging stations
- High-voltage industrial equipment

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Al-enhanced smart accelerometers raise performance and efficiency in always-aware applications

New LIS2DUX12 and LIS2DUXS12 from STMicroelectronics perform smart functions onchip, such as movement and gesture recognition and activity detection, lifting the processing burden from the host controller or SoC.



Two new accelerometers from STMicroelectronics feature advanced processing engines which extend the sensor's autonomy, enabling the host system to respond more quickly to external events while lowering power consumption.

The LIS2DUX12 and LIS2DUXS12 offer new programmable capabilities including a machine-learning core (MLC), advanced finite state machine (FSM), and an enhanced pedometer. An anti-aliasing filter for high accuracy at low sampling frequencies improves the performance of applications such as gesture detection while having a negligible effect on power consumption.

The integrated MLC in the LIS2DUX12 and LIS2DUXS12 enables artificial intelligence (AI) algorithms to perform reliable activity detection, while the FSM enhances movement recognition. Together, they enable autonomous processing in the sensor, offloading the burden of data processing from the host. This has the effect of lowering power consumption and producing faster system responses.

In addition, by deploying an adaptive self-configuration capability, the accelerometers adjust their own settings, such as measurement range and frequency, autonomously to improve performance.

The LIS2DUXS12 features ST's Qvar[®] channel, which makes the sensor aware of changes in the ambient electrostatic environment. This capability lets developers add value to applications such as user-interface control and liquid detection. In user-interface applications, the Qvar channel combined with an acceleration signal removes the potential for false positive detection in two-tap and multi-tap events.

The new accelerometers are supported by the ST MEMS GitHub model zoo, which facilitates the deployment of code for recognizing complex gestures, asset tracking, and many other use cases.

A third, entry-level new accelerometer, the LIS2DU12, is also available for less demanding applications.



FEATURES

- Supply-voltage range: 1.62 V to 3.6 V
- Ultra low-power consumption:
 - 10.8 μA current in highperformance mode with antialiasing filter
 - 6.2 μA current in low-power mode with anti-aliasing filter
 - 2.7 μA current in ultra lowpower mode
 - 0.01 μA current in power-down mode
- 220 µg/√Hz noise
- ±2g/±4g/±8g/±16g programmable full-scale range
- Up to 800 Hz output data rate
- High-speed I2C/SPI/MIPI I3C digital output interface
- Advanced pedometer, step detector and step counter

APPLICATIONS

- Wearable devices
- True Wireless Stereo speakers and earbuds
- Smartphones
- Hearing aids
- Game controllers
- Smart watches
- Asset trackers
- Robotic appliances
- IoT devices

FREE DEV BOARD

Adapter kit for LIS2DUXS12 has standard DIL24 socket.

Orderable Part Number STEVAL-MKI235KA

APPLY HERE NOW











Melex

 Configurable magnetic threshold from ±0.5 mT and ±40 mT
 Last-state feedback function

• Supply-voltage range: 2.7 V to 60

• 175°C maximum junction

APPLICATIONS

Fan and pump motorsGarage doorsBlindsShutters

Automotive systems
 Power liftgates
 Motorized doors

FEATURES

temperature

Magnetic switch provides flexibility and pitchindependent dual outputs

The Melexis MLX92352 three-axis magnetic dual latch and switch provides a simple, PCB-less solution for speed, pulse or direction sensing in motor-control applications such as eBike cadence sensors and control knobs.



Melexis has launched the MLX92352, a programmable three-axis magnetic latch and switch IC that functions as a stand-alone, PCB-less rotary or linear position or speed sensor. The MLX92351 is a pre-programmed version of the product.

Use of the MLX92352 or MLX92351 enables system developers to realize simple, single-component DC motor indexing designs. The devices can be used to implement various position sensing functions, including:

- Linear speed and direction control
- Incremental rotary encoding
- Dual linear position detection for pistons and levers
- Angular position detection for knobs and jog wheels

The MLX92351 and MLX92352 provide quadrature outputs, allowing the accurate measurement of rotational speed and direction in motor systems. Implementing a magnetic field design to support the sensor is easy, as a 90° phase shift between its two outputs makes it independent of pitch and air gap. The magnetic switches also provide design flexibility by outputting any two-fold combination of the x, y or z magnetic axes in the form of speed, pulse, or direction signals.

The MLX92351 and MLX92352 are fabricated with the Melexis silicon-on-insulator technology, which produces excellent electrical characteristics: the sensors withstand ESD strikes of up to 15 kV on the human body model, and are highly resistant to EMI.

The MLX92351 is supplied pre-programmed, while the MLX92352 offers end-of-line programmability, so the module can be tuned to compensate for mechanical tolerances in production.

An automotive version is AEC-Q100 qualified and supports ISO 26262 functional safety compliance.







SAMPLES

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New single-pair Ethernet controllers simplify industrial network systems

The LAN8650 and LAN8651 from Microchip enable the use of low-cost microcontrollers in the end nodes at the edge of industrial and IoT networks, such as sensors and actuators.



Microchip has introduced the LAN8650 and LAN8651 10BASE-T1S MAC-PHY single-pair Ethernet (SPE) controllers, which simplify the implementation of zonal networking architectures.

By using the LAN8650 or LAN8651, designers can implement systems with basic microcontrollers, rather than higher-end MCUs that have an on-chip media access controller (MAC), when creating sensors, actuators and other devices for the edge of operational and information technology networks. These low-speed devices do not need their own communication system; Microchip's MAC-PHY devices connect them to a standard Ethernet system all the way to the cloud over simple twisted-pair wiring.

For industrial applications that require higher bandwidth, designers can use MCUs with an integrated Ethernet MAC. For these applications, Microchip now offers an industrial-grade version of its LAN8770 100BASE-T1 Ethernet PHY transceiver that supports a transmit and receive data rate of up to 100 Mbits/s over a single unshielded twisted pair (UTP) cable.

In addition, Microchip has built on its SPE portfolio with industrial-grade versions of its LAN937x and LAN938x Gigabit Ethernet time-sensitive networking (TSN) switches with integrated 100BASE-T1 PHYs. These scalable, secure and compact SPE switches include hardware time-stamping features for supporting IEEE 802.1AS (gPTP) and IEEE 1588v2 (PTP) time synchronization, as well as other TSN functionality. Energy-efficiency features include an ultra-deep sleep mode with remote wake-up.

The Microchip industrial-grade SPE offerings withstand harsh environmental conditions across a broad temperature range. They provide features such as safety, security and extended cable reach that are required in industrial applications.

Tool support for these Ethernet devices includes MPLAB[®] Harmony v3 for configuring, debugging and programming designs. The MPLAB Network Creator provides a quick and intuitive graphical interface for switch configuration.



FEATURES

- Long range:
 - Half-duplex point-to-point link segments up to at least 15 m
 - Half-duplex multi-drop mixing segments up to at least 25 m
- Optional frame filtering to limit incoming packets
- Serial peripheral interface
- Physical layer collision avoidance
- Over-temperature protection
- Under-voltage protection

APPLICATIONS

- Industrial networking equipment
- Industrial IoT devices

FREE DEV BOARD

Seven-port TSN Ethernet evaluation board.

