



MIP

Marketing Innovative Products

2018/03

HUMAN
MACHINE
INTERFACE

ARTIFICIAL
INTELLIGENCE

INTER-
CONNECTIVITY

LIGHTSPEED

SUPER STRONG
COLLABORATION



EBVElektronik
| An Avnet Company |

The MIP Web App – Innovation Whenever, Wherever

Technology and digital transformation are accelerating our world, and instant access to information is becoming a standard. The MIP presents a snapshot of this ever-changing environment helping you to easily filter the most innovative and disruptive electronic components out of the flood of information available. In order to provide an even better experience and complement the focused knowledge of the MIP with digital features and a bridge to the vast number of new parts available we have developed the MIP Web App.

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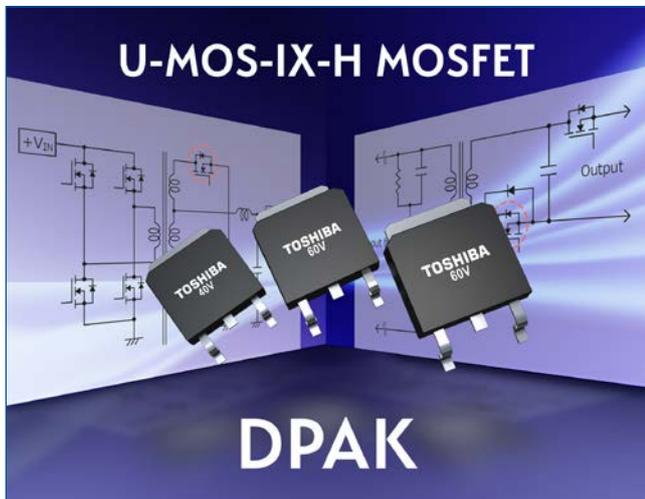


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Toshiba 40V and 60V U-MOS-IX-H

TK3R1P04PL, TK4R4P06PL, TK6R7P06PL



Toshiba_40V and 60V MOSFETS

Toshiba Launches 40V and 60V MOSFETs Based on Latest Generation of Trench Process. The TK3R1P04PL (40V), TK4R4P06PL (60V) and TK6R7P06PL (60V) N-channel MOSFETs are supplied in compact DPAK packaging. The devices are ideal for high-efficiency power conversion applications including AC-DC and DC-DC converters, power supplies and motor drives. For industrial applications DPAK SMD Package is of unchanged popularity. Toshiba decided to equip DPAK's with Chips of the latest high speed low Voltage Trench MOSFET process U-MOS-IX-H. U-MOS9 Item offer excellent trade off: $R_{DS(on)} * Q_{oss}$

- Low Q_{oss} (output charge) design
- Excellent trade off: $R_{DS(on)} * Q$

- Extended Channel temperature $t_{ch} = 1$
- Supports Logic level drive 4,5V

FEATURES

- TK3R1P04PL is a 40V MOSFET with a maximum $R_{DS(ON)}$ of 3.1m Ω and a maximum drain current (I_D) rating of 58A (at a temperature of 25°C).
- TK4R4P06PL and TK6R7P06PL (60V MOSFET) have respective maximum $R_{DS(ON)}$ and I_D ratings of 4.4m Ω and 58A and 6.7m Ω and 46A.
- U-MOS9 Item offer excellent trade off: $R_{DS(on)} * Q_{oss}$
- It is most applicable where combination of low $R_{DS(on)}$ and switching performance is needed

