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25-vii
Industrial Automation/Industry 4.0

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Complete camera modules ease evaluation of monochrome image sensor

The STMicroelectronics CAM-55G1 camera modules provide a choice of lens options, all in compact form factors, to accelerate the set-up of low-power embedded vision system prototypes.

The CAM-55G1 modules from STMicroelectronics provide a ready-made camera system for evaluation and integration of the VD55G1 0.56 Mpixel monochrome image sensor. These ready-to-use cameras combine a VD55G1 sensor, lens holder, lens, and flexible printed circuit (FPC) connection, integrated into a single module as small as 5.0 mm2.

The VD55G1 sensor is ideal for small, low-power embedded systems, particularly those which use AI for intelligent vision. The sensor features the world's first 2.16 µm global shutter pixel. Its tiny 2.73 mm x 2.16 mm footprint fits into space-constrained products such as AR/VR glasses or personal electronics devices.

Low power consumption is maintained even when the VD55G1 is operating at the highest frame rates, making it ideal for battery-powered devices. The sensor's low power consumption is enhanced by its automatic wake-up feature. This enables the sensor to operate in an ultra low-power sleep mode when no change or event is detected. As soon as an event is detected, the sensor automatically sends a trigger to the host processor to switch into full streaming mode to capture the corresponding event.

The VD55G1 image sensor is supplied by ST as a bare die, so the CAM-55G1 modules provide an easier integration option for OEMs. The CAM-55G1 implements all the camera features of the VD55G1 image sensor, including:

- Auto-exposure
- Automatic wake-up
- Background removal

Multiple GPIOs enable users to synchronize the modules with triggers and an illumination source. Featuring a single-lane MIPI CSI-2 output, the modules are perfectly suited for low-power embedded vision applications.

The CAM-55G1 cameras are supplied with a choice of lenses to match the needs of various applications, providing different options for optical set-up and mechanical specifications. All camera modules are equipped with the same FPC-to-board connector and pin-out. This plug-and-play architecture allows users to change the choice of module, and re-use the same set-up with different lenses, color options and even different image sensors from the ST BrightSense portfolio.

The modules are backed by a comprehensive set of free enablement software, drivers and evaluation tools, including drivers for a Linux® operating system.

Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.

FEATURES

- Lens options:
  - Ultra wide-angle lens with 160° field of view
  - Compact lens with 81° field of view and clear filter
  - Near infrared-optimized (NIR) lens with 940 nm bandpass filter
- Easy evaluation and integration:
  - Connects to computer via EVK Main hardware tool and free GUI
  - Connects to embedded processing platforms via MIPI CSI-2 output
- High sensitivity and sharpness in both visible and NIR spectrum

APPLICATIONS

- Edge AI devices
- AR/VR equipment
- Gaming systems
- Drones and UAVs
- Security cameras
- In-line visual inspection systems

FREE DEV BOARD

Off-the-shelf image sensor module saves space and power.

Orderable Part Number
CAM-55G1

APPLY HERE NOW

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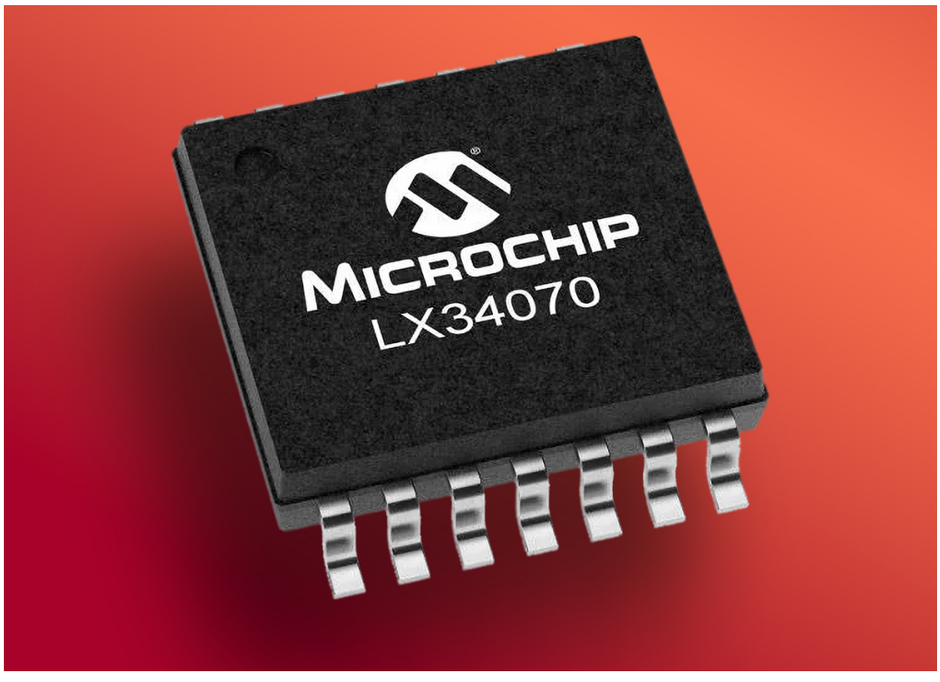
Inductive position sensor offers superior reliability for automotive and industrial

The automotive-grade LX34070 from Microchip facilitates compliance with the car industry's functional safety standards. It provides a smaller, lighter and more robust alternative to traditional magnetic position sensors.



MICROCHIP

FEATURES

- Operating-temperature range: -40°C to 150°C
- 100 kHz bandwidth
- Less than 5 µs latency

APPLICATIONS

- Motor control
- Automotive systems
- Industrial equipment
- Medical equipment

FREE DEV BOARD

Evaluation board for automotive-grade inductive position sensor.

Orderable Part Number
EV65W60A

APPLY HERE NOW

The LX34070 inductive sensor from Microchip provides safer and more reliable position sensing in harsh environments ranging from high-temperature engine bays to demanding industrial automation systems.

Qualified to AEC-Q100 Grade 0 and compliant with the requirements of the ISO 26262 functional safety standard to ASIL C, the LX34070 provides automotive and industrial system designers with confidence in the sensing system, even in the presence of strong electrical or magnetic interference.

Unlike traditional Hall effect position sensors, which rely on magnetic fields and are prone to interference, the LX34070 uses a differential inductive sensing architecture which enhances signal integrity and maintains immunity to magnetic and environmental noise. This produces precise and stable position measurements even in the presence of strong electromagnetic fields or metallic debris.

The sensor features built-in oscillator circuitry to drive the primary coil and two independent analogue channels with demodulation. This means that the LX34070 provides redundancy and fault tolerance, crucial features for safety-critical applications such as throttle position sensing, motor commutation, and robotic joint feedback. In addition, the sensor's automatic gain control dynamically adjusts to variations in target air gaps, delivering consistent high-resolution output across a wide mechanical tolerance range.

Supporting a wide input-voltage range of 4.5 V to 5.5 V with protection up to 18 V, and featuring differential output buffers with precise common-mode voltage and robust short-circuit protection, the LX34070 provides a rugged electrical interface.

Calibration can be performed via the VIN or GPIO pins, simplifying set-up and reducing manufacturing complexity. The sensor includes advanced diagnostic features such as exciter and receive coil fault detection, power supply monitoring, and ground loss detection, helping manufacturers to achieve functional safety compliance.

SAMPLES

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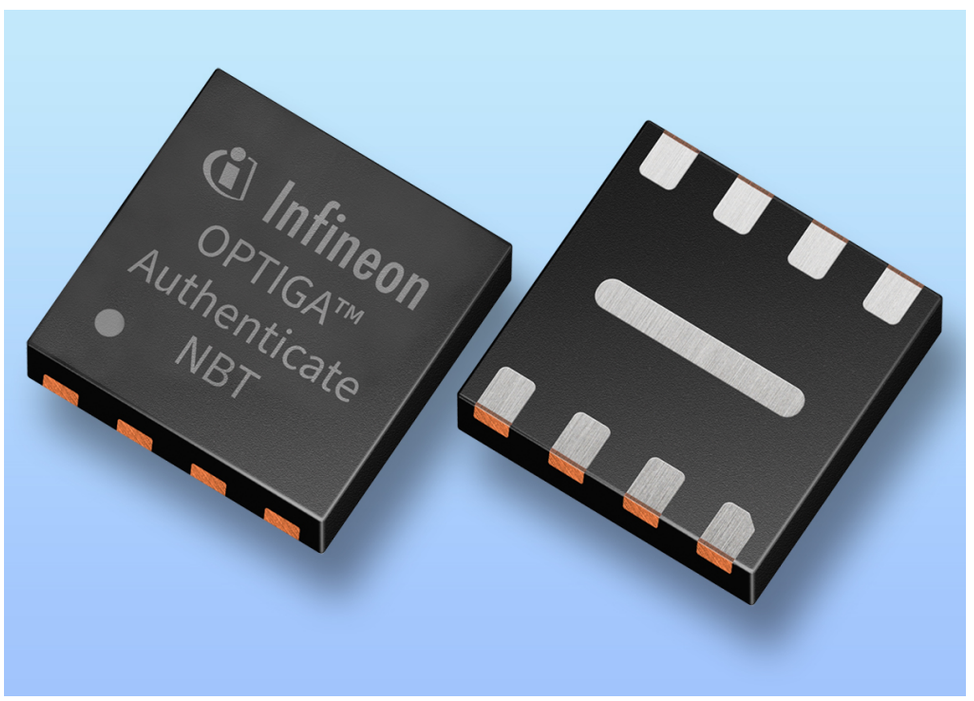
NFC I2C bridge tag for contactless authentication and configuration of IoT devices

The Infineon OPTIGA™ Authenticate NBT is an NFC Type 4 asymmetric tag with an I2C interface, providing a contactless bridge between an NFC reader such as a smartphone and a host microcontroller.



The Infineon OPTIGA Authenticate NBT is a high-performance NFC I2C bridge tag for secure human-machine interfaces (HMIs). The bridge tag enables fast, contactless NFC communication between an IoT device I2C interface and a contactless NFC reader such as a smartphone.

A Type 4 Tag certified by the NFC Forum, the OPTIGA Authenticate NBT can be used for single-tap authentication and secure configuration of an IoT device via an app on the user's smartphone. The tag provides high security because of the Integrity Guard 32 security architecture. It also holds EAL6+ security certification.

The NFC I2C bridge tag supports both symmetric and asymmetric cryptographic authentication, as well as pass-through and asynchronous data communication modes. These can be used for a variety of applications such as:

- Secured configuration of smart devices with no display
- Activation of shared mobility vehicles
- Passive commissioning of non-powered smart devices prior to installation
- Data logging on patient health monitors

Featuring an 8 kbyte memory, the NFC I2C bridge tag offers ample space to store customer- and application-specific configuration information. High on-chip capacitance enables the use of a smaller antenna to lower bill-of-materials cost and reduce board footprint.

Infineon

FEATURES

- Data rates:
  - Up to 848 kbits/s contactless (NFC)
  - Up to 1 Mbit/s on I2C interface
- Security:
  - ECDSA-based asymmetric cryptography
  - AES-128-based symmetric cryptography
  - 32-bit password-based verification
- 78 pF on-chip input capacitance

APPLICATIONS

- Shared mobility products
- Industrial equipment
- Consumer electronics
- Healthcare devices

FREE DEV BOARD

NFC I2C bridge tag evaluation kit includes PSoC™ prototyping board.