Orderable Part Number EV04C47A

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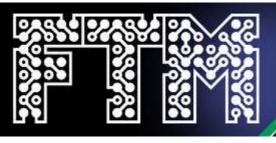






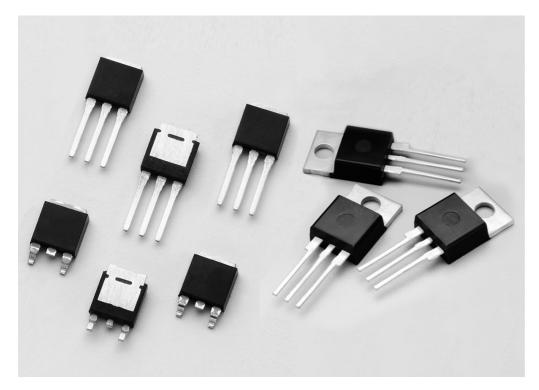






Triacs with isolated package provide ULrecognized solution for ac switching

New Littelfuse triacs handle high temperatures and voltages, providing a safe and reliable option for motor control, light dimming and home appliance applications.



Littelfuse has introduced a new series of standard high-temperature alternistor triacs (thyristors) that have 4 A, 12 A, 16 A, 30 A, or 35 A maximum rms current ratings.

An alternistor triac is typically used with highly inductive loads that require a high commutation capability. A triac is, for instance, an excellent ac switch in applications such as heating, lighting, and motor controls.

These Littelfuse triacs are valuable because the internally isolated packages offer better heat sinking with a higher isolation voltage. The ability to handle high dv/dt ratios also makes them suitable for ac switching and phase control applications.

The new product lines include the QVxx16xHx series of 16 A triacs, supplied in TO-220AB, TO-220 isolated, and TO-263 packages. The QJxx30xH4 triacs are rated for 30 A rms current, and the QJxx35xH4 series for 35 A.

The new SJxx08xSx and SJxx08xx series triacs can carry rms current of 8 A, while the SJ6012D1TP has a $12 \, \text{A}$ rating.



Expertise Applied | Answers Delivered

FEATURES

QVxx16xHx

- 150°C maximum junction temperature
- 600 V voltage rating
- 200 A surge current capability at 60 Hz half-cycle
- Up to 1,000 V/µs dv/dt ratio
- UL 1557 recognized as an electrically isolated semiconductor device

APPLICATIONS

- Ac solid-state relays
- Motor controls
- Lighting dimmers
- Power tools
- Kitchen and home appliances
- Infrared heaters
- Water heaters
- Industrial motors

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DATASHEET #2























650 V MOSFET produces efficient powerconversion performance

The SiHK045N60E power switch from Vishay combines low on-resistance with low gate charge to give low switching and conduction losses in switching power converters. The part is also notable for its low output capacitance.



The fourth generation of Vishay E series MOSFET technology provides an improved figure-of-merit, for more efficient performance in power-conversion applications.

The 650 V SiHK045N60E power MOSFET takes advantage of the E series technology to produce excellent switching and conduction characteristics. The device offers a low figure-of-merit for the product of on-resistance and gate charge. On-resistance at a gate-source voltage of 10 V is 43 m Ω . Maximum gate charge is 98 nC.

Energy-related effective output capacitance is another attractive feature of the SiHK045N60E, at just 117 pF.



FEATURES

- UIS avalanche energy rated
- 5 V gate-source threshold voltage
- 0.45°C/W maximum junction-tocase thermal resistance
- 0.8Ω gate input resistance

APPLICATIONS

- Server power supplies
- Telecoms equipment power supplies
- Switch-mode power supplies
- Power factor correction circuits
- Lighting equipment
 - High-intensity discharge lamps
 - Fluorescent ballasts
- Industrial
 - o Welding equipment
 - o Induction heating
 - Motor drives
- Battery chargers
- Solar inverters

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MEMS motion sensors feature low offset and excellent linearity

New SCC400T MEMS sensors from Murata are easy to integrate into precision motion sensing applications such as robot arm control or platform stabilization, thanks to low noise and low offset drift.



Murata has released a new MEMS sensor that combines a two-axis gyroscope and three-axis accelerometer in a single package. The new SCC433T-K03 offers the best offset and linearity stability performance in its class over lifetime and temperature.

Murata has also introduced the SCC410T-K03, a single-axis gyroscope. Together, these two parts in the SCC400T series enable the implementation of a 6 degrees-of-freedom (6DoF) sensor solution on a single board.

The SCC400T series sensors provide two parallel acceleration and rate-of-turn digital outputs with independent filter controls via a serial peripheral interface. The measurement range of the gyroscope is $\pm 300^{\circ}$ /s for both parallel outputs; the accelerometer measurement range is ± 6 g for a normal output, and ± 8 g for a secondary output.

Designers who integrate the SCC400T sensors into end product designs will benefit from stable measurement outputs over the lifetime of the device: offset drift over lifetime is a maximum of 0.9° /s, and a maximum of 25 mg. Noise performance is another outstanding feature of these MEMS sensors: noise density is just 70 µg/ $\sqrt{\text{Hz}}$ and 0.002° /s $\sqrt{\text{Hz}}$.

The sensor measures 10.4 mm x 7.65 mm x 2.3 mm.



FEATURES

- Linearity error less than ±1 mg
- Extensive self-diagnostics
- Secondary gyroscope output with independent low-pass filter control
- Operating-temperature range: 40°C to 110°C
- 3.3 V supply voltage

APPLICATIONS

- Inertial measurement units (IMUs)
- Robotics
- Machine control
- Platform stabilization
- Motion analysis and control
- High-precision satellite positioning

FREE DEV BOARD

The purpose of the SCC400T Chip Carrier PCB is to enable fast prototyping.

Orderable Part Number SCC433T-K03-PCB

APPLY HERE NOW

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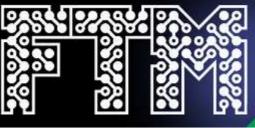












Six-axis motion sensor features built-in Al processing unit

The ISM330IS six-axis motion sensor from STMicroelectronics combines an accelerometer and a gyroscope with a new processing unit to deliver real-time sensor data from a single small package.



The ISM330IS motion sensor from STMicroelectronics, which combines a three-axis digital accelerometer and a three-axis digital gyroscope, contains a new processing unit to provide real-time sensor data to the host application.

The ISM330IS system-in-package's intelligent sensor processing unit (ISPU) is an ultra low-power, high-performance programmable core which can execute signal processing and artificial intelligence (AI) algorithms at the edge. The ISPU supports C programming, and is backed by an ecosystem of libraries and third-party tools and development environments. Its circuitry is optimized for the real-time execution of algorithms, providing a streamlined implementation of AI in wireless sensor nodes.

The ISM330IS has a full-scale acceleration range of ± 2 g/ ± 4 g/ ± 8 g/ ± 16 g. The angular rate range is between ± 125 degrees/s and $\pm 2,000$ degrees/s.

