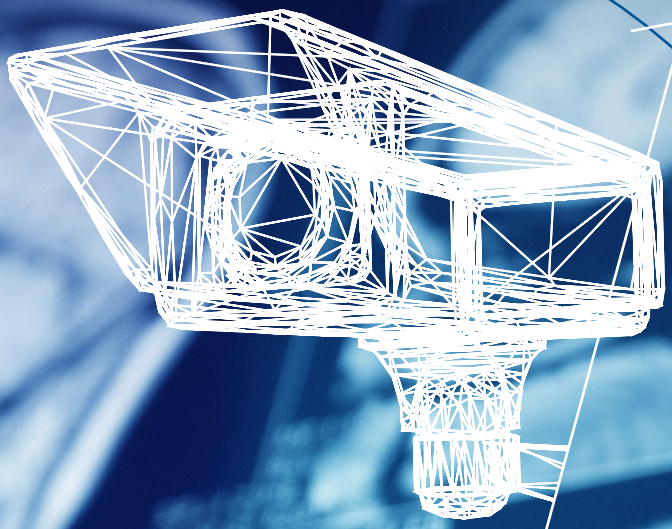
M I P

MARKETING INNOVATIVE PRODUCTS



2020

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EBV Elektronik

I An Avnet Company I

Embedded Vision

Computer Vision began as a very ambitious project in the late '60s, complementing the Artificial Intelligence (AI) development efforts. In several different universities, scientists were trying to construct an intelligent robot that would be able to see and describe what he saw. Although unsuccessful, this ambitious and somewhat naive project laid the foundation for a new interdisciplinary scientific field, focused on using computers to extract high-level information from a single image or a sequence of images.

Embedded vision is a subset of Computer Vision, and it is closely related to it. Due to recent technological breakthroughs in the field of semiconductors and emerge of powerful, energy-efficient, and low-cost hardware processors, it is now possible to implement Computer Vision capabilities into embedded systems. Embedded Vision represents the next step in the Computer Vision evolution, as it refers to its practical use in the real world. After more than 60 years of research and development, scientists have managed to embed Computer Vision into machines that can now understand their environment through visual means.

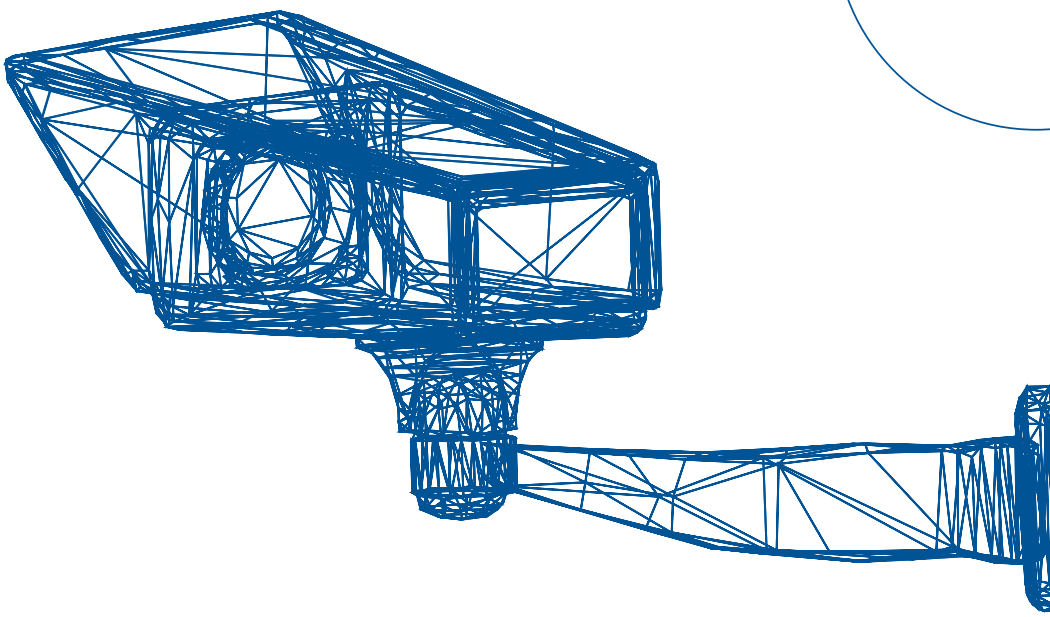
Embedded Vision has reached a development stage where it can be reliably used to automate various tasks that have otherwise relied on human vision. It found its way into different industrial machines and smart tools, where it is used for quality inspection and control, positioning, product classification and sorting, packaging, labeling, barcode scanning and recognition, and more. In some situations, Embedded Vision can even surpass the capabilities of the human vision; one good example is the detection of micro defects and fractures that cannot be seen with the naked eye.

With the emerge of the efficient Artificial Neural Network (ANN) models, along with the powerful, compact, and efficient hardware that can process them, Embedded Vision can now be used not only for robust industrial machines, but also for autonomous driving systems, semi-autonomous drone control, vision-guided robots and cobots, medical imaging, surveillance, and other applications that rely on a visual information.

Each of the applications mentioned above has very different requirements. For example, a typical surveillance system processes reasonably low-bandwidth video feed, and it focuses primarily on object detection and face-recognition. It is essential that it 'sees' good enough, even in low-light conditions. It does not operate in a time-critical domain, and some latency is allowed. On the other hand, an autonomous driving system has to process large amounts of data comprised of high-bandwidth video streams, often from multiple sources. It has to be able to extract the necessary visual information very quickly, with the lowest latency possible. In such time-critical applications, a few milliseconds can make a difference between life and death.

This clearly illustrates that the underlying hardware and software solutions may differ from application to application and that every component needs to be chosen very carefully. The ability to choose the right component may be essential for a successful implementation: for example, picking an image sensor with low sensitivity would render a surveillance system entirely useless while used in low-light conditions. When designing an autonomous driving application, poorly chosen processing architecture may lead to a very long and costly development, with a less-than-ideal outcome. On top of it all, the incredibly dynamic semiconductors market doesn't make this choice any easier.

EBV Elektronik, as the leading semiconductors distributer in the EMEA region, can help you make such important choices. Our team of experts is always ready to help you stay on top of the current technology, providing you with both the support and reliable long-term supply chain. As an integral part of Avnet - the most prominent global semiconductors distribution network, EBV Elektronik can help you reach further.



CONTENTS BY PRODUCT GROUPS

CONTENTS BY MANUFACTURERS

Product order code
- MCP6V51-E/MS
- MCP6V51T-E/MS
- MCP6V51T-E/OT

MCP6V51

45 V, 2 MHz Zero-Drift Op-amp with EMI Filtering

MCP6V51 Zero-Drift Op-amp with EMI Filtering

The MCP6V51 operational amplifier employs dynamic offset correction for very low offset and offset drift. The device has a gain-bandwidth product of 2 MHz (typical). It is unity-gain stable, has virtually no 1/f noise, excellent Power Supply Rejection Ratio (PSRR) and Common Mode Rejection Ratio (CMRR). The device operates with a single supply voltage that can range from 4.5 to 45 V, (±2.25 to ±22.5 V) while drawing 470 µA (typical) of quiescent current.
The MCP6V51 op-amp is offered as a single-channel amplifier and is designed using an advanced CMOS process.

- **High DC Precision**
- **Low Noise & Low Power**
- **Easy to Use**
- **Small Packages**

Features
- Zero-drift architecture
- Maximum off set of only 15 µV
- Maximum off set drift of 36 nV/C
- Wide operating range: 4.5 to 45 V
- No 1/f noise
- GBWP of 2 MHz
- Enhanced EMI rejection
- Small 5-pin SOT-23 and 8-pin MSOP packaging
- Easy to Use: EMI filtered Inputs, Rail-to-rail output and unit gain stable

Key Applications
- Industrial/automotive monitors
- Control loops/process control
- Medical instrumentation
- Electronic weight scales

Market Segment
- Automotive
- Healthcare & Wearables
- Industrial
- Smart Consumer & Building

Sub Market
- ADAS, Automotive Infotainment & Cluster
- Medical Instruments
- Home Appliances
- Embedded Computing & Storage
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Instrumentation, Test and Measurement

Technology Segment
- Analog & Power

ONA10IV

Digital Input Class-D Audio Amplifier

ONA10IV Class-D Audio Amplifier

The ONA10IV is a digital input, mono Class-D audio amplifier with real-time, integrated current and voltage sensing of the loudspeaker. The sense data is transmitted to the host through a separate digital output to enable a smart amplifier system. This filterless amplifier can drive 16 W power into 4 Ω load at a 14 V supply voltage. Up to eight devices can share the digital audio interface through a fast mode I2C control

- **Digital Input Class-D Audio Amplifier**
- **16 W power amplifier into 4 Ω load at a 14 V supply voltage**
- **Smart Speaker Voltage & Current Sense**
- **Integrated protection features**

Features

- Filterless, Mono Class-D Amplifier
  - 16 W into 4 Ω / 14 V Supply (1% THD+N)
  - 13.8 W into 4 Ω / 12 V Supply (1% THD+N)
- Smart Speaker Voltage & Current Sense
  - Up to 20 kHz Bandwidth
  - 81/71 dBA Dynamic Range (Voltage / Current)
  - 0.5% V/I Gain Error Variation
- I²C Fast Mode Control
- EMI Reduction Control
- Over Current and Thermal Protection

Key Applications

- Audio Amplifier for Speakers
- Speaker Protection & Reliability
- Smart Amplifier Algorithms
- Home Automation
- Alarms

Market Segment

- Healthcare & Wearables
- Industrial
- Smart Consumer & Building

Sub Market

- Personal Health, Sport & Fitness
- Portable Personal Electronics & Wearables
- Information Kiosk & Advertising Panels
- Human Machine Interface
- Point of Sales and Vending machines
- Professional Gaming, Amusement & Casino Machines
- Audio and Video
- Home Appliances
- Toys, games and entertainment

Technology Segment

- Analog & Power

NCV7344

CAN Transceiver, FD Flexible Data Rate, Low Power

NCV7344 FD CAN Transceiver

The NCV7344 CAN transceiver is the interface between a Controller Area Network (CAN) protocol controller and the physical bus, being an addition to the CAN high-speed transceiver family complementing NCV734x CAN stand-alone transceivers and previous generations. The NCV7344 guarantees additional timing parameters to ensure robust communication at data rates beyond 1 Mbps to cope with CAN flexible data rate requirements (CAN FD). These features make the NCV7344 an excellent choice for all types of HS-CAN networks, in nodes that require a low-power mode with wake-up capability via the CAN bus.

