MIP

Marketing Innovative Products

2017/02

BIG DATA
ROBOTICS
CYBER PHYSICAL SYSTEMS
SECURITY
INDUSTRY 4.0

EBV Elektronik
An Avnet Company

R2D2, Data, HAL 9000 – without the popular robot characters of our youth, the world of movies would have been much less exciting.

For a long time they were indeed pure fiction. The first real robots installed in the 1970s were pretty inflexible machines which, for the safety of their environment, and above all of the people in it, were only allowed to operate behind guarding barriers. But now robots are about to move beyond those guards. Thanks to the enormous advances made in electronics, and especially in the field of high-performance microprocessors and in sensor technology, robots are getting continually better at sensing their surroundings. New software algorithms are increasingly imbuing robots with intelligence, and with the ability to learn autonomously. So now robots are able to work together with humans with no barriers between them, perform tasks independently in unknown surroundings, and even recognise the emotions of a human counterpart. The new issue of The Quintessence demonstrates how far robotics has already progressed, and predicts how robots are going to be changing our lives in the near future. Robots are delivering parcels, working hand-in-hand with humans on assembly lines, assisting cruise ship tourists, and even performing surgical procedures entirely autonomously. All in all, the latest issue of The Quintessence provides an interesting and entertaining insight into another fascinating area of application for state-of-the-art electronics.

Read more about ROBOTICS in the latest issue of our TQ magazine

EBV AppStore

App Store Google play

EBV Products TQ by EBV

CONTENTS
by Product Groups

CONTENTS
by Manufacturer

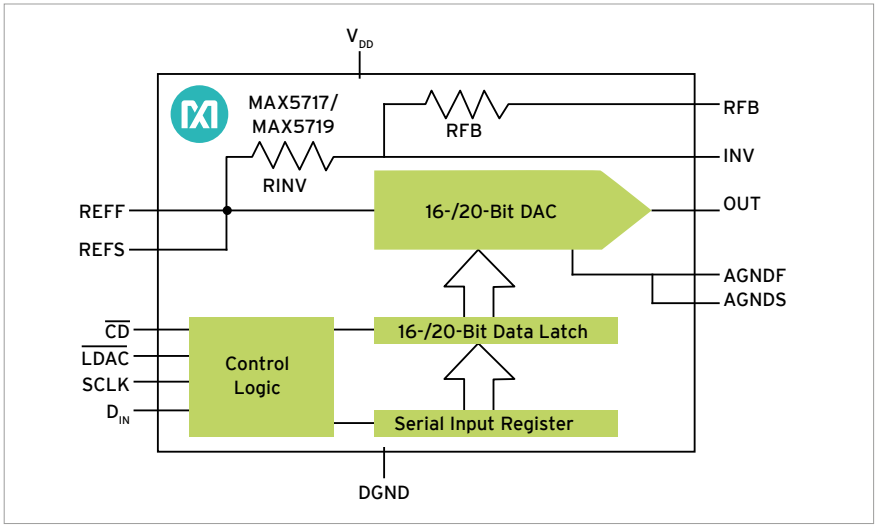
maxim integrated

100-up price	1-up price
MAX5717GSD	MAX5717EVKIT#
€ 6.92	€ 120.-

MAX5717/19

16- and 20-Bit Voltage DACs

CLICK OR SCAN



MAX5717 Simplified Block Diagram

The MAX5717 and MAX5719 are serial-input, unbuffered 16 and 20-bit voltage-output unipolar digital-to-analog converters (DACs) with integrated feedback resistors.

Both high performance DACs allow bipolar operation when used with an external operational amplifier. These DACs provide low glitch energy, low noise, tight bipolar resistor matching, and high accuracy. The DACs feature ±4LSB INL (max, 16-bit) over the temperature range of -40…+105°C. Integrated precision setting resistors make the DACs easy to use. The MAX5717 and MAX5719 feature a 50MHz, 3-wire SPI™, QSPI™, MICROWIRE™, and DSP-compatible serial interface.

On power-up, the output resets to zero-scale, providing additional safety for applications which drive valves or other transducers that need to be off on power-up. The DAC output settles in 750ns and has a low offset and gain drift of ±0.1 ppm/°C of FSR.

The MAX5717 is functionally similar to the MAX542, but with significantly faster settling time. The MAX5719 provides a similar speed improvement as well as an increase in resolution to 20 bits.

KEY FEATURES

- 16 and 20-bit resolution
- ±4 LSB INL (Max, 16-bit)
- ±0.5 LSB DNL (Max, 16-bit)
- 750ns settling time (typ)
- 0.05 nV-sec glitch energy
- 6 nv/√Hz Output Noise Density
- Integrated ±0.025% (max.) Bipolar Setting Resistors
- 4.5…5.5 V Supply Range
- 4.0…V_{DD} Reference Input Range
- Safe Power-Up Reset-to-Zero-Scale DAC Output (Unipolar)
- 50 MHz 3-Wire SPI Interface
- -40…+105°C Operating Temperature Range.
- SO-14 Package

APPLICATION EXAMPLES

- Automatic Test Equipment
- Automatic Tuning
- Communication Systems
- Data-Acquisition Systems
- Gain and Offset Adjustment
- Portable Instrumentation
- Process Control and Servo Loops
- Programmable Voltage and Current Sources
- Test and Measurement Equipment

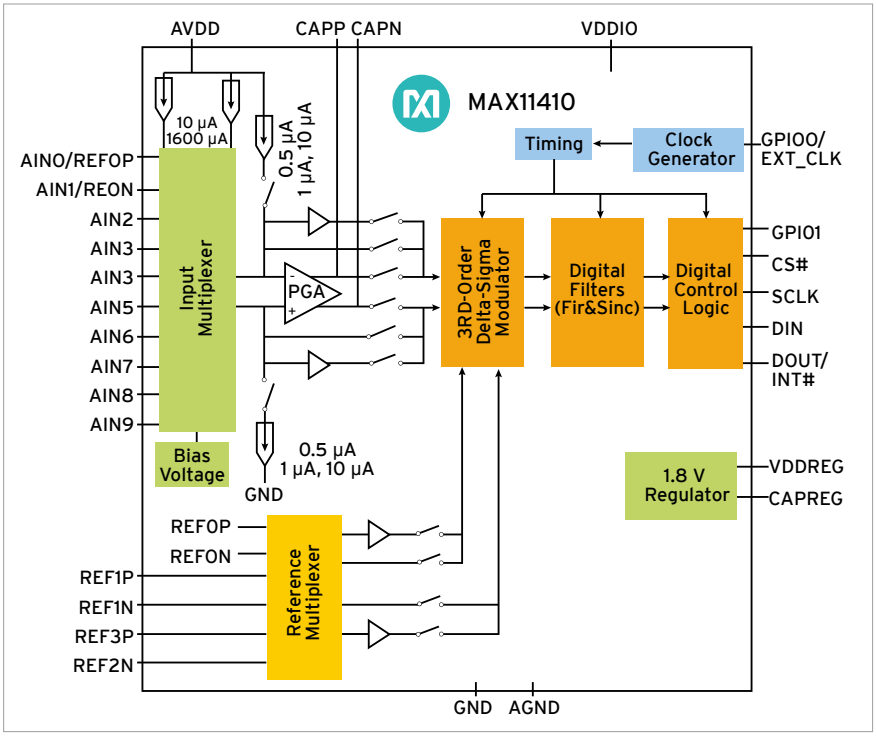
maxim integrated

100-up price
MAX11410ATI
€ 4.84

MAX11410

24-Bit Multi-Channel Low-Power 1.9 ksps Delta-Sigma ADC with PGA

CLICK OR SCAN



MAX11410 Block Diagram

The MAX11410 is a low-power, 10-channel 24-bit delta-sigma ADC optimized for precision sensor measurement.

The MAX11410 is a low-power, multi-channel, 24-bit delta-sigma ADC with features and specifications that are optimized for precision sensor measurement. The input section includes a low-noise programmable gain amplifier (PGA) with very high input impedance and available gains from 1× to 128× to optimize the overall dynamic range. Input buffers provide isolation of the signal inputs from the switched-capacitor sampling network when the PGA is not in use, making the ADC easy to drive even with high-impedance sources. Several integrated features simplify precision sensor applications. The programmable matched current sources provide excitation for resistive sensors. An additional current sink and current source aid in detecting broken sensor wires. The 10-channel input multiplexer provides the flexibility needed for complex, multi-sensor measurements. GPIOs reduce isolation components and ease control of switches or other circuitry. When used in single-cycle mode, the digital filter settles within a single conversion cycle. The integrated on-chip oscillator requires no external components. If needed, an external clock source may be used instead. Control registers and conversion data are accessed through the SPI-compatible serial interface.

KEY FEATURES

- High Resolution And Low Noise For Signal Sources With Wide Dynamic Range
  - 24-Bit Resolution
  - 90 dB Simultaneous 60 Hz and 50 Hz Power Line Rejection
  - 3 ppm Typical INL with No Missing Codes
- Optimized Features For More Efficient System Design
  - 10 Analog Inputs May be Used for Single-Ended/Fully Differential in Any Combination
  - Two Dedicated/One Shared Differential Voltage Reference Inputs
  - On-Demand Offset and Gain Self-Calibration
- Low Power for Efficient Systems
  - 2.7…3.6 V Analog Supply Range
  - 1.7…3.6 V I/O Supply Range
  - <1 µA Sleep Mode
- Standard SPI-Compatible Control Interface
- Selectable Internal/External Oscillator
- Operating Temperature Range from -40…+125°C
- Small 28-Pin 4 × 4mm² TQFN Package: Lead-Free and RoHS Compliant

APPLICATION EXAMPLES

- Portable Instruments
- Resistive Bridge Measurement
- Sensor Measurement

EBV Elektronik
An Avnet Company

1000-up price
LV8907UWR2G
€ 6.99

LV8907

Sensor-less Three-phase Brushless DC Motor Controller with Gate Drivers

CLICK OR SCAN

LV8907

An on-chip two-stage charge pump provides required gate current for a wide range of ultra low $R_{DS(ON)}$ type external N-MOSFETs.

The device offers a rich set of system protection and diagnostic functions such as over-current, over-voltage, short-circuit, under-voltage, over-temperature and more. It supports open-loop as well as closed-loop speed control with user configurable startup, speed setting and proportional/integral (PI) control coefficients.

Therefore the LV8907 is suitable for a wide range of motor and load combinations.

With an in-built linear regulator for powering an external circuit, a watchdog timer and a Local Interconnect Network transceiver, the LV8907 offers an extremely small system solution footprint. A SPI interface is provided for parameter setting and monitoring the system health.

KEY FEATURES

- Operating junction temperature up to 175 °C
- Operating voltage range from 5.5…20 V with tolerance from 4.5…40 V
- Embedded proprietary sensor-less commutation control
- In-built LIN transciever and Watchdog timer
- SPI interface for real-time parameterization and diagnostic
- Various system protection features including:
  - Shoot through protection using configurable dead-time
  - Drain-source short detection
  - Cycle-by-cycle current limit and over-current shutdown
  - Over-voltage and under-voltage shutdown
  - Over-temperature warning and shutdown
  - Input PWM fault detection
- Integrated 5 V/3.3 V regulator output for external circuit
- Integrated gate drivers for driving six N-MOSFETs
- Two-stage charge pump for continuous 100% duty-cycle operation
- Supports open-loop as well as closed-loop speed control
- Configurable speed setting and PI control coefficients

APPLICATION EXAMPLES

- BLDC motor control with or without LIN control
- Automotive pumps
- Fans (HVAC, Radiator, Battery Cooling, LED Headlight Cooling)

life.augmented

100-up price	1-up price
L6986	STEVAL-ISA156V1
€ 1.15	€ 39.-

L6986

38 V 2 A synchronous step-down switching regulator with 30 µA quiescent current

CLICK OR SCAN

Evaluation Board

The L6986 device is a step-down monolithic switching regulator able to deliver up to 2 A DC. The output voltage adjustability ranges from 0.85...V_{IN}.

Thanks to the P-channel MOSFET high-side power element, the device features 100% duty cycle operation.

The wide input voltage range meets the specification for 5 V, 12 V and 24 V power supplies. The "Low Consumption Mode" (LCM) is designed for applications that are active during idle mode.