The sensor provides a programmable interrupt function, and an on-chip sensor hub for the internal accelerometer and gyroscope and up to four external sensors.

The LGA package of the ISM330IS measures 2.5 mm x 3 mm x 0.83 mm.



FEATURES

- Low power consumption in always-on mode
- Low operating current:
 - 0.59 mA in high-performance mode
 - 0.46 mA in low-power mode with ISPU inactive
- 70 µg/√Hz noise in highperformance mode
- SPI/I2C interface
- Operating-temperature range: 40°C to 85°C
- Embedded temperature sensor

APPLICATIONS

- Industrial robots
- Condition-based monitoring
- Asset tracking
- Smart home automation
- Personal health monitoring equipment

FREE DEV BOARD

Evaluation kit for ISM330IS motion sensor.

Orderable Part Number STEVAL-MKI230KA

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New NFC tag-side controller integrates sensing and energy-harvesting functions

The Infineon NGC1081 enables designers to develop new IoT concepts for compact, battery-free smart sensing products that connect to the cloud via a convenient wireless smartphone interface.



The new NGC1081 from Infineon is a single-chip NFC tag-side controller which enables the IoT industry to develop low-cost, miniature edge computing and sensing devices.

Such devices can be controlled and powered by mobile phones, with many potential applications in personal medical equipment, maintenance and configuration of machinery, home appliances and consumer devices, and in connected sensor products. The NGC1081's intuitive wireless connection with a mobile phone enables innovative cloud-based business models.

The NGC1081 can also be used to provide a galvanically isolated sensing interface for applications with direct human body contact.

The tag-side controller supports a dual power-supply function: this allows it to operate in a passive battery-free mode through energy harvesting, or in a battery-powered mode, operating as a self-contained sensing node backed by an external power supply. In passive mode, the entire sensing system, including the IC and its connected sensors, can draw power via energy harvesting from the NFC field of a mobile phone.

These features open up the potential to support sensing use cases that require no batteries and minimal maintenance. This is particularly useful for applications in which the power supply needs to be galvanically isolated to meet safety requirements.

The NGC1081 NFC tag-side controller is based on a low-power Arm[®] Cortex[®]-M0 core. It also includes an NFC front-end that complies with the ISO 14443 Type A standard, and a motor control driver that employs an H-bridge circuit with a drive capability of up to 250 mA. The device also features a sensing unit based on a 12-bit SAR ADC with four analog inputs and a 10-bit DAC with one analog output.

In addition, the sensing unit features a current-to-voltage converter, and an integrated temperature sensor.

Watch: NGC1081 the reliable solution for battery-free IoT devices

























FEATURES

- Memory provision:
 - o 16 kbytes of ROM as bootloader
 - o 16 kbytes of RAM
 - 60 kbytes of non-volatile memory
- SPI, I2C and UART interfaces
- Supplied in VQFN-32 package

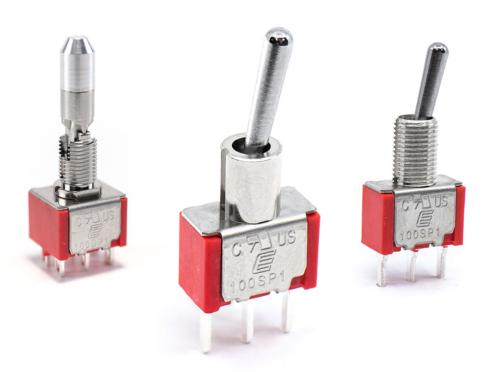
APPLICATIONS

- Battery-free sensing nodes
- Data or temperature loggers
- Medical monitoring patches
- Smart thermostats
- Programming interface to electronic devices



Miniature toggle switches provide multiple configuration options

100 series switches from E-Switch give design engineers the freedom to select the termination type, actuator material, contact material, switching function, and bushing type.





FEATURES

- Up to four poles
- Variety of switching functions
- Miniature dimensions
- Epoxy-sealed
- Silver or gold options for contact material

APPLICATIONS

- Telecoms equipment
- Instrumentation
- Networking equipment
- Medical equipment

The 100 series of miniature toggle switches from E-Switch provides design engineers with a broad range of configuration options, enabling them to fit the switch's operation and mechanical design to the needs of individual applications.

The 100 series switches have multiple termination options:

- Quick connect
- Right-angle PCB pin
- Solder lug
- Vertical PCB pin
- Wire wrap

The products are also available as a locking toggle switch or flat-lever toggle switch. Their actuators come in metal or plastic.

These toggle switches are PCB mountable, and are available in through-hole or right-angle terminations. Bushing options for these custom toggle switches include high torque, non-threaded, threaded, and splash-proof.

























Switching regulator modules offer more output options and improved thermal performance

Using the new R-78Kxx dc-dc converters from RECOM, design engineers can realize pointof-load power supply designs that require no heat-sink. The R-78Kxx modules provide a simple replacement for standard three-pin 78 linear regulators.



RECOM has launched an upgraded version of its popular R-78 series of non-isolated switching regulator modules. The new R-78Kxx series provides an efficient replacement for three-terminal, TO-220-style linear regulators, enabling manufacturers to save energy, board space, and cost by eliminating the need for heat-sinks.

The new R-78Kxx dc-dc converters offer various improved specifications, including a wider range of fixed-voltage outputs: new 1.2 V, 1.5 V, 1.8 V, 2.5 V, and 6.5 V options, as well as the previous 3.3 V, 5 V, 9 V, 12 V, and 15 V outputs. The input-voltage range has also been extended to a maximum of 36 V. Designers can choose output-current ratings of 0.5 A, 1 A, or 2 A.

Peak efficiency across the range has increased to 96%, allowing all parts to operate at an ambient temperature of 90°C, many with no derating.

All R-78Kxx series modules can meet the requirements of the EN 55032 Class B EMC specifications with a simple input filter.

The 0.5 A- and 1 A-rated versions are supplied in a miniature SIP-3 package which has a footprint of 11.5 mm x 7.55 mm and a height of 10.2 mm. The 2 A version's SIP-3 package has a 11.5 mm x 8.5 mm footprint and is 17.5 mm high. All versions are pin-compatible with standard 78 regulator footprints.

The devices offer a very long mean time before failure of around 5 million hours according to Mil Std HDBK 217F. The parts also withstand shock of 2 g, and are vibration-tested.

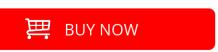


FEATURES

- Under-voltage lockout to protect battery-powered supplies from deep-discharge damage
- Continuous short-circuit protection with automatic recovery
- Three-year warranty
- IEC/EN 62368-1 Third Edition safety certified

APPLICATIONS

- Industrial equipment
- Consumer devices

















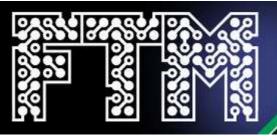














Six-axis IMU features AI core for intelligent motion signal processing at the edge

The STMicroelectronics LSM6DSV16X IMU combines an accelerometer and gyroscope with a machine learning core in a single compact package, to enable context awareness and configurable motion tracking without recourse to a host controller.