- **CAN FD Timing Specified up to 5 Mbps**
- **Very Low Current Standby Mode with Wake-up via the Bus**
- **Low Electromagnetic Emission, High Electromagnetic Immunity**
- **High ESD Robustness of Bus Pins > 8 kV System ESD Pulses**

Features
- Compatible with ISO 11898-2:2016
- VIO Pin on NCV7344-3 Version Allows Direct Interfacing with 3 - 5 V Microcontrollers
- Low Electromagnetic Emission without Common-Mode (CM) Choke
- No Disturbance of the Bus Lines with an Un-Powered Node
- Transmit Data (TxD) Dominant Timeout Function
- Thermal Protection
- Bus Pins Short Circuit Proof to Supply Voltage and Ground
- Bus Pins Protected Against Transients in an Automotive Environment
- Pb-Free
- AEC Qualified, PPAP Capable

Key Applications
- Automotive
- Powertrain
- Chassis
- Body Electronics
- Industrial Networks

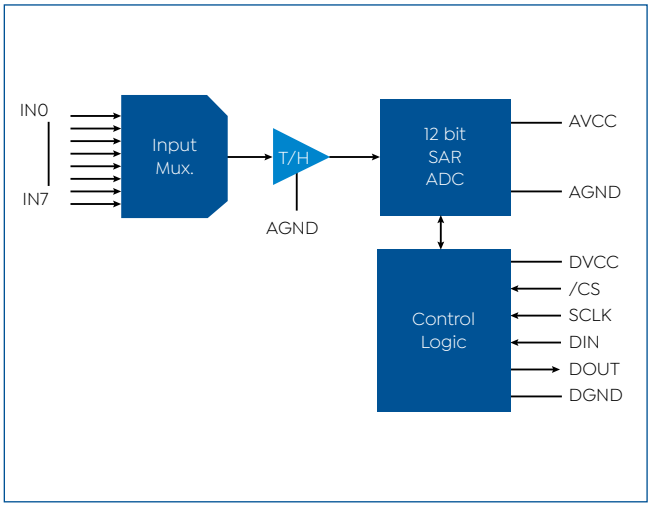
Market Segment
- Automotive
- Industrial
- Smart Grid

Sub Market
- ADAS, Automotive Infotainment & Cluster
- Commercial, Construction and Agricultural Vehicles
- Connected Car, Body Electronics and Automotive Lighting
- Motion Control, Servo Drives
- Instrumentation, Test and Measurement
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Elevators, Escalators, Moving Walkways
- Power Conversion (Inverters, Welding, Converters)
- Automotive Power Train and Chassis

Technology Segment
- Analog & Power

ADC120

8-Channel, 50 kSPS to 1 MSPS, 12-Bit A/D Converter



STMicroelectronics ADC120: Block Diagram

The ADC120 is a low-power, eight-channel pure CMOS 12-bit analog-to-digital converter specified for conversion from 50 kSPS to 1 MSPS, tested at 1 MSPS. The architecture is based on a successive-approximation register with an internal track-and-hold cell. The ADC120 features 8 single-ended multiplexed inputs. The output serial data is straight binary and is SPI-compatible. The analog and digital power supplies operate from 2.7 V to 3.6 V. The power consumption at 3.3 V nominal supply is as low as 6.6 mW. The ADC120 comes plastic TSSOP-16 package and can operate from -40 °C to +125 °C.

- **50 kSPS to 1 MSPS Conversion Rate**
- **8-to-1-Channel Input MUX**
- **3.3 V Operating Supply with Very Low Consumption**
- **SPI, Serial Digital Output**

Features
- Power-down function

Key Applications
- Shunt Resistor Detector
- Analog Multiplexing and Conversion
- Telemetry

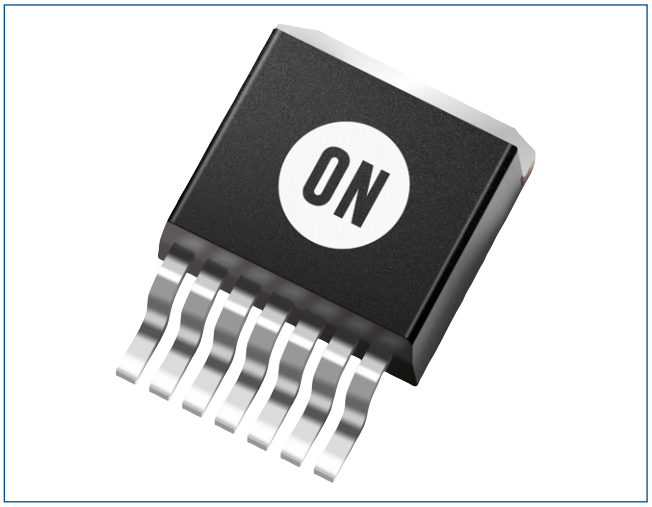
Market Segment
- Industrial
- Healthcare & Wearables

Sub Market
- Medical Instruments
- Elevators, Escalators, Moving Walkways
- Embedded Computing & Storage
- Instrumentation, Test and Measurement
- Robotics
- Motion Control, Servo Drives
- Factory Automation (PLCs, I/O, Sensors & Actuators)

Technology Segment
- Analog & Power

NVBG020N120SC1

Silicon Carbide MOSFET, N-Channel, 1200 V, 20 mΩ, D2PAK−7L



D2PAK7 in TO-263-7L HV Package

Silicon Carbide (SiC) MOSFET uses a completely new technology that provides superior switching performance and higher reliability compared to silicon. In addition, the low ON resistance and compact chip size ensure low capacitance and gate charge. Consequently, system benefits include the highest efficiency, faster operation frequency, increased power density, reduced EMI, and reduced system size.

- **1200 V Rated**
- **High Speed Switching and Low Capacitance**
- **Max $RDS_{(ON)}$ = 28 mΩ at V_{GS} = 20 V, I_D = 60 A**
- **Qualified for Automotive According to AEC-Q101**

Features
- 100% UIL Tested
- Pb-Free, RoHS Compliant

Key Applications
- PFC
- Boost Inverter
- PV Charging
- Automotive DC/DC converter for EV/PHEV
- Automotive On Board Charger
- Automotive Auxiliary Motor Drive

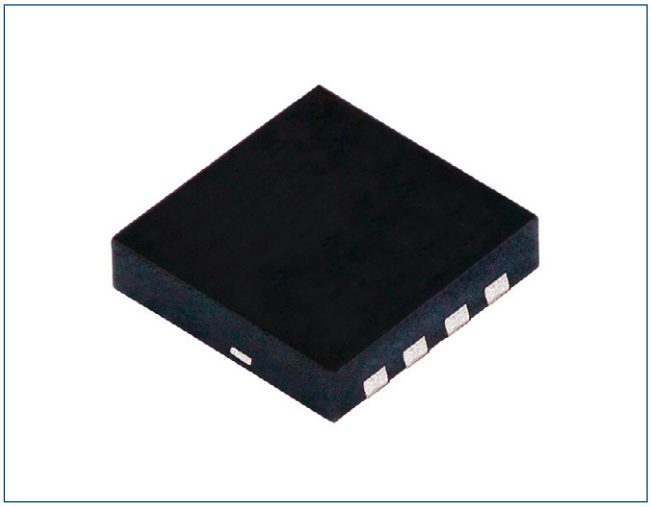
Market Segment
- Automotive
- Smart Grid

Sub Market
- Automotive Power Train and Chassis
- Power Conversion (Inverters, Welding, Converters)
- Power Supplies (UPS, Chargers)
- Renewable Energy Generation

Technology Segment
- Analog & Power

SISS12DN

New SiSS12DN 40 V MOSFET in PowerPAK® 1212-8S Package



SiSS12DN MOSFET in PowerPAK® 1212-8S Package

Vishay introduces the new 40 V TrenchFET® Gen IV N-channel power MOSFET. Best in class COSS times ON-resistance, a critical figure of merit (FOM) for MOSFETs used in power conversion designs employing zero-voltage-switching (ZVS) or switch-tank topology. SISS12DN utilizes 65% less PCB space than similar solutions in 6 x 5 packages, enabling higher power density. Minimizing conduction and switching losses simultaneously to increase efficiency for several building blocks in power supplies.