The L6986 maximizes the efficiency at light load with controlled output voltage ripple. The "Low Noise Mode" (LNM) makes the switching frequency constant overload current range, meeting the low noise application specification. The output voltage supervisor manages the reset phase for any digital load (µC, FPGA, etc.).

The RST open collector output can also implement output voltage sequencing during the power-up phase. The synchronous rectification, designed for high efficiency at medium - heavy load, and the high switching frequency capability contribute to the compact size of the application. Pulse by pulse current sensing on both power elements implements an effective constant current protection.

KEY FEATURES

- 2 A DC output current
- 4…38 V operating input voltage
- Low consumption mode or low noise mode
- 30 µA IQ at light load (LCM V_{OUT} = 3.3 V)
- 8 µA IQ-SHTDWN
- Adjustable fSW (250 kHz - 2 MHz)
- Output voltage adjustable from 0.85…V_{IN}
- Embedded output voltage supervisor
- Synchronization
- Adjustable soft-start time
- Internal current limiting
- Overvoltage protection
- Output voltage sequencing
- Peak current mode architecture
- $R_{DS(ON)}$ HS = 180 mΩ, $R_{DS(ON)}$ LS = 150 mΩ
- Thermal shutdown

APPLICATION EXAMPLES

- Designed for 12 V and 24 V buses
- Programmable logic controllers (PLCs)
- Decentralized intelligent nodes
- Sensors and low noise applications (LNM)

100-up price	1-up price
L7987	STEVAL-ISA152V1
€ 1.19	€ 65.-

L7987

61 V 3 A asynchronous step-down switching regulator with adjustable current limitation

CLICK OR SCAN

Evaluation Board

The L7987 device is a step-down monolithic switching regulator able to deliver up to 3 A DC. The output voltage adjustability ranges from 0.8...V_{IN}

The wide input voltage range and the 100% duty cycle capability meet the fail safe specifications for industrial systems. The embedded switchover feature on the V_{BIAS} pin maximizes the efficiency at light load.

The adjustable current limitation, designed to select the inductor RMS current accordingly with the nominal output current, and the high switching frequency capability make the size of the application compact.

Pulse-by-pulse current sensing with digital frequency foldback implements an effective constant current protection over the different application conditions.

The peak current foldback decreases the stress of the power components in heavy short-circuit condition.

The PGOOD open collector output can also implement output voltage sequencing during the power-up phase.

Multiple devices can be synchronized sharing the SYNCH pin to prevent beating noise in low noise applications like sensors with A/D conversion.

KEY FEATURES

- 3 A DC output current
- 4.5...61 V operating input voltage
- $R_{DS(ON)}$ = 250 mΩ typ.
- Adjustable f_{SW} (250 kHz - 1.5 MHz)
- Low IQ-SHD (11 µA typ. from V_{IN})
- Low IQ (1 mA typ. - V_{IN} 24 V - V_{OUT} 3.3 V)
- Output voltage adjustable from 0.8...V_{IN}
- Synchronization
- Adjustable soft-start time
- Adjustable current limitation
- Low dropout operation (12 µs max.)
- V_{BIAS} improves efficiency at light load
- PGOOD open collector output
- Output voltage sequencing
- Digital frequency foldback in short-circuit
- Peak current foldback in short-circuit
- Auto-recovery thermal shutdown

APPLICATION EXAMPLES

- Designed for 24 V bus
- Fail safe tolerant system
- Programmable logic controllers (PLCs)

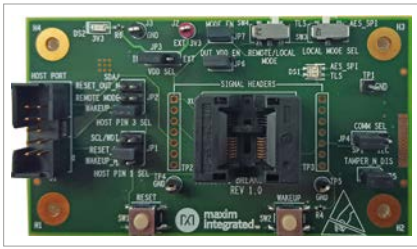
maxim integrated

Please contact EBV for price information

MAXQ1061

DeepCover Cryptographic Controller for Embedded Devices

CLICK OR SCAN



MAXQ1061

The MAXQ1061 is delivered with a "cryptographic toolbox," which enables features such as key generation, secure storage, digital signatures, and SSL/TLS/DTLS encryption

DeepCover® embedded security solutions cloak sensitive data under multiple layers of advanced physical security to provide the most secure key storage possible. DeepCover cryptographic controller (MAXQ1061) protects the confidentiality, authenticity and integrity of software IP, communication and revenue models.

It is ideal for connected embedded devices, industrial networking, PLC, and network appliances. The embedded, comprehensive cryptographic toolbox provides key generation and storage up to full SSL/TLS/DTLS support by offering a high level of abstraction. It can also serve as a secure bootloader for an external generic microcontroller. A flexible file system manages access rights for the objects. The device is controlled over an SPI or I²C interface.

Cryptographic algorithms supported by the device include all main signature schemes and digest algorithms. A separate hardware AES engine over SPI, allows it to function as a coprocessor for stream encryption. The advanced physical, environmental and logical protections, are designed to meet the stringent requirements of FIPS and Common Criteria EAL4+ certifications.

KEY FEATURES

Advanced Cryptographic Tool Box Seamlessly Supports Highly Secure Key Storage

- Certificates Chain Management
- Secure 32 KB File System Based on EEPROM (500 K Cycles) for Extensive Key and Certificate Storage
- Symm-key: AES-128/-256 (ECB, CBC, CCM)
- Asymm-key: ECC NIST P-256, -521, -384
- Secure Hash: SHA-256, -384, -512
- MAC Digest: CBC-MAC, HMAC-SHA256, -384, -512
- Signature Schemes: ECDSA (FIPS 186-4)
- Key Exchange: EC Diffie-Hellman (TLS)
- 128-Bit AES Stream Encryption Engine Over SPI (=> 20 Mb/s) Supporting AES-GCM and -ECB Modes
- On-Chip Key Generation: ECC, AES
- True Random Number Generation

High-Level Functions Simplify SSL/TLS/DTLS Implementations

- TLS/DTLS Key Negotiation (PSK, ECDH, ECDHE)
- ECDSA Based TLS/DTLS Authentication, Digital Signature Generation and Verification
- SSL/TLS/DTLS Packet Encryption (AES)
- MAC Algorithm (HMAC-SHA256)

Extensive Host/System Services - Flexibility & Reduce System Cost

- Watchdog Timer
- Power-On Reset/Brownout Reset
- Secure Boot Function
- Tamper Detection
- Life Cycle Management and Key Loading Protocol
- Flexible File System With User-Programmable Access Conditions for Each Object Software Reset
- Software Reset, Shutdown, and Wake-Up Functions

Multiple Communication Interface Options for Simpler Connection to a Host Processor

- I²C, and SPI Slave Controller with a Dedicated DMA Channel and 128-Bit AES Stream Encryption Engine (AES-GCM , AES-ECB Modes)

APPLICATION EXAMPLES

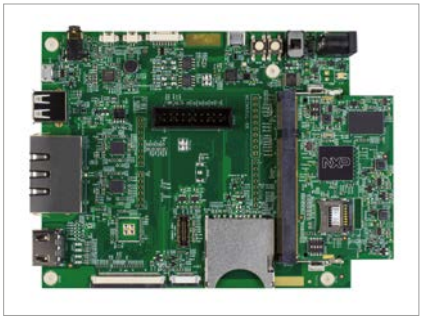
- Certificate Distribution and Management
- Cybersecurity for Critical Infrastructures
- Electronic Signature Generation
- Secure Access Control
- Smart Metering

100-up price	100-up price	1-up price
MCIMX6Y1CVM05AA	MCIMX6Y2DVM05AA	MCIMX6ULL-EVK
€ 5.57	€ 5.61	€ 145.-

I.MX 6ULL

Ultra-efficient and low cost application processor for the IoT

CLICK OR SCAN



i.MX 6ULL Evaluation Kit

i.MX 6ULL Single-Core Processor with ARM® Cortex®-A7 Core

The i.MX 6ULL is a power efficient and cost optimized applications processor family featuring an advanced implementation of a single ARM® Cortex®-A7 core, which operates at speeds up to 528 MHz.

The i.MX 6ULL application processor includes an integrated power management module that reduces the complexity of an external power supply and simplifies power sequencing. Each processor in this family provides various memory interfaces, including 16-bit LPDDR2, DDR3, DDR3L, raw and managed NAND flash, NOR flash, eMMC, Quad SPI and a wide range of other interfaces for connecting peripherals such as WLAN, Bluetooth®, GPS, displays and camera sensors.

KEY FEATURES

CPU Complex

- ARM® Cortex®-A7 core @ 528 MHz, 128 KB L2 cache

Display

- Parallel LCD Display up to WXGA (1366 × 768)
- 8/10/16/24-bit Parallel Camera Sensor Interface
- Electrophoretic display controller support direct-driver for E-Ink EPD panel, with up to 2048 × 1536 resolution at 106 Hz

Memory

- 16-bit LP-DDR2, DDR3/DDR3L
- 8/16-bit Parallel NOR FLASH/PSRAM
- Dual-channel Quad-SPI NOR FLASH
- 8-bit Raw NAND FLASH with 40-bit ECC

Connectivity

- 2 × MMC 4.5/SD 3.0/SDIO Port
- 2 × USB 2.0 OTG, HS/FS, Device or Host with PHY
- Audio Interfaces include 3 × I²S/SAI, S/PDIF Tx/Rx
- 2 × 10/100 Ethernet with IEEE 1588
- 2 × 12-bit ADC, up to 10 input channel total, with resistive touch controller (4-wire/5-wire)

Advanced Power Management

- Partial PMU Integration

Security

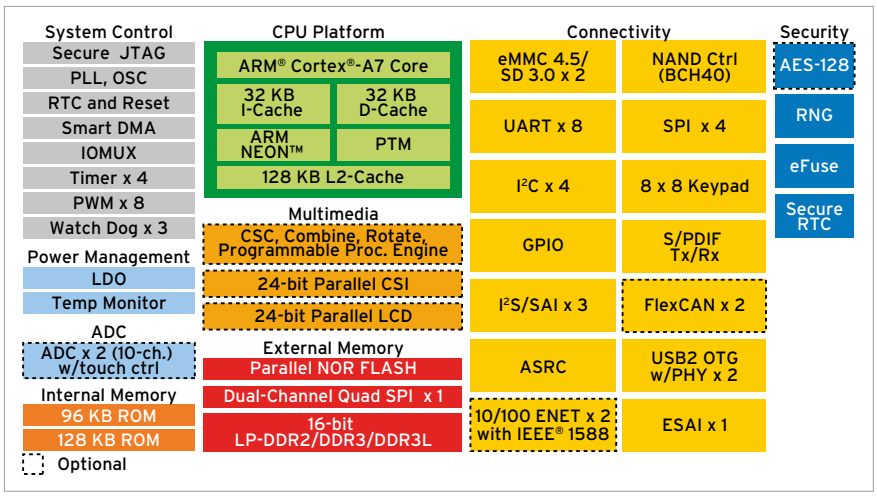
- Security Block: TRNG, Crypto Engine (AES with DPA, TDES/SHA/RSA), Secure Boot

Package

- 14 × 14 289 MAPBGA 0.8 mm pitch
- 9 × 9 272 MAPBGA 0.5 mm pitch

APPLICATION EXAMPLES

- Human-machine interface (HMI)
- IoT gateways
- Home energy management systems
- Smart energy concentrators
- Intelligent industrial control systems
- Portable medical
- Streaming audio
- Printers and 2D scanners
- Smart appliances
- Low-end e-Readers



i.MX 6ULL Block Diagram

100-up price	1-up price
MKE15Z256VLL7	HVP-KE18F
€ 2.48	€ 87.-

KINETIS KE1X

Kinetis E MCUs are Robust, Rugged and Can Withstand Harsh Electrical Conditions

CLICK OR SCAN

Kinetis E series: 5 V devices based on the ARM® core

Kinetis E MCUs are robust, rugged and can withstand harsh electrical conditions. Building on the success of the initial KE0x family, the new Kinetis KE1x MCUs support a wide range of performance, memory, and peripherals. With its communication interfaces, mixed-signal integration, and a complete set of analog/digital features, the Kinetis KE1x family is the perfect fit for low-end to high-end applications in the white goods and industrial market. The Kinetis KE1x family includes KE1xZ and KE1xF MCUs.