Orderable Part Number
NBT2000A8K0T4KITV1TOBO1

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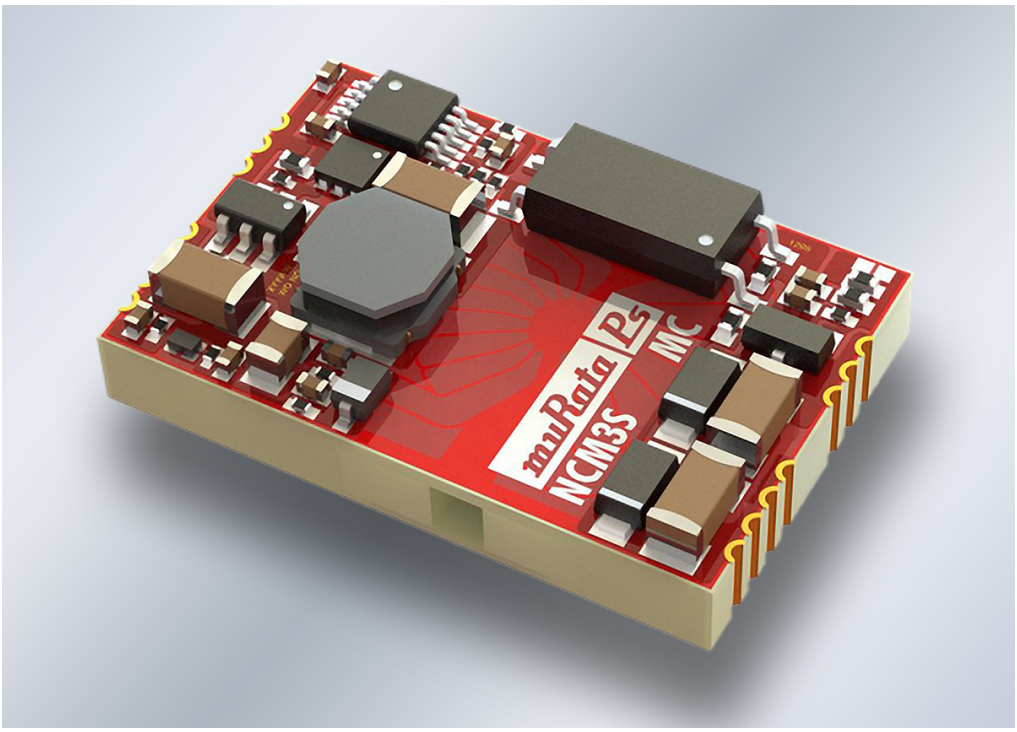
3 W dc-dc converter modules ideal for use in high-voltage equipment

The NCM3 series power modules from Murata provide a 3 W power output, and are backed by safety certificates with reinforced insulation sufficient for use in mains-powered industrial, medical and energy equipment.



muRata
INNOVATOR IN ELECTRONICS

FEATURES

- Less than 1 µA leakage current
- 5 mA ripple current
- Operating-temperature range: -40°C to 105°C with derating
- Isolation voltage: 100% production-tested at 5 kV ac for 1s
- No electrolytic capacitors
- Continuous short-circuit protection

APPLICATIONS

- Consumer equipment
- Industrial equipment
- Energy generation and storage equipment
- Medical equipment

The NCM3 series from Murata are isolated 3 W dc-dc converter modules which are certified for use in medical equipment.

Operating from an input-voltage range of 9 V to 36 V, the NCM3 converters supply a regulated output voltage of 5 V, 12 V or 24 V.

The NCM3 modules offer 250 Vrms of reinforced insulation according to the UL62368-1 standard. The series has a pending certification for ANSI/AAMI ES60601-1 for two means of patient protection (MOPP), making it suitable for use in mains-powered equipment in both medical and other high-voltage applications.

The surface-mount package supports high-speed automated product placement.

10110 DATASHEET

SAMPLES

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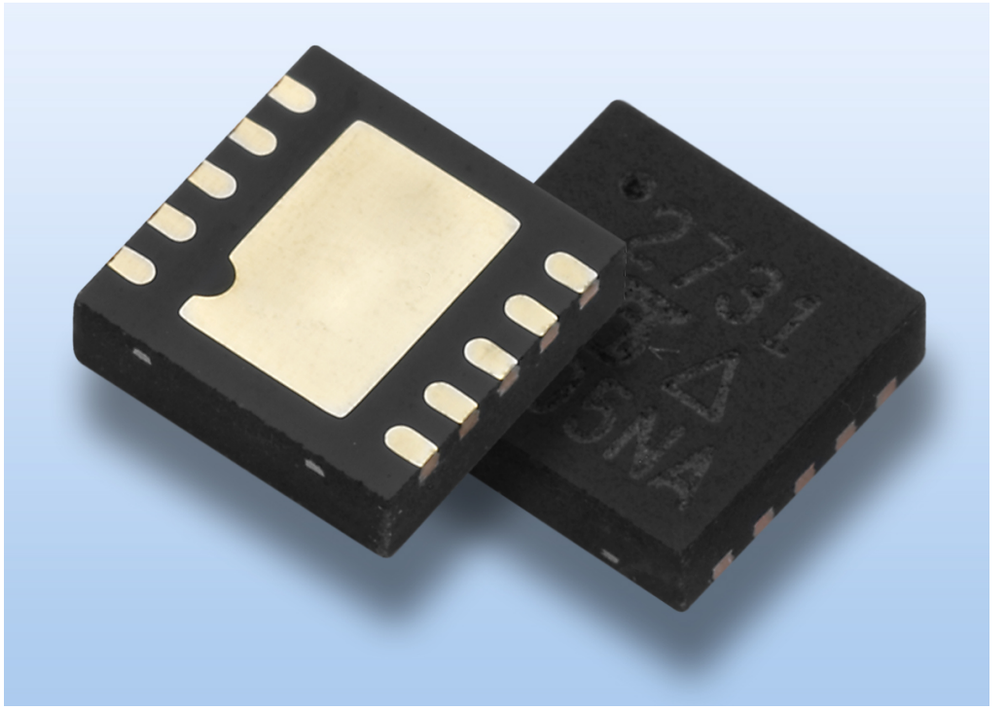
Current-limit switches provide comprehensive circuit protection

The Vishay SiP32433A/B and SiP32434A/B eFuse switches provide settable limits for over- and under-voltage protection, and block voltage surges and inrush currents over a wide input-voltage range, with either latch off or auto-retry.



VISHAY
The DNA of tech.™

FEATURES

- 28 V maximum voltage with 24 V internal over-voltage protection
- 33 mΩ switch resistance
- Fast response to short-circuits
- Programmable turn-on slew rate
- Junction-temperature range: -40°C to 125°C
- Over-temperature protection

APPLICATIONS

- Industrial equipment
- IoT devices
- Smart home devices
- Medical and healthcare equipment
- Networking and telecoms equipment
- Data storage
- Computing equipment
- Programmable logic controllers
- Lighting
- Games consoles

The SiP32433A and SiP32433B from Vishay are single-channel load switches which protect both power sources and downstream circuitry connected to the switch from overloads, short-circuits, voltage surges, and excessive inrush currents.

The output-current limit can be set by a single external resistor in a range from 0.3 A to 3.5 A, with an accuracy of ±8%. The rated input-voltage range is 2.8 V to 22 V. Vishay also supplies the SiP32434A and SiP32434B switches, which can be set to limit current in a range between 0.5 A and 6 A, with an accuracy of ±7%.

After switching off due to a fault, the SiP32433A and SiP32434A latch the power switch off, while the SiP32433B and SiP32434B auto-retry after a settable period.

The SIP32433 and SiP32434 eFuse switches integrate multiple control and protection features, giving system designers a simple way to control power behavior and maintain reliable operation with only a small number of external components. Over-voltage protection and under-voltage lockout threshold levels can be set with an external resistor network. Inrush current behavior can be set with a single external soft-start capacitor.

The SiP32433A and SiP32433B feature active reverse blocking, making them ideal for systems with a USB Type-C® Power Delivery power supply or with multiple power-source switching.

DATASHEET | DATASHEET #2 | SAMPLES

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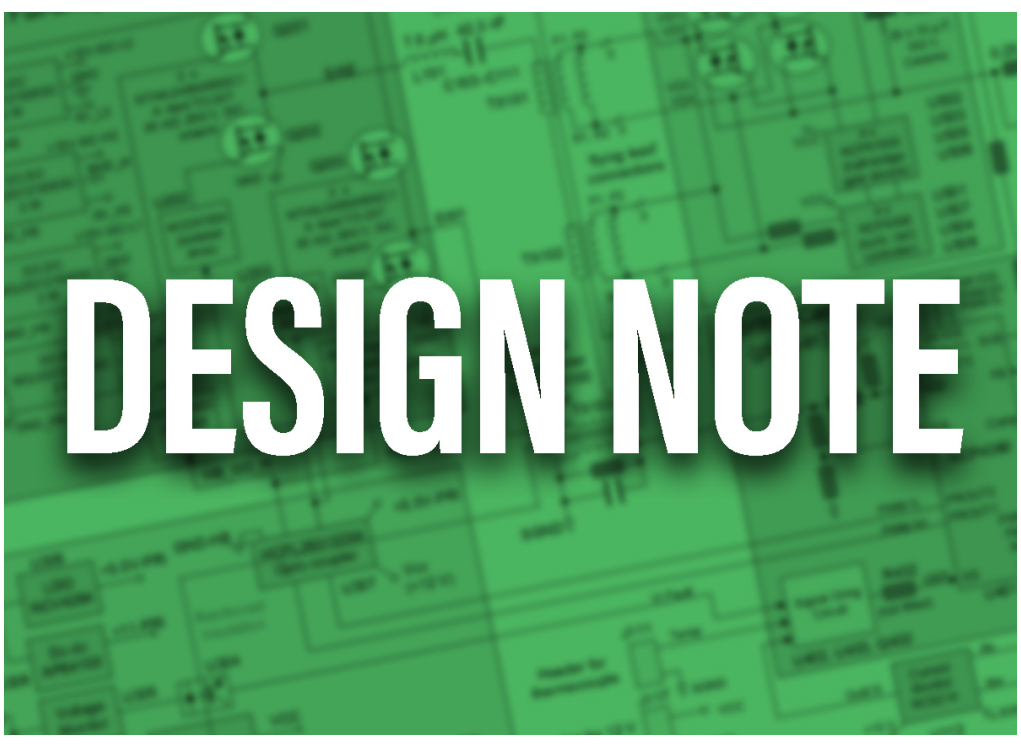
How access control technology improves efficiency of manufacturing operations

Fully integrated RFID reader modules from ELATEC provide the easiest way to implement modern, secure contactless authentication technology in factories and other industrial settings.



ELATEC
RFID Systems

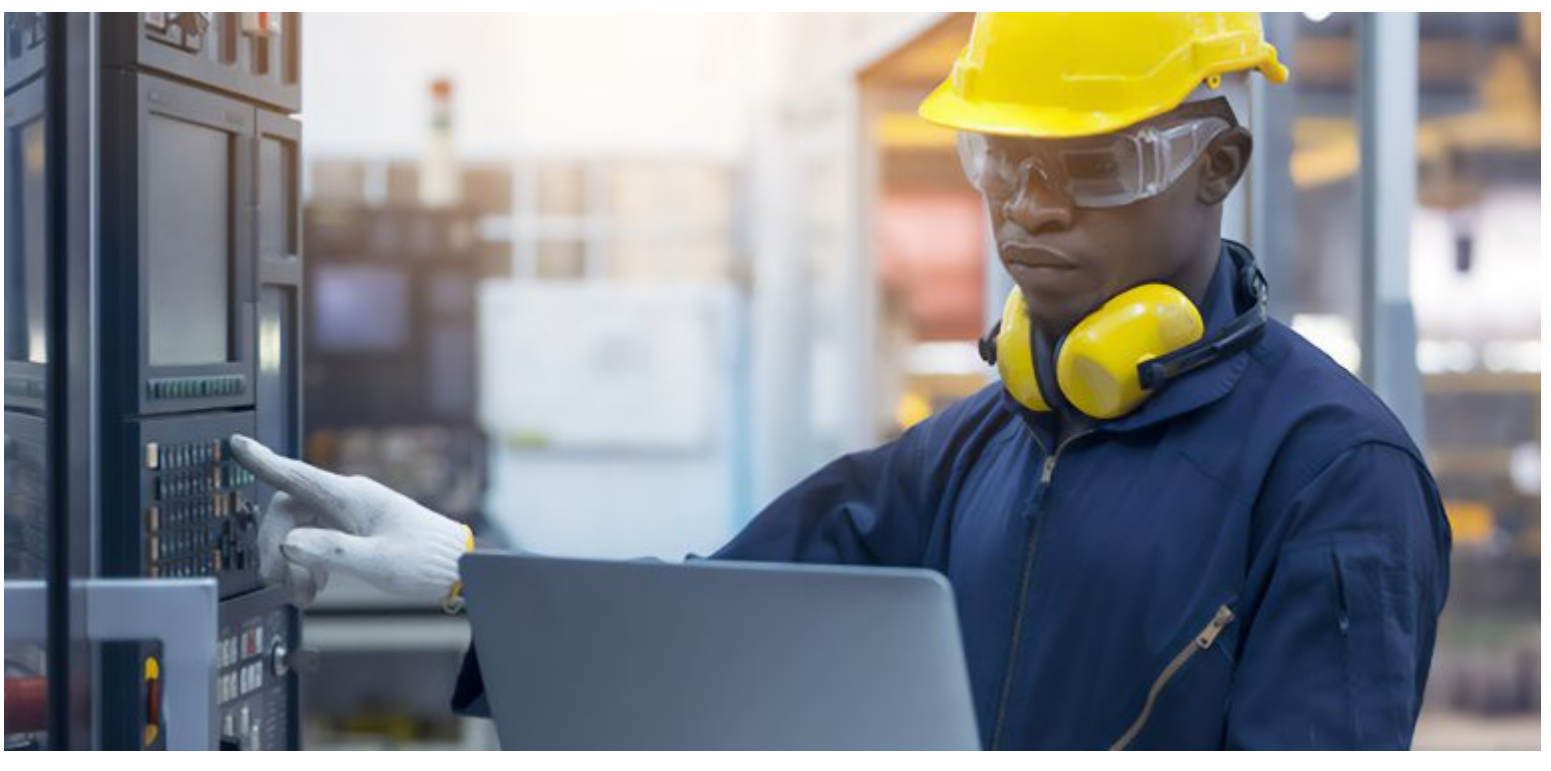
In today's globalized landscape, manufacturing companies face rising customer expectations, driving the need for efficiency and innovation. This creates challenges for factory operators, who must optimize production operations in order to maintain supplies of competitive, high-quality products. In response to these challenges, automation, driven by the Industrial Internet of Things (IIoT), is on the rise, necessitating enhanced safety measures for people, equipment, and data. Additionally, questions arise around sustainability and skilled workforce recruitment.