- **Maximum ON-Resistance Down to 1.98 mΩ at 10 V Minimizes Conduction Losses**
- **Low COSS of 680 pF and Gate Charge of 28.7 nC Reduces Switching Power Losses**
- **Offered in Compact 3.3 x 3.3 mm PowerPAK 1212-8S Package**
- **100% RG- and UIS-tested, RoHS-Compliant, and Halogen-Free**

Features

- Drain source voltage: 40 V
- RDS_{ON} max. at:
  - 10 V: 1.98 mΩ
  - 4.5 V: 2.74 mΩ
- COSS typical: 680 pF
- Gate charge: 28.7 nC
- Output charge typical: 28 nC
- Synchronous rectification in AC/DC power supplies
- Primary- and secondary-side switching in DC/DC converters targeting telecom, server, and medical equipment
- Half-bridge power stage and buck-boost converters in voltage regulation for server and telecom equipment
- OR-ing functionality in telecom and server power supplies
- Power stage for switch capacitor or switch tank converters
- Motor drive control in power tools and industrial equipment
- Battery protection and charging in battery management modules

Key Applications

- Synchronous Rectification in AC/DC Power Supplies
- OR-ing Functionality in Telecom and Server Power Supplies
- Power Stage for Switch Capacitor or Switch Tank Converters
- Motor Drive Control in Power Tools and Industrial EG.
- Battery Protection and Charging in Battery Mgr. Module

Market Segment

- Healthcare & Wearables
- Automotive
- Industrial
- Smart Consumer & Building
- Smart Grid

Sub Market

- Medical Instruments
- Connected Car, Body Electronics and Automotive Lighting
- Automotive Power Train and Chassis
- Motion Control, Servo Drives
- Power Supplies (AC/DC, DC/DC)
- Power Conversion (Inverters, Welding, Converters)
- Power Supplies (UPS, Chargers)

Technology Segment

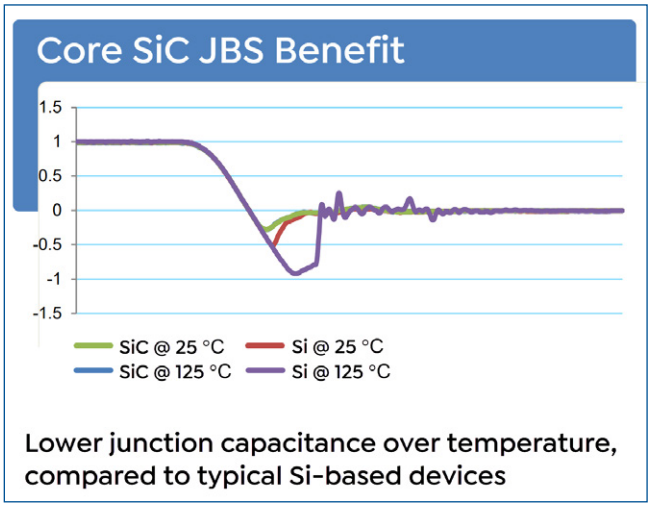
- Analog & Power

Product order code

- WNSC021200Q
- WNSC051200Q
- WNSC101200Q
- WNSC101200WQ

1200 V Silicon Carbide Diodes

Fast and Temperature-independent Switching for High Voltage, High Frequency PFC



SiC Schottky Diodes: Junction Capacitance vs Temperature Diagram

WeEn Silicon Carbide (SiC) 1200 V Schottky diodes are designed for high-frequency switched-mode power supplies. These SiC diodes are ideally suited for Power Factor Correction (PFC), Uninterruptible Power Supplies (UPS), PV inverters, motor drivers, and similar applications that can benefit from their superior switching and thermal performance over traditional Si devices.

- **Highly Stable Switching Performance**
- **Extremely Fast Reverse Recovery Time**
- **High Forward Surge Current Capability I_{FSM}**
- **Superior in Efficiency to Silicon Diode Alternatives**

Features

- Reduced Losses in Associated MOSFET
- Reduced EMI
- Reduced Cooling Requirements
- RoHS Compliant
- High Junction Operating Temperature Capability (T_{JMAX}= 175 °C)

Key Applications

- Power Factor Correction (PFC)
- Telecom/Server SMPS
- PV inverter
- Uninterruptible Power Supply (UPS)
- PC Silverbox
- LED/OLED TV
- Motor Drives

Market Segment

- Communication & Infrastructure
- Industrial
- Lighting
- Smart Grid

Sub Market

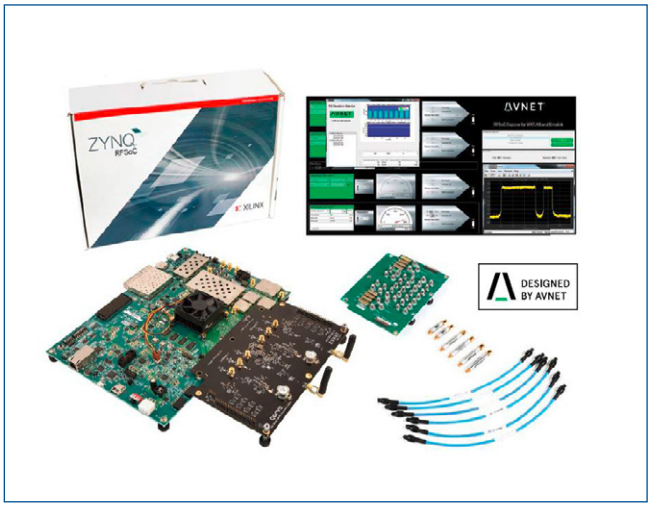
- Telecom and Networking
- Power Supplies (UPS, Chargers)
- Renewable Energy Generation
- Power Conversion (Inverters, Welding, Converters)
- Motor Control, Servo Drives
- Robotics

Technology Segment

- Analog & Power

RFSoC Development Kit

Xilinx Zynq® UltraScale+™ RFSoC from Antenna to Digital Including Qorvo RF Front-end



RFSoC Development Kit

The Avnet Zynq® UltraScale+™ RFSoC Development Kit enables system architects to explore the entire signal chain from the antenna to digital, using tools from MathWorks and industry-leading RF components from Qorvo. We extend the functionality of the Xilinx Zynq UltraScale+ RFSoC ZCU111 Evaluation Kit by adding a Qorvo 2 x 2 Small Cell RF front-end 1.8 GHz card for over-the-air transmission, plus native connection to MATLAB® & Simulink® with Avnet's RFSoC Explorer® application.

- **Rapid Prototyping Platform using the XCZU28DR-2EFFVG1517 Device**
- **Qorvo 1800 MHz RF Daughtercard**
- **XM500 Balun Board**
- **Free MATLAB Trial Package for Wireless Communications**

Features

Xilinx Zynq UltraScale+™ RFSoC ZCU111 Evaluation Board:

- Rapid Prototyping Platform using the XCZU28DR-2EFFVG1517 Device
- Supports 8 x 4 GSPS 12-bit ADCs, 8 x 6.5 GSPS 14-bit DAC, and 8 Soft-decision
- Forward Error Correction (SD-FECs)
- 4 GB DDR4 Memory for Large Sample Buffer Storage
- On-board Reference PLL (LMK04208) and RF PLLs (LMX2594) Generate RF-ADC and RF-DAC Sample Clocks
- Two Samtec LPAF Connectors for Access to RF-ADC/RF-DAC Clocking and Data Path Signals

Qorvo 1800 MHz RF Daughter card:

- Two channels, each with Tx, Rx and DPD (Digital Pre-distortion) Observation Path
- Default Tuning to LTE Band 3/1800 MHz FDD System
- Transmit Signal Chain (2x):
  - TQQ0303 - 1842.5 MHz RF BAW Filter
  - TQL9092 - Driver Amplifier
  - RFSA3713 - Digital Step Attenuator
  - QPA9903 - 0.5 Watt High-Efficiency Linearisable Power Amplifier
  - QPQ1297 - Band 3 BAW Duplexer
- Receive Signal Chain (2x):
  - QPQ1297 - Band 3 BAW Duplexer
  - TQQ0302 - 1747.5 MHz RF BAW Filter - Band 3 Uplink
  - TQP4M9017 - Fast Digital Step Attenuator
  - RMS Power Detector
  - QPL9096 - Ultra-Low-Noise Bypass LNA

Key Applications

- 3G/4G/5G Commercial Wireless Communications
- Aerospace and Defense
- Test and Measurement / Instrumentation

Market Segment

- Communication & Infrastructure
- Hi-Rel

Sub Market

- Broadcast
- Telecom and Networking
- Wireless Infrastructure
- Aerospace, Defense and High Temp Electronics

Technology Segment

- High End Processing

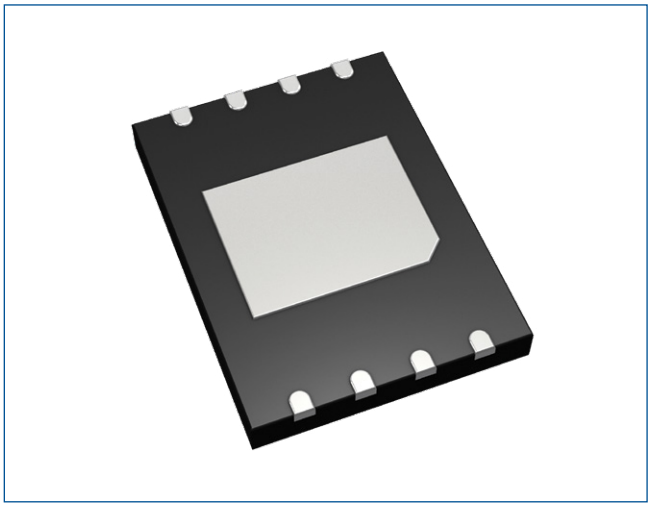
KIOXIA

Product order code

- TC58CVG0S3HRAIJ_TRAY
- TC58CVG1S3HRAIJ_TRAY
- TC58CVG2S0HRAIJ_TRAY
- TH58CVG3S0HRAIJ_TRAY

New Generation of Serial NAND

KIOXIA introduces a new family of Serial NAND – SLC with Quad-SPI Interface



Serial Interface NAND in WSON Package

To utilize Serial Peripheral Interface (SPI) for connecting SLC NAND to the SoC is getting popular. An easier interface adaptation and smallest package are key advantages for memory design. KIOXIA's new line-up of 24 nm Serial NAND supporting SPI Interface up to quad-speed is now available. The new generation is not only offering a higher clock rate and four times higher program speed but it also adds the 8 Gbit densities to the family. It is available in a small WSON package (6 x 8 mm) providing enhanced features like optional ECC support, security features, and industrial temperature range.