Besides multiple memory options, ARM® Cortex®-M0+ based KE1xZ MCUs support a complete set of analog/digital features. The robust TSI provides high level stability and accuracy to any HMI system. ADC- and FlexTimer modules (FTM) ease the creation of BLDC motor-control systems.

Kinetis KE1xF MCUs are targeted more to high-end applications. Enhanced by up to 512 KB flash, the high performance ARM® Cortex®-M4 core supports FPU and DSP. Multiple ADCs and FlexTimers, CAN 2.0B-compliant FlexCAN modules, and a broad suite of interfaces provide flexibility for communication emulation.

APPLICATION EXAMPLES

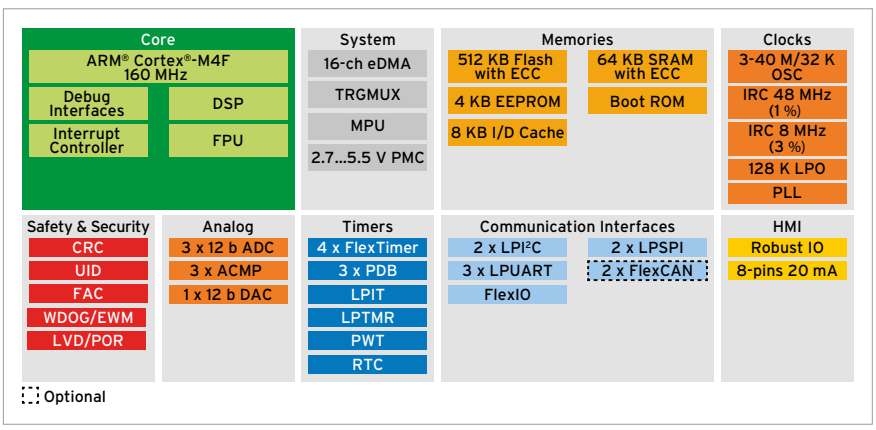
Target Applications

- Home appliance
- 5 V motor control
- Industrial control
- Smart lighting

KEY FEATURES

KINETIS KE1x Series

	KE1xZ	KE1xF
Core/ Organisation	ARM® Cortex®-M0+ up to 72 MHz 8 ch eDMA TRGMUX MMDVSQ	ARM® Cortex®-M4F up to 168 MHz 16 ch eDMA TRGMUX MPU
Communications	3 × LPUART/2 × LPSPI/2 × LPI²C/FlexIO	2 × FlexCAN 3 × LPUART/2 × LPSPI/2 × LPI²C/FlexIO
Analog	2 × 12 b ADC, 1 MSPS 2 × ACMP 1 × 8 b DAC	3 × 12 b ADC, 1 MSPS 3 × ACMP 1 × 12 b DAC
Packages	100LQFP (0.5 mm pitch) 64LQFP (0.5 mm pitch) Pin compatible within KE	100LQFP (0.5 mm pitch) 64LQFP (0.5 mm pitch) Pin compatible within KE
Memory	up to 256 KB Flash up to 32 KB SRAM up to 32 KB FlexMemory/2 KB EEPROM Boot ROM	up to 512 KB Flash with ECC up to 64 KB SRAM with ECC up to 64 K FlexMemory/4 KB EEPROM 8 KB I/D Cache Boot ROM
Timers	1 × 8 ch FTM (PWM) 2 × 4 ch FTM (PWM/Quad Dec.) 1 × PDB 1 × 4 ch LPIT/1 × LPTMR/1 × PWT 1 × RTC	2 × 8 ch FTM (PWM) 2 × 8 ch FTM (PWM/Quad Dec.) 3 × PDB 1 × 4 ch LPIT/1 × LPTMR/1 × PWT 1 × RTC
Others	Up to 36 keys Touch Sensing Interface (TSI) Up to 89 GPIO with glitch filter 2.7…5.5 V, -40…105 °C	Up to 89 GPIO with glitch filter 2.7…5.5 V, -40…105 °C



KE1xF block diagram

100-up price	1-up price
MKL28Z512VLL7	TWR-KL28Z72M
€ 3.97	€ 145.-

KINETIS KL28

High speed ARM® Cortex®-M0+ core, advanced smart peripherals for low power and security features

CLICK OR SCAN

FRDM-KL28Z-BD

The Kinetis KL28 will meet the performance and power efficiency requirements of IoT applications.

The Kinetis KL28 processor provides the industry with one of the fastest M0+ MCUs, with larger memory size and advanced smart peripherals such as LPI²C, LPSPI, EVSIM and Parallel FlexIO.

High Performance and Large Memory Size

- Up to 72/96 MHz core frequency
- Up to 512 KB flash memory and 128 KB SRAM
- 32 KB ROM with built-in bootloader

Advanced Smart Low Power Peripherals and Clock Structure

- New Low Power smart IIC/SPI interface
- New EMVSIM for card interface
- New Flexible System and Peripheral Clock Management
- New Peripheral Trigger Mechanisim
- Enhanced DMA and FlexIO
- Additional USB RAM for Low Power Operation
- New EMVSIM Module

Enhanced Security

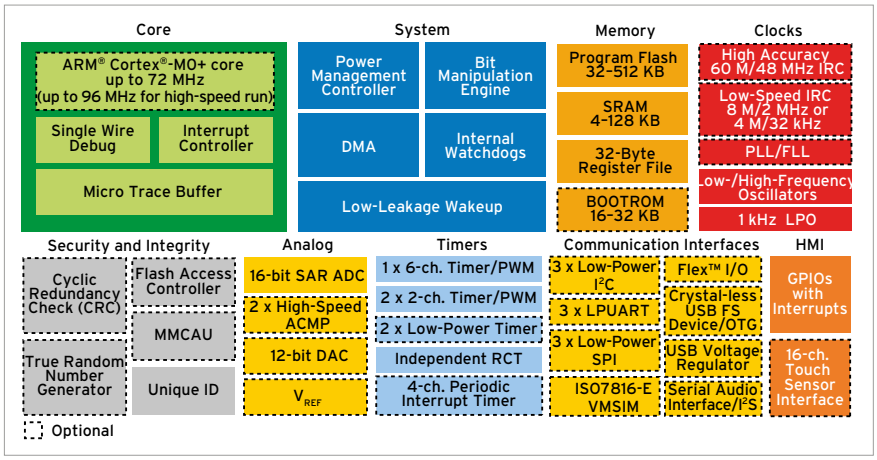
- True Random Number Generator
- MMCAU to support AES/DES/SHA/MD5
- Flash Access Control and Security

KEY FEATURES

- Performance
  - ARM® Cortex®-M0+ cores up to 72 MHz in Normal mode and 96 MHz in High Speed mode
- Connectivity and Communications
  - Three 16-bit Low Power Serial Peripheral Interface (LPSPI) modules
  - One EMVSIM module supporting EMV version 4.3, ISO7816
  - Three LPUART modules, three LPI²C modules supporting up to 5 Mbit/s
  - One SAI module supporting I²S
  - One FlexIO module emulating UART, SPI, I²S, camera interface, and Motorola 68K/Intel 8080 bus
  - USB FS 2.0 device operation without need of external crystal
- Analog Front End
  - 16-bit, 24-channel SAR ADC with internal voltage reference
  - Two High-speed analog comparators each containing a 6-bit DAC and programmable reference input
  - One 12-bit DAC
  - 1.2 V and 2.1 V voltage references (V_{REF})
- Advanced Security
  - 80-bit unique identification number per chip
  - MMCAU supports acceleration of the DES, 3DES, AES, MD5, SHA-1, and SHA-256 algorithms
- Packages
  - 100LQFP 14 × 14 × 1.4/0.5 mm³
  - 121XFBGA 8 × 8 x 0.43/0.65 mm³
- Operating Voltage and Temperature Range
  - Voltage range 1.71…3.6 V
  - Temperature range -40…+105 °C

APPLICATION EXAMPLES

- Entry Level Security
- 2-D Code Decoder
- Sensor Fusion/IoT Node
- Wearable
- Gaming / Pad Accessories



KL28 Block Diagram

life.augmented

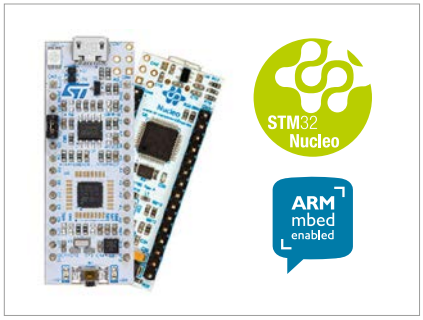
100-up price	100-up price	1-up price
STM32L443RCT6	STM32L433RCT6	NUCLEO-L432KC
€ 3.29	€ 3.29	€ 10.-

STM32L43

STM32L4 series of ultra-low-power and performance MCUs

CLICK OR SCAN

STM32L4



Nucleo Board

EBV ELEKTRONIK presents the STM32L432xx ultra-low-power microcontrollers based on the high-performance ARM® Cortex®-M4 32-bit RISC core operating at a frequency of up to 80 MHz.

The Cortex-M4 core features a floating point unit (FPU) single precision which supports all ARM single-precision data-processing instructions and data types. It also implements a full set of DSP instructions and a memory protection unit (MPU) which enhances application security. The STM32L432xx devices embed high-speed memories (Flash memory up to 256 Kbyte, 64 Kbyte of SRAM), a Quad SPI flash memories interface and an extensive range of enhanced I/Os and peripherals connected to two APB buses, two AHB buses and a 32-bit multi-AHB bus matrix.

The STM32L432xx devices embed several protection mechanisms for embedded Flash memory and SRAM: readout protection, write protection, proprietary code readout protection and Firewall. The devices offer a fast 12-bit ADC (5 Msps), two comparators, one operational amplifier, two DAC channels, a low-power RTC, one general-purpose 32-bit timer, one 16-bit PWM timer dedicated to motor control, four general-purpose 16-bit timers, and two 16-bit low-power timers.

KEY FEATURES

- Ultra-low-power with FlexPowerControl
- Core: ARM® 32-bit Cortex®-M4 CPU with FPU, Adaptive real-time accelerator (ART Accelerator™) allowing 0-wait-state execution from Flash memory, frequency up to 80 MHz, MPU, 100 DMIPS/1.25 DMIPS/MHz (Dhrystone 2.1), and DSP instructions
- Performance Benchmark – 1.25 DMIPS/MHz (Drystone 2.1) – 273.55 Coremark® (3.42 Coremark/MHz @ 80 MHz) Energy Benchmark – 176.7 ULPBench® score
- Internal 16 MHz factory-trimmed RC (±1%)
- Rich analog peripherals (independent supply)
- 1 × 12-bit ADC 5 Msps, up to 16-bit with hardware oversampling, 200 µA/Msps
- 2 × 12-bit DAC, low-power sample and hold -1× operational amplifier with built-in PGA
- 2 x ultra-low-power comparators 15 × communication interfaces
- USB 2.0 full-speed crystal less solution with LPM and BCD
- 1 × SAI (serial audio interface)
- 3 × I²C FM+(1 Mbit/s), SMBus/PMBus
- 4 × USARTs (ISO 7816, LIN, IrDA, modem)
- 3 × SPIs (4× SPIs with the Quad SPI)
- CAN (2.0B Active) and SDMMC interface
- SWPMI single wire protocol master I/F

Memories:

- Up to 256 KB single bank Flash, proprietary code readout protection
- 64 KB of SRAM including 16 KB with hardware parity check
- Quad SPI memory interface

APPLICATION EXAMPLES

- All industial applications (125°C, Rc 1%)
- All battery powered applications: ULP architecture
- Stepper motor

1000-up price
MT29F1G08ABAEAH4:E
€ 0.99

MT29F SERIES
SLC NAND Flash Family

CLICK OR SCAN

MT29F series

Single-level cell (SLC) NAND flash. Ideal for high-performance, high-endurance and low-power small form-factor applications, Micron's SLC NAND meets the demands of IoT, automotive and emerging embedded applications.

Storing 1 bit of data per memory cell, SLC NAND offers fast read and write capabilities and boot times, excellent endurance and reliability, and with our latest generation 25 nm NAND-on-die ECC algorithms enabling advanced security features and data corruption protection. For small form-factor designs and applications requiring speed, endurance and security, SLC NAND is the best choice.