Digital transformation offers manufacturers a competitive edge. In smart factories, modern user authentication and access control technologies, such as RFID, play a pivotal role in enhancing security and ensuring compliance with regulations. Whether for machines or laboratories, restricting access to authorized personnel minimizes errors and protects data against tampering or espionage. It also ensures security and transparency in fleet management, allowing for precise tracking. This transparency empowers factory operators, revealing optimization opportunities in production. Processes can be streamlined and adapted to evolving technologies. Simplified authorization management is crucial.

For employees, user-friendly authentication and access control enhance convenience. Kiosk applications and single sign-on streamline access, fostering employee satisfaction and competitiveness.

Enhancing efficiency with universal user authentication

At the core of a modern system for user authentication and access control are universal readers. These readers enable manufacturing companies to use their existing employee badges for machine authentication. Moreover, this system easily adapts to include applications such as access control, lockers, or kiosks. But there is more: while robust cards excel in demanding shop floor environments, smartphones can also serve as identification tools alongside employee ID cards. The choice is flexible for each application and employee, and can easily be changed when needed.



Customized solutions from ELATEC

In the diverse field of manufacturing, no two companies are alike. Unique factors such as product portfolio, manufacturing processes, machinery, employee count, and production sites distinguish each operation. It is crucial to implement a flexible solution which allows adjustments as needed.

ELATEC offers a scalable system which can be designed to meet the customer's requirements. Manufacturers can begin with machine authentication before expanding the use of authentication technology, for instance for company fleet management, kiosk solutions in manufacturing, or secure office printing.

The ELATEC solution is built on universal readers, accommodating various transponder devices such as cards and smartphones. Universal ELATEC devices seamlessly integrate different technologies and credentials into the system.

Efficiency and security: advantages of user authentication

A secure and convenient system for user authentication as well as access control promotes smooth processes and enhances efficiency across a company. This liberates valuable resources that specialists can devote to the development of new products or customer projects, for instance. The ELATEC solution comprises robust software and hardware, complemented by expert consulting and exceptional support.

Implementing ELATEC authentication technology in the factory offers multiple benefits to factory operators.

Comfort

Make your skilled workers' day-to-day work as smooth as possible. Thanks to universal readers and a well thought-out overall solution, one card is enough to give them quick and easy access to everything they need for their work, from access to machinery and equipment to tools and forklifts, even across multiple locations.

Security

In manufacturing, access to equipment and access to hazardous areas must be controlled with absolute reliability in order to protect people, inventory and data. This imposes strict requirements for user authentication and access control.

Readers from ELATEC support almost every encryption scheme, including advanced cryptographic methods. And that is not all: for an even higher level of security, ELATEC readers can be combined with a secure access module (SAM).

Versatility

The broad ELATEC portfolio of universal readers, RFID cards or digital ID on a smartphone opens up a wide range of possibilities: from machine authentication to access to the company network or the loan of company vehicles.

Transparency

Factory operators need to take note of the way that production machines and systems are used, the people who operate them, and the locations and causes of malfunctions. A uniform system for user authentication provides valuable information to support decisions about these issues. This also works in other areas of operations, such as fleet management, or the use of industrial trucks and tools.

Future-proof solution for user authentication

The universal ELATEC package of reader products and software works internationally and offers great flexibility. ELATEC products can be easily adapted at any time, by users or by solution experts, to provide manufacturers with a system which meets customer needs today and into the future.

Processor offers competitive solution for advanced HMIs

The new RZ/A3M microprocessor from Renesas features 128 Mbytes of fast DDR3L DRAM memory for system cost reduction, and supports 1,280 px x 800 px video resolution at a rate of 30 frames/s.

RENESAS

FEATURES

- LCD controller
- Parallel RGB interface
- MIPI-DSI interface
- 2D graphics drawing engine
- USB 2.0 interface
- I2S interface
- Temperature sensor

APPLICATIONS

- Home appliances
- Industrial automation equipment
- Office automation equipment
- Healthcare devices
- Building control systems

Renesas has launched a new high-performance microprocessor for advanced human-machine interface (HMI) systems that are based on a real-time operating system (RTOS).

The new RZ/A3M MPU integrates large DDR3L SDRAM and SRAM memories to facilitate the seamless execution of complex tasks and to render real-time graphics displays. The RZ/A3M drives video and camera images to large LCD panels at a resolution of up to 1280 px x 800 px.

The RZ/A3M features a 64-bit Arm® Cortex®-A55 CPU core operating at a maximum frequency of 1 GHz with 128 kbytes of on-chip SRAM. By integrating 128 Mbytes of high-speed DDR3L DRAM in a single system-in-package, the MPU eliminates the complex task of designing a high-speed signal interface for connecting external DDR memory.

The RZ/A3M supports both external NAND and NOR Flash memory via a quad SPI interface for data and code storage. Paired with a driver, high-capacity NAND Flash offers a cost-effective option for memory expansion. Additionally, the RZ/A3M BGA package has a unique pin layout which simplifies PCB routing and enables a low-cost, dual-layer printed wiring board design, providing substantial cost and time savings. Integrating memory in this way simplifies PCB design by reducing the routing complexity and minimizing layout constraints.

Comprehensive development environment

Renesas offers a comprehensive HMI development environment which includes the Flexible Software Package (FSP), evaluation kits, development tools, and sample software. GUI solutions from partner companies facilitate rapid HMI graphics development.

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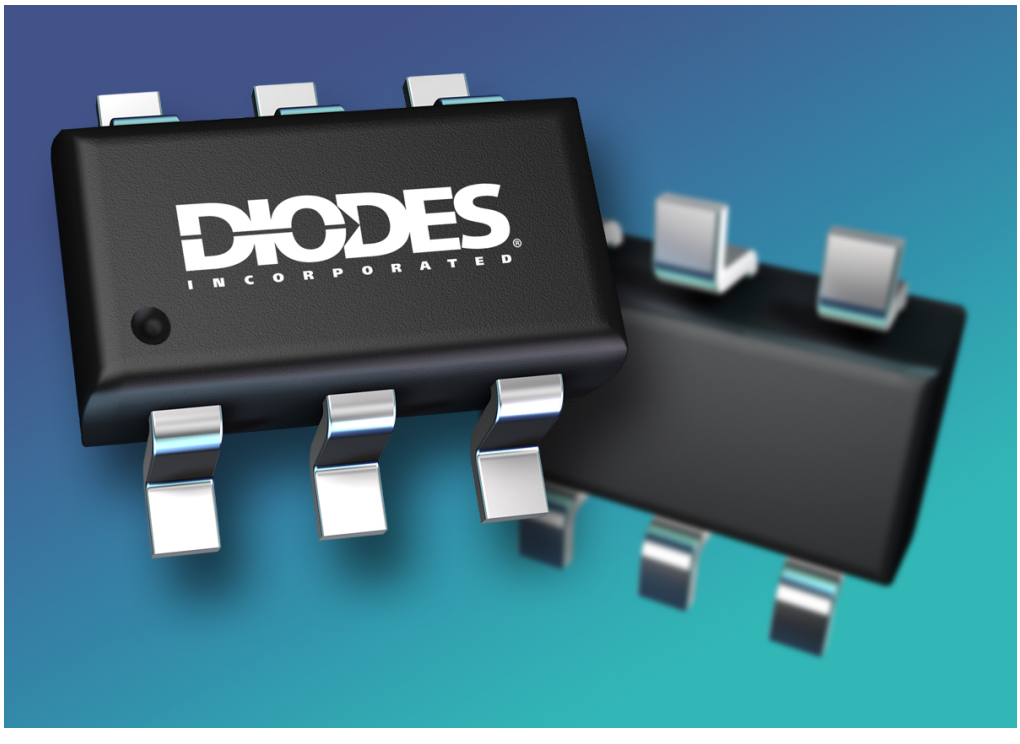
Linear Hall effect sensor saves space in rotary and proximity detection applications

Diodes Incorporated supplies the AH4930, a linear sensor which performs 3D magnetic sensing with temperature compensation in a wide variety of switches, buttons and proximity detectors.



DIODES INCORPORATED

FEATURES

- 9 nA current in power-down mode
- 13 µA active current sampling at 10 Hz
- Supply-voltage range: 2.8 V to 5.5 V
- Interrupt output signal

APPLICATIONS

- Knobs, levers
- Joysticks with push feature
- Rotary switches with push feature
- Linear switches
- Stalk gear shifters
- Shifter position sensors
- Robotics shaft position sensing
- Flow meters
- Door handles and door locks
- Motor commutation
- Power tools

The AH4930 from Diodes Incorporated is a 3D Hall effect sensor which provides accurate measurement of linear displacement in small electronics systems such as joysticks, knobs and door handles.

Monitoring the magnetic field in all three axes, the AH4930 operates across an extended industrial temperature range of -40°C to 125°C. An integrated temperature sensor provides accurate on-chip compensation. The sensor's robust signal path and 12-bit ADC enable precise measurement of magnetic fields, facilitating accurate decoding of motion and position information.

The AH4930 integrates user-programmable configuration registers for optimized performance. Data is accessible via an I2C interface, enabling seamless integration with host systems. The selectable power mode control unit allows for flexible operation: options range from micro-power modes when the system is sleeping to continuous measurement for demanding applications.

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

The STMicroelectronics ISM330BX motion sensor combines an accelerometer and gyroscope in a single small package. An internal machine learning processor runs algorithms at the edge, reducing the burden on the host processor.

FEATURES

- Low operating current:
  - 0.6 mA in high-performance mode
  - 0.19 mA with accelerometer only
- 70 µg/√Hz noise
- SPI, I2C and MIPI I3C interfaces
- Embedded temperature sensor

APPLICATIONS

- Industrial robots
- Condition-based monitoring
- Asset tracking
- White goods
- Hearing aids

The ISM330BX inertial measurement unit (IMU) from STMicroelectronics, which combines a three-axis digital accelerometer and a three-axis digital gyroscope, contains a processing unit to provide real-time sensor data to the host application.

Implemented as a system-in-package, the ISM330BX includes advanced features and data handling for motion processing. These features include a finite state machine, a low-power sensor fusion algorithm, adaptive self-configuration, and a machine learning core (MLC) with exportable AI features and filters for IoT applications.

The ISM330BX has a full-scale acceleration range of ±2 g/±4 g/±8 g. The angular rate range is between ±125 degrees/s and ±4,000 degrees/s. An embedded analog hub is available for analog-to-digital conversion and for processing analog input data.

The 14-lead LGA package of the ISM330BX measures 2.5 mm x 3.0 mm x 0.71 mm.

FREE DEV BOARD

Evaluation kit for motion sensor with machine learning core.