STMicroelectronics has introduced the LSM6DSV16X, a six-axis inertial measurement unit (IMU) which features advanced artificial intelligence (AI) capabilities to bring smart motion-sensing capabilities to IoT devices at the edge of the network.

The device is ideal for functions such as motion tracking and gesture detection, indoor navigation, image stabilization, and vibration monitoring and compensation.

The LSM6DSV16X includes standard IMU components: a three-axis digital accelerometer and a three-axis digital gyroscope. But on top of this, ST has built in a triple core for processing acceleration and angular rate data on three separate channels, the user interface, optical image stabilization, and electronic image stabilization, with dedicated configuration, processing, and filtering functions.

The LSM6DSV16X's AI capabilities also enable it to apply edge computing functions to the raw motion data that it captures. Its finite state machine (FSM) performs configurable motion tracking, while a machine learning core (MLC) supplies context awareness, and provides exportable AI features for IoT applications.

The LSM6DSV16X supports the adaptive self-configuration feature, which allows the FSM to automatically reconfigure the device in real time based on the detection of a specific motion pattern. Reconfiguration can also be driven by the output of a specific decision tree configured in the MLC, without any intervention from the host processor.

The LSM6DSV16X embeds ST's new Qvar function, which detects variation in electric charge, for user interface functions such as tap, double-tap, triple-tap, long press, or L/R or R/L swipe.

The LSM6DSV16X features an analog hub which can interface to an external analog input and convert it to a digital signal for processing.



FEATURES

- 0.65 mA operating current in highperformance mode
- Smart FIFO up to 4.5 kbytes
- Compatible with Android™ operating system
- ±2/±4/±8/±16 g full-scale accelerometer range
- ±125/±250/±500/±1,000/±2,000/±4,000 degrees/s gyroscope full-scale range
- Advanced pedometer, step detector, and step counter
- Significant motion detection
- Tilt detection
- Temperature sensor

APPLICATIONS

- Augmented/virtual/mixed reality equipment
- Wearable devices
- IoT devices
- Smartphones
- Handheld devices
- Cameras

FREE DEV BOARD

Three-axis accelerometer and three-axis gyroscope kit with QVAR functionality based on LSM6DSV16X IMU.

Orderable Part Number STEVAL-MKI227KA

APPLY HERE NOW























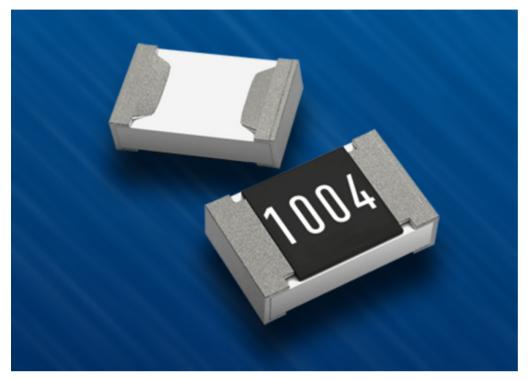






Precision resistors offer stable performance at high temperature and humidity

Panasonic Industry Europe supplies a broad range of chip resistors, including products optimized for precision, reliability or stability, and featuring maximum operating-temperature ratings up to 155°C.



Panasonic

INDUSTRY

FEATURES

- Certifications:
 - o IEC 60115-8
 - ∘ JIS C 5201-8
 - ∘ JEITA RC-2133C

APPLICATIONS

• Industrial equipment

Within the wide Panasonic Industry Europe range of chip resistors, design engineers can find products that are optimized for high precision, for high reliability, or for high stability and reliability. The Panasonic product selection includes devices with tolerance of resistance ranging from $\pm 0.05\%$ to $\pm 0.5\%$.

The high quality and stable resistance of these products mean that engineers can achieve consistently accurate performance in applications such as current sensing.

ERA A type thin-film chip resistors optimized for reliability:

- Stable at high temperature up to 155°C
- Load rated at 85°C and 85% relative humidity
- Low temperature coefficient of resistance
- Low tolerance of resistance
- Low current noise
- Excellent linearity
- AEC-Q200 qualified

ERJ PB type thick-film chip resistors optimized for precision:

- ±0.1% tolerance of resistance
- $\pm 50 \times 10^{-6}$ /K temperature coefficient of resistance in products up to 1 M Ω
- High power ratings:
 - o 0.20 W in 0603 case
 - o 0.25 W in 0805 case
- AEC-Q200 qualified

ERA V type thin-film chip resistors optimized for high stability and reliability:

- Stable at high temperature up to 155°C
- \bullet Load rated at 85°C and 85% relative humidity
- Low tolerance of resistance
- Low temperature coefficient of resistance
- Low current noise
- Excellent linearity
- Withstand high ESD
- AEC-Q200-002 HBM Class 1c and above
- Anti-sulfur structure





DATASHEET











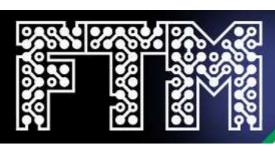














FEATURES16 or 24 contacts0.5 mm contact pitch

• 1.25 A maximum current rating

20 V ac voltage rating10,000 mating cycles

• Control systems
• Drones

Point-of-sale equipmentImaging equipmentSmall portable devicesBattery chargers

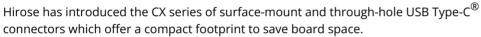
Medical devicesSmart meters

ELECTRIC EUROPE B.V.

Compact USB Type-C connectors support 10 Gbits/s data-transfer rate

CX series connectors from Hirose provide the robust mating performance and solid construction needed to meet the requirements of industrial and automotive applications. The connectors are well suited to automated production environments.





The new CX series connector, which conforms to the specifications of the USB 3.1 Gen 2 standard, supports the 10 Gbits/s transmission rate, enabling data transfers twice as fast as those of a conventional 5 Gbits/s USB 3.0 connector. A high-current variant, the CX90M-16P, operates at the USB 2.0 data rate of 480 Mbits/s, and is intended for use in fast battery chargers.

The receptacles feature a hybrid design and use both surface-mount and through-hole soldering to improve mounting accuracy and to minimize the board mounting space needed. The design also facilitates automated optical inspection, and eases reworking of the solder terminal joints with a visible lead design.

The slim plug is reversible, and the user-friendly receptacle features a symmetrical mating face to prevent incorrect insertion. A tactile click can be felt when mating the connectors to ensure correct engagement and prevent incomplete mating.

USB Type-C® and USB-C® are registered trademarks of USB Implementers Forum.