KEY FEATURES

- Open NAND Flash Interface (ONFI) 1.0-compliant
- Single-level cell (SLC) technology
- Asynchronous I/O performance
  - t_{RC}/t_{WC}: up to 20 ns (3.3 V), 25 ns (1.8 V)
- Serial Peripheral Interface (SPI)
  - Standard and extended SPI-compatible serial bus interface
- Quality and reliability
  - Endurance: up to 100,000 PROGRAM/ERASE cycles
  - Data retention: JESD47G/H-compliant
  - Additional: Uncycled data retention: 10 years 24/7 @ 85 °C
- Operating voltage range
  - V_{CC}: 2.7…3.6 V
  - V_{CC}: 1.7…1.95 V
- Operating temperature:
  - Commercial: 0…+70 °C
  - Industrial (IT): -40…+85 °C
- Package:
  - 48-pin TSOP
  - 63-ball VFBGA
  - 16-pin SOP
  - 8-pin U-PDFN
  - 24-ball T-PBGA

APPLICATION EXAMPLES

- Automotive
  - Infotainment
  - Powertrain
  - ADAS
  - Cluster/Dashboard
- Consumer Applications
  - Digital TVs (DTV)
  - Wearables
  - Set-top boxes (STB)
  - Routers
  - Surveillance

TOSHIBA
Leading Innovation

100-up price	100-up price
TH58NVG4S0HTA20	TH58NVG4S0HTAK0
€ 11.60	€ 11.95

SLC NAND FLASH TH58NVG4S0HTAXX

16 Gbit SLC in 24 nm Technology

CLICK OR SCAN

Toshiba 16 Gbit, 24 nm technology

Toshiba Electronics Europe has expanded its family of 24 nm flash single-level cell (SLC) memory: 16 Gbits in standard 48-pin TSOP

Toshiba is expanding the 24 nm flash single-level cell (SLC) memory family with a new device that offers a capacity of 16 Gbits (Gb) in an industry-standard 48-pin TSOP package.

The new addition to the range means that designers can now take advantage of the price/performance of the company's advanced 24 nm NAND flash SLC technology at all capacity points from 1…128 Gb.

As with other members of the family, the new device offers a combination of high read/write performance, effective write endurance (using 8-bit BCH ECC), and extended temperature operation. This makes it suitable for a variety of commercial and industrial applications.

Toshiba's commitment to supporting the 24 nm SLC flash technology also provides industrial designers with the confidence of choosing the technology for applications requiring production longevity.

KEY FEATURES

- 16 Gbit density of SLC NAND flash
- Leading edge 24 nm process technology
- High performance & reliability
- Long term support
- 2.7…3.3 V power supply.
- Operating temperature range is from -40…85°C
- Used with 8 bit ECC

APPLICATION EXAMPLES

- Manufacturing
- Factory automation
- Home entertainment
- Portable devices
- Home automation
- Home appliances

EBV Elektronik
An Avnet Company

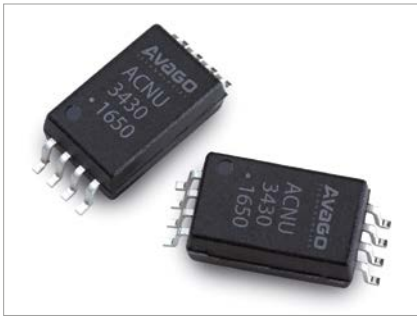
BROADCOM
connecting everything®

1000-up price	1000-up price	1000-up price	1000-up price
ACNU-3410-500E	ACNU-3410-000E	ACNU-3430-500E	ACNU-3430-000E
€ 1.99	€ 1.99	€ 2.29	€ 2.29

ACNU-3410/3430 GATE DRIVERS

Industry´s First 11 mm SSO-8, 5 A/3 A Gate Drive Optocouplers

CLICK OR SCAN



ACNU-3430

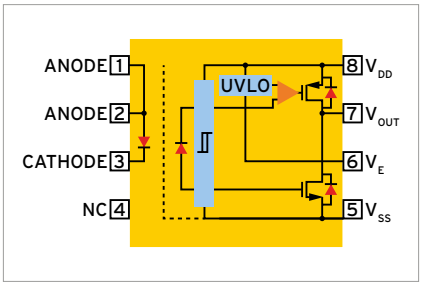
The ACNU-3410/3430 are 5 A/3 A gate drive optocoupler devices in a 11 mm SSO-8 package designed for high voltage, space constrained industrial applications including 600 V_{AC} motor drives and 1 kV_{DC} solar inverters.

The new package platform features wide 11 mm creepage and 10.5 mm clearance, high insulation voltage and a compact package footprint, providing enhanced high voltage protection and signal isolation in tight spaces.

The ACNU family is an upgrade and 40 % smaller to the popular HCNW/ ACNW in 400 mil DIP-8 package.

The family features common mode transient immunity (CMTI) greater than 100 kV/µs, preventing erroneous gate driver failures in noisy environments. Furthermore, the new device has minimal propagation delay, three times faster than the previous generation, enabling high frequency switching to improve efficiency in driving IGBT and SiC/GaN MOSFET.

The ACNU-3430 has a V_E pin that allows use of a negative power supply without affecting the UVLO monitoring the positive power supply.



Block Diagram ACNU-3410

KEY FEATURES

- 5 A Maximum Peak Output Current [ACNU-3430]
- 3 A Maximum Peak Output Current [ACNU-3410]
- High CMTI: >100 kV/µs
- Propagation Delay: 70 ns typ.
- 11 mm Creepage and 10.5 mm Clearance
- UVLO with V_E reference for Bi-directional Power Supply
- Worldwide Safety Approvals:
  - IEC/EN/DIN EN 60747-5-5, V_{IORM} = 1,414 V_{PEAK}
  - UL 1577, V_{ISO} = 5,000 V_{RMS} for 1 minute
  - CSA Component Acceptance Notice 5

APPLICATION EXAMPLES

- IGBT/MOSFET Gate Drive
- AC and Brushless DC Motor Drives
- Renewable Energy Inverters
- Industrial Inverters
- Switching Power Supplies

BROADCOM
connecting everything

100-up price
AFBR-59SMI2Z
€ 19.99

AFBR-59SMI2Z

250-MBd Compact 650-nm Transceiver for Data Communication

CLICK OR SCAN

AFBR-59SMI2Z

The AFBR-59SMI2Z transceiver provides system designers with the ability to support serial communication with baud rates of up to 250 MBd over 2.2 mm jacketed standard polymer optical fiber (POF) with 1 mm core diameter and NA 0.5.

The SMI optical interconnect with its push-pull positive latching, with safe-release mechanism, provides secure, safe and easy to mate and de-mate optical connection for miscellaneous industrial and medical applications. The AFBR-59SMI2Z is Laser Class 1, lead-free and compliant with RoHS.

Transmitter

The transmitter consists of a 650-nm LED, which is controlled by a fully integrated driver IC. The LED driver operates at 3.3 V. It receives Low Voltage Differential Signaling (LVDS) electrical input, and converts it into a modulated current driving the LED. LED and driver IC are packaged in an optical subassembly. The optimized lens system of the optical subassembly couples the emitted optical power very efficiently into 1-mm core POF cable.

Receiver

The receiver utilizes a fully integrated single chip solution, which provides excellent immunity to EMI and fast transient dV/dt rejection. The receiver directly converts light to a digital LVDS output signal and operates at 3.3-V nominal supply. The integrated receiver is packaged in an optical subassembly, which couples optical power efficiently from POF to the receiving PIN. The receiver features an analog monitor output of the incoming optical signal. The monitor output provides an analog voltage proportional to the average optical input

KEY FEATURES

- Fast Ethernet communications over POF
- Data rates up to 250 MBd
- High EMI/EMC robustness
- SMI connector system
- Link lengths up to 50 m POF
- 3.3 V operation
- LVDS input and output data connections
- Analog monitoring output (RSSI)
- Operating temperature range -40…+85 °C.
- RoHS compliant

APPLICATION EXAMPLES

- Industrial and medical applications
- Fast Ethernet

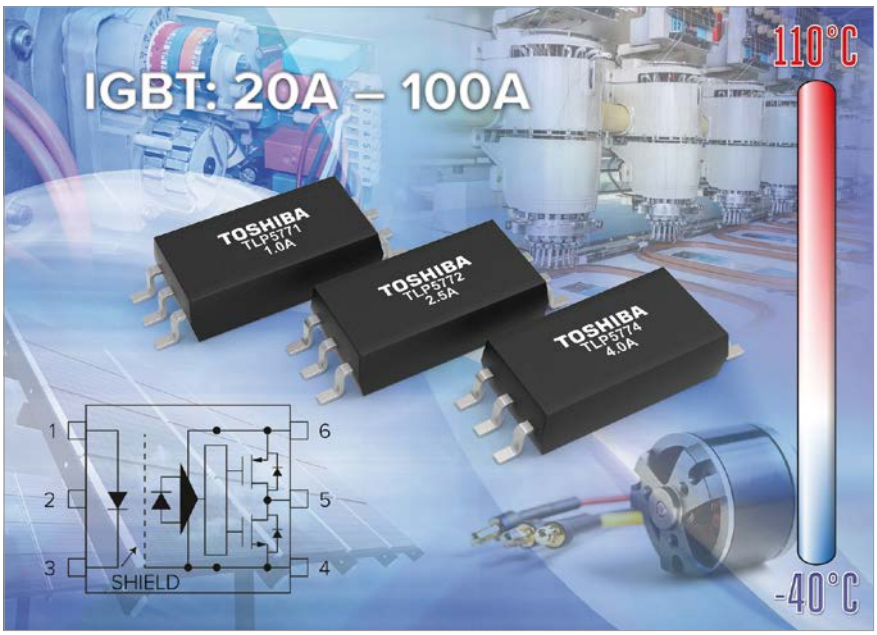
TOSHIBA
Leading Innovation

100-up price	100-up price	100-up price
TLP5771(TP,E(T	TLP5772(TP,E(T	TLP5774(TP,E(T
€ 0.53	€ 0.54	€ 0.56

TLP5771, TLP5772 AND TLP5774

Low Input Current Drive Gate Driver Photocouplers

CLICK OR SCAN



Toshiba_TLP5771_TLP5772 and TLP5774

Low threshold input current of 2 mA max allows direct buffer-less drive of the gate of low-to-medium-power IGBTs and MOSFETs by microcontrollers. Low package height allows flexible design (device can be used on back of PCB).

Toshiba Electronics Europe promotes their series of low-input current drive, rail-to-rail output, gate-drive photocouplers. With a threshold input current of 2 mA (max.), half the 4 mA (max.) of Toshiba's existing products, the new photocouplers allow bufferless direct drive of low- to medium-power IGBTs and MOSFETs from microcontrollers. The peak output currents of 1.0 A, 2.5 A and 4.0 A, allow the series to meet a wide range of user requirements. In addition, because minimum operating voltage is 10 V compared to the 15 V of previous devices, the couplers contribute to higher system efficiency and lower power consumption.

All of the new devices are housed in a low-profile SO6L package that supports the development of thinner and smaller systems. Potential applications for the new photocouplers include amplifiers, motor drivers, general-purpose and photovoltaic (PV) inverters, and many more. The TLP5771 is suitable for small-scale IGBTs up to 20 A, while the TLP5772 is applicable for mid-scale IGBTs up to 80 A. The TLP5774 can be used with mid-scale IGBTs up to 100 A.

KEY FEATURES

- Gate driver photocouplers with +/- 1 A, 2.5 A and 4 A (TLP5771, TLP5772, TLP5774) peak output current.
- Threshold Input Current max. 2 mA.
- Rail-to-Rail (R2R) totem-pole output for bootstrap power supply operation.
- Low power loss due to reduced supply current of max. 3 mA and R2R operation.
- Extended operation temperature range of -40…110°C.
- Fast propagation delay time (150 ns) and low skew (+/-80 ns).
- Common Mode Transient Immunity +/- 35 kV/µs.
- Advanced SO6L package with a height of max. 2.3 mm
- Isolation Voltage BVs of min. 5000 kVeff.
- UL-approved, cUL-approved and VDE-approved.