Orderable Part Number
STEVAL-MKI245KA

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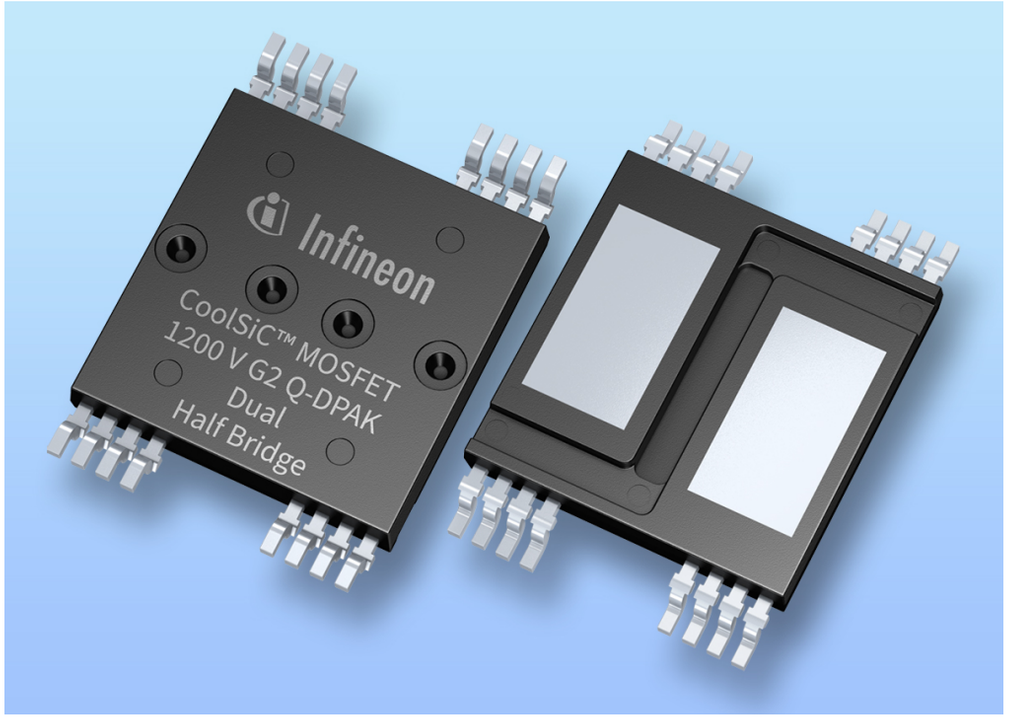
1,200 V SiC MOSFET provides outstanding thermal performance

The Infineon IMSQ120R026M2HH CoolSiC™ MOSFET combines excellent efficiency and tolerance of high-temperature operation, making it ideal for applications such as industrial drives, EV chargers and solar power generation.



Infineon

FEATURES

- 25 mΩ on-resistance
- 200°C maximum junction temperature
- Operating-temperature range: -55°C to 175°C
- 59 A maximum drain current at a case temperature of 100°C
- 4.2 V gate threshold voltage
- 2 µs short-circuit withstand time

APPLICATIONS

- Industrial drives
- EV chargers
- Solar power generation
- Uninterruptible power supplies

The IMSQ120R026M2HH from Infineon is a 1,200 V CoolSiC silicon carbide (SiC) N-channel MOSFET in a top-side cooled Q-DPAK dual half-bridge package for use in industrial applications.

Fabricating a MOSFET power switch from silicon carbide provides multiple advantages over silicon, including faster switching, tolerance of higher operating temperatures, and lower switching losses. This enables power-system manufacturers to create products which are smaller, lighter, more efficient, and achieve higher power density.

The IMSQ120R026M2HH extends these advantages by using the Q-DPAK package, which reduces system cost by enabling easier assembly and providing outstanding thermal performance. Compared to bottom-side cooled solutions, a top-side cooled device such as the IMSQ120R026M2HH benefits from a superior PCB layout, which reduces the effects of parasitic components and stray inductances, while also providing enhanced thermal management capabilities.

The MOSFET has a robust body diode to enable hard commutation, and resists parasitic turn-on effects.

10110 DATASHEET

SAMPLES

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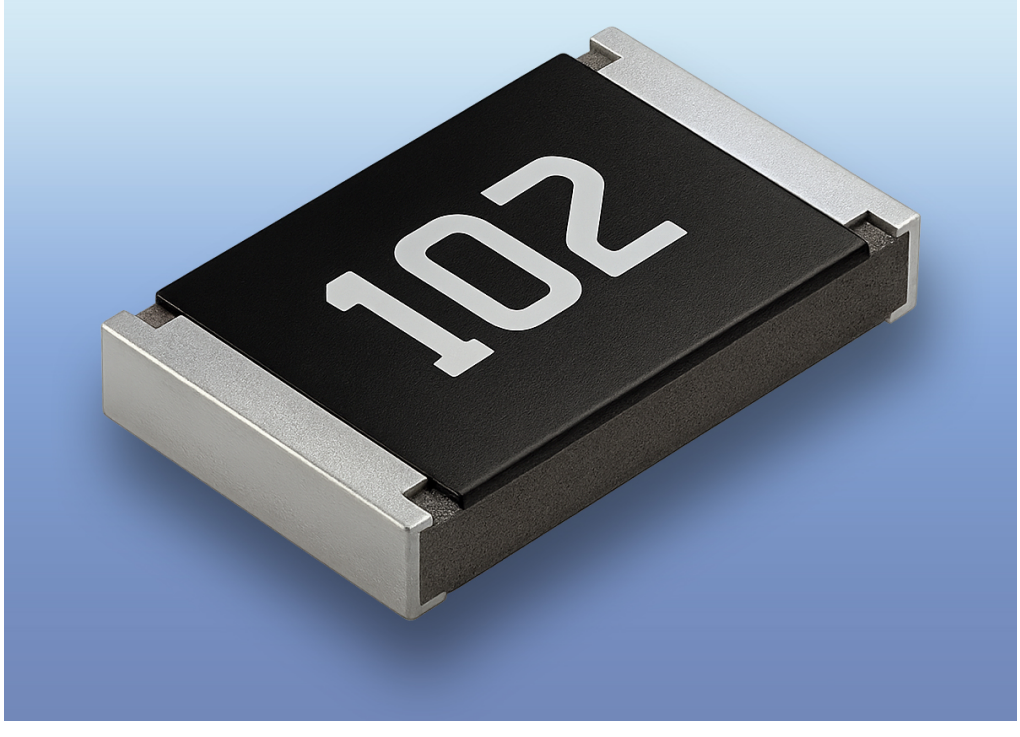
Thin-film chip resistors offer stable and accurate performance

The ERA-A series resistors from Panasonic Industry, which can tolerate high temperatures and humidity, are suitable for use in Industry 4.0 signal processing applications which require precise operation and low drift.



Panasonic INDUSTRY

FEATURES

- Resistance tolerance down to ±0.05%
- Temperature coefficient from ±10 ppm/°C
- AEC-Q200 qualified in all case sizes
- Low current noise
- Excellent linearity
- Standards compliance:
  - IEC 60115-8
  - JIS C 5201-8
  - JEITA RC-2133C
- Available in sizes from 0201 inch to 1206 inch

APPLICATIONS

- Industrial equipment:
  - Communication modules
  - Distributed control units
  - Sensor modules
  - Predictive maintenance
  - Remote monitoring equipment

The ERA-A series thin-film resistors from Panasonic Industry are high-performance components which provide the high-precision control, long-term stability, environmental resilience, and design flexibility required in modern industrial equipment. These resistors are available with resistance values ranging from 10 Ω to 1 MΩ.

The ERA-A resistors are ideal for use in applications that require precise signal processing, to accurately handle the low voltages and currents in sensor and analog circuits. The tightly specified resistance of the ERA-A series and its low temperature coefficient of resistance help to minimize signal error and improve control accuracy.

Use of the ERA-A resistors also helps developers to achieve low drift and long-term stability in system operation. The ERA-A series supports reduced calibration frequency thanks to its excellent long-term stability. This stable performance is maintained in the high temperatures often found in industrial environments, and these Panasonic resistors are rated for operation at up to 155°C.

DATASHEET

SAMPLES

ENERGY INDUSTRIAL LIGHTING MEDICAL TRANSPORT SECURITY CONSUMER TELECOMS

Dual inductive position sensor provides high accuracy at high speed

The NCS32100 from onsemi operates at speeds up to 60,000 rpm and produces 24-bit position and velocity outputs. The inductive sensing technology helps the NCS32100 to operate reliably in difficult conditions.

The onsemi NCS32100 IC is a dual inductive position sensor which offers the high accuracy at high rotation speed required in servo motors and other industrial applications.

An NCS32100-based position sensor system consists of two PCBs:

- A rotor board featuring two printed inductors, and no soldered components on the rotor
- A stator board featuring printed inductors and the NCS32100 encoder IC

Accuracy is better than ±50 arcsec for a 38 mm sensor board. The NCS32100 achieves full accuracy at speeds up to 6,000 rpm, and above this can operate at speeds up to 60,000 rpm with reduced accuracy. Incremental motion is tracked with high precision: the NCS32100 resolves single-turn data to 20 bits, and multi-turn outputs to 24 bits.

onsemi has made it as easy as possible for designers to implement systems based on the NCS32100. The IC includes an integrated microcontroller with firmware, which means that it produces position and velocity outputs rather than raw analog signals. The sensor can also be easily configured to work with inductive sensor boards of various sizes.

Flexible arrangements for mechanical assembly include alignment tolerance of ±0.25 mm. Integrated self-calibration accounts for PCB asymmetries, and secondary calibration helps to adjust for mechanical errors.

The NCS32100 inductive sensor system is immune to temperature changes, vibration and contaminants, and can provide position data even when the rotor is not moving.

onsemi supports the NCS32100 chip with a PCB reference design for a 38 mm rotary sensor, firmware, and an evaluation kit.

onsemi

FEATURES

- 2.5 MHz UART interface for connection to a half-duplex RS-485 driver
- Supports battery back-up for multi-turn count tracking
- Reports back-up battery voltage with programmable low-battery alert
- Internal temperature monitoring with programmable over-temperature limit
- 3 µs MCU response time
- 90 mA operating current

APPLICATIONS

- Industrial automation
- Robotics
- Servo motors
- Encoder position sensing modules

FREE DEV BOARD

Eval kit for inductive position sensor provides high accuracy.

Orderable Part Number
STR-NCS32100-GEVK

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DATASHEET

SAMPLES

ENERGY INDUSTRIAL LIGHTING MEDICAL TRANSPORT SECURITY CONSUMER TELECOMS

DIN rail ac-dc power supplies save space in industrial applications

The new RACPRO1 series from RECOM, available with rated power outputs up to 960 W, offers excellent thermal characteristics, allowing the power supplies to be densely mounted on the DIN rail.

RECOM

FEATURES

- Low no-load power consumption
- DC-OK signal
- 5 kV isolation
- Conforms to EN 60715 DIN rail mechanical standard
- IEC/EN/UL 62368-1, IEC/EN/UL/CSA 61010-1 and IEC/EN/UL 61010-2-201 safety certificates
- Conforms to EN 61000-6-4 Class B and EN61000-6-2 EMC standards

APPLICATIONS

- Factory automation
- Industrial equipment
- Renewable energy generation
- Power distribution equipment
- Test and measurement instruments

RECOM has introduced a range of three-phase ac-dc power supplies which can be densely packed on a DIN rail to save space in industrial equipment.

The RACPRO1 range includes power supplies rated for 240 W, 480 W and 960 W outputs in units which are 43 mm, 52 mm and 80 mm wide. Offering efficiency up to 97.1%, and benefiting from advanced thermal management, the power supplies require no clear space at either side, helping to maximize packing density in the system.

The RACPRO1 power supplies can operate at full power up to 60°C with only convection cooling, and down to -40°C, lower than most competing parts. The power supplies also offer a power boost feature which enables them to supply capacitive or high-inrush loads without requiring the designer to over-specify the power supply.

The 480 W and 960 W power supplies can supply a constant voltage/constant current output, enabling battery charging and output paralleling.

The power supplies, which are made in Europe, are designed for long operating life. Reliability is enhanced by high levels of input-surge and output-return voltage immunity, ideal for industrial environments and motor or inductive loads.

Part Number	Power Rating	Input-voltage Range	Regulated Output-voltage Range
RACPRO1-T240	240 W	320 V to 575 V ac / 430 V to 850 V dc	24 V to 28 V
RACPRO1-T480	480 W	320 V to 575 V ac / 430 V to 850 V dc	24 V to 28 V / 48 V to 56 V
RACPRO1-T960	960 W	320 V to 575 V ac / 430 V to 850 V dc	24 V to 28 V / 48 V to 56 V

DATASHEET | DATASHEET #2 | SAMPLES

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Three-axis MEMS accelerometer includes intelligent data processing functions

The STMicroelectronics IIS2DULPX MEMS accelerometer performs free-fall detection, self-orientation and other functions, reducing the need for external components and helping designers to reduce system complexity.

The IIS2DULPX, a three-axis linear MEMS accelerometer from STMicroelectronics, provides a range of intelligent features and data processing capabilities which enable designers to integrate multiple functions and streamline the bill-of-materials.

These features include:

- Always-on anti-aliasing filtering
- Finite state machine
- Machine learning core (MLC) with adaptive self-configuration
- Analog hub and charge variation (Qvar) sensing channel

The finite state machine and MLC produce impressive, always-on processing capabilities which operate at the edge.