Product	Туре	Contact Type	Features
CX60-24S-UNIT	Plug (Unit)	Surface-mount, double- row	Slim type
CX60-SLDA	Plug (Plug shell)	-	Slim type
CX70M-24P1	Receptacle (Mid- mount)	Hybrid (surface-mount and DIP, one row each)	Space-saving type Depth: 8.35 mm
CX70M-24P2	Receptacle (Mid- mount)	Hybrid (surface-mount and DIP, one row each)	Space-saving type Depth: 7.95 mm
CX90B1-24P	Receptacle (Top- mount)	Surface-mount, double- row	10 Gbits/s data transfer rate, robust structure type
СХ90М-16Р	Receptacle (Mid- mount)	Surface-mount, double- row	Capable of carrying high current up to 6 A for fast charging USB 2.0 data rate of 480 Mbits/s
CX90MWD2- 24P	Receptacle (Mid- mount)	Surface-mount, double- row	Waterproof (IPx8)
CX80B1-24P	Receptacle (Vertical)	Surface-mount, double- row	Low-profile type











www.FutureElectronics.com







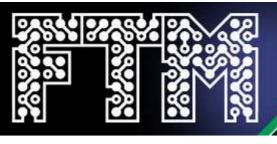












Integrated flyback controller IC offers high efficiency in appliance power supplies

Power Integrations InnoSwitch3-TN enables tight constant-current and constant-voltage regulation without the requirement for any external feedback components, simplifying power-supply designs and saving board space.



The InnoSwitch™3-TN offline flyback controller ICs from Power Integrations simplify the development of power supplies for appliances and industrial auxiliary power systems supporting loads up to 21 W.

The InnoSwitch3-TN, supplied in a safety-qualified, compact MinSOP™-16A package, integrates a 725 V primary-side MOSFET, isolated feedback loop, synchronous rectification and secondary-side control.

In smart, connected appliances that require a high output current, the InnoSwitch3-TN devices enable ac-dc power conversion at efficiency of up to 90%, better than traditional approaches such as buck regulators that are often less than 60% efficient. Highly integrated, these Power Integrations flyback converters incorporate all the necessary feedback components while supporting isolated and non-isolated, single- and multi-output

The InnoSwitch3-TN provides constant efficiency across the load range. No-load power consumption is less than 5 mW at 230 V ac.

The flexibility afforded by FluxLink™ communication technology means that positive and negative outputs can easily be supplied. InnoSwitch3-TN ICs can be used in a 5 V singleoutput power supply, with two positive output rails, or with both positive and negative rails, without any external feedback components.

Safety-rated FluxLink technology also ensures reliable synchronous rectification and accurate constant voltage and constant current on the output. The low forward drop of the synchronous rectification MOSFET also ensures excellent cross-regulation performance.

OOWEI integrations™

FEATURES

- Input-voltage range: 85 V to 265 V
- Enables designs that easily meet global energy efficiency regulations
- Protection functions:
 - Output over-current
 - o Over-temperature
 - Output over-voltage
 - o Open-gate detection for the synchronous rectification FET
 - Hysteretic thermal shut-down
- Accurate internal constant-current
- Operating-temperature range: -40°C to 150°C

APPLICATIONS

- Home appliances
- Industrial auxiliary power supplies

FREE DEV BOARD

Reference design for 12 W dual-output, open-frame power supply for appliances.

Orderable Part Number

APPLY HERE NOW

















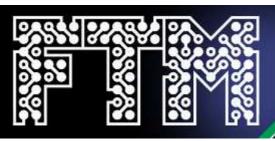














New 16- and 24-pin USB Type-C connectors support loads of up to 240 W

Global Connector Technology connectors benefit from a robust mechanical design. The 240 W USB PD capability provides much more power and faster charging than the previous 100 W limit.





APPLICATIONS

- Consumer electronics
- Industrial equipment

Global Connector Technology (GCT) has launched new USB Type-C[®]-rated connectors that support a power throughput of 240 W for the latest generation of electronics devices that demand more power and faster charging than the previous 100 W limit for USB Power Delivery (PD) systems.

The GCT 240 W USB Type-C connectors support the USB PD standard for operation at up to 48 V and 5 A. The USB PD protocol enables devices to communicate with each other before transmitting and receiving power, so they can take and/or deliver only the amount of power needed.

The new 240 W-rated products are available in a 16-pin format for USB 2.0 applications, and a 24-pin format for USB 3.2 Gen 2. The connectors' robust design withstands a minimum of 20,000 mating cycles, twice the industry standard.

The multiple mounting configurations and shell stake options provide the flexibility to fit a number of common PCB thicknesses.

Part Number	Configuration	
USB4081-03-A	24-pin horizontal mount with 1.60 mm shell stakes	
USB4105-GF-A	16-pin horizontal mount with 0.95 mm shell stakes	
USB4105-GF-A-060	16-pin horizontal mount with 0.60 mm shell stakes	
USB4105-GF-A-120	16-pin horizontal mount with 1.20 mm shell stakes	
USB4145-03-0070-C	16-pin vertical mount with 0.70 mm shell stakes	
USB4145-03-0170-C	16-pin vertical mount with 1.70 mm shell stakes	
USB4145-03-0230-C	16-pin vertical mount with 2.30 mm shell stakes	
USB4160-03-0070-C	24-pin vertical mount with 0.70 mm shell stakes	
USB4110-GF-A	16-pin horizontal surface-mount	
USB4520-03-0-A	16-pin mid-mount with 2.10mm offset	
USB4520-03-1-A	16-pin mid-mount with 2.10mm offset and shell springs	
USB4160-03-0170-C	24-pin vertical mount with 1.70 mm shell stakes	
USB4160-03-0230-C	24-pin vertical mount with 2.30 mm shell stakes	

















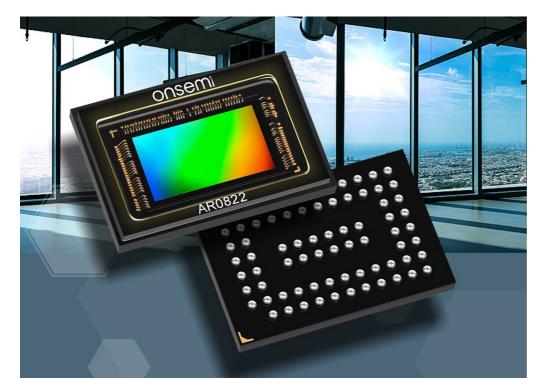






8 Mpixel image sensor with high dynamic range optimized for harsh lighting conditions

The new AR0822 from onsemi produces excellent image quality in mixed dark and bright lighting thanks to embedded high dynamic range capability, while minimizing the burden on the host processor.



onsemi has announced the launch of the AR0822, an innovative RGB image sensor which offers the high dynamic range (HDR) and excellent near infrared (NIR) response necessary for use in harsh or uncontrolled lighting conditions.

The sensor's low-power architecture and wake-on-motion feature enable designers to keep system power consumption to a minimum.

The AR0822 is an 8 Mpixel stacked 1/1.8 inch (8.81 mm diagonal) back-side illuminated CMOS digital image sensor based on a 2.0 μ m pixel. Providing a rolling-shutter readout, the AR0822 features an active pixel array of 3,840 px (H) x 2,160 px (V), and produces 4K video at a rate of 60 frames/s.

The new onsemi sensor is intended for use in cameras that are required to operate in uncontrolled light conditions, and especially in scenes containing bright and dark regions. Many competing image sensors achieve HDR by using multi-exposure outputs, sending up to three images with different exposures to the image signal processor to be combined. This approach requires up to three times more system bandwidth and more expensive components, especially at high resolution. By taking an alternative approach enabled by its on-chip embedded HDR functionality, the AR0822 reduces system bandwidth and processor power while producing exceptional image quality.