APPLICATION EXAMPLES

- IGBT / MOSFET gate drive
- Industrial inverters
- Compact motor drivers
- Factory automation (FA)
- Photovoltaic (PV) power conditioning systems
- Industrial sewing machines
- AC servos

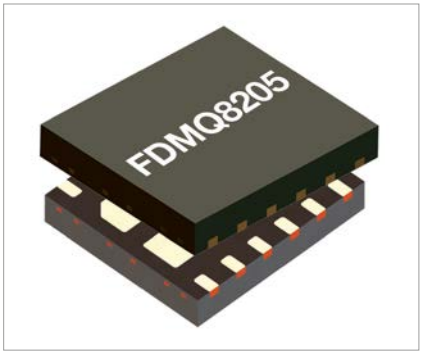
ON Semiconductor®

1000-up price
FDMQ8205
€ 1.49

FDMQ8205

GreenBridge™ Quad MOSFET Solutions

CLICK OR SCAN



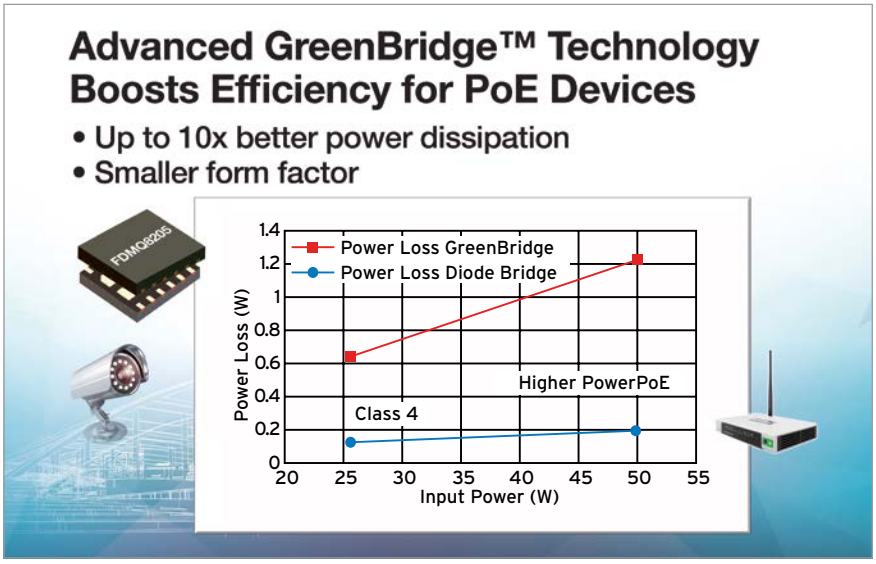
FDMQ8205

EBV Elektronik presents the FDMQ8205 enabling applications to maximize the available power and voltage and to eliminate the thermal design problems in PoE PD applications.

EBV Elektronik presents the FDMQ8205 GreenBridge™ II series of quad MOSFETs – for a bridge application so that the input will be insensitive to the polarity of a power source coupled to the device. Many known bridge rectifier circuits can be configured using typical diodes. The conventional diode bridge has relatively high power loss that is undesirable in many applications.

Especially, Power over Ethernet (PoE) Power Device (PD) application requires high-efficiency bridges because it should be operated with the limited power delivered from Power Source Equipment (PSE) which is classified by IEEE802.3at. FDMQ8205 is configured with low $R_{DS(ON)}$ dual P-ch MOSFETs and N-ch MOSFETs so that it can reduce the power loss caused by the voltage drop, compared to the conventional diode bridge.

The second-generation GreenBridge FDMQ8205 family is comprised of two N-channel and two P-channel 80 V-rated MOSFETs in a single, small MLP 4.5 × 5 package.



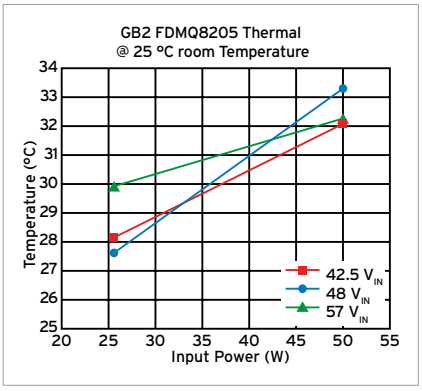
GreenBridge™-II Efficiency

KEY FEATURES

- Low Power Loss GreenBridge™ Replaces Diode Bridge
- Self driving circuitry for MOSFETs
- Low $R_{DS(ON)}$ MOSFETs
- Maximizing available power and voltage
- Eliminating thermal design problems
- IEEE802.3at compatible
- Meet detection and classification requirement
  - Work with 2 and 4-pair architecture
  - Small backfeed voltage
  - Compact MLP 4.5 × 5 package

APPLICATION EXAMPLES

- Power over Ethernet (PoE) and Power Device (PD)
- IP phones
- Network cameras
- Wireless access points
- Thin clients
- Microcell
- Femtocell
- Security cameras
- LED lighting



ON Semiconductor®

100-up price
FGY120T65SPD_F085
€ 4.49

FGY120T65SPD-F085

Ultra-High Current Density Discrete Short Circuit Rated 650 V IGBT

CLICK OR SCAN

FGY120T65SPD-F085

EBV Elektronik presents a 650 V, 120 A Field Stop Trench IGBT with soft fast recovery diode from ON Semiconductor.

The benefits from this part are very low conduction and switching losses for high efficiency operation in various applications. The IGBT is very rugged against transients and therefore a very reliable choice, the soft switching characteristics of IGBT and co-pack diode secures low EMI emissions. Additionally, an outstanding parallel operation performance with balanced current sharing is a brilliant characteristic of this part.

KEY FEATURES

- Automotive qualified
- Very low saturation voltage: $V_{CE(SAT)}$ = 1.5 V (typ.) @ I_C = 120 A
- Maximum junction temperature: T_J = 175 °C
- Positive temperature co-efficient
- Tight parameter distribution
- High input impedance
- 100 % of the parts are dynamically tested
- Short circuit ruggedness >6 µs @ 25 °C
- Copacked with soft, fast recovery Extremefast diode

APPLICATION EXAMPLES

- Traction inverter for HEV & EV
- Automotive auxilary DC/AC converter
- Motor drives
- Other automotive power train applications requiring high power switch

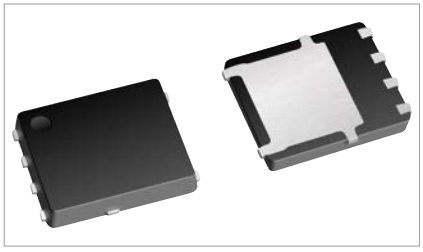
ON Semiconductor®

1000-up price	1000-up price	1000-up price
NTMFS5H409NLT1G	NTMFS5H400NLT1G	NTMFS5H600NLT1G
€ 1.39	€ 2.09	€ 2.09

T8 40 V/60 V POWER MOSFETS

Power MOSFET Single N-Channel SO-8FL Logic Level

CLICK OR SCAN



SO8FL package

ON Semiconductor's NTMFS5H4xx and NTMFS5H6xx 40 V and 60 V Power MOSFETs deliver one of the lowest $R_{DS(ON)}$ for these voltage classes in the market and with the low Q_G also an excellent FOM, they come in a small footprint SO8FL package.

The devices deliver $R_{DS(ON)}$ values as low as 0.8 mΩ, thus minimizing conduction losses significantly and improving overall operational efficiency levels.

The Power MOSFETs also offer very low Q_G and input capacitance, ensuring driver losses are kept as low as possible.

The devices are housed in a small footprint SO8FL package.

KEY FEATURES

- Small Footprint SO8FL (5 × 6) Package
- Sub mΩ $R_{DS(ON)}$ minimizing conduction loss
  - 60 V: $R_{DS(ON)}$
    - 1.3 mΩ @ 10 V Max.
    - 1.7 mΩ @ 4.5 V Max.
  - 40 V: $R_{DS(ON)}$
    - 0.8 mΩ @ 10 V Max.
    - 1.1 mΩ @ 4.5 V Max.
- Low Q_G and Capacitance to minimize driver losses
  - 60 V, Gate Charge:
    - 40 nC @ 4.5 V V_{GS}
    - 89 nC @ 10 V V_{GS}

APPLICATION EXAMPLES

- High Efficiency DC-DC Conversion
  - Primary side MOSFET
  - Secondary Synchronous Rectification
  - Buck Regulator
- High Efficiency AC-DC Conversion
  - Secondary Synchronous Rectification
- Networking/Telecom
- Servers
- AC Adapters
- Handheld Power Tools

100-up price	100-up price	100-up price	1-up price
SiP32102DB-T1-GE1	SiP32101DB-T1-GE1	SiP32103DB-T1-GE1	SiP32101EVB
€ 0.49	€ 0.49	€ 0.59	€ 37.-

SIP321XX
Vishay Smart Load Switches

CLICK OR SCAN

SiP32101DB

EBV Elektronik presents a 6.5 mΩ, bi-directional battery switch in compact WCSP.

The SiP32101, SiP32102, and SiP32103 bidirectional switches feature reverse blocking capability to isolate the battery from the system. The internal switch has an ultra-low 6.5 mΩ (typ at 3.3 V) on-resistance and operates from a +2.3…+5.5 V input voltage range, making the devices ideal battery-disconnect switches for high-capacity battery applications.

Other features like slew rate control provide a controlled supply ramp, reducing inrush current. With quick output discharge, the output node has a defined decay and does not leave the node floating. Fault protection and isolation allows load switches to have integrated protection features like reverse current, over temperature, current limiting and short circuit, thus increasing robustness. Due to the small package size, these integrated load switches use significantly less PCB area compared to most discrete implementations.

Reduced BOM count translates to lower manufacturing costs.

KEY FEATURES

- In-rush control
- Low voltage control logic
- Output discharge
- Reverse blocking
- Hot plug
- Programmable over current protection
- Over current clamping
- Short circuit protection
- Load condition-current read back
- Over voltage protection
- Over voltage clamping
- Over temperature protection
- Fault flag

APPLICATION EXAMPLES

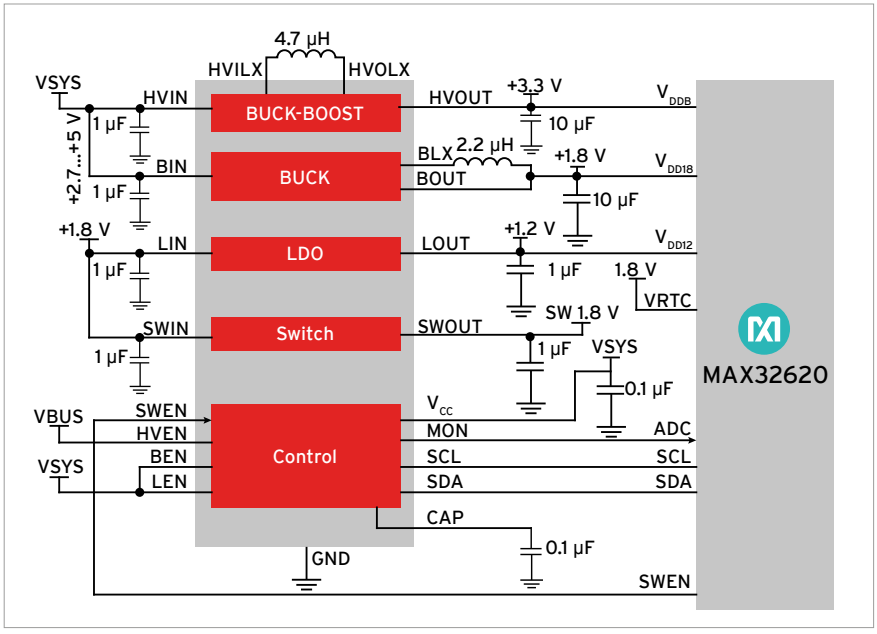
- Portable instruments
- Healthcare devices
- Smartphone/cellular phones
- PMP, GPS, DSC
- Tablets
- Digital still/video cameras
- Portable meters and test instruments
- Communication devices with embedded batteries
- Data storage
- Battery bank

maxim integrated

100-up price
MAX14720AEWA T
€ 2.86

MAX14720
Power-Management Solution

CLICK OR SCAN



MAX14720

The MAX14720/MAX14750 integrate a power switch, a linear regulator, a buck regulator, and a buck-boost regulator.