The sensor has selectable full scales of ±2 g/±4 g/±8 g/±16 g, and measures acceleration in three axes at output data rates from 1.6 Hz to 800 Hz.

The IIS2DULPX has a dedicated internal engine which implements motion and acceleration detection functions, including free-fall detection, wake-up, single-, double-, triple-tap recognition, activity/inactivity detection, and 6D/4D orientation.

FEATURES

- MIPI I3C® interface
- 128-level FIFO buffer
- 220 µg/√Hz noise
- Four operating modes:
  - 9.3 µA operating current in high-performance mode with anti-aliasing filter
  - 6.5 µA current in low-power mode with anti-aliasing filter
  - 3 µA current in ultra low-power mode
  - One-shot mode
- Digital I2C/SPI/MIPI I3C® interface
- Up to 400 Hz bandwidth
- Operating-temperature range: -40°C to 105°C

APPLICATIONS

- Anti-tampering devices
- Asset tracking equipment
- Robots
- Industrial safety equipment
- Portable healthcare devices
- Hearing aids
- Black boxes

FREE DEV BOARD

Adapter board for intelligent three-axis linear accelerometer.

Orderable Part Number
STEVAL-MKI246KA

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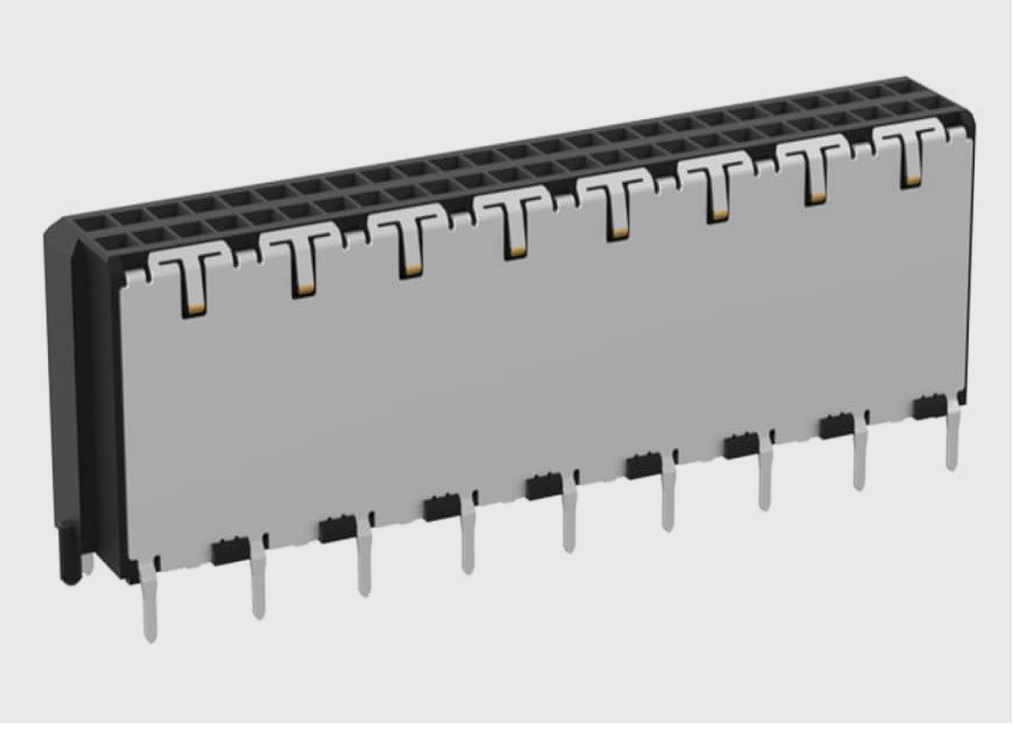
Compact connectors support high-speed data communication

The MicroSpeed connectors from TE Connectivity provide a convenient and reliable way to support applications which implement Ethernet, USB or other high-speed communication protocols.



TE connectivity
AUTHORIZED DISTRIBUTOR

FEATURES

- Board-to-board stacking-height range: 5 mm to 20 mm
- Mechanical configurations:
  - 2-row versions
  - MicroSpeed Triple 3-row versions
  - Open Pin Field Array 7-row versions

APPLICATIONS

- Data communications
- Telecoms equipment
- High-end computing equipment
- Medical technology
- Industrial automation

The MicroSpeed shielded connector family from TE Connectivity enables the reliable transmission of data at high speeds up to 25 Gbits/s.

The connectors, which are available with a pitch of 1.0 mm or 1.27 mm, are ideal for applications which use high-speed communication protocols such as IEEE 802.3ba Ethernet, Optical Internetworking Forum (OIF), or USB 3.x.

The MicroSpeed connectors feature a specially designed shield which helps manufacturers to comply with the requirements of EMC standards. The connectors produce minimal electromagnetic radiation, and offer high resistance to interference.

The robust frame design with polarized mating face is valuable in industrial applications. The dual-beam female contact provides for safe and reliable connection in harsh environments. The connectors provide a wipe length of 1.5 mm.

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COTS alternative to mini D-Sub backshells helps reduce cost of military equipment

The MICRO-D backshells from NorComp provide a rugged, shielded option in designs which require tolerance of harsh conditions but which do not require a military specification.

MICRO-D backshells from NorComp are a rugged, space-saving alternative to conventional mini D-Sub backshells.

Optimized for use with the NorComp 380 and 580-M series connectors, the MICRO-D backshell provides a metal-to-metal interface for strong mechanical connections while maintaining shielding effectiveness in demanding environments.

The NorComp addition of backshells to its portfolio complements the range of military-specification commercial off-the-shelf (COTS) MICRO-D connectors. The MICRO-D backshells are suitable for applications in which the connector requires a military specification but accessories such as a backshell do not, providing a 10x reduction in bill-of-materials cost.

A compact unit, the MICRO-D backshell provides the reliability and ruggedness needed in harsh operating conditions.

The NorComp backshell kits include two backshell halves, four shell screws, two thumb screws, and one grommet tree, providing a complete backshell assembly.

NORCOMP

FEATURES

- 66% smaller than a standard D-Sub
- Die-cast ZAMAK construction for durable performance
- Available with 9, 15 or 25 positions
- Compatible with most micro D-Sub connectors
- Operating-temperature ranges:
  -40°C to 80°C with grommets
  -40°C to 125°C without grommets

APPLICATIONS

- Military equipment
- Industrial robots
- Wireless communications equipment
- Ruggedized computers

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SAMPLES

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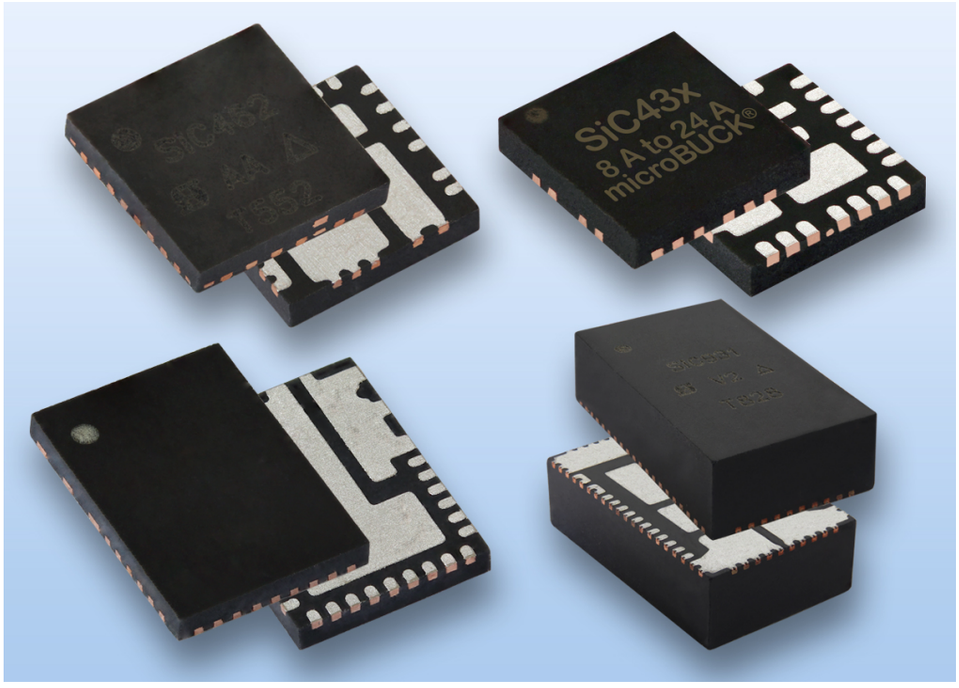
Point-of-load power supplies reduce need for external components

The microBUCK and microBRICK families from Vishay are integrated dc-dc regulators which operate over wide input-voltage ranges, and support high output-current requirements up to 40 A.



VISHAY
The DNA of tech.™

FEATURES

- Power Good output
- Protection features:
  - Under-voltage lockout
  - Over-current protection
  - Over-temperature protection
  - Over- and under-voltage protection
- 98% peak efficiency

APPLICATIONS

- Base station power supplies
- Industrial computing power supplies
- ATMs and vending machines
- Battery-powered industrial vehicles and equipment

Vishay supplies two families of integrated dc-dc regulators which provide a ready-made solution for point-of-load (PoL) power supplies.

The microBUCK and microBRICK PoL solutions offer high efficiency while reducing costs. Each family comprises a large portfolio of high-density PoL power supplies with common pin-outs, allowing designers to scale for the best combination of cost and performance.

The microBUCK regulators consist of a PoL regulator and two integrated MOSFETs. The microBRICK regulators contain a PoL regulator, two integrated MOSFETs, and an inductor.

Housed in a 5 mm x 5 mm PowerPAK® package, the SiC47x microBUCK regulators operate over an input-voltage range of 4.5 V to 55 V, and the SiC46x have an input-voltage range of 4.5 V to 60 V.

The microBUCK SiC43x have a narrower input-voltage range of 4.5 V to 24/28 V, and are housed in a 4 mm x 4 mm PowerPAK package. SiC45x regulators in a 5 mm x 5 mm or 5 mm x 7 mm PowerPAK package have an input-voltage range of 4.5 V to 20 V, and, in the case of the SiC450, a maximum output current as high as 40 A.

The microBRICK regulators are housed in a larger 10 mm x 6 mm PowerPAK package. The SiC967 has an input-voltage range of 4.5 V to 60 V and a maximum output current of 6 A. The SiC931 operates over a 4.5 V to 18 V range and has a maximum output of 20 A. The SiC951 produces an output of up to 25 A from an input ranging between 4.5 V and 20 V.

FREE DEV BOARD

Evaluation kit for compact, integrated dc-dc converter module.

Orderable Part Number
SiC951EVB-A

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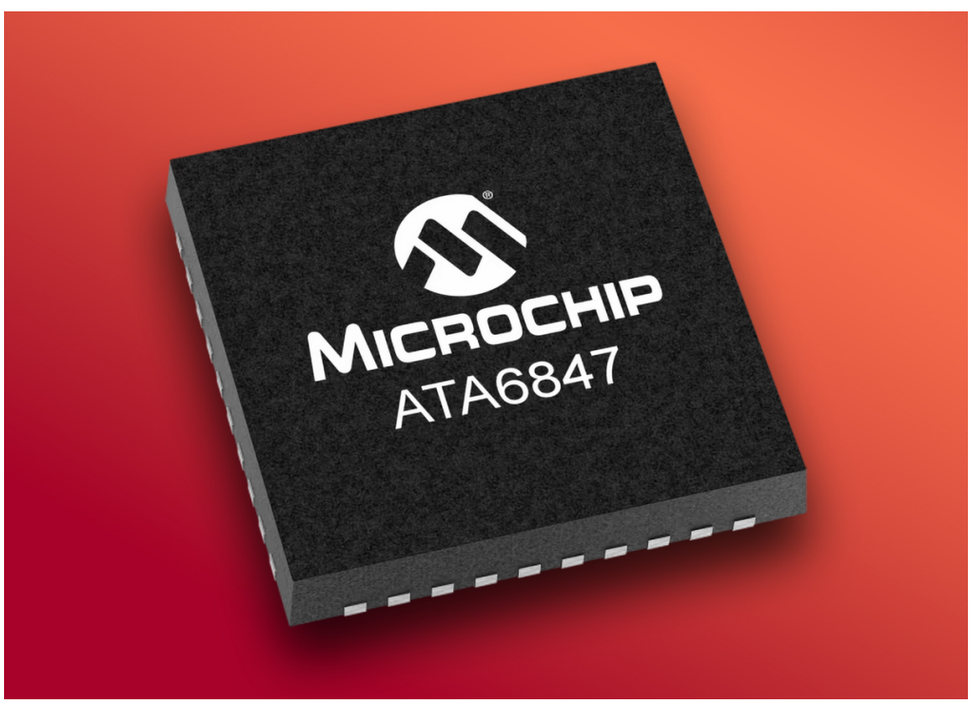
High-performance gate driver SBC enables safe, efficient BLDC motor control

The ATA6847 from Microchip works with external controller and power devices to provide a complete solution for brushless dc motor system control. The gate driver eval board suits motors drawing up to 35 A current.