- **Quad - SPI support**
- **Line up from 1 Gbit to 8 Gbit**
- **Space-saving WSON package with 6 x 8 mm**
- **Optional 8-bit ECC engine embedded**

Features

- SLC (Single Level Cell) NAND
- Device Density: 1 Gbit, 2 Gbit, 4 Gbit, 8 Gbit (NEW)
- Page Size:
  - 2112 byte (1 Gbit, 2 Gbit Internal ECC Enable)
  - 4224 byte (4 Gbit, 8 Gbit Internal ECC Enabled)
- Block Size:
  - (128 K + 4 K)byte (1 Gbit, 2 Gbit Internal ECC Enable)
  - (256 K + 8 K)byte (4 Gbit, 8 Gbit Internal ECC Enable)
- Power Supply:
  - 2.7 to 3.6 V (Order Codes Tx58CVG...)
  - 1.7 to 1.95 V (Order Codes Tx58CYG...)
- Operation Temperature: -40 °C to 85 °C
- Package: WSON-8
- I/F Specification
  - I/F: SPI (x1, x2, x4) Mode 0, Mode 3
  - Clock Frequency: up to 133 MHz (for New Generation)
  - Program mode: x1/x4 mode (for New Generation)
- Internal ECC
  - 8-bit ECC for every 528 bytes
  - Users can switch enable/disable of internal ECC.
- Function
  - Page Read, Page Program, Block Erase
  - Write Enable/Disable
  - Block Lock
  - Set Feature/Get Feature
  - Parameter Page Read
  - ID Read
  - Block Protection (OTP)
  - ECC Bit Flip Count Report

Key Applications

- Machine Control, Data Logger, Intelligent Audio Speaker
- Smart Metering Hub, Base Station, GPS Tracker
- POS, PLC, IPTV, Industrial PC, GPON
- HMI, CoM, Router, STB, Security Camera

Market Segment

- Communication & Infrastructure
- Healthcare & Wearables
- Industrial
- Smart Consumer & Building
- Smart Grid

Sub Market

- Audio and Video
- Home & Building Control and Automation
- Home Appliances
- Robotics
- Portable Personal Electronics & Wearables
- Embedded Computing & Storage
- Smart Grid Protection and Control

Technology Segment

- High End Processing

K32 L3 MCU Family

Low-Power MCUs with Advanced Security and Physical Protection

K32 L3 MCU Family

Building on the successful Kinetis K Series, the K32 L3 family of MCUs delivers a 50% improvement in power optimization and security advancements to address a wide range of industrial and IoT applications. It's based on the ARM® Cortex®-M4 and offers a ARM® Cortex®-M0+, with enhancements such as low-leakage power-optimized peripherals, DC-DC converter, and security features like the authenticated boot, secure update, and tamper detection.
The K32 L3 MCU is the start of a long line of MCUs, which will further advance NXP's security capabilities and power optimization features.

- **Architected for Low Power and Efficiency**
- **Protect Against Threats that Compromise Networks**
- **Dual-core Technology for Optimized Low-power Use Cases**
- **Comprehensive Ecosystem Includes MCUXpresso Tools and Freedom Board for Easy Prototyping**

Features

- Significant improvements in power optimization
- Efficient dynamic power
- Low static power consumption with full retention
- 50% decrease in run current and 80% decrease in wake-up time from deep-sleep over its predecessors
- Assuring confidentiality, integrity, and authenticity of the IoT device and its data
- State-of-the-art cryptography with secure boot and update functionality
- Robust enablement with MCUXpresso Software & Tools
- Includes a high-performance Cortex®-M4 core and an optional low-power Cortex®-M0+ core, ideal for applications that require a host MCU and a low-power MCU

Key Applications

- Building Automation:
  - Security and access control
  - Building control and monitoring
  - Building HVAC control
  - Secure applications
- Industrial:
  - Factory automation
  - Robotics
- Smart Home:
  - Door locks
  - Smart thermostats
  - Lighting control
  - Security systems

Market Segment

- Lighting
- Smart Consumer & Building
- Industrial

Sub Market

- Heating, Ventilation and Air Conditioning
- Home & Building Control and Automation
- Home & Building Security (Alarms, Access Control)
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Robotics
- Asset Tracking
- Home Appliances
- Lighting Drivers and Electronic Control Gears

Technology Segment

- High End Processing

Product order code
- R5F523W8ADNG#30
- RTK5RX23W0C00000BJ

Renesas RX23W

Bluetooth 5.0 enhanced high-performance MCU

Renesas RX23W

The new RX23W is the first Renesas RX MCU with integrated wireless connectivity. The high-performance 32-bit RXv2 CPU core system controller with DSP functions and FPU is enhanced with Bluetooth 5.0 Low Energy. It is equipped with Renesas' integrated Trusted Security IP, capacitive touch support, lots of interfaces like CAN or SDHI and an integrated antenna matching circuit. Therefore, it supports easy design and shortest time-to-market for state-of-the-art connected IoT devices for all industries. On top of this, it offers low power consumption of the MCU with superior RF capabilities.

- **Full Functional Support for Bluetooth 5.0 Low Energy**
- **A Basic Protocol Stack Package and All Standard Profiles**
- **Simple Design Through Integrated Antenna Matching Circuit for BOM Reduction**
- **Feature Rich Peripherals & Interfaces, Integrated Security, Industry's Smallest Footprint**

Features
- Bluetooth 5.0 Low Energy Full Function Integrated
- Communication rate 2 x higher, communication distance 4 x greater and data transfer efficiency improved compared to Bluetooth 4.2
- Mesh Network Supported
- RXv2 Core, 54 MHz, DSP Capability, FPU
- Implements high performance and low power consumption simultaneously
- Equipped with Trusted Secure IP Lite
- High-Speed Processing with Encryption Hardware Accelerator
- Secure Key Management Mechanism
- Operating Voltage: 1.8 to 3.6 V
- Operating temperature range: Ta = -40 °C to 85 °C
- Integrated antenna matching
- Integrated RF specific clocking source
- BT Long Range up to 400 m
- High data throughput up to 2 Mbps
- Comprehensive SW tools for RF Tuning, profile management and integration of custom profiles, stack implementation, certification testing, BT evaluation
- Driver and Middleware packages (FIT Modules)

Key Applications
- Home & Building Automation

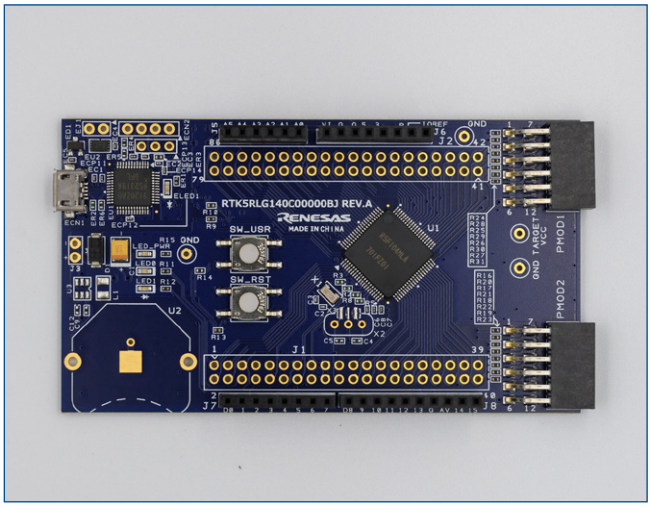
Market Segment
- Communication & Infrastructure
- Healthcare & Wearables
- Industrial
- Lighting
- Smart Consumer & Building

Sub Market
- Wireless Infrastructure
- Medical Instruments
- Personal Health, Sport & Fitness
- Portable Personal Electronics & Wearables
- Embedded Computing & Storage
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Human Machine Interface
- Information Kiosk & Advertising Panels
- Instrumentation, Test and Measurement
- Point of Sales and Vending machines
- Professional Gaming, Amusement & Casino Machines
- Surveillance, Parking & Traffic Control
- Lighting Drivers and Electronic Control Gears
- Home & Building Control and Automation
- Home & Building Security (Alarms, Access Control)
- Home Appliances
- Toys, games and entertainment

Technology Segment
- High End Processing

RL78/G14 FastPrototyping Board

Fast Prototyping Board Speeds up Users' Applications



Renesas RL78/G14 Fast Prototyping Board

The Renesas RL78/G14 Fast Prototyping Board enables users to quickly build their own applications. Thanks to its onboard debugging circuit no additional equipment other than a USB cable is needed to get started with prototype development. An Arduino Uno header and Pmod connectors mounted on the board ensure fast and easy expansion of users' applications. In addition, users can expand their application with the RL78/G1D BLE Module Expansion Board.

- **All Pins of RL78/G14 are Accessible**
- **Arduino and Pmod Connectors for Easy Expansion**
- **High Performance and Low Power**
- **On-board E2 Lite Emulator Circuit**

Features

- RL78G14 MCU at 32 MHz
  - 51.2 DMIPS @ 32 MHz
  - 512 KB Flash/48 KB RAM
  - DTC/ELC
  - Advanced Timer/Comparator/DAC
- Power: USB Bus Power or Coin-cell Battery
- Reset and User Switch
- Compatible with Arduino UNO R3
- PMOD Header x 2
- LED x 3 (User x 2, Act x 1)
- 32 KHz Crystal Oscillator
- On-board Debugging Circuit

Key Applications

- Sensors/IoT devices
- Motor Control
- Home Appliances
- Office/Meter

Market Segment

- Communication & Infrastructure
- Healthcare & Wearables
- Industrial
- Smart Consumer & Building

Sub Market

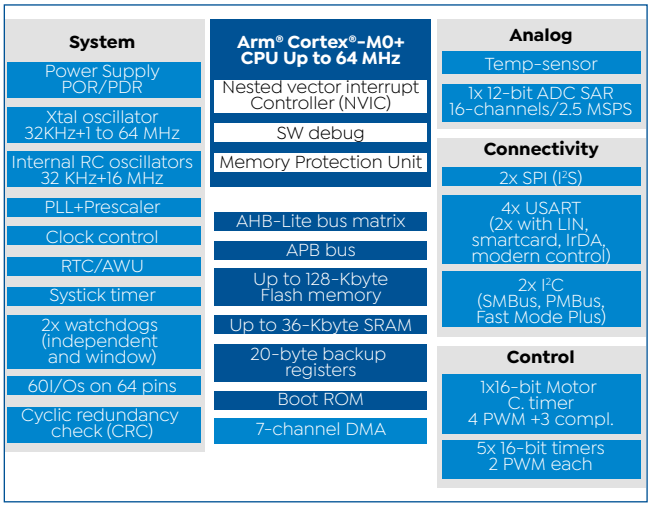
- Wireless Infrastructure
- Toys, games and entertainment
- Personal Health, Sport & Fitness
- Portable Personal Electronics & Wearables
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Human Machine Interface
- Instrumentation, Test and Measurement
- Motion Control, Servo Drives
- Professional Gaming, Amusement & Casino Machines
- Robotics
- Surveillance, Parking & Traffic Control
- Asset Tracking
- Home & Building Control and Automation
- Home & Building Security (Alarms, Access Control)

Technology Segment

- Low Power MCU

STM32G0x0 Value Line

Arm® Cortex®-M0+ 32-bit MCU, 128 KB Flash, 36 KB RAM, 4x USART, timers, ADC, comm. I/Fs



STM32G0x0 Value Line Block Diagram

The STM32G0x0 Value Line features an Arm® Cortex®-M0+ core and runs at speeds up to 64 MHz. Setting the lowest ever price point, the STM32G0x0 Value Line makes no compromise on what matters. Offering a high level of integration, these devices are perfectly suited for a wide range of applications in consumer, industrial and appliance domains, and are ready for various Internet of Things (IoT) solutions.