SUB MARKET

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

TECHNOLOGY SEGMENT

- Analog & Power

KEY APPLICATIONS

- Power Supply
- DC/DC
- Switch regulator
- Motor Drive

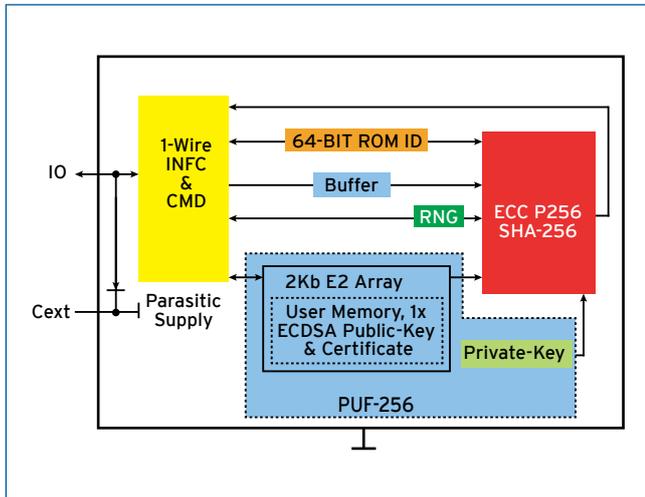
MARKET SEGMENT

- Industrial



DS28E38

DeepCover Secure ECDSA Authenticator with ChipDNA PUF Protection



Block Diagram Security

Protect your design using Crypto-Strong Authentication secured with a physically unclonable function.

The DS28E38 is an ECDSA public key-based secure authenticator that incorporates Maxim's patented ChipDNA™ PUF technology. ChipDNA technology involves a physically unclonable function (PUF) that enables the DS28E38 to deliver cost-effective protection against invasive physical attacks.

- Patented Physically Unclonable Function Secures Device Data
- RNG with NIST SP 800-90B Compliant Entropy Source
- FIPS 186-Compliant ECDSA P256 Signature
- 2Kbits of EEPROM

FEATURES

- Robust Countermeasures Protect Against Security Attacks
- Actively Monitored Die Shield Detects and Reacts to Intrusion Attempts
- All Stored Data Cryptographically
- Efficient Public-Key Authentication Solution to Authenticate Peripherals
- FIPS 186-Compliant ECDSA P256 Signature for Challenge/Response Authentication
- Options for ECDSA Public/Private Key Pair Source Include ChipDNA Generated, Chip Computed, and User Installed
- Supplemental Features Enable Easy Integration into End Applications
- 17-Bit One-Time Settable, Nonvolatile Decrement-Only Counter with Authenticated Read
- 2Kbits of EEPROM for User Data, Key, Control Registers, and Certificate

- Unique and Unalterable Factory Programmed 64-Bit Identification Number (ROM ID)
- Single-Contact, 1-Wire Interface Communication with Host at 11.7kbps and 62.5kbps Operating Range: 3.3V ±10%, -40°C to +85°C
- 6-Pin TDFN-EP Package (3mm x 3mm)

KEY APPLICATIONS

- IoT Node Authentication
- Peripheral Authentication
- Accessories Authentication

MARKET SEGMENT

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

SUB MARKET

- Telecom and Networking
- Wireless Infrastructure
- Medical Diagnostic and Therapy
- Medical Instruments
- Personal Health, Sport & Fitness
- Portable Personal Electronics & Wearables
- Elevators, Escalators, Moving Walkways
- Embedded Computing & Storage
- Embedded Vision
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Human Machine Interface
- Information Kiosk & Advertising Panels
- Instrumentation, Test and Measurement

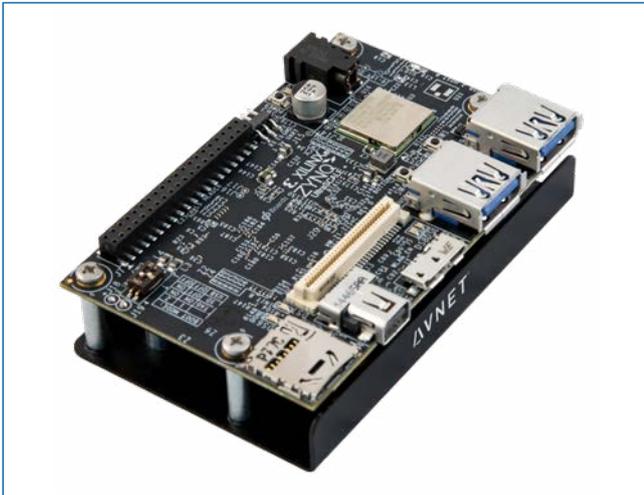
TECHNOLOGY SEGMENT

- High End Processing



ULTRA96 Development Board

ARM-based, Xilinx Zynq UltraScale+™ MPSoC Development Board



Ultra96 board

Ultra96™ is an ARM-based, Xilinx Zynq UltraScale+™ MPSoC development board based on the Linaro 96Boards specification.