The Microchip ATA6847 is a powerful three-phase motor driver system basis chip (SBC) for use in automotive and industrial brushless dc (BLDC) motor control systems.

Built on advanced silicon-on-insulator (SOI) technology, this highly integrated motor driver SBC, supplied in a compact QFN package, provides precise gate control, robust diagnostic capabilities, and safety-ready features.

The ATA6847 works alongside a microcontroller and six external NMOS transistors to enable independent gate-drive control for each MOSFET, allowing full 0% to 100% PWM duty cycle operation via dual charge pumps. This enables sensorless BLDC motors to operate at high efficiency, even during start/stop or crank pulse events.

The chip includes two precision current-sense amplifiers with configurable gain and output offset, plus advanced current limitation using an operational amplifier and DAC. The integrated back-EMF detection module enables sensorless motor control with motor neutral point emulation, eliminating the need for external position sensors.

Robust safety mechanisms such as cross-conduction protection, MOSFET voltage monitoring, dead-time control, and configurable fault filter/blanking times ensure safe and reliable operation under all conditions. Additional features include a window watchdog with cyclic wake-up and limp-home mode.

The ATA6847 complies with the requirements of the ISO 26262 ASIL B and IEC 61508 SIL 2 standards for applications which require functional safety.

MICROCHIP

FEATURES

- Operating-voltage range: 3 V to 42 V
- Integrated 5 V/3.3 V low dropout regulators
- 15 µA current in deep sleep mode
- 3.3 V or 5 V MCU interface
- Protection features:
  - Short-circuit detection
  - Over-voltage detection
  - Under-voltage detection
- 4 MHz serial peripheral interface
- NIRQ pin for external interrupts

APPLICATIONS

- Automotive electrification
- Industrial automation
- E-mobility
- Home appliances
- Power tools
- Hobby aircraft and boats
- Drones

FREE DEV BOARD

Evaluation board for motor control SBC.

Orderable Part Number
EV43F54A

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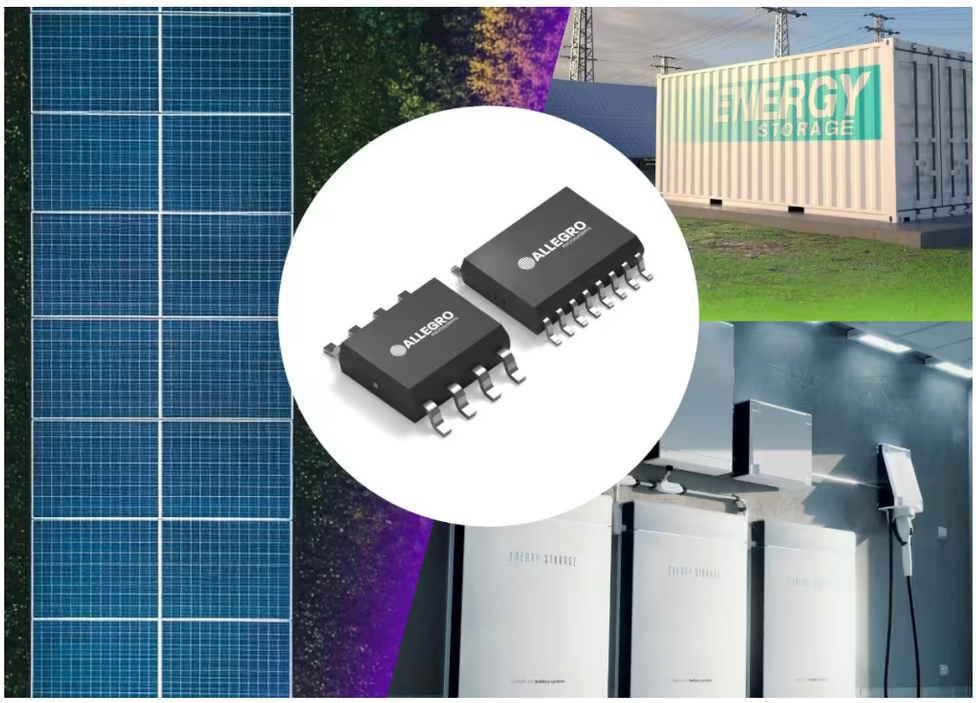
Compact new TMR current sensors minimize power losses

The CT4022 and CT4032 from Allegro MicroSystems offer very low-noise performance and high immunity to magnetic interference. Low power consumption makes these sensors ideal for use in clean energy applications.



Allegro MicroSystems has launched new XtremeSense™ tunnel magnetoresistance (TMR) current sensors which provide superior noise performance and perform precise current measurements in high-voltage, power-dense clean energy applications.

The XtremeSense TMR technology is characterized by higher magnetic sensitivity, lower power consumption, and a smaller footprint than other magnetic current-sensing technologies such as Hall effect sensors, anisotropic magnetoresistance (AMR), and giant magnetoresistance (GMR).

Average noise of 5 mA in the CT4022 and CT4032 TMR sensors is half that of earlier TMR solutions, and four times less than that of Hall effect integrated conductor solutions. This noise performance allows manufacturers to achieve highly efficient power conversion, even when supplying light loads, a benefit which is of particular value in clean energy systems such as heat pumps and solar power inverters.

The CT4022/32 TMR current sensors measure current flowing through an integrated conductor while rejecting interference from external stray magnetic fields. Integrated galvanic isolation enables low-side, high-side or in-line current sensing in applications operating at up to 1,000 V. The resistance in the primary conductor is 1 mΩ, which enables the sensors to withstand high inrush current and to minimize power loss.

The CT4022 is supplied in an industry-standard 8-pin SOIC package, and the CT4032 in a 16-pin wide-body SOIC.

ALLEGRO microsystems

FEATURES

- Differential sensing architecture:
  - Cancels out common-mode magnetic interference
- Reinforced isolation:
  - 565 Vrms for CT4032
  - 280 Vrms for CT4022
- Ratiometric output
- Available with AEC-Q100 Grade 1 qualification

APPLICATIONS

- Heat pumps
- Solar inverters
- Onboard EV chargers
- Data centers
- Server power supplies
- E-bikes and e-scooters

FREE DEV BOARD

Evaluation boards for low-noise TMR current sensors.

Orderable Part Number
ACSEVB-MA16-LA16

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High-speed common-mode EMI filter offers integrated ESD protection

The ECMF4-40A100N10 from STMicroelectronics provides highly effective noise suppression for high-speed interfaces such as USB Type-C® ports. The integration of ESD protection helps to save board space and reduce parasitic effects.

STMicroelectronics has introduced the ECMF4-40A100N10 integrated common-mode filter to enable the suppression of EMI or RF interference on high-speed differential serial buses.

High-speed interface technologies for which this filter can provide protection include:

- HDMI v2.1 and earlier
- USB4
- USB 3.x
- USB 2.0
- Ethernet
- MIPI
- DisplayPort

By integrating noise suppression and ESD protection functions into a single device, the ECMF4-40A100N10 helps designers to keep the effect of parasitic capacitance and inductance to a minimum.

The filter can protect and filter one or two differential lanes. It is supplied in a compact 10-lead QFN package measuring 1.4 mm x 2.2 mm x 0.5 mm.

FEATURES

- 10.7 GHz differential bandwidth
- 3.0 Ω serial resistance
- High common-mode attenuation at WLAN frequencies:
  - -15 dB at 2.4 GHz
  - -21 dB at 5.0 GHz
  - -17 dB at 6.0 GHz
- Exceeds requirements of IEC 61000-4-2 level 4 standard for ESD:
  - Withstands ±10 kV contact discharge
  - Withstands ±25 kV air discharge

APPLICATIONS

- Notebook computers
- Tablet computers
- Laptop computers
- Media streaming boxes
- HDMI streaming sticks
- Games consoles
- Set-top boxes
- Portable electronics devices

FREE DEV BOARD

Evaluation platform for ESD protection and filtering components.

Orderable Part Number
STEVAL-OET005Vx

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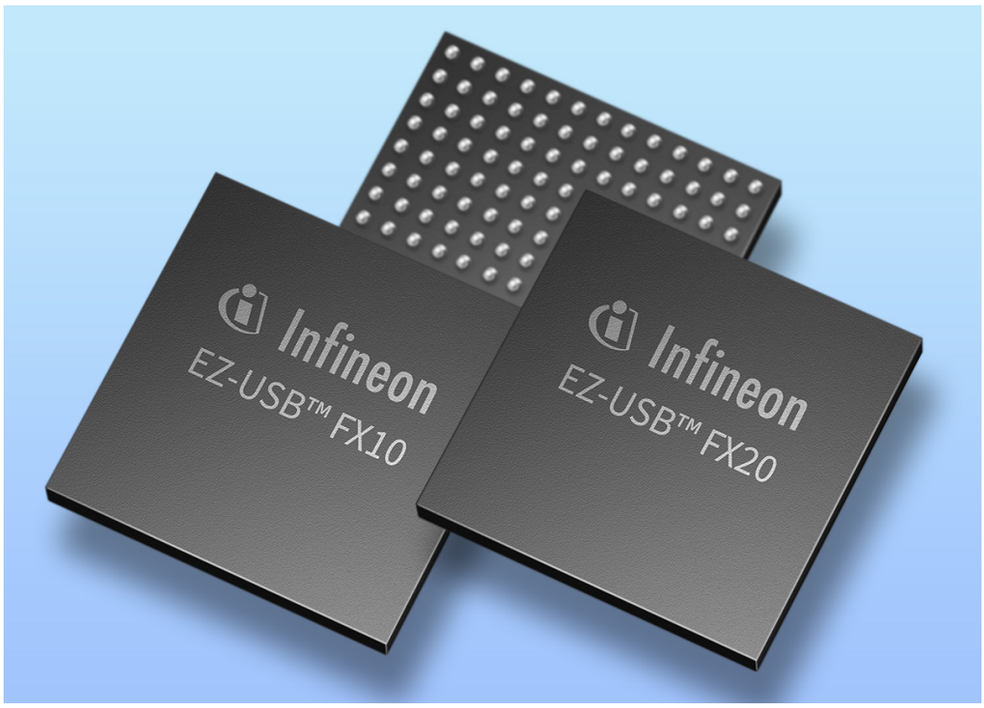
USB peripheral controller supports data rates up to 20 Gbits/s

The EZ-USB™ FX20 from Infineon is a fully integrated USB peripheral controller which provides a complete solution for USB connectivity in embedded devices. It is backed by a full-featured development kit with software support.



The EZ-USB FX20 USB peripheral controller from Infineon extends the capabilities of the EZ-USB family to add support for the latest ultra-fast 20 Gbits/s USB and LVDS interfaces.

The Infineon family of USB peripheral controllers also includes the EZ-USB FX10, which uses one lane of USB 3.2 Gen2 PHY to transfer data at a rate of up to 10 Gbits/s. The Infineon USB 3.2 PHY circuitry provides dynamic programmability: this allows the designer to implement the optimal connection to transfer signals over a passive USB cable up to 5 m long, at a data transfer rate of up to 8.8 Gbits/s.

FEATURES

- USB Type-C® orientation detection
- Dual-core architecture:
  - Arm® Cortex® M4F CPU
  - Arm Cortex-M0+ CPU
- 512 kbytes of Flash memory
- 16-lane, 1.25 Gbits/s LVDS interface
- Two quad SPI interfaces
- Seven serial communication blocks
- USB Full-speed device debug port
- Two I2S/PDM-PCM interfaces
- Cryptography accelerator

APPLICATIONS

- Industrial automation
- Machine vision
- Medical equipment
- Dental equipment
- FPGA modules and systems-on-module
- Test and measurement equipment
- Interface converters
- Frame grabbers
- Scanners

FREE DEV BOARD

Development kit with FPGA mezzanine card interface for USB peripheral controller.