The MAX14720/MAX14750 are compact power-management solutions for space-constrained, battery-powered applications where size and efficiency are critical.The MAX14720 is designed to be the primary power-management device and is ideal for either non-rechargeable battery (coin-cell, dual alkaline) applications or for rechargeable solutions. The device includes a button monitor and sequencer.

The MAX14750 works well as a companion to a charger or PMIC in rechargeable applications providing direct pin control of each function. The devices include two programmable micro-IQ, high-efficiency switching converters: a buck-boost regulator and a synchronous buck regulator. Both feature a burst mode for increased efficiency during light-load operation and include a multiplexer for monitoring the power inputs and outputs of each function. The low-dropout (LDO) linear regulator has a programmable output. It can also operate as a power switch to disconnect the quiescent load of system peripherals. A programmable power controller allows the MAX14720 to be configured either for true-off or for always-on applications. It provides a delayed reset signal, voltage sequencing, and customized button timing for on/off control and recovery hard reset.

Package:
- 25-bump, 0.4 mm pitch,
- 2.26 × 2.14 mm² wafer-level package (WLP)

Operating temperature range:
- 40…+85°C

KEY FEATURES

Extend Product Shelf-Life
- Battery Seal Mode (MAX14720)
  - 120 nA Battery Current
- Power Switch On-Resistance
  - 250 mΩ (max.) at 2.7 V
- Battery Impedance Detector

Easy-to-Implement System Control
- Configurable Power Mode and Reset Behavior (MAX14720)
- Push-Button Monitoring
- Disconnects All Loads From Battery and Reduces Leakage to Less than 1 µA
- Power-On Reset (POR) Delay and Voltage Sequencing
- I²C Control Interface

APPLICATION EXAMPLES

- Wearable Fitness and medical Devices

Extended System Battery Use Time

Regulator	Input Voltage	Output Voltage (programmable)	Quiescent Current	Features
Micro-IQ 250mW Buck-Boost	1.8…5.5 V	2.5…5 V	1.1 µA	Programmable Current Limit
Micro-IQ 200mA Buck	1.8…5.5 V	1.0…2.0 V	0.9 µA	
Micro-IQ 100mA LDO	1.71…5.5 V	0.9…4.0 V	0.9 µA	Configurable as load switch

EBV Elektronik
An Avnet Company

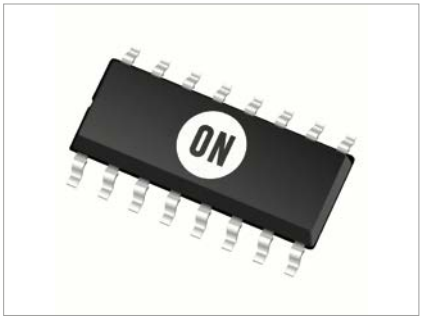
ON Semiconductor®

100-up price	1000-up price	1000-up price	1000-up price
NCD5701ADR2G	NCD5701CDR2G	NCD5701BDR2G	NCD5700DR2G
€ 0.89	€ 0.89	€ 0.89	€ 1.19

NCD570X

High-Current IGBT Gate Drivers

CLICK OR SCAN



NCD5700 package

The NCD570x is a cost competitive feature rich IGBT driver that enhances system efficiency and improve system reliability.

The NCD570x is a high-current, high-performance stand-alone IGBT driver for high power applications that include solar inverters, motor control and uninterruptable power supplies.

The device offers a cost-effective solution by eliminating many external components. Device protection features include Active Miller Clamp, accurate UVLO, EN input, DESAT protection and Active Low FAULT output. The driver also features an accurate 5.0 V output and separate high and low (VOH and VOL) driver outputs for system design convenience. The NCD570x is designed to accommodate a wide voltage range of bias supplies including unipolar and bipolar voltages.

KEY FEATURES

- High Current Output (+4.0/-6.0 A) at IGBT Miller Plateau Voltages
  - Reduced switching losses and short switching times
- Low VOH and VOL
  - Full enhancement of IGBT and great noise margin
- DESAT Protection with Programmable Delay
  - Enhanced programmable protection
- Efficiency Improvement
  - Low switching losses due to high drive current
  - Low conduction losses due to higher V_{GE} (for same V_{CC})
- Reliability Improvement
  - Low pulse-width distortion, Low part-part variation in delay times
  - Full protection features (DESAT, Miller CLAMP, TSD, FLT, Enable)
- Cost/Convenience
  - Low solution cost for available drive capability
  - Elimination of external buffers for drive enhancement
  - Convenience of choosing any isolator for cost/performance

APPLICATION EXAMPLES

- Welding and Induction Heating
- UPS
- Solar Inverters
- EV Chargers
- Motor Control

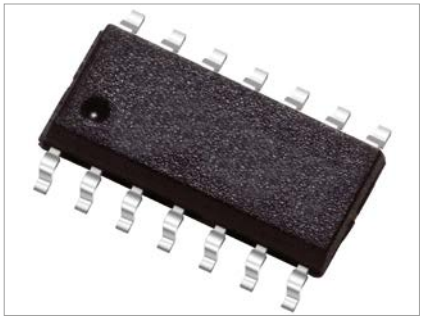
ON Semiconductor®

1000-up price	1000-up price	1000-up price
NCP1339CDR2G	NCP1339HDR2G	NCP1339IDR2G
€ 0.69	€ 0.69	€ 0.69

NCP1339

High Frequency Quasi-Resonant Controller

CLICK OR SCAN



NCP1339 Package

EBV Elektronik presents the NCP1339 - a quasi-resonant flyback controller capable of controlling high performance off-line power supplies.

The quasi-resonant current-mode flyback stage features a proprietary valley-lockout circuitry, ensuring stable valley switching. This system works down to the 6th valley and toggles to a frequency foldback mode to eliminate switching losses. When the loop tends to force below 25 kHz frequencies, the NCP1339 skips cycles to contain the power delivery.

To help build rugged converters, the controller features several key protective features: an internal brown-out, a non-dissipative Over Power Protection for a constant maximum output current regardless of the input voltage, and a latched over-voltage protection through a dedicated pin.

KEY FEATURES

- Loss-free adjustable over power protection
- Power savings mode
- Noise free 6th valley lockout
- Brownout protection
- Frequency foldback with 25 kHz clamp
- Latched over voltage protection dedicated pin
- Adjustable non-dissipative over power protection for a constant, independent maximum output current

APPLICATION EXAMPLES

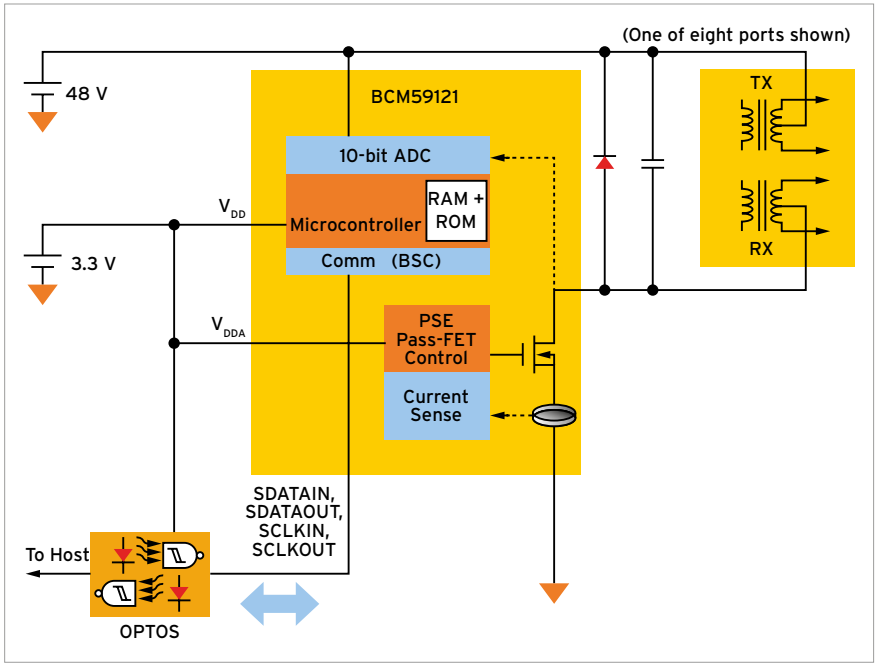
- High power AC-DC converters
- High density adapters
- Notebook and USB Power Device adapters
- Flat TV switched-mode power supply

100-up price
BCM59121B0KMLG
€ 11.99

BCM59121

Octal Integrated IEEE 802.3at-Compliant PSE Controller

CLICK OR SCAN



BCM59121 Application Circuit

The Broadcom® BCM59121 is a highly integrated, IEEE 802.3at-compliant Power Sourcing Equipment (PSE) controller with highest class integration and flexibility.

It contains eight low-RDS (0.2 Ω), highvoltage pass-FETs, each with a very accurate, lossless, proprietary internal current sense and an onboard microcontroller, all targeted to significantly reduce the complexity of Power over Ethernet (PoE) and Power over Ethernet Plus (PoE+) designs while easing PCB layout.

The BCM59121 provides excellent protection under all possible fault conditions and overloads. It also supports two-event Classification for Type 2 (30 W) applications. The BCM59121 has a networking-oriented host interface, communicating via a BSC bus and capable of speeds up to 2.4 Mbps.

KEY FEATURES

- IEEE 802.3at-compliant with support for IEEE 802.3af
- Supports two-event classification (Type 2)
- Supports four-pair 60 W applications
- Supports detection of legacy PDs
- Cascading of multiple devices; up to 64 ports supported
- Programmable ICUT and ILIM for Type 1 and Type 2
- Broadcom Serial Control (BSC) – an NXP I²C-compatible bus architecture
- Manual/Semi-autonomous operating mode
- Real-time current, voltage, and temperature measurements available per port
- Over-temperature protection (warning and shutdown)
- Operates from a 48 V supply (nominal) and external 3.3 V supply
- Firmware download capability via BSC communication bus from host
- 8 × 8 × 0.9 mm³ QFN-56 Package

APPLICATION EXAMPLES

- Routers and switches for SMB
- Enterprise
- SOHO
- Commercial markets

BROADCOM
connecting everything

100-up price
BCM89200BBQLEG
€ 11.39

BCM89200

4-Port Integrated BroadR-Reach® Automotive Switch

CLICK OR SCAN

BCM89200

The BCM89200 device is Broadcom's first fully integrated BroadR-Reach® multilayer switch to support automotive qualification (AEC-Q100) for in-car networking applications

The BCM89200 is part of a family of products that provide optimal solutions for key automotive designs that have high-performance yet challenging low-power requirements. Building upon industry-leading 65 nm architecture, the BCM89200 supports multiple intuitive low-power modes as well as an automotive cable diagnostics feature.

BCM89200 expands Broadcom's leadership in Ethernet switching technology by delivering an optimized solution for automotive applications requiring nonblocking switching performance. Examples of applications include interconnectivity in the car that bridges automotive Electronic Control Units with vital systems such as Head Units, Central Gateways, and On-Board Diagnostic ports.

The BCM89200 can interconnect with other devices through multiple interfaces, including RGMII, GMII, MII, and Turbo MII, to enable the design of scalable, high-performance systems. Requirements such as high-precision stereo cameras, rear-seat entertainment units, and multichannel amplifiers are driving the need for adherence to quality of service requirements, e.g. highly synchronized and accurate timing.

The BCM89200 device supports IEEE 1588 and IEEE 802.1AS timing functions designed for both peer-to-peer and end-to-end transparent clocking in hardware. This product family delivers a comprehensive automotive technology solution required by OEM and Tier1 suppliers, meeting or exceeding CISPR 25 component-level, ISO 11452-5 Stripline, ISO 11452-4, IEC 61000-4-2, automotive Grade 2 temperature, AEC-Q100, and TS 16949 certifications.