The AR0822 also offers very low power consumption to save power in battery-powered and mobile applications. Most cameras save power by operating in low-power modes when the application is inactive, and resuming regular operation after detecting motion, a function that requires both the sensor and the host processor to be active.

The AR0822 is different: it can intelligently detect motion using its wake-on-motion function, which allows the host processor to enter a low-power standby mode until the sensor detects motion and triggers the processor to resume its active mode.

onsemi

FEATURES

- Extended dynamic range
- Binning capability
- Windowing capability
- Intelligent linearization to minimize motion artifacts and LED flicker
- MIPI interface
- Junction-temperature range: -30°C to 85°C

APPLICATIONS

- Security and surveillance systems
- Body-worn cameras
- Doorbell cameras
- Vehicle dashboard cameras
- Robots

FREE DEV BOARD

Evaluation board features 8 Mpixel rolling shutter CMOS image sensor.

Orderable Part Number AR0822NPSC10SMTAH3-GEVB

APPLY HERE NOW



























Op amps with 1.7 MHz bandwidth extend design flexibility in industrial and automotive applications

TSB62 series op amps from STMicroelectronics are available in three versions with a single-, dual- or quad-channel output. A wide input-voltage range enables use across multiple voltage domains.



The TSB62 series of operational amplifiers from STMicroelectronics provides a high degree of ruggedness and flexibility in industrial and automotive applications, thanks to the devices' gain-bandwidth product of 1.7 MHz.

The automotive-qualified TSB62 series consists of the single-channel TSB621, dual-channel TSB622, and quad-channel TSB624.

The op amps support a wide supply-voltage range from 2.7 V to 36 V, giving design engineers the freedom to use the same device for multiple applications that operate at different voltage domains.

The rail-to-rail output maximizes an analog system's dynamic range, while the low inputoffset voltage of 1 mV ensures high precision when implemented in low-power devices.



life.augmented

FEATURES

- Unity-gain stable
- 375 μA maximum current per operator at 36 V
- Input common-mode voltage includes ground
- 4 kV ESD rating on the humanbody model
- EMI hardened
- Operating-temperature range: -40°C to 125°C
- 10 years' longevity commitment

APPLICATIONS

- Industrial equipment
- Power supplies
- Automotive systems

BUY NOW















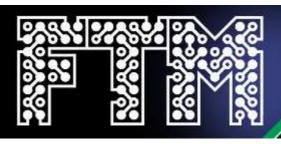












Analog-rich configurable MCUs provide integrated platform for signal-chain designs

The PSoC 6 family of configurable MCUs from Infineon gives designers great flexibility to implement a single-chip analog front-end using an array of programmable analog blocks alongside the renowned CAPSENSE touch-sensing technology.



The configurable PSoC™ 62 Performance Line and PSoC 61 Entry-Level Line microcontrollers from Infineon provide a wide range of analog and sensor capabilities to enable the realization of custom analog front-ends and sophisticated sensor interfaces that are out of reach of other Arm® Cortex®-M core-based MCUs.

The PSoC 6 architecture is built on an ultra low-power 40 nm process technology. This produces microcontrollers that achieve high energy efficiency and extend battery life in low-power applications such as secure wearable and mobile devices.

The rich set of analog capabilities in the PSoC 6 family enables designers to replace multiple discrete analog ICs with a single-chip combination of an analog front-end and MCU. PSoC 6 implementations of an analog front-end are characterized by high precision, low power consumption and low leakage current.

A choice of dual-core Arm Cortex-M4 or Cortex-M0+ architectures lets designers optimize for power and performance simultaneously. In addition, the ability of the device's analog peripherals to operate autonomously while the CPU is in deep sleep mode provides for substantial power savings.

The MCU's software-defined peripherals enable the creation of custom analog front-ends or digital interfaces for innovative system components such as electronic ink displays. The PSoC 6 MCUs also feature the latest generation of the CAPSENSE™ capacitive-sensing technology, enabling modern touch and gesture-based interfaces that are robust and

The PSoC 62 line is particularly well suited to sensing and signal chain applications, thanks to its rich provision of programmable digital and analog resources. Infineon design examples include a low-power analog front-end that uses the PSoC 62's on-chip operational amplifier and SAR ADC. Infineon has also demonstrated a single-chip solution for a sensor hub based on the PSoC 62, integrating an analog front-end, digital peripherals, and a CAPSENSE-based capacitive touch user interface.

Security is also well provided for in the PSoC 6 MCUs through built-in capabilities such as hardware cryptographic accelerators, and memory and peripheral protection units.

The entry-level PSoC 61 MCUs provide the lowest-cost way to use a PSoC 6 device. PSoC 61 MCUs are based on a single Arm Cortex-M4 core, and enjoy the same development support through the ModusToolbox™ development software libraries and tools as the other PSoC 6 products.



FEATURES

- Memory provision:
 - o Up to 2 Mbytes of Flash
- o 1 Mbyte of SRAM
- Up to 104 GPIOsSupply-voltage range: 1.7 V to 3.6

APPLICATIONS

- IoT devices
- · Wearable devices
- Smart home products
- Portable medical devices

FREE DEV BOARD

PSoC 62S4 Pioneer Kit.

Orderable Part Number CY8CKIT-062S4

APPLY HERE NOW



BUY NOW



INFORMATION



DATASHEET



DATASHEET #2





















New type of smart connector provides cloudenabled functions in a C14 power entry module

SCHURTER breaks new ground with the launch of the DS11, a Wi-Fi radio-enabled smart plug that enables energy monitoring, preventive maintenance and fleet management via a cloud-based software ecosystem.



SCHURTER has launched the DS11, the world's first 'embedded Smart Connector', a Wi-Fi[®] network-enabled device that can be installed as a power entry module in almost any electronic device or system, and that connects to monitoring and other functions hosted in the cloud. The DS11 enables equipment and device manufacturers to offer their customers various smart functions without any costly development and engineering work.

The DS11, part of a new portfolio of smart products from SCHURTER, is a C14 appliance power inlet compatible with IEC 60320-1 specifications, and features a built-in Wi-Fi 802.11b/g/n radio. It is backed by a comprehensive, cloud-based software system that is free of charge to users. Users can access the DS11 remotely via this Smart Ecosystem, which includes a Smart Connector app.

The new smart connector can be used for a wide range of functions enabled by cloud software systems. These include:

- \bullet Monitoring the energy consumption of electronic equipment, it performs active energy monitoring to an accuracy of $\pm 0.2\%$
- Configuring intervals between preventive maintenance events
- Fleet management of connected electrical devices

A serial interface to the device processor enables the implementation of data visualization, energy and asset management, the provision of device maintenance information, and other cloud-based services.

An integrated V-Lock cord retention system prevents accidental unplugging.