- **Armm® 32-bit Cortex®-M0+ CPU, up to 64 MHz Clock Frequency**
- **Internal 32 kHz RC Oscillator (±5 %)**
- **12-bit, 0.4 µs ADC (Up to 16 ext. Channels)**
- **11 timers, 1 x 16-bit for Advanced Motor Control**

Features

- Memory:
  - 128 Kbytes of Flash memory
  - 36 Kbytes of SRAM (32 Kbytes with HW parity check)
- Clock Management:
  - 4 to 48 MHz crystal oscillator
  - 32 kHz crystal oscillator with calibration
  - Internal 16 MHz RC with PLL option
  - Internal 32 kHz RC oscillator (±5%)
- Up to 59 Fast I/Os:
  - All mappable on external interrupt vectors
  - Multiple 5 V-tolerant I/Os
- 7-channel DMA Controller with Flexible Mapping
- 12-bit, 0.4 µs ADC (up to 16 ext. channels)
  - Up to 16-bit with hardware oversampling
  - Conversion range: 0 to 3.6V
- Timers:
  - Eleven timers are available
  - 16-bit for advanced motor control
  - Five 16-bit general-purpose
  - Two basic 16-bit
  - Two watchdogs
  - SysTick timer

Key Applications

- Industrial devices
- Lighting
- Consumer objects
- Smart Home
- Motor Control
- Sensors

Market Segment

- Smart Consumer & Building
- Industrial
- Healthcare & Wearables

Sub Market

- Medical Instruments
- Personal Health, Sport & Fitness
- Portable Personal Electronics & Wearables
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Instrumentation, Test and Measurement
- Home & Building Control and Automation
- Home & Building Security (Alarms, Access Control)
- Home Appliances
- Power Supplies (AC/DC, DC/DC)

Technology Segment

- High End Processing

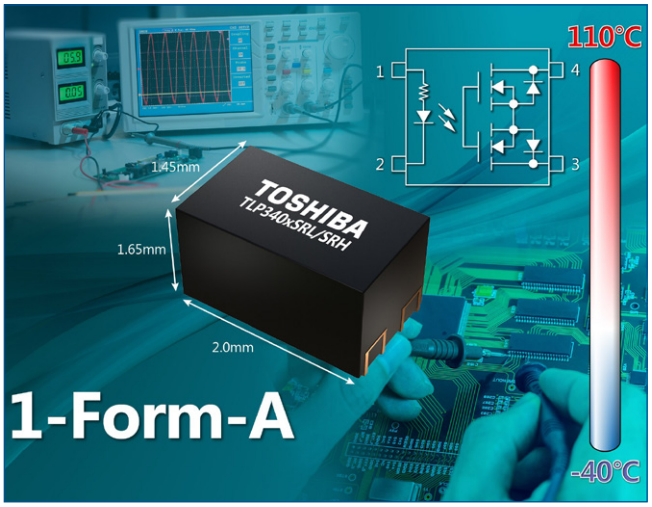
TOSHIBA

Product order code

- TLP3406SRH(TP,E(O
- TLP3406SRL(TP,E(O
- TLP3407SRH(TP,E(O
- TLP3407SRL(TP,E(O
- TLP3412SRH(TP,E(O

TLP34xxSRL and TLP34xxSRH

Low-voltage-driven Photorelays



Toshiba TLP340xSRL/SRH Photorelays

Toshiba introduced a new family of photo relays housed in one of the industry's smallest packages. The new photo relays are housed in tiny S-VSON4T (2.0 x 1.45 mm) packages and require a mounting space of just 2.9 mm², a footprint approx. 27% smaller than the previous generation. In addition, all devices have a built-in input resistor, saving space by eliminating the need for an external resistor. The tiny package will allow engineers to design smaller test boards, especially probe cards. It also allows the number of photo relays onboard to be increased to achieve higher density solutions.

- **One of The Smallest Packages on the Market**
- **Voltage-driven, Due to Built-in Resistor**
- **Supply Voltages 3.3 V and 1.8 V**
- **Supports Higher Density Solutions**

Features

- Very small mounting space, size of a PCB can be reduced and many devices can be mounted on a small area
- No external resistor needed to drive LED on the input side
- 1.8 V supply to comply with the latest FPGA technology
- Small and compact PCBs are possible
- Cost and space reduction, as no external resistor is needed
- Can be directly driven by low input voltage from MCU

Key Applications

- Probe Cards
- Automatic Test Equipment (ATE)
- Logic and Memory Testers, etc.
- Measuring instruments (Oscilloscope, Data Logger, etc.)
- Factory Automation

Market Segment

- Industrial

Sub Market

- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Instrumentation, Test and Measurement

Technology Segment

- Analog & Power

Product order code

- MCP1811AT-012/7QX
- MCP1812AT-033/OT
- MCP1811AT-025/TT
- MCP1812AT-040/7QX

MCP1811/12

Ultra-Low Quiescent Current LDO

MCP1811/12 LDO Series

The MCP1811/12 devices are 150 mA (MCP1811) and 300 mA (MCP1812) Low Dropout (LDO) linear regulators that provide high-current and low-output voltages while maintaining an ultra-low 250 nA of quiescent current during device operation. In addition, the MCP1811B/12B can be shut down for 5 nA (typical) supply current draw. The 150/300 mA output current capability, combined with the low output-voltage capability, make the MCP1811/12 family a good choice for new ultra-long-life LDO applications that have high-current demands but require ultra-low power consumption during sleep periods.

- **Ultra-low Quiescent Current: 250 nA (typical)**
- **Ultra-low Shutdown Supply Current**
- **Small Package Size to Help Reduce Bill of Material (BOM) Cost**
- **Stable With Cost-effective Ceramic Capacitor that Provides Lower Output Noise**

Features

- Extend battery life by consuming less current during standby or with light load
- Output current capability:
  - 150 mA for MCP1811A/B
  - 300 mA for MCP1812A/B
- Input voltage range: 1.8V to 5.5V
- Standard output voltages (VR): 1.0V to 4.0V
- Constant low dropout voltage: 550 mV
- Stable with ceramic output capacitor:
  - 1.0 µF for MCP1811
  - 2.2 µF for MCP1812
- Overcurrent protection
- Output discharge (Shutdown mode, SHDN = GND)

Key Applications

- Portable and IoT devices
- Emergency kits
- Home equipment

Market Segment

- Healthcare & Wearables
- Smart Consumer & Building

Sub Market

- Portable Personal Electronics & Wearables
- Medical Diagnostic and Therapy
- Toys, games and entertainment
- Asset Tracking

Technology Segment

- Analog & Power

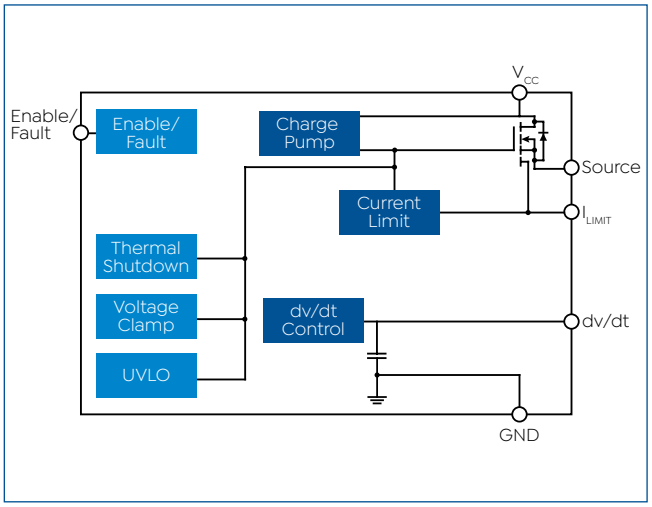
ON Semiconductor®

Product order code

- NIS5020MT2TXG
- NIS5021M T1TXG
- NIS5820MT1TXG
- NIS5820MT2TXG

NIS5x2x

Electronic fuse (eFuse), +12 V, Current rating 8 A, 10 A and 12 A



NIS5x2x Series eFuse

The NIS5x2x Series eFuses are self-protected, resettable, solid-state electronic fuses that monitor input and output voltage, output current, and die temperature. The 12 V electronic fuse series is rated 8 A, 10 A, and 12 A. It is designed to buffer the load device from excessive voltage and current which can damage sensitive circuits. It includes an overvoltage clamp circuit that limits the output voltage during transients but does not shut the unit down, thereby allowing the load circuit to continue its operation.