The 96Boards' specifications are open and define a standard board layout for development platforms that can be used by software application, hardware device, kernel, and other system software developers.

Ultra96 represents a unique position in the 96Boards community with a wide range of potential peripherals and acceleration engines in the programmable logic that is not available from other offerings.

- Xilinx Zynq UltraScale+ MPSoC ZU3EG A484
- Micron 2 GB (512M x32) LPDDR4 Memory

- Wi-Fi / Bluetooth
- Mini DisplayPort (MiniDP or mDP)

FEATURES

- Delkin 16 GB MicroSD card + adapter
- Pre-loaded with PetaLinux environment
- 1x USB 3.0 Type Micro-B upstream port
- 2x USB 3.0, 1x USB 2.0 Type A downstream ports
- 40-pin 96Boards Low-speed expansion header
- 60-pin 96Boards High speed expansion header
- 85mm x 54mm form factor
- Linaro 96Boards Consumer Edition compatible

KEY APPLICATIONS

- Artificial Intelligence
- Machine Learning
- IoT/Cloud connectivity for add-on sensors
- Embedded Computing
- Robotics

MARKET SEGMENT

- Industrial

SUB MARKET

- Embedded Vision
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Human Machine Interface
- Instrumentation, Test and Measurement
- Robotics
- Motion Control, Servo Drives
- Surveillance, Parking & Traffic Control

TECHNOLOGY SEGMENT

- TOOL

THE KIT INCLUDES

- Ultra96 development board
- 16 GB pre-loaded MicroSD card + adapter
- Voucher for SDSoC license from Xilinx
- Quick-start instruction card

OPTIONAL ADD-ON ITEMS

- External 12V @ 2.0A power supply
- USB-to-JTAG/UART pod
- Seed Studios Grove Starter Kit for 96Boards
- Accessories package



UltraZed-EV™ SOM

Xilinx Zynq® UltraScale+™ MPSoC EV SOM



UltraZed-EV SOM

UltraZed-EV™ SOM is a high performance, full-featured, System-On-Module (SOM) based on the Xilinx Zynq® UltraScale+™ MPSoC EV family of devices. Designed in a small form factor, the UltraZed-EV SOM on-board dual system memory, high-speed transceivers, Ethernet, USB, and configuration memory provides an ideal platform for embedded video processing systems. Designers can simply design their own carrier card, plug-in UltraZed-EV SOM, and start their application development with a proven Zynq UltraScale+MPSoC sub-system. Available with the Zynq UltraScale+ MPSoC XCZU7EV-FBVB900 device, the UltraZed-EV SOM enables designers to build multimedia, embedded vision applications with confidence and ease.

- Xilinx XCZU7EV-1FBVB900 device
- Gigabit Ethernet PHY

- 1GB 4G PS DDR4 SDRAM
- 1GB PL DDR4 SDRAM

FEATURES

- Xilinx XCZU7EV-1FBVB900 device (SOM also supports 4EV, 5EV, 4EG, 5EG, or 7EG device in the FBVB900 package)
- PS DDR4 SDRAM (4GB, in x64 configuration)
- PL DDR4 SDRAM (1GB, in x16 configuration)
- 300 MHz LVDS system clock
- Dual QSPI Flash (64MB)
- I²C EEPROM (2Kb)
- eMMC Flash (8GB, x8)
- USB 2.0 ULPI PHY
- I²C 8-bit I/O expander
- 2-channel I²C switch/mux
- PS reference clock input
- On-board voltage regulators
- Power-On Reset (POR) circuit
- Small 4-position boot mode DIP switch
- 3 JX connectors

KEY APPLICATIONS

- Embedded system-on-module (SOM)
- Embedded vision
- Test & measurement
- Industrial automation

MARKET SEGMENT

- Industrial

SUB MARKET

- Embedded Vision
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Human Machine Interface
- Instrumentation, Test and Measurement