ELECTRONIC COMPONENTS

FEATURES

- 10 A current rating
- IP40 protection rating
- Less than 0.5 W standby power consumption
- Live energy measurement at update rate up to 60 s
- Serial interface to host processor

APPLICATIONS

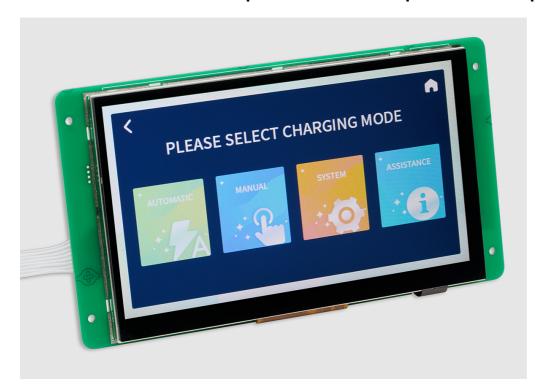
- Consumer devices
- Home appliances
- Industrial products





New 7" TFT display module offers choice of capacitive or resistive touch-sensing control

The ATM0700U3 series display modules from Zettler are backed by software that makes it easier to develop attractive and sophisticated display user interfaces.



ZETTLER

FEATURES

- Audio playback capability
- 450 cd/m2 luminance
- ±80° viewing angle
- Operating-temperature range: -20°C to 70°C

APPLICATIONS

• Industrial equipment

Zettler has introduced a new series of 7" display modules that have a UART serial data interface, and that support user interaction via either capacitive or resistive touch-sensing control. The ATM0700U3-CT module supports capacitive touch sensing, and the ATM0700U3-T resistive touch sensing.

The modules include a built-in microcontroller that runs advanced firmware for controlling via UART a user interface widget and for drawing geometric figures. PC software supplied by Zettler also simplifies development of the display user interface. The module's firmware can be updated via TransFlash card.

The ATM0700U3 series modules are 7" TFT displays offering resolution of 800 px x 480 px. A 1 Gbit integrated Flash memory can be used to support the user interface and font functions.



DATASHEET



DATASHEET #2















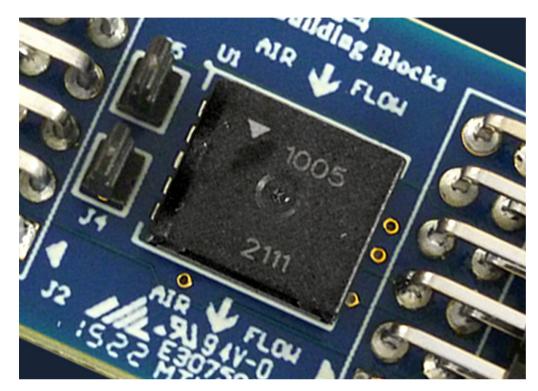






Air-speed sensors improve monitoring of fan operation in server and power-supply boards

Small, surface-mount FS3000 sensor module from Renesas provides a space-saving option for monitoring air flow in densely populated devices, such as a server's processor board.



Renesas supplies a MEMS-based air-flow sensor module which can be integrated into tightly packed electronics assemblies such as the processor boards in data center servers.

The FS3000 is an ideal replacement for the temperature sensor used to control the air flow through boards, enclosures and filters, and to detect a failure or malfunction in a fan. The FS3000 is a surface-mount device measuring just 8 mm x 9 mm x 4 mm, for mounting directly on the main system board in servers and power supplies.

The series contains two product options: the FS3000-1005 measures air velocity in a range from 0 m/s to 7 m/s. The FS3000-1015 has a wider measurement range of 0 m/s to 15 m/s.

Because today's server boards are so densely populated, it is difficult for devices such as temperature sensors to accurately measure the local temperature and air flow. Previously, the alternatives available for measuring the speed of cooling air flows have been large rotary fan-based anemometers, or meters based on differential pressure sensors. These products have narrow flow-speed measurement ranges, and are generally unable to measure low-speed flows. They are also too large to be integrated into enclosures in settings such as data centers.

The FS3000 solves all of these problems, providing an accurate measurement of air flow even in the most tightly packed board assemblies. The MEMS thermopile sensing element provides a fast response time and is highly sensitive to low-volume and low-speed air flows. The module's digital and sensor circuitry is fully encapsulated so it is resistant to condensation and to clogging. A silicon carbide coating over the MEMS flow sensor protects it from abrasive wear and water condensation.

RENESAS

FEATURES

- No moving parts
- Resistant to vibration and pressure shock
- 3.3 V supply voltage
- I2C interface
- Digital output in 12-bit resolution
- Operating-temperature range: -20°C to 85°C

APPLICATIONS

- Data centers and servers
- HVAC and air control systems
- Air filtration and collection systems
- Commercial air sampling
- Weather stations
- Flow control systems

FREE DEV BOARD

Evaluation kit for the FS3000 air velocity sensor module.

Orderable Part Number FS3000-EVK

APPLY HERE NOW

























New IR receiver modules cut power consumption and improve sunlight immunity in remote controls

Family of Vishay integrated IR receivers provides a wide range of package options, to give OEMs flexibility in board layout and assembly. High ESD capability makes the Vishay modules a reliable choice.



Vishay has upgraded its TSOP2xxx, TSOP4xxx, TSOP57xxx, TSOP6xxx, and TSOP77xxx series infrared (IR) receiver modules for remote controls with a new Cyllene 2 IC.

Designed in-house to ensure long-term product availability and reduced lead time, the new IC enables designers to achieve higher performance with greatly reduced power consumption over a wider supply-voltage range. These improved features extend battery life in mobile applications such as robotic vacuum cleaners.

The new devices also better withstand ESD and resist interference from direct sunlight. Sunlight immunity leads to better performance in outdoor uses such as garage door light barriers. The new receivers are also immune to disturbance from sources such as the IR emissions from compact fluorescent lamps, and the RF emissions from Wi-Fi[®] antennas.

The TSOP series modules integrate a photodetector, preamplifier circuit, and IR filter into a single package. The new receivers may be used as plug-and-play replacements for earlier modules. Various package options give the designer flexibility to integrate the module into the application's board layout. The receivers are available in versions with various automatic gain control settings for long- or short-burst codes.



FEATURES

- 0.35 mA operating current
- Supply-voltage range: 2.0 V to 5.5 V
- 12 kV ESD capability on the human-body model
- Carrier-frequency range: 30 kHz to 56 kHz
- High immunity to ripple noise

APPLICATIONS

- Consumer televisions
- Set-top boxes
- Audio equipment
- Gaming systems
- Air conditioners and other appliances
- Industrial automation controls
- Lighting systems





























New microcontrollers raise performance and enhance security for IoT and embedded applications

The STM32U5 series of MCUs from STMicroelectronics takes advantage of the security capabilities of the Arm Cortex-M33 core. Advanced graphics features enable these low-power MCUs to produce smartphone-like display effects.



STMicroelectronics has expanded its STM32U5 series of microcontrollers, introducing new devices that raise performance and enhance security while cutting power consumption.

The new MCUs are based on the Arm Cortex -M33 core, which offers excellent performance and energy efficiency alongside resistance to online attacks. Around this core, ST has implemented an architecture that takes advantage of established Arm features, such as a memory protection unit and the TrustZone architecture, to produce superior cybersecurity. The MCUs also integrate cryptographic accelerators for advanced AES algorithms, provide support for public key architecture, and enhance resistance to physical attacks.