- **12 V Electronic Fuse with Overvoltage Clamping**
- **Monitors Input and Output Voltage, Output Current, and Die Temperature**
- **Self-protected, Resettable, Solid State Electronic Fuse**
- **High Continuous Current Driving Capability of 8 A, 10 A or 12 A**

Features

- Low RDS_{ON}
- Fast Response Overvoltage Clamp Circuit
- Low Quiescent Current
- Hot-Pluggable
- Thermally Protected
- Tri-state Enable pin
- WDFN-10 Package, 3 x 3, and 4 x 4 mm
- Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

Key Applications

- Hot-Plug and Overcurrent Protection
- Power supply overcurrent protection
- Hot plug fans
- Overcurrent protection for motor control
- Relay replacement, protected relays

Market Segment

- Communication & Infrastructure
- Industrial
- Smart Consumer & Building

Sub Market

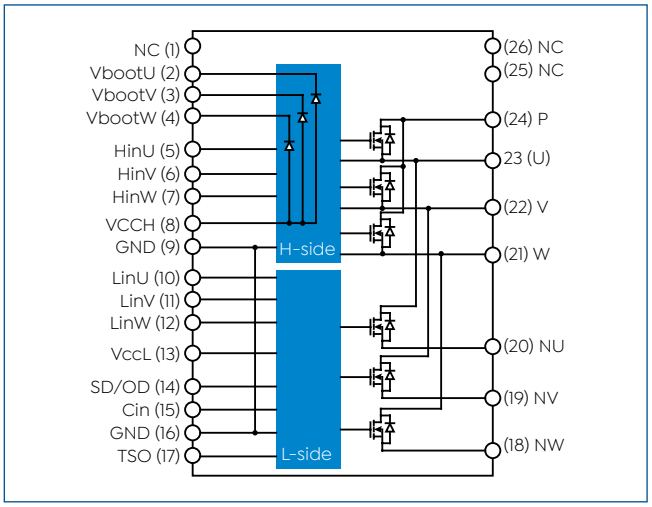
- Telecom and Networking
- Wireless Infrastructure
- Embedded Computing & Storage
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Motion Control, Servo Drives
- Power Supplies (AC/DC, DC/DC)

Technology Segment

- Analog & Power

STIB1560DM2-L

SLLIMM 2nd Series IPM, 3-Phase Inverter 0.15 Ω Typ. 15 A, 600 V Power MOSFET



SLLIMM 3-phase Inverter

This new IPM, belonging to the second series of SLLIMM (Small Low-Loss Intelligent Molded Module), provides a compact, high-performance AC motor drive in a simple, rugged design. It combines new ST proprietary control ICs with the high-voltage N-channel super-junction MDMesh DM2, providing fast-recovery diode series to increase efficiency and minimize EMI and overall losses, making it ideal for any high-efficiency converter and 3-phase inverter system. SLLIMM is a trademark of STMicroelectronics.

- **IPM 15 A, 600 V, 3-phase MOSFET Inverter Bridge with 2 Control ICs for Gate Driving**
- **3.3 V, 5 V TTL/CMOS Inputs with Hysteresis**
- **Internal Bootstrap Diode**
- **Undervoltage Lockout of Gate Drivers**

Features

- Smart Shutdown Function
- Short-Circuit Protection
- Shutdown Input/Fault Output
- Separate Open-Source Outputs
- Built-in Temperature Sensor
- Comparator for Fault Protection
- Fast, Soft Recovery Diodes
- Fully Isolated Package
- Isolation Rating Of 1500 VRMS/min
- UL Recognition: UL 1557, File E81734

Key Applications

- 3-Phase Inverters for Motor Drives
- Linear and BLDC Compressor
- Aircon
- Elevators, Escalators, Moving Walkways
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Motion Control, Servo Drives

Market Segment

- Automotive
- Industrial

Technology Segment

- Analog & Power

Sub Market

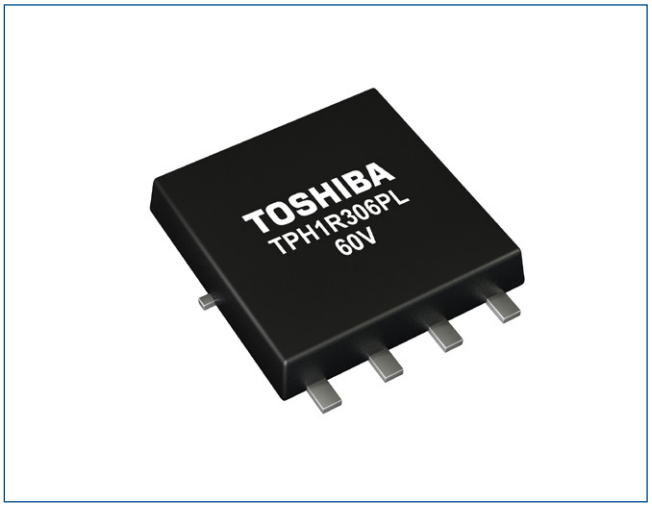
- Automotive Power Train and Chassis
- Connected Car, Body Electronics and Automotive Lighting

TOSHIBA

Product order code • TPH1R306P1,L1Q(M

TPH1R306P1

60 V N-Channel Power MOSFET U-MOSIX-H Series



TPH1R30PL, a U-MOSIX-H Series MOSFET

The TPH1R306P is suitable for power supplies. It is a low spike product, using the latest generation process U-MOSIX-H with a low voltage trench structure. The product is able to maintain low spike voltage which is generated between the drain and the source at the switching operation, making it suitable for synchronous rectification in a secondary side of switching power supplies that require low EMI. Both low spike products and highly efficient products have been lined up in the U-MOSIX-H series, users can choose products that are suitable for their applications.

- **One of The Lowest ON-resistance Levels in Industry**
- **Low Spike**
- **Allows 4.5 V Logic Level Drive**
- **Suitable for Compact Motor Control Applications**

Features

- RDS_{ON} = 1.28 mΩ (max) at V_{GS} = 10 V
- Reduces conduction losses of power supplies with its low ON-resistance characteristic
- Absolute maximum V_{DSS}: 60 V
- 5 x 6 mm package
- Its low spike characteristic reduces EMI, therefore it suitable for Compact Motor control applications like Cordless tools
- Allows 4.5 V logic level drive

Key Applications

- Switching Power Supplies
- Motor Control Equipment
- DC/DC Converters
- AC/DC Converters

Market Segment

- Industrial
- Smart Consumer & Building

Sub Market

- Power Supplies
- Motion Control
- Servo Drives
- Home Appliances

Technology Segment

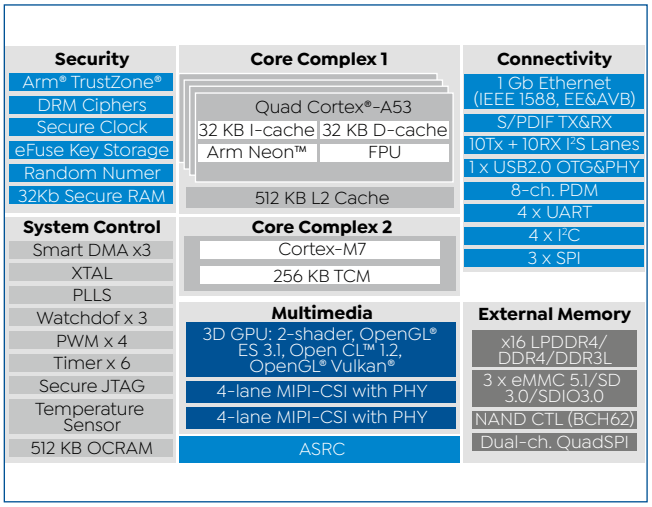
- Analog & Power

Product order code

- MIMX8MN6DVTJZAA
- MIMX8MN4DVTJZAA
- MIMX8MN3CVTIZAA
- MIMX8MN1CVTIZAA
- 8MNANOD4-EVK
- MX8-DSI-OLED1

i.MX 8M Nano

Applications Processor for Secure, Affordable and Intelligent Edge Computing



i.MX 8M Nano Block Diagram

Featuring up to 4 x ARM® Cortex®-A53 cores and 1 x ARM® Cortex®-M7, built-in high-performance and power-efficient 14FinFET technology, the i.MX 8M Nano applications processor provides a new pin-compatible, scalable offering to the popular i.MX 8M family of application processors.
The i.MX 8M Nano applications processor provides cost-effective integration and affordable performance for smart, connected, power-efficient devices requiring graphics, vision, voice control, intelligent sensing, and general-purpose processing to edge IoT devices.

- **Power-efficient, Scalable and Cost-optimized System Design**
- **Industry-leading Ecosystem**
- **Industrial Reliability and Commitment to Long-term Supply**
- **Versatile, optimized system design**

Features

- 1x, 2x or 4x Arm®Cortex®-A53 cores @ 1.5 GHz
- Pin-compatible with the i.MX 8M Mini
- FinFET technology improves immunity to alpha particles
- Cortex®-M7 core @ 750 MHz for power optimizations and general task offload
- LPDDR4 for optimized performance or DDR3L/DDR4 for optimized system cost
- Optimized 14 x 14 mm package
- Qualified for industrial operation for min. 10 years of continuous operation
- Fanless thermal design
- -40 to 105 °C junction temperature
- Minimum 10-year supply longevity
- NXP Linux®, Android®, and FreeRTOS® BSPs
- Proven designs based on i.MX 8M
- Mini/Nano processors
- Global software partners for AI and ML
- Full documentation and design resources available on NXP.com

Key Applications

- Industrial printer
- Machine visual inspection
- Mobility and logistics
- IoT Gateway
- Image and bar-code scanners
- Mobile patient care, (e.g. infusion pump, respirator)
- Blood pressure monitor
- Activity/wellness monitor
- Fitness equipment
- Smart appliances
- Smart light control
- Service robots (vacuum cleaner etc.)
- Portable audio devices
- Audio/video receivers

Market Segment

- Healthcare & Wearables
- Industrial
- Smart Consumer & Building
- Lighting

Sub Market

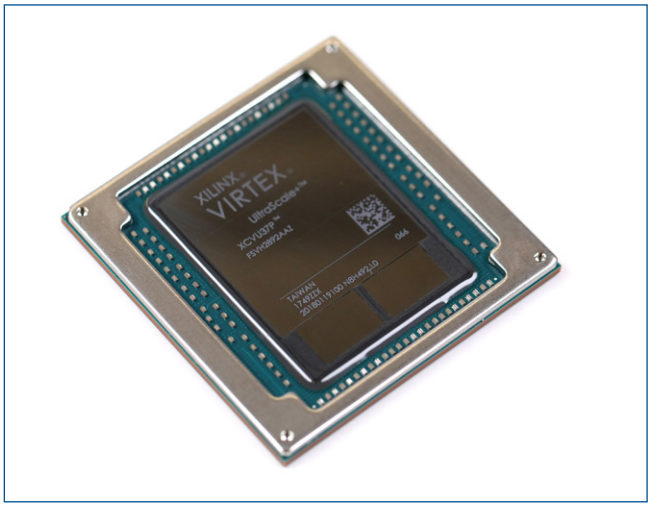
- Point of Sales and Vending machines
- Human Machine Interface
- Information Kiosk & Advertising Panels
- Embedded Vision
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Instrumentation, Test and Measurement
- Portable Personal Electronics & Wearables
- Personal Health, Sport & Fitness
- Medical Instruments
- Home Appliances
- Home & Building Control and Automation
- Home & Building Security (Alarms, Access Control)
- Audio and Video

Technology Segment

- High End Processing

Xilinx HBM FPGA VU45P VU47P

VU45P VU47P Virtexx® UltraScale+™ 16 GB HBM FPGA



Virtex® Ultrascale+™ HBM FPGA

Virtex® UltraScale+™ HBM FPGAs provide the highest on-chip memory density with up to 500 MB of total on-chip integrated memory, plus up to 16 GB of high-bandwidth memory (HBM) Gen2 integrated in-package for 460 GB/s of memory bandwidth. Innovative embedded HBM controller and breakthrough integration enable maximum bandwidth, efficient routing complexity, and optimized power efficiency for compute, storage, and network applications.