Orderable Part Number
KIT_FX20_FMC_001

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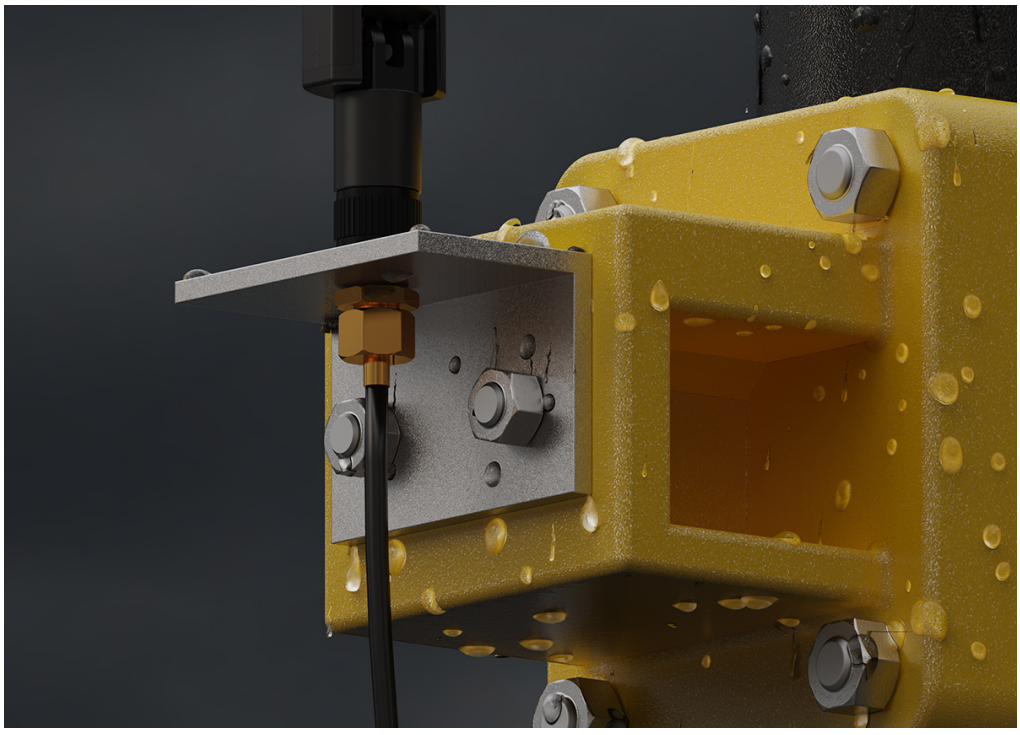
Sealed SMA plugs and jacks eliminate need for extra sealing on installation

IP67-, IP68- and IP69K-rated SMA extender cables from GCT provide waterproof connections for use in harsh outdoor conditions. The integral sealing offers a more reliable alternative to the application of self-amalgamating tape.



GCT
better connected

FEATURES

- Frequency range: dc to 6 GHz
- 50 Ω impedance
- Available in both gold-plated brass and stainless steel variants
- Operating-temperature range: -40°C to 85°C

APPLICATIONS

- Industrial equipment
- Marine equipment
- Aerospace
- Outdoor applications

GCT has introduced sealed SMA extender cables with IP67, IP68, and IP69K protection ratings for use in harsh and challenging environments.

In many applications, engineers have traditionally used self-amalgamating tape to seal SMA connectors or mated pairs in the field. While this method can offer temporary protection, it often results in inconsistent sealing, makes maintenance more complex, and increases downtime during inspections or repairs.

The patent-pending SMA extender cables from GCT offer a fit-and-forget solution, providing consistent sealing performance at both the connector interface, whether mated or unmated, and at cable entry points, without the need to apply additional sealing materials. This simplifies installation, improves reliability, and reduces maintenance requirements over the life of the product.

Available in a variety of standard lengths up to 5 m, these assemblies can also be produced to custom lengths to suit customer requirements.

SAMPLES

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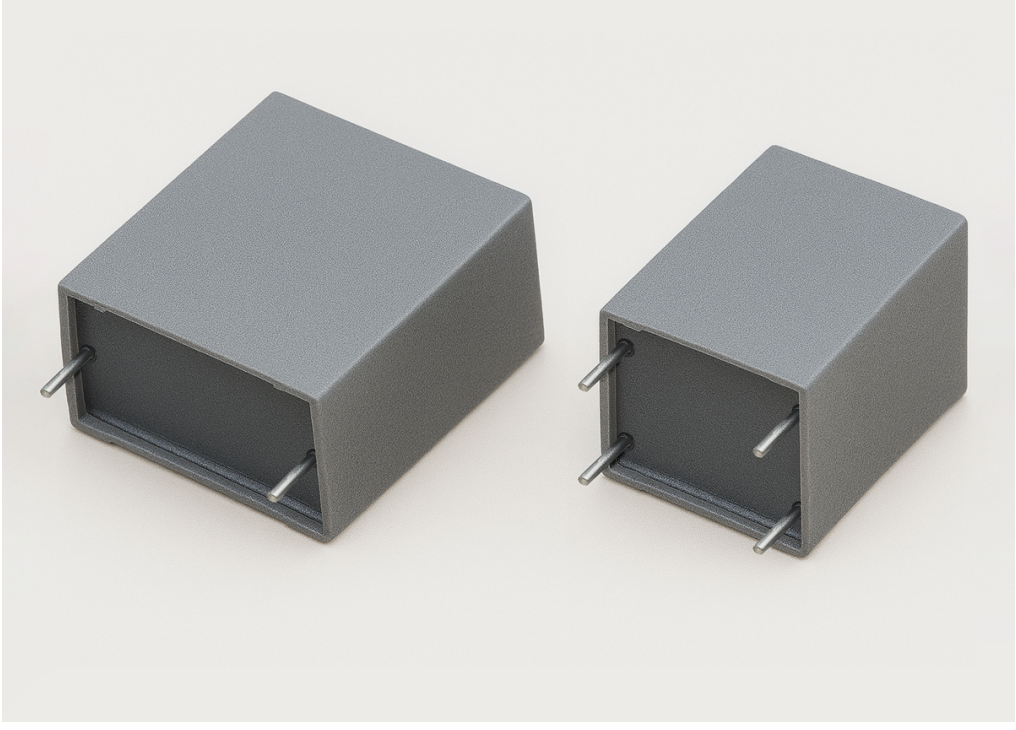
Dc-link capacitors provide high reliability and stability

The NPDC series of capacitors from NIC Components provides a wide range of capacitance and tolerance options to give designers the opportunity to match dc filtering characteristics to the needs of the application.



NIC COMPONENTS CORP.

FEATURES

- Capacitance range: 1 µF to 200 µF
- Operating-temperature range: -40°C to 105°C with derating above 85°C
- 3 kV withstanding voltage at 25°C
- 100,000-hours operating life expectancy at 85°C

APPLICATIONS

- Renewable energy generation
- HVAC units
- Uninterruptible power supplies
- Battery chargers
- Motor drives
- Automotive systems

NIC Components supplies the NPDC series of metallized polypropylene film capacitors which offer high reliability and stability in demanding applications. The capacitors are optimized for use in dc filtering in dc-link applications.

The NPDC capacitors are notable for their low ESR. The capacitors also handle high currents, providing for robust performance in power-conversion circuits. The NPDC series is AEC-Q200 qualified, ensuring high reliability and stable performance in harsh conditions in automotive and other applications.

The molded box construction of the NPDC capacitors produces a compact form factor which enables integration into tight spaces without compromising performance. The capacitors are available with tolerance options of ±5%, ±10% and ±20%.

INFORMATION
DATASHEET
SAMPLES

ENERGY
INDUSTRIAL
LIGHTING
MEDICAL
TRANSPORT
SECURITY
CONSUMER
TELECOMS

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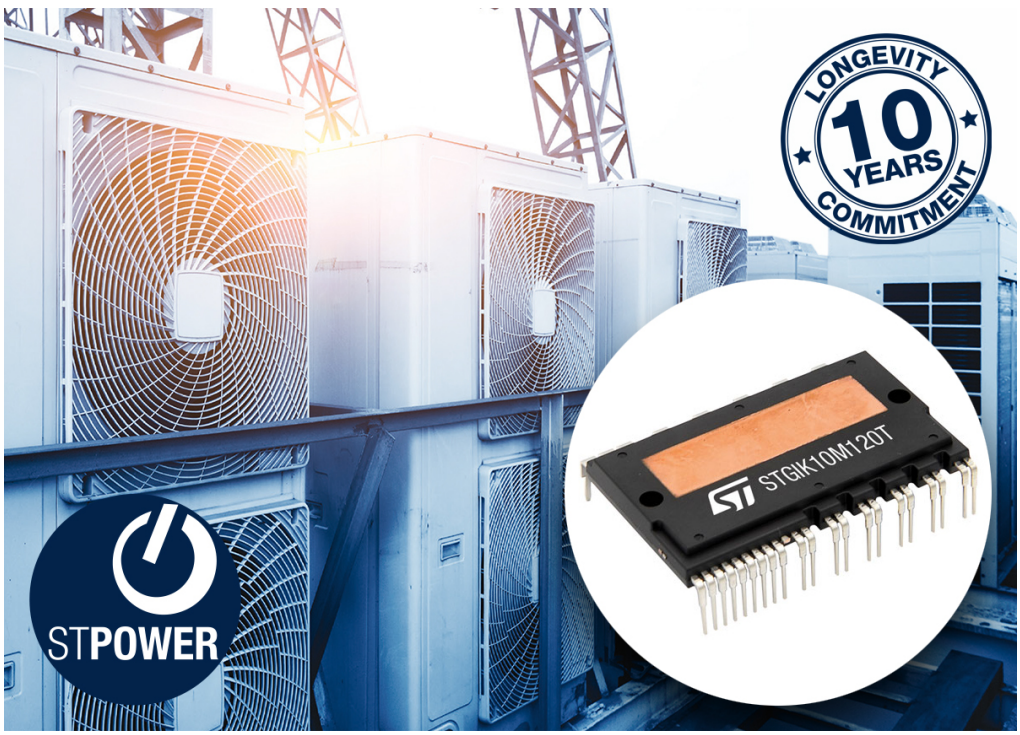
Inverter power module supports motor drives up to 7 kW

The STGIK10M120T inverter power module from STMicroelectronics provides a thermally efficient and integrated option for industrial motor drives.



The SLLIMM High Power (HP) series is a family of compact, powerful, dual-in-line intelligent power modules (IPMs) from STMicroelectronics for loads up to 7 kW.

The latest SLLIMM HP power module, the STGIK10M120T, extends the SLLIMM series portfolio, increasing the breakdown voltage ratings, current capability, and power range. The IPMs use a new internal driver configuration and trench gate field-stop IGBTs plus freewheeling diodes for the motor drive power stage.

FEATURES

- Short-circuit protection
- Very fast, soft-recovery diodes
- Separate open emitter outputs
- Comparator for fault protection
- Shutdown input/fault output
- Fully isolated package with top-side cooling
- Direct bonded copper substrate
- 2.5 kVrms isolation rating
- 100 kΩ NTC for temperature monitoring

APPLICATIONS

- HVAC units
- Servo motors
- Inverters
- Industrial washing machines

Part number	Breakdown Voltage Rating	Maximum Continuous Current	Saturation Voltage at 25°C
STGIK10M120T	1,200 V	10 A	1.6 V

DATASHEET | DATASHEET #2 | SAMPLES

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Bluetooth Low Energy SoC provides integrated IoT short-range wireless

The AIROC CYW20829 system-on-chip (SoC) and module from Infineon provide robust Bluetooth Low Energy connectivity for industrial and consumer applications, and combine excellent radio performance with low power consumption.

The AIROC CYW20829 is a Bluetooth Low Energy SoC which offers robust and reliable wireless connectivity for many IoT, smart home and industrial use cases. The SoC is also available in an easily integrated form as a compact Bluetooth 5.4 module, the CYW20829B0-P4TAI100.

In industrial automation, the AIROC CYW20829 can support the development of wireless sensor networks, where it can be used to connect sensors and devices to a central control system or the cloud. This enables real-time monitoring and control of industrial processes, allowing for improved efficiency, reduced downtime, and enhanced decision-making. For instance, the SoC or module can be used to connect temperature, pressure, or vibration sensors in a factory, enabling remote monitoring and predictive maintenance.

The CYW20829 can also be used in industrial automation for wireless commissioning and configuration of devices. The module's Bluetooth 5.4 capabilities enable secure and reliable wireless connections, making it possible to configure and commission devices remotely. This can simplify the set-up and deployment of industrial devices, reducing the time and effort required for installation and maintenance.