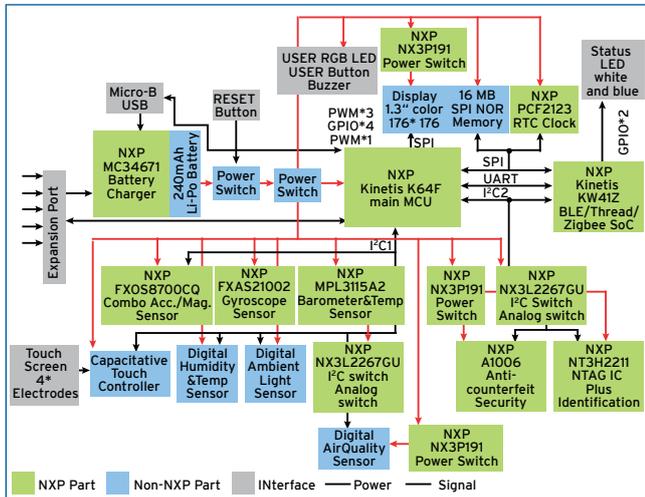
TECHNOLOGY SEGMENT

- TOOL



Rapid IoT prototyping kit

From IoT idea to proof-of-concept as easy as 1-2-3



NXP Rapid IoT prototyping kit

IoT and the ability to create 'Smart' nodes' means opportunity, but taking an IoT node idea to a Proof of Concept (POC) on time and on budget can be a challenge. After combining hardware, often from multiple vendors, the developer must ensure they work seamlessly as a "system". This involves software: RTOS, Drivers and Middleware. Programming this 'system' requires an IDE and coding, often in C. Rapid IoT is a comprehensive, secure and power-optimized IoT end node solution with a user-friendly development environment that enables to quickly and easily take an idea to a proof-of-concept.

- **Comprehensive Design: Rapid IoT integrates 11 NXP devices**
- **Extreme Ease of Use: Proven software enablement**
- **Secure, from sensor to cloud: Flexible security options**
- **Optimized for low-power and small form factor**

FEATURES

- Kinetis® K64-120 MHz MCU based on Arm Cortex®-M4 Core for application processing
- KW41Z Wireless MCU: BLE, Thread, Zigbee allows connection to a smart phone or gateway
- Enhanced Security
 - A1006 Secure Authentication & anti-counterfeit IC
 - NT3H2211 NFC Forum Type 2 Tag
- Optimized for low-power and small form factor
- Pre-installed applications:
 - Weather station incl. Air quality monitor
 - Thermostat
 - Tilt / Fall detection
 - Low-power motion detection
 - Tap converter
 - RGB LED
- Atmosphere® web IDE with GUI based programming and automatic source code / project generation for MCUXpresso IDE

- MCUXpresso SDK (RTOS, drivers, middleware)
- iOS/ Android mobile apps and IoT Cloud connect
- Secure bootloader for convenient USB and over-the-air BLE reprogramming
- Multiple sensors:
 - Gyroscope / Accelerometer / Magnetometer
 - Barometer / Temperature / Air Quality
 - Ambient light
 - Capacitive touch
- Easy expandability to 300+ IoT end-node use cases with Click modules
- Compatible with NXP IoT Modular Gateway

KEY APPLICATIONS

- home & building automation

MARKET SEGMENT

- Smart Consumer & Building
- Healthcare & Wearables
- Industrial

SUB MARKET

- Toys, games and entertainment
- Embedded Computing & Storage
- Information Kiosk & Advertising Panels
- Elevators, Escalators, Moving Walkways
- Portable Personal Electronics & Wearables
- Personal Health, Sport & Fitness
- Asset Tracking
- Audio and Video
- Heating, Ventilation and Air Conditioning
- Home & Building Control and Automation
- Home & Building Security (Alarms, Access Control)
- Home Appliances
- Surveillance, Parking & Traffic Control

TECHNOLOGY SEGMENT

- TOOL



SYNIOS® P2720

New 940nm Infrared LED for 2D facial recognition



View of Synios® P2720

Smartphones, tablets and the like can now be unlocked in very different ways: with a password, fingerprint scan or even an iris scan.