- **Memory Bandwidth**
- **PCIe® Gen4 x 8 with CCIX**
- **32.75 Gb/s Transceivers**
- **Maximized HBM Bandwidth**

Features

- Memory Bandwidth
  - 460 GB/s of memory bandwidth
  - 20x more bandwidth than a DDR4 DIMM
- PCIe® Gen4 x 8 with CCIX
  - Cache coherent compute using CCIX ports
  - Suitable for a complete end-to-end solution for multi-100G ports
- 32.75 Gb/s Transceivers
  - Up to 96 transceivers on a device provide 3.1 Tb/s SerDes bandwidth
- Extremely Low Power
  - 4 to 6 times lower power per bit (~7 pJ/bit) compared to a discrete memory solution
  - Enables low OpEx for power-sensitive use cases
- Maximized HBM Bandwidth
  - Extended AXI interfaces to enable 3.7 Tb/s operation
  - Flexible addressing over pseudo-channel boundaries helps users get efficient routing and the most usable bandwidth in and out of the HBM stacks
- Footprint Reduction
  - By eliminating I/O to external packaged memories and providing massive on-chip memory, these FPGAs enable small footprint system design without comprising performance

Key Applications

- Data Centre

Market Segment

- Communication & Infrastructure

Sub Market

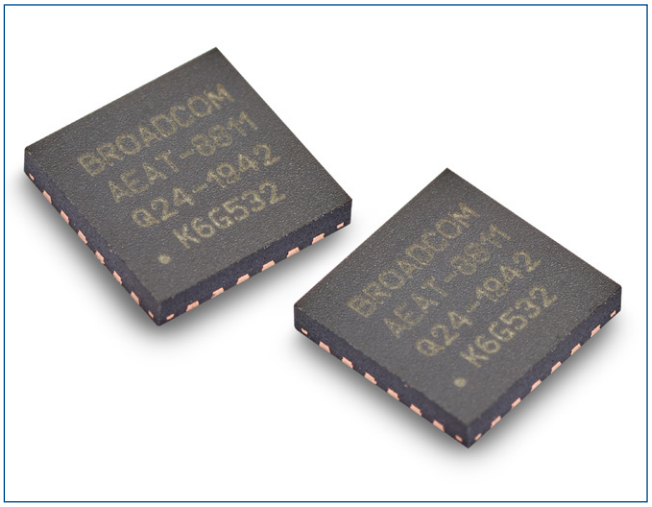
- Telecom and Networking
- Broadcast
- Wireless Infrastructure

Technology Segment

- High End Processing

AEAT-8811-Q24

10-Bit to 16-Bit Programmable Magnetic Encoder IC



AEAT-8811-Q24

The AEAT-8811 programmable magnetic rotary encoder ASIC has been designed to enhance the performance of motion control systems, providing accurate angular measurement over a full 360 degrees of rotation. It gives value to the customer by delivering advance position information to controller systems, simplifying the assembly process of the feedback device, and providing reliable information throughout the system's operation in the harsh industrial environment. It can be used in industrial, medical, space limited consumer, and harsh (dusty and oily) environment applications.

- **5 V Operation**
- **Selectable 10, 12, 14, or 16 Bits of Absolute Resolution**
- **PWM Output Modes**
- **Incremental ABI, UVW Pins Out**

Features

- User-programmable Zero Position, Direction, Index Width
- Selectable Option Zero Latency Mode
- Programmable Hysteresis
- Available 2-wire or 3-wire SSI options.
- Selectable Option for 3-wire SSI with Initial Data Output at Tristate Mode
- No Programming Required for Offset Calibration
- Both Absolute and Incremental Output Signals Available
- Instant Indication of the Magnet's Angular Position with a Selectable Resolution of 10, 12, 14, or 16 Bits
- Incremental ABI and UVW Pins Out
- Wider Incremental options:
  - 32, 64, 128, 256, 512, 1024, 2048, 4096, and 50, 100, 200, 400, 800, 1000 ,2000, 4000 CPR
- User-programmable Index (I) Width: 90, 180, 270, 360 degrees
- Selectable UVW Output of 1 to 8 Pole Pairs (2 to 16 Poles)
- Compact QFN-24 leads (5 mm × 5 mm) Package
- RoHS compliant

Key Applications

- Brushless DC Motor and Stepper Motor
- Resolver and Potentiometer Replacement
- Industrial Automation and Robotics
- Industrial Sewing Machine and Textiles Equipment

Market Segment

- Industrial

Sub Market

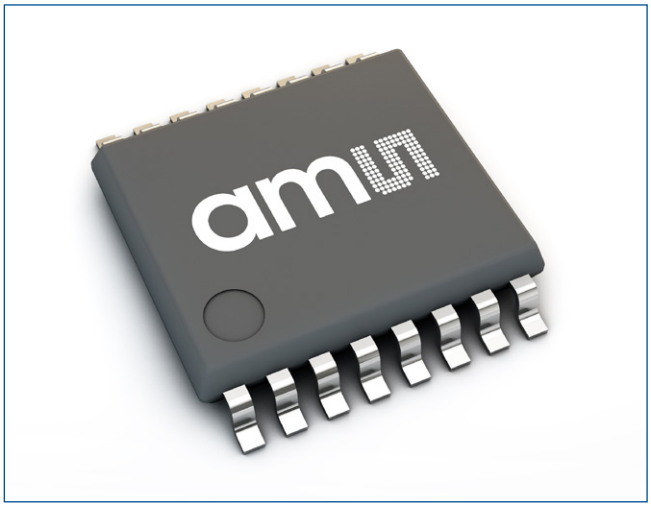
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Robotics

Technology Segment

- Smart Sensing & Connectivity

AS5715R

Inductive Position Sensing for Automotive Applications



AS5715R in TSSOP-16 Package

Based on inductive sensor technology, a new position sensor from ams measures the coupling between a TX (transmission) and two RX (receive) coils via a moveable target. The coils are executed as printed circuit coils thereby reducing the overall cost of the system.
The target is a simple punched metal part.
With the correct layout of coils and target the IC outputs differential sin/cos signals which are proportional to the angular position of the rotor and can be used for motor commutation. The product is defined as SEooC (Safety Element out of Context) according to ISO26262.

- **On- and Off-axis Positioning Possible**
- **Adaptable Coil/Sensor Layout**
- **High Angular Accuracy (0.3° Electrical Error)**
- **Low Propagation Delay**

Features
- Sin/Cos Output
- Functional Safety, Diagnostics
- AEC-Q100 Grade 0 qualified

Key Applications
- EPS motor drive
- HVAC pumps
- Window lift

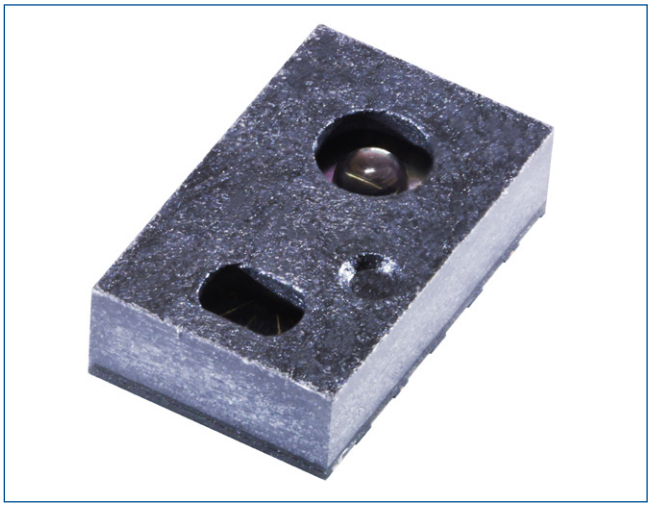
Sub Market
- Automotive Power Train and Chassis
- Commercial, Construction and Agricultural Vehicles

Market Segment
- Automotive

Technology Segment
- Smart Sensing & Connectivity

TMF8801

Time-of-Flight Sensor



TMF8801 ToF Sensor

The TMF8801 is a robust true direct time-of-flight (ToF) sensor system that offers highly accurate depth accuracy detection through a sub-nanosecond light pulse and an antialiasing "stop-watch" method to measure round-trip time of pulse. It provides single-zone detection of an object, regardless of the color, reflectivity, and texture of the object.
An integrated microcontroller is featured with all algorithms included on-chip with no need for external optics. Ultra-compact technology use is featured through the industry's smallest modular package size of 2.2 x 3.6 x 1.0 mm.