KEY FEATURES

- Enhanced architecture supports nonblocking, line-rate data transfer at wirespeed performance for all frame sizes over unshielded single-pair twisted cable.
- Integrated switch core with provisions for the integrated ARM® Cortex®-R4 processor and dedicated on-chip SRAM to send and receive frames.
- Processor subsystem supports timing stack and AVB bridging support functions.
- Deep Sleep and Ultralow Power mode support, which reduces power consumption to zero during periods of inactivity.
- Specific architectural and design enhancements increase design for test, reliability, and quality (AEC-Q100 and EMC requirements)
- IEEE 1588 and IEEE 802.1AS timing functions.
- Peer-to-peer and end-to-end transparent clocking in hardware.
- Automotive cable diagnostics feature, which can detect pair open/short and distance.

APPLICATION EXAMPLES

- Applications requiring non-blocking switching:
- Interconnectivity in the car that bridges automotive Electronic Control Units with vital systems such as Head Units, Central Gateways and On-Board Diagnostic ports

EBV Elektronik
An Avnet Company

BROADCOM
connecting everything

100-up price
BCM89810A2AMLG
€ 4.99

BCM89810

BroadR-Reach® Single-Port Automotive Ethernet Transceiver

CLICK OR SCAN

BCM89810

World's first automotive BroadR-Reach PHY, supporting cost-effective connectivity through lower cabling and connector cost.

The BCM89810 is a 100 Mbps automotive Ethernet transceiver integrated into a single monolithic CMOS chip. The device performs all of the physical layer (PHY) functions for BroadR-Reach™ encoded Ethernet packets over single-pair unshielded twisted-pair copper wire, such as FlexRay™.

The BCM89810 is designed to exceed automotive specifications for noise cancellation and transmission jitter, providing consistent and reliable operation over the broadest range of existing single-pair twisted-pair automotive cable plants. 100 Mbps automotive Ethernet transceiver integrated into a single monolithic CMOS chip.

The BCM89810 is based on Broadcom's proven digital-signal processor technology, combining digital adaptive equalizers, ADCs, phase-locked loops, line drivers, encoders, decoders, echo cancelers, and all other required support circuitry. The BCM89810 is designed to be fully compliant with RGMII and MII interface specifications, allowing compatibility with industry-standard Ethernet media access controllers (MACs) and switch controllers. The device detects and corrects polarity automatically. BroadR-Reach technology enables the BCM89810 to auto-negotiate and link up with BroadR-Reach compliant link partners. The BCM89810 delivers one of the most comprehensive automotive technology solutions required by OEM and Tier 1 suppliers, meeting or exceeding CISPR 25 component-level, ISO 11452-5 Stripline, ISO 11452-4, IEC 61000-4-2, AEC-Q100, and Grade 1 temperature range.

KEY FEATURES

- Single BroadR-Reach transceiver in a fully integrated 65 nm CMOS chip
- Full-duplex operation at the rate of 100 Mbps over one pair of UTP cable
- Fully integrated twisted-pair termination resistors
- Trace-matched output impedance
- Specific architectural and design enhancements are utilized to increase design for test, reliability, and quality to surpass AECQ100 and EMC requirements
- Designed to support IEEE 1588 timing function
- Small size footprint support with 48-pin MLP package
- Automotive cable diagnostics feature can detect pair open/short and distance

APPLICATION EXAMPLES

- Camera modules
- RSE displays

1-up price P9221-R-EVK € 100.-	1-up price P9242-R-EVK € 150.-

15 W WIRELESS POWER REFERENCE KIT

Extremely High Efficiency 15 W Turnkey Wireless Power Reference Kit

CLICK OR SCAN

P9221 R board

P9242 R board

The new 15 W reference kit solution is a comprehensive turnkey wireless power reference design for immediate prototyping

The IDT 15 W wireless power reference kit is ideal for infrastructure that can benefit from higher power transfer – places like the home, office or café, as well as tablets, industrial portable scanners, Bluetooth speakers and mobile accessories such as charging pads, smartphone sleeves and cases.

The new solution delivers the same ease of use and product support collateral as previous IDT wireless power kits.

Supporting the latest Wireless Power Consortium Qi 1.2.3 specification, the new kit's compact wireless power transmitter and receiver operate at 87 percent efficiency, an excellent value that rivals the performance of wired solutions and translates to reduced power dissipation and heat – resulting in faster battery charging times.

An associated layout module allows for direct copy to a system board, while an optimized and fully-tested BOM takes the guess work out of component selection. In addition, the extensive digital online library of collateral eliminates traditional design and support barriers regardless of application volume.

With this latest 15 W kit, IDT now presents an off-the-shelf library of turnkey wireless power solutions covering the range from 1…15 Watts.

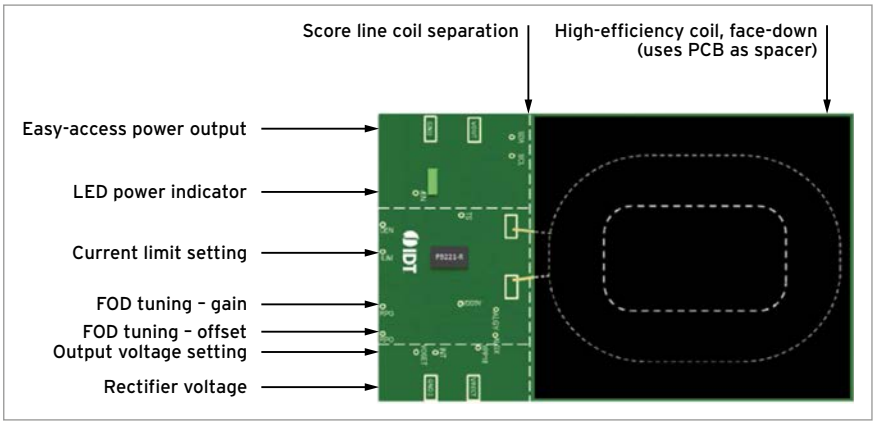
KEY FEATURES

- Supports up to 15 W applications
- WPC-1.2.3 compliant
- Peak 87 % system efficiency at 15 W
- Embedded 32-bit ARM® processor
- Supports I²C communication
- Extensive digital library of collateral
- Schematic and layout import files provide seamless integration
- Compact development package for fast prototyping
- Fully tested bill of material (BOM)

The turnkey wireless power reference solution is comprised of both a transmitter board (P9242-R-EVK) and a receiver board (P9221-R-EVK) that are WPC-1.2.3 compliant

APPLICATION EXAMPLES

IDT's wireless power reference kits are targeted at applications ranging from 5…15 W.



P9221 R EVK

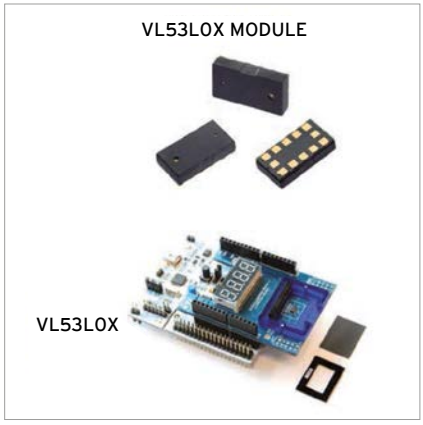
life.augmented

100-up price	1-up price	1-up price	1-up price
VL53L0CAV0DH/1	53L0-Satel-I1	X-Nucleo-53LOA1	P-Nucleo-53L0A1
€ 2.79	€ 17.-	€ 33.-	€ 53.-

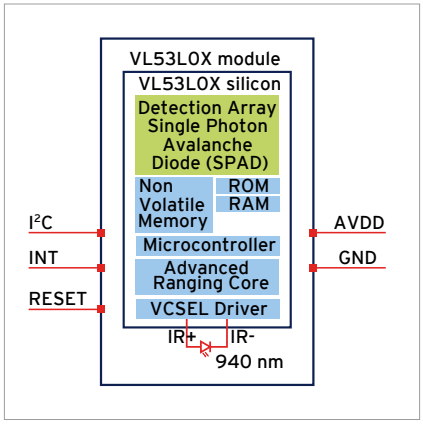
VL53L0X

Ultra-Small Time-of-Flight (ToF) ranging sensor

CLICK OR SCAN



Evaluation KIT X-NUCLEO-53L0A1



Block Diagram

EBV Elektronik presents the VL53L0X as a new generation Time-of-Flight laser-ranging module housed in a very compact package and offering excellent ranging performance levels.

VL53L0X can measure absolute distances up to 2 m, independent of target reflectance in less than 30 ms. The VL53L0X is based on Time-of-Flight principle coupled with a leading-edge SPAD (Single Photon Avalanche Diodes) array and implements ST's second generation FlightSense™ patented technology.

The VL53L0X's 940 nm VCSEL emitter (Vertical Cavity Surface-Emitting Laser), is totally invisible to the human eye and when coupled with physical Infrared filters enables longer ranging distance, higher immunity to ambient light and better robustness to cover-glass optical cross-talk.

KEY FEATURES

- Fully integrated miniature module
- 940 nm Laser VCSEL
- VCSEL driver
- Ranging sensor with advanced embedded microcontroller
- 4.4 × 2.4 × 1.0 mm³
- Fast, accurate distance ranging
- Measures absolute range up to 2 m
- Reported range is independent of the target reflectance
- Operates in high IR ambient light levels
- Advanced embedded optical cross-talk compensation to simplify cover glass selection
- Eye safe
- Class 1 laser device compliant with latest standard IEC 60825-1:2014 - 3rd edition
- Easy integration
- Single reflowable component
- No additional optics
- Single power supply
- I²C interface for device control and data transfer
- Xshutdown (Reset) and interrupt GPIO

APPLICATION EXAMPLES

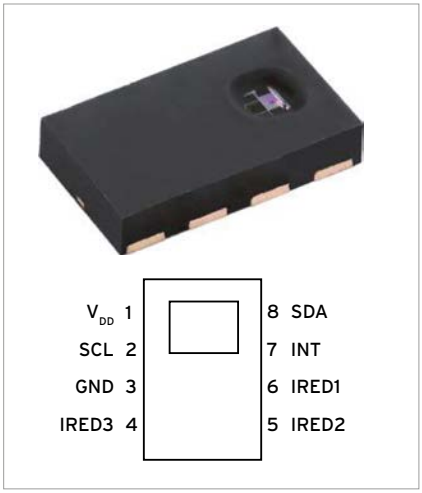
- Laser assisted Auto-Focus. Enhances and speeds-up camera AF system performance, especially in difficult scenes (low light levels, low contrast) or fast moving video mode.
- Smartphone advanced Proximity Sensor (distance in mm)
- User detection for Personal Computers/Laptops and IoT (Energy saving)
- Security (autonomous low power mode)
- 1D gesture recognition
- Robotics (obstacle detection)

1000-up price VCNL4035X01-GS18 € 0.79	1000-up price VCNL4035X01-GS08 € 0.79

VCNL4035

Integrated Proximity and Ambient Light Sensor with I²C Interface and Interrupt Function

CLICK OR SCAN



VCNL4035X01

VCNL4035X01 integrates a proximity sensor (PS), ambient light sensor (ALS), a muxx, and a driver for up to 3 external IREDs / LEDs into one small package.

This new device incorporates photodiodes, amplifiers, and analog to digital converting circuits into a single chip by CMOS process.

The 16-bit high resolution ALS offers excellent sensing capabilities with sufficient selections to fulfill the requirements of most applications whether based on dark or high transparency lens design. Both, ALS and PS programmable interrupt features of individual high and low thresholds offer the best utilization of resource and power saving on the microcontroller.

The proximity sensor features an intelligent cancellation scheme eliminating the cross talk phenomenon effectively. To accelerate the PS response time, smart persistence prevents the misjudgement of proximity sensing but also keeps a fast response time. Active force mode, one time trigger by one instruction, is another good approach for more design flexibility to fulfill different kinds of applications with more power saving.

The adoption of patented Filtron™ technology achieves the closest ambient light spectral sensitivity to real human eye responses and offers the best background light cancellation capability (including sunlight) without utilizing the microcontrollers' resources.

VCNL4035X01 provides an excellent temperature compensation capability for keeping output stable under various temperature configurations. ALS and PS functions are easily operated via the simple command format of I²C (SMBus compatible) interface protocol. Operating voltage ranges from 2.5 …3.6 V. VCNL4035X01 is packaged in a lead-free 8-pin molding package, which offers excellent, market-proven reliability and quality.