The STM32U5 MCUs have received certification from the US National Institute of Standards and Technology for their embedded random-number entropy source, the industry's first MCUs to receive this endorsement. As the certification is reusable by customers, it simplifies and speeds certification for those applications that need SP800-90B final certification.

The STM32U5 series also breaks the constraints on graphics performance that typically apply to ultra low-power MCUs. Variants with ST's advanced NeoChrom graphics processing unit on-chip can run a sophisticated graphical user interface (GUI), a capability that was previously only possible with an expensive microprocessor-based system. A tiny, embedded processor can now host smartphone-like user experiences. The STM32U5 MCUs also support GUI development using ST's sophisticated TouchGFX GUI development tool.

The new MCUs in the STM32U5 series provide larger code and data Flash storage of 128 kbytes for cost-sensitive applications, while also adding high-density versions for complex applications and sophisticated smartphone-like user interfaces. Among these, the STM32U59x and STM32U5Ax devices offer 4 Mbytes of Flash and 2.5 Mbytes of SRAM, the largest on-chip memory of any STM32 MCU.

With their increased capabilities, the new MCUs open up new opportunities in deeply embedded applications, especially those operating in remote locations that are difficult to reach.

Like all STM32 MCUs, the STM32U5 parts benefit from the powerful and easy-to-use STM32Cube and STM32Cube.Al development ecosystem. This ecosystem consolidates tools and software to support customer projects from start to finish, including the creation of cutting-edge artificial intelligence and machine learning solutions through conversion of pre-trained neural networks to optimized code.



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FEATURES

- Hi-speed USB interface with integrated transceiver
- Error correction code on Flash and SRAM
- 100,000 cycles' endurance on 512 kbytes of Flash memory

APPLICATIONS

- Environmental sensors
- Industrial actuators
- Building automationHome appliances
- White goods
- Wearable devices
- eRikes
- Smart speakers
- Audio hubs

FREE DEV BOARD

STM32 Nucleo development board for STM32U5A5ZJ MCU supports Arduino, ST Zio and morpho connectivity.

Orderable Part Number NUCLEO-U5A5ZJ-Q

APPLY HERE NOW

₩ BUY NOW













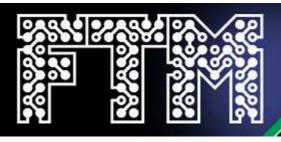












Analog switches and multiplexers offer high precision and low power consumption

Vishay supplies a broad range of signal switching devices to support precision analog circuitry in applications such as data acquisition, industrial process control, test and measurement, and medical systems as well as consumer devices.



Vishay signal switching devices supplied in nearly 20 surface-mount and through-hole package types support precision analog circuitry in all major configuration types: single-pole single-throw, single-pole double-throw, double-pole single throw, and double-pole double-throw.

The Vishay analog switches and multiplexers offer valuable performance characteristics including low and flat on-resistance, low power consumption, and low leakage current and charge injection. The products are also known for their low parasitic capacitance and high bandwidth, while operating over a wide supply-voltage range.

The devices are supplied in a number of package options, including TSSOP, SOIC, and miniQFN, giving designers flexibility to optimize board layouts. The products support both single- and dual-supply operation. On-resistance values range from under 1 Ω to more than 10 Ω .



FEATURES

- Switch configuration options:
 - Single-pole single-throw
 - Single-pole double-throw
 - o Double-pole single-throw
 - Double-pole double-throwBus switches
- Multiplexer options:
 - o 2:1, 4:1, 8:1, and 16:1
 - o Differential configurations

APPLICATIONS

- Audio and video systems
- Control and automation equipment
- Data acquisition systems
- Industrial process control
- Data storage equipment
- Network and telecoms equipment
- Modems and routers
- Medical and healthcare devices
- Instrumentation
- Test and measurement equipment
- Consumer electronics
 - Mobile phones
 - Set-top boxes
 - Personal digital assistants
 - Media players
 - $\circ \ \ \text{Video game equipment}$

Recent additions to the product family include products that:

- Extend operating voltage range down to 1.6 V
- Lower the on-resistance of ± 15 V switches to 1.5 Ω
- Lower charge injection to below 1 pC
- Lift signal bandwidth to 1 GHz

These analog products can be used in circuits that perform functions including:

- Audio and video signal switching
- Sample and hold
- Programmable gain control and filtering
- Test calibration
- Precision ADC input multiplexing
- Signal port isolation
- Relay replacement























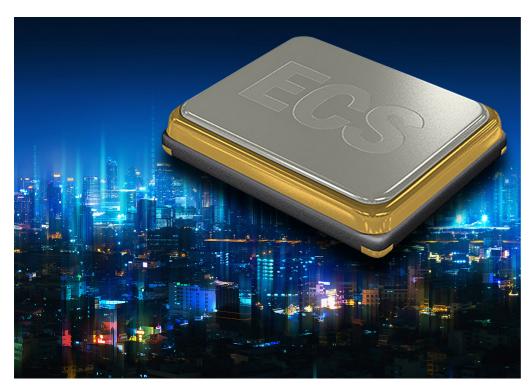






Compact, surface-mount crystals provide excellent frequency stability in wireless applications

The ECX-32 series of surface-mount crystals from ECS Inc produces frequency outputs between 8 MHz and 54 MHz, making the crystals ideal for use in Bluetooth or Wi-Fi radio devices.



The ECX-32 compact, surface-mount quartz crystals from ECS Inc are supplied in an industry-standard four-pad package that is ideal for IoT devices and wireless or mobile systems that contain a Wi-Fi $^{\text{R}}$, Bluetooth $^{\text{R}}$, or LoRa $^{\text{R}}$ radio.

The compact ECX-32 crystals have a footprint of 3.2 mm \times 2.5 mm, and support frequencies in a range from 8 MHz to 54 MHz. The crystals are available with tight stability and tolerance options of \pm 10 ppm.

The standard part provides a 20 pF load capacitance, but additional load capacitance options of 8 pF, 10 pF, 12 pF and 18 pF are available.

Part Number	Frequency	Frequency Stability	Operating Temperature Range
ECS-240-18-33-JEN-TR3	24 MHz	±50 ppm	-40°C to 85°C
ECS-80-10-33-CKM-TR3	8 MHz	±10 ppm	-20°C to 70°C
ECS-160-18-33-AEN-TR3	16 MHz	±50 ppm	-40°C to 85°C
ECS-200-18-33-JGN-TR3	20 MHz	±30 ppm	-40°C to 85°C
ECS-250-10-33-AGM-TR3	25 MHz	±30 ppm	-20°C to 70°C
ECS-100-18-33-AGM-TR3	10 MHz	±30 ppm	-20°C to 70°C



FEATURES

- 5 pF maximum shunt capacitance
- 100 μW drive power
- ±5 ppm maximum aging in the first year

APPLICATIONS

- Wireless or mobile devices
- Wi-Fi, Bluetooth or LoRa radiobased systems
- IoT devices





