Low power is combined with high performance thanks to its efficient peripheral design, low-leakage silicon, and a low-power Bluetooth radio. The CYW20829 offers superior RF connectivity: it integrates a power amplifier with 10 dBm of output power, and offers Receive sensitivity of -98.5 dBm in Bluetooth Low Energy mode.

The Bluetooth subsystem is built for low power consumption, with a highly optimized radio and Bluetooth control operations running on a dedicated Arm® Cortex®-M33 core. A second Cortex-M33 core is for user applications. It can be clocked at up to 96 MHz to provide high-performance compute at low power.

The application sub-system is highly integrated, with configurable serial communication blocks, multiple timer/counter/pulse-width modulators, and I2S, PDM, CAN and LIN interfaces.

The AIROC CYW20829 is supported by the ModusToolbox software and tools, which enable rapid development of Bluetooth enabled IoT solutions.

Infineon

FEATURES

- Memory resources:
  - 256 kbytes of RAM
  - 64 kbytes of ROM
  - Options for on-chip and external Flash
- Security features:
  - ROM-based root of trust
  - True random number generator
  - eFuse for custom keys
  - Cryptographic acceleration

APPLICATIONS

- Smart home automation
- Smart building equipment
- Factory automation
- Industrial lighting control
- Wireless sensor nodes and hubs
- Robotics
- Asset tracking
- Healthcare equipment

FREE DEV BOARD

Evaluation kit for Bluetooth Low Energy SoC and module.

Orderable Part Number
CYW920829M2EVK-02

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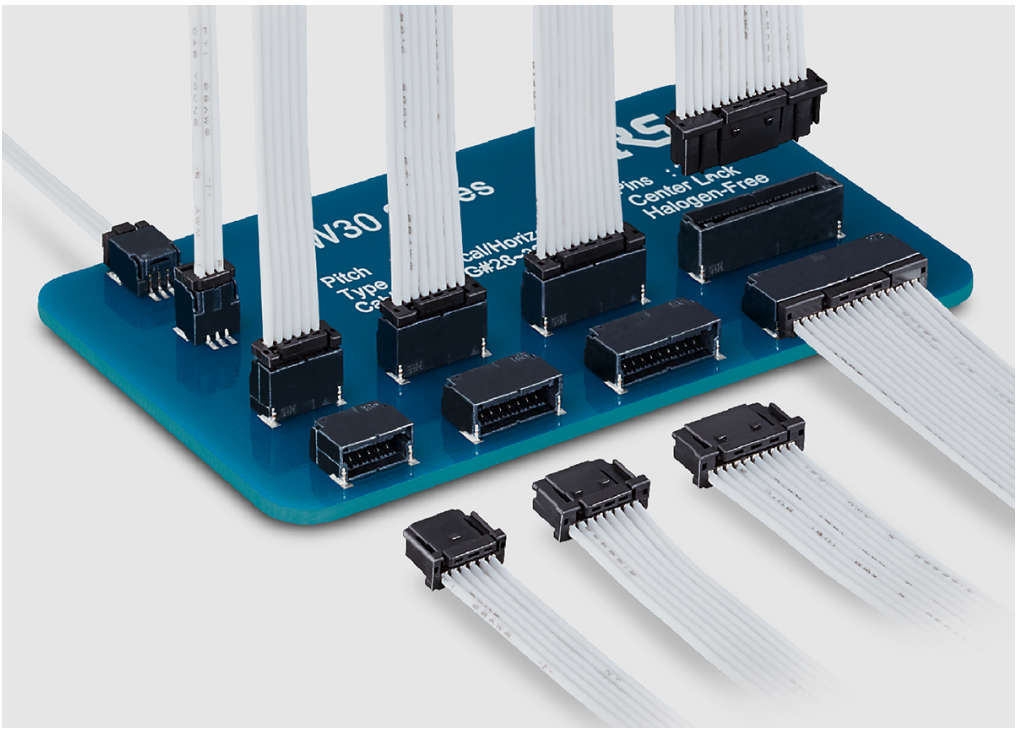
Compact, versatile wire-to-board connectors suited to high-vibration environments

The Hirose KW30 series 100 V connectors feature a robust construction with contacts which offer high mechanical stability. Design features ensure correct mating and minimize the risk of damage to the receptacle when assembled.



The KW30 series wire-to-board connectors from Hirose have a robust construction which can withstand the strong vibrations experienced in harsh industrial environments.

These connectors have been tested for tolerance of vibrations at frequencies up to 2,000 Hz. The rib design of the connectors ensures secure mating, while a two-point contact and clipping design on the receptacle, and a box-shaped plug crimp contact which resists catching or deformation, help to ensure excellent contact stability.

The positive locks on the KW30 series prevent incomplete mating, mis-insertion and receptacle damage. When mated correctly, there is a clear tactile click. The connector also offers enhanced signal performance and contact durability thanks to its gold plated contacts.

The KW30 series comes in a compact package featuring a contact pitch of 1 mm as standard, or 2 mm for the two-position version. The connectors are available in straight and right-angle configurations, and accept cables ranging in size from 28 to 32 AWG.

HIROSE ELECTRIC EUROPE B.V.

FEATURES

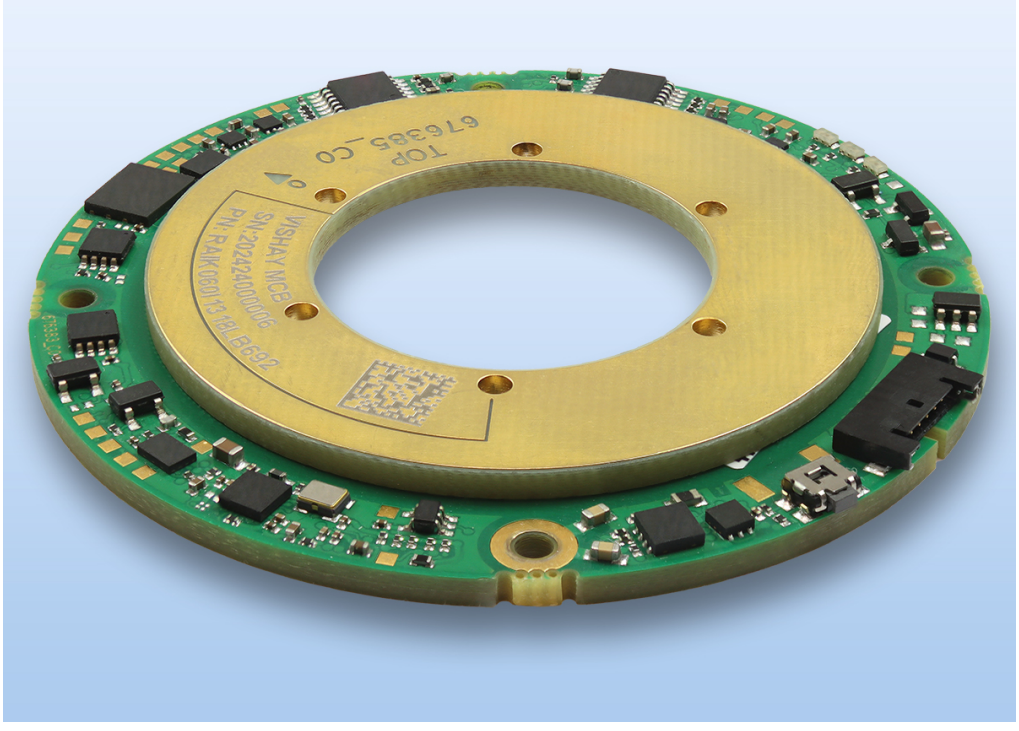
- 0.7 mm effective mating length
- Number of contacts: 2, 3, 4, 5, 6, 7, 8, 9, 10, or 15
- Rated current:
  - 0.8 A for 32 AWG wire with 2 to 15 contacts
  - 1.0 A for 28-30 AWG wire with 2 to 15 contacts
  - 3.0 A with 28 AWG wire and two contacts
- 100 V ac/dc rated voltage
- 30 mating cycles
- 30 mΩ contact resistance
- Operating-temperature range: -55°C to 105°C
- UL/cUL recognized

APPLICATIONS

- Office equipment
- Medical devices
- Home appliances
- Industrial robots
- Flat panel TVs
- Motors
- Semiconductor manufacturing equipment
- Factory equipment

Inductive position encoder offers high accuracy at high rotation speeds

The RAIK060 is a complete solution for rotary position measurement in off-axis applications. Resistant to interference and contamination, this encoder is ideal for industrial motor applications and robots.



VISHAY
The DNA of tech.®

FEATURES

- Single and multi-turn variants
- Embedded self-calibration
- Easy assembly supported by status LEDs
- Remembers last position before power off
- Insensitive to moisture and pollution
- Built-in self-monitoring

APPLICATIONS

- Robots
- Automated guided vehicles
- Industrial automation
- Machine tools and valves
- Lawn mowers
- Military guidance and stabilization devices
- Hospital equipment
- Aeronautics

The RAIK060 from Vishay is an off-axis rotational absolute inductive kit (RAIK) encoder with a diameter of 60 mm which can measure rotary position accurately and precisely at rotation speeds up to 10,000 rpm. It is intended for use in demanding industrial applications, including in motor drives, robots and motion-control applications.

Accuracy of angle measurement is 0.01%, and the sensor resolves measurements to 18 bits, or 0.0014°. The RAIK060 provides its measurement outputs in BiSS-C, SSI, or SPI format. Latency is a maximum of 5 µs.

The rotor is composed of multiple inductive traces printed on a PCB. The electrical fields are read by inductive cells mounted on the stator, which allows the absolute position of the rotor to be determined.

The value of the inductive sensing principle lies in its tolerance of operation in hostile environments, including exposure to interference from electromagnetic fields, to dust and liquids, and to high temperatures.

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NPIs, DESIGN AND TECHNOLOGY NEWS

Half-bridge gate driver provides drop-in replacement option

The new IXD0579M gate driver IC from Littelfuse, which features an integrated bootstrap diode and resistor, helps to simplify high-speed designs for brushless motors, power tools, and dc-dc converters.

Littelfuse

FEATURES

- 1.5 A source and 2.5 A sink output drive current
- Under-voltage lockout protection
- TTL and CMOS logic inputs
- Cross-conduction protection
- Less than 1 µA standby current
- Operating-temperature range: –40 °C to 125 °C

APPLICATIONS

- Brushless dc motor drives
- Battery-powered hand tools
- Dc-dc converters and power supplies
- Industrial equipment

Littelfuse has launched the IXD0579M, a high-speed gate driver which simplifies board design, saves space, and offers a reliable second source for components that drive N-channel MOSFETs or IGBTs in a half-bridge configuration.

Operating across a wide supply-voltage range of 6.5 V to 18 V, the IXD0579M high-side/low-side driver integrates a bootstrap diode and a series current-limit resistor, functions which would more commonly be implemented in discrete components. This means that the IXD0579M, which is housed in a 3 mm x 3 mm TDFN package, saves board space and reduces component count and cost, while making PCB layouts simpler.

Its compact footprint and robust performance also make it well-suited for space-constrained designs and high-efficiency power stages.

DATASHEET

SAMPLES

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Compact current limiter protects PLCs from damaging sensor or button inputs

The STMicroelectronics CLT03-2Q3 current limiter provides the characteristics required in industrial systems and factory automation equipment, including good noise immunity and low power dissipation.

The CLT03-2Q3 digital input current limiter from STMicroelectronics protects programmable logic controllers (PLCs) or other digital devices from the risk of damage caused by excessive current transferred from input devices such as safety buttons or sensors. It is a dual-channel current limiter supplied in a 16-lead QFN or 8-lead SOT23 package.

The CLT03-2Q3 includes a de-glitch filter to maintain high immunity to EMI, for safer and more reliable operation. The current limiter requires no external power supply, and can drive either an optocoupler or a 3.3 V LVTTL circuit.

Low power dissipation means that designers can use the CLT03-2Q3 to build compact systems comprised of densely mounted assemblies of I/O modules.

This current limiter enables designers to implement system designs which conform to standard industry requirements such as reverse polarity operation and over-voltage tolerance.

FEATURES

- High- and low-side compatible
- Inputs are reverse plug-in compatible
- Ambient-temperature range: -30°C to 125°C
- Exceeds IEC 61000-4-2 level 1:
  - ±4 kV for air discharge
  - ±2 kV for contact discharge
- Complies with standards:
  - IEC 61131-2 Type 1 and 3
  - IEC 61508

APPLICATIONS

- Factory automation
- PLCs
- Remote input modules

FREE DEV BOARD

Board enables evaluation of current limiters for PLCs and other industrial equipment.

Orderable Part Number
STEVAL-IFP035V1

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