KEY FEATURES

- Package type: surface mount
- Dimensions (L × W × H in mm): 4.0 × 2.36 × 0.75
- AEC-Q101 qualified
- Integrated modules: ambient light sensor (ALS), proximity sensor (PS), and signal conditioning IC
- Operates ALS and PS in parallel structure
- Filtron™ technology adoption for robust background light cancellation
- Temperature compensation: -40 °C …+105 °C
- Low power consumption I²C (SMBus compatible) interface
- Output type: I²C bus (ALS / PS)
- Operation voltage: 2.5…3.6 V

APPLICATION EXAMPLES

APPLICATIONS

- Handheld devices
  Notebook, tablet PC
- Consumer devices
- Industrial applications

GESTURE APPLICATION

- 2D and 3D gesture function supported

EBV EUROPEAN HEADQUARTERS

EBV Elektronik GmbH & Co. KG I D-85586 Poing | Im Technologiepark 2-8 | Phone: +49 (0)8121 774-0 | www.ebv.com

EBV REGIONAL OFFICES | Status May 2017

AUSTRIA
A-1120 Wien
Grünbergstraße 15 / Stiege 1 / 7. OG
Phone: +43 (0)18 91 52-0
Fax: +43 (0)18 91 52-30

BELGIUM
B-1831 Diegem
Kouterveldstraat 20
Phone: +32 (0)27 16 00 10
Fax: +32 (0)27 20 81 52

BULGARIA
B-1505 Sofia
48 Sitnyakovo Blvd., Serdika offices,10th floor, Unit 1006
Phone: +359 2 9264 337
Fax: +359 2 9264 133

CZECH REPUBLIC
Amazon Court
Karolinska 661/4
CZ-18600 Prague
Czech Republic
Phone: +420-234 091 011
Fax: +420-234 091 010

DENMARK
DK-8230 Åbyhøj
Ved Lunden 10-12, 1. sal
Phone: +45 86 25 04 66
Fax: +45 86 25 06 60

DK-2730 Herlev
Lyskær 9, 1. sal
Phone: +45 39 69 05 11
Fax: +45 39 69 05 04

ESTONIA
E-10414 Tallinn
Niine 11
Phone: +372 625 79 90
Fax: +372 625 79 95
Cell. +372 513 22 32

FINLAND
FIN-02240 Espoo
Pihatörmä 1 a
Phone: +358 (0)927 05 27 90
Fax: +358 (0)9 27 09 54 98

FIN-90100 Oulu
Nahkatehtaankatu 2
Phone: +358 8 41 52 62 70
Fax: +358 8 41 52 62 75

FRANCE
F-13856 Aix-en-Provence
1330 Rue G.G. de la Lauziere
Europarc Pichaury, Bâtiment A2
Phone: +33 (0)442 39 65 40
Fax: +33 (0)442 39 65 50

F-92184 Antony Cedex (Paris)
2-6 Place Du General De Gaulle - CS70046
Phone: +33 (0)140 96 30 00
Fax: +33 (0)140 96 30 30

F-35510 Cesson Sévigné (Rennes)
35, av. des Peupliers
Phone: +33 (0)299 83 00 50
Fax: +33 (0)299 83 00 60

F-67400 Illkirch Graffenstaden
35 Rue Gruninger
Phone: +33 (0)3 90 40 05 92
Fax: +33 (0)3 88 65 11 25

F-31500 Toulouse
8 chemin de la terrasse
Parc de la plaine
Phone: +33 (0)561 00 84 61
Fax: +33 (0)561 00 84 74

F-69693 Venissieux (Lyon)
Parc Club du Moulin à Vent
33, Av. du Dr. Georges Lévy
Phone: +33 (0)472 78 02 78
Fax: +33 (0)478 00 80 81

GERMANY
D-85609 Aschheim-Dornach
Einsteinring 1
Phone: +49 (0)89 388 882-0
Fax: +49 (0)89 388 882-020

D-10587 Berlin
Englische Straße 28
Phone: +49 (0)30 74 70 05-0
Fax: +49 (0)30 74 70 05-55

D-30938 Burgwedel
Burgdorfer Straße 2
Phone: +49 (0)5139 80 87-0
Fax: +49 (0)5139 80 87-70

D-59439 Holzwickede
Wilhelmstraße 1
Phone: +49 (0)2301 943 90-0
Fax: +49 (0)2301 943 90-30

D-41564 Kaarst
An der Gümpgesbrücke 7
Phone: +49 (0)2131 96 77-0
Fax: +49 (0)2131 96 77-30

D-71229 Leonberg
Neue Ramtelstraße 4
Phone: +49 (0)7152 30 09-0
Fax: +49 (0)7152 759 58

D-90471 Nürnberg
Lina-Ammon-Straße 19B
Phone: +49 (0)911 817 669-0
Fax: +49 (0)911 817 669-20

D-04435 Schkeuditz
Airport Business Center Leipzig
Frankfurter Straße 2
Phone: +49 (0)34204 4511-0
Fax: +49 (0)34204 4511-99

D-78048 VS-Villingen
Marie-Curie-Straße 14
Phone: +49 (0)7721 998 57-0
Fax: +49 (0)7721 998 57-70

D-65205 Wiesbaden
Borsigstraße 36
Phone: +49 (0)6122 80 88-0
Fax: +49 (0)6122 80 88-99

HUNGARY
H-1117 Budapest
Budafoki út 91-93, West Irodahaz
Phone: +36 1 436 72 29
Fax: +36 1 436 72 20

IRELAND
IRL-Dublin 12
Calmount Business Park
Unit 7, Block C
Phone: +353 (0)14 09 78 02
Fax: +353 (0)14 56 85 44

ISRAEL
IL-40600 Tel Mond
Drorrim South Commercial Center
P.O. Box 149
Phone: +972 (0)9 778 02 60
Fax: +972 (0)3 760 11 15

ITALY
I-20092 Cinisello Balsamo (MI)
Via C. Frova, 34
Phone: +39 02 66 09 62 90
Fax: +39 02 66 01 70 20

I-50019 Sesto Fiorentino (FI)
EBV Elektronik Srl
Via Lucchese, 84/B
Phone: +39 05 54 36 93 07
Fax: +39 05 54 26 52 40

I-41126 Modena (MO)
Via Scaglia Est, 33
Phone: +39 059 29 24 211
Fax: +39 059 29 29 486

I-80128 Napoli (NA)
Via G. Capaldo, 10
Phone: +39 081 193 016 03
Fax: +39 081 198 061 24
Cell. +39 335 8 39 05 31

I-00155 Roma (RM)
Via Edoardo D'Onofrio 212
Phone: +39 064 06 36 65/789
Fax: +39 064 06 37 77

I-35030 Sarmeola di Rubano (PD)
Piazza Adelaide Lonigo, 8/11
Phone: +39 049 89 74 701
Fax: +39 049 89 74 726

I-10144 Torino (TO)
Via Treviso, 16
Phone: +39 011 262 56 90
Fax: +39 011 262 56 91

NETHERLANDS
NL-3606 AK Maarssenbroek
Planetenbaan 116
Phone: +31 (0)346 58 30 10
Fax: +31 (0)346 58 30 25

NORWAY
Postboks 101, Manglerud
Ryensvingen 3B
N-0681 Oslo
Phone: +47 22 67 17 80
Fax: +47 22 67 17 89

POLAND
80-838 Gdansk
Targ Rybny 11/12
Phone: +48 (0)58 307 81 00

02-674 Warszawa
Ul. Marynarska 11
Phone: +48 (0)22 257 47 06

PL-50-062 Wroclaw
Pl. Solny 16
Phone: +48 (0)71 34-2 29-44
Fax: +48 (0)71 34-2 29-10

PORTUGAL
Unipessoal LDA
Edifício Tower Plaza
Rotunda Eng.º Edgar Cardoso, 23 - 14ºG
4400-676 Vila Nova de Gaia
Phone: +351 220 920 260
Fax: +351 220 920 261

ROMANIA
4C Gara Herastrau Street
Building B, 2nd Floor - 2nd District
Bucharest
RO-014472
Phone: +40 21 528 16 12
Fax: +40 21 528 16 01

RUSSIA
RUS-620028 Ekaterinburg
Tatischeva Street 49A
Phone: +7 343 311 40 4
Fax: +7 343 311 40 46

RUS-127486 Moscow
Korovinskoye Shosse 10,
Build 2, Off.28
Phone: +7 495 730 31 70
Fax: +7 495 730 31 71

RUS-195197 St. Petersburg
Polustrovsky Prospect 43,
Office 421
Phone: +7 812 635 70 63
Fax: +7 812 635 70 64

SERBIA
Balkanska 2
SRB-11000 Belgrade
Phone: +381 11 404 9901
Fax: +381 11 404 9900
Mobile: +381 63 204 506
Mobile: +381 62 78 00 12

SLOVAKIA
SK-82109 Bratislava
Turčianska 2
Green Point Offices
Phone: +421 2 321 111 41
Fax: +421 2 321 111 40

SLOVENIA
SI-1000 Ljubljana
Dunajska 167
Phone: +386 (0)1 56 09 778
Fax: +386 (0)1 56 09 877

SOUTH AFRICA
ZA-8001 Foreshore, Cape Town
1 Mediterranean Street
5th Floor MSC House
Phone: +27 (0)21 402 19 40
Fax: +27 (0)21 419 62 56

ZA-3629 Westville
Forest Square,11 Derby Place
Suite 4, Bauhinia Building
Phone: +27 (0)31 27 92 600
Fax: +27 (0)31 27 92 624

ZA-2157 Woodmead,
Johannesburg
Woodlands Office Park
141 Western Service Road
Building 14-2nd Floor
Phone: +27 (0)11 236 19 00
Fax: +27 (0)11 236 19 13

SPAIN
E-08014 Barcelona
c/Tarragona 149 - 157 Planta 19 1°
Phone: +34 93 473 32 00
Fax: +34 93 473 63 89

E-39005 Santander (Cantabria)
Racing nº 5 bajo
Phone: +34 94 223 67 55
Phone: +34 94 237 45 81

E-28760 Tres Cantos (Madrid)
Centro Empresarial Euronova
C/Ronda de Poniente, 4
Phone: +34 91 804 32 56
Fax: +34 91 804 41 03

SWEDEN
S-191 62 Sollentuna
Glimmervägen 14, 7 tr
Phone: +46 (0)859 47 02 30
Fax: +46 (0)859 47 02 31

SWITZERLAND
CH-8953 Dietikon
Bernstrasse 394
Phone: +41 (0)44 745 61 61
Fax: +41 (0)44 745 61 00

CH-1010 Lausanne
Av. des Boveresses 52
Phone: +41 (0)216 54 01 01
Fax: +41 (0)216 54 01 00

TURKEY
Canan Residence
Hendem Cad. No: 54 Ofis A2
Serifali Umraniye Istanbul
34775 Turkiye
Phone: +90 (0)216 52 88 310
Fax: +90 (0)216 52 88 311

Armada Is Merkezi
Eskisehir Yolu No: 6 , Kat: 14
Ofis No: 1406
06520 Sogutozu, Ankara-Turkey
Phone: +90 (0)312 295 63 61
Fax: +90 (0)312 295 62 00

UKRAINE
UA-03040 Kiev
Vasilovskaya str. 14
off. 422-423
Phone: +380 44 496 22 26
Fax: +380 44 496 22 27

UNITED KINGDOM
South East
2, The Switchback
Gardner Road
Maidenhead
Berkshire, SL6 7RJ
Phone: +44 (0)16 28 77 85 56
Fax: +44 (0)16 28 78 38 11

South West & Wales
12 Interface Business Park
Bincknoll Lane
Royal Wootton Bassett
Wiltshire, SN4 8SY
Phone: +44 (0)17 93 84 99 33
Fax: +44 (0)17 93 85 95 55

North
Manchester International
Office Centre, Suite 3E (MIOC)
Styal Road
Manchester, M22 5WB
Phone: +44 (0)16 14 99 34 34
Fax: +44 (0)16 14 99 34 74

Scotland
1st Floor
180 St. Vincent Street
Glasgow, G2 5SG
Phone: +44 (0)141 242 4820
Fax: +44 (0)141 221 1916

EBV Elektronik
An Avnet Company