- **20 to 250 cm distance measurement**
- **True Direct Time-of-Flight Measurement**
- **Fast Compact Time-To-Digital Converters**
- **High Accuracy Distance Measurement (5%) - 1 mm Resolution**

Features

- Single-photon avalanche diode detection
- Sub-nanosecond (< 500 ps) light pulse driver
- Histogram based architecture
- SoC with integrated micro-controller - all algorithms on-chip
- Dynamic cover glass calibration
- Dirt/smudge cover glass detection and compensation
- Sunlight on-chip rejection filter and algorithm
- 940 nm VCSEL Class 1 Eye Safety
- 32 mA active mode current consumption at 30 Hz
- I^2C fast-mode compatible interface
- Modular OLGA package with lens - 2.2 x 3.6 x 1.0 mm

Key Applications

- Laser Detect Auto Focus
- Distance measurement
- Presence detection
- Object detection
- Collision avoidance

Market Segment

- Industrial
- Smart Consumer & Building

Sub Market

- Elevators, Escalators, Moving Walkways
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Human Machine Interface
- Information Kiosk & Advertising Panels
- Robotics
- Surveillance, Parking & Traffic Control
- Home & Building Security (Alarms, Access Control)
- Home Appliances
- Instrumentation, Test and Measurement

Technology Segment

- Smart Sensing & Connectivity

LIS2DTW12

Temperature Sensor Combined With a 3-Axis MEMS Accelerometer

LIS2DTW12 MEMS Accelerometer

The LIS2DTW12 is an ultra-low-power high-performance three-axis linear accelerometer and temperature sensor belonging to the "femto" family, which leverages the robust and mature manufacturing processes already used for the production of micromachined accelerometers. The device has user-selectable full scales of ±2/±4/±8/±16 g and is capable of measuring accelerations with output data rates from 1.6 Hz to 1600 Hz. The LIS2DTW12 has an embedded 0.8 °C (Typ. accuracy) temperature sensor with ODRs ranging from 50 to 1.6 Hz and resolution from 8 to 12 bits.

- **Ultra-Low Power Consumption**
- **Very Low Noise**
- **0.8 °C Embedded Temperature Sensor**
- **Multiple Operating Modes with Multiple Bandwidths**

Features

- Ultra-Low Power Consumption:
  - 50 nA in Power-Down Mode
  - Below 1 µA in Active Low-Power Mode
- Very Low Noise: Down to 1.3 mg RMS in Low-Power Mode
- Android Stationary Detection, Motion Detection
- Supply Voltage: 1.62 V to 3.6 V
- Independent IO Supply
- ±2/±4/±8/±16 g Full Scale
- High-Speed I²C/SPI Digital Output Interface
- Single Data Conversion on Demand
- 16-bit Accelerometer Data Output
- 12-bit Temperature Data Output
- Self-Test
- 32-Level FIFO
- 10000 G High Shock Survivability
- ECOPACK, RoHS And "Green" Compliant

Key Applications

- Fragile Shipment Tracking
- Motion and Temperature Monitoring
- Gesture Recognition and Gaming
- Motion-Activated Functions and User Interfaces
- Display Orientation
- Tap/Double-Tap Recognition
- Free-Fall Detection
- Motion-Enabled Metering Devices

Market Segment

- Healthcare & Wearables
- Smart Consumer & Building
- Industrial

Sub Market

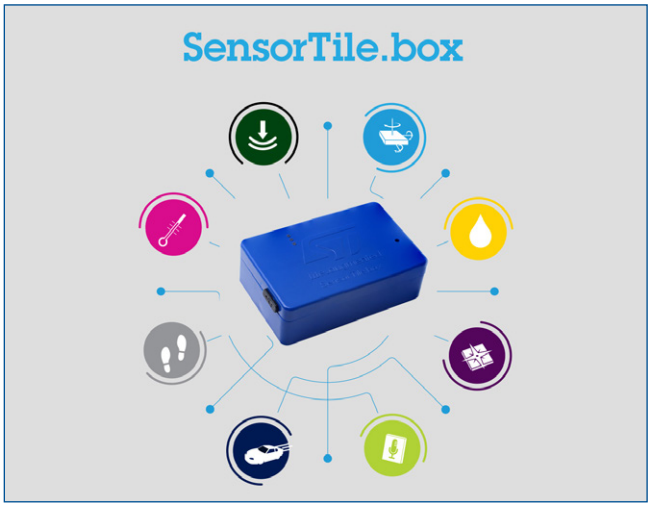
- Personal Health, Sport & Fitness
- Portable Personal Electronics & Wearables
- Home & Building Control and Automation
- Home Appliances
- Toys, games and entertainment
- Human Machine Interface
- Robotics
- Motion Control, Servo Drives

Technology Segment

- Smart Sensing & Connectivity

STEVAL-MKSBOX1V1

Plug-and-Play Module to Jump-Start Sensor-to-Cloud IoT Applications



SensorTile.box

The STEVAL-MKSBOX1V1 (SensorTile.box) is a ready-to-use box kit with wireless IoT and wearable sensor platform to help you use and develop apps based on remote motion and environmental sensor data, regardless of your level of expertise. The SensorTile.box board fits into a small plastic box, and the ST BLE Sensor app on your smartphone connects via Bluetooth to the board and allows you to immediately begin using the wide range of default IoT and wearable sensor applications.

- **Play With a Ready-to-Go IoT Node**
- **AI Ready Solution**
- **Immediate Functionality for Motion and Environmental Sensor Applications**
- **Expert Mode with Additional Sensor App Parameter Settings**

Features

- Easy-To-Use App with Immediate Functionality for the Following Motion and Environmental Sensor Applications:
  - Pedometer Optimized For Belt Positioning
  - Baby Crying Detection with Cloud AI Learning
  - Barometer/Environmental Monitoring
  - Vehicle/Goods Tracking
  - Vibration Monitoring
  - Compass and Inclinometer
  - Sensor Data Logger
- Expert Mode with Additional Sensor App Parameter Settings
- Compact Board with the Following High Precision Sensors:
  - Digital Temperature Sensor (STTS751)
  - 6-axis Inertial Measurement Unit (LSM6DSOX)
  - 3-axis Accelerometers (LIS2DW12 and LIS3DHH)
  - 3-axis Magnetometer (LIS2MDL)
  - Altimeter / Pressure Sensor (LPS22HH)
  - Microphone / Audio Sensor (MP23ABS1)
  - Humidity Sensor (HTS221)
- Ultra-Low-Power Arm®Cortex®-M4 Microcontroller with DSP and FPU
  - STM32L4R9
- Bluetooth Smart Connectivity V4.2 (SPBTLE-1S)
- Programming and Debugging Interface for Professional Firmware Development

Key Applications

- IoT
- Wearables
- Sensor Applications

Market Segment

- Smart Consumer & Building
- Industrial
- Healthcare & Wearables

Sub Market

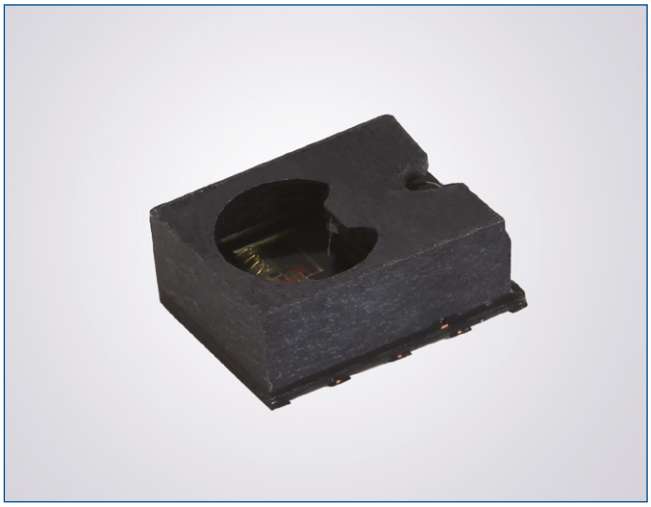
- Asset Tracking
- Robotics
- Human Machine Interface
- Toys, games and entertainment
- Heating, Ventilation and Air Conditioning
- Home & Building Security (Alarms, Access Control)
- Motion Control, Servo Drives
- Personal Health, Sport & Fitness
- Portable Personal Electronics & Wearables

Technology Segment

- Smart Sensing & Connectivity

VCNL36821S

Proximity Sensor With Interrupt, IRED, and I²C Interface



VCNL36821S Proximity Sensor

VCNL36821S integrates a proximity sensor (PS), and an IRED into one small package. It incorporates photodiodes, amplifiers, and analog to digital converting circuits into a single chip by CMOS process. PS programmable interrupt features of individual high and low thresholds offer the best utilization of resource and power saving on the microcontroller.

- **Integrated Module: infrared Emitter (IRED), Proximity Sensor (PS) and Signal Conditioning IC**
- **Smallest Light Hole Opening Design**
- **Immunity to Red Glow (940 nm)**
- **Supply Voltage Range: 1.7 V to 3.6 V**

Features

- Package type: surface-mount
- Dimensions (L x W x H in mm): 2.55 x 2.05 x 1.0
- Interrupt function
- Low power consumption I²C (SMBus compatible interface)
- Floor life: 168 h, MSL 3, according to J-STD-020
- Output type: I²C bus (PS)
- Temperature compensation: -40 °C to +85 °C
- Material categorization:
  - For definitions of compliance please visit the official web page: www.vishay.com/doc?99912
- Immunity to red glow (940 nm IR LED)
- Programmable IR LED sink current
- Intelligent cancellation to reduce cross-talk phenomenon
- Smart persistence scheme to reduce PS response time
- Low power consumption mode
- Programmable interrupt function for PS with upper and lower thresholds
- Adjustable persistence to prevent false triggers for PS

Key Applications

- Handheld Devices
- Consumer Devices
- Industrial Applications
- Earphone

Market Segment

- Industrial
- Smart Consumer & Building
- Communication & Infrastructure

Sub Market

- Wireless Infrastructure
- Telecom and Networking
- Audio and Video
- Toys, games and entertainment
- Professional Gaming, Amusement & Casino Machines
- Human Machine Interface

Technology Segment

- Smart Sensing & Connectivity

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