2D facial recognition is another method and involves illuminating the user's face with an infrared light source and capturing the image with an IR camera. The system then compares the image with the images previously stored for the purposes of identification, focusing on characteristic two-dimensional features. If there is a match for the various data then the device will be unlocked.

- Reduces red glow with a wavelength of 940 nm (120°)
- Superior corrosion robustness
- Impressive performance with an output of 1,150 mW at 1 A
- Ideal for space-critical applications: 2.0x2.75x0.6mm

FEATURES

- By using a wavelength of 940 nm, Synios® P2720 reduces the red glow that can occur with infrared light sources in the short-wave infrared range. Up to now, the sensitivity of IR cameras was only good if the light source had a wavelength of 850 nm. The cameras have been further developed to give them greater sensitivity in longer wavelength ranges so 940 nm light sources can now be used – which in turn improves the overall performance of the system.
- Bright and uniform illumination of the user's face or eyes is particularly important for facial recognition and also for eye-tracking systems. Synios® P2720 offers impressive performance with an output of 1,150 mW at 1 A. Thanks to this high overall output it has a radiant intensity of 360 mW/sr.

- The new Synios P2720 has the same footprint as the 850 nm version. Measuring only 2.0 mm x 2.75 mm x 0.6 mm, the IRED is therefore ideal for space-critical applications
- Not released for automotive applications

KEY APPLICATIONS

- 2D facial recognition
- Eye tracking systems
- Infrared Illumination for cameras

MARKET SEGMENT

- Smart Consumer & Building

SUB MARKET

- Toys, games and entertainment
- Home & Building Security (Alarms, Access Control)
- Home & Building Control and Automation

TECHNOLOGY SEGMENT

- Analog & Power



A71CH

A71CH Plug & Trust for IoT Security. The fast, easy way to deploy secure IoT connections



A71CH package

A71CH is a ready-to-use secure element. It provides a root of trust at IC level and delivers chip-to-cloud security right out of the box. You can safely authenticate your device within a system and to IoT clouds and services without exposing your secret keys. A71CH comes with a comprehensive support package including development boards, host library and application notes, easy integration with many i.MX and Kinetis platforms. Please visit our “Security and Identification” page: <https://www.avnet.com/wps/portal/ebv/solutions/technologies/security-and-identification/>

You will experience more than just a Video!

- ECC key generation & signature verification
- Easy access to any MCU/MPU with I2C 400 kbps slave interface

- Secure storage of keys and credentials
- Standard (-25 to +85°C) & extended (-40 to +90 °C) temp. range

FEATURES

- Protected access to credentials
- Encrypted/authenticated interface to host processor
- Certificate-based TLS set-up (ECC NIST P-256)
- TLS set-up using pre-shared secret (TLS-PSK)
- Connectionless message authentication (HMAC)
- Symmetric key derivation
- Secure vault for product master secrets (key wrapping, derivation, locking)
- Encrypted key injection
- Optional trust provisioning by NXP and qualified partners
- Compact HVSON8 (4 x 4 mm) package

KEY APPLICATIONS

- protected key storage

MARKET SEGMENT

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

SUB MARKET

- Personal Health, Sport & Fitness
- Lighting Drivers and Electronic Control Gears
- Lighting Fixtures
- Specialty Lighting (Digital Signage, Signals, Entertainment, Transportation)
- Audio and Video
- Heating, Ventilation and Air Conditioning
- Home & Building Control and Automation
- Home & Building Security (Alarms, Access Control)
- Home Appliances
- Metering (Electricity, Flow, Heat)
- Surveillance, Parking & Traffic Control

- Robotics
- Medical Instruments
- Portable Personal Electronics & Wearables
- Elevators, Escalators, Moving Walkways
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Human Machine Interface
- Information Kiosk & Advertising Panels
- Instrumentation, Test and Measurement
- Motion Control, Servo Drives
- Professional Gaming, Amusement & Casino Machines
- Smart Grid Protection and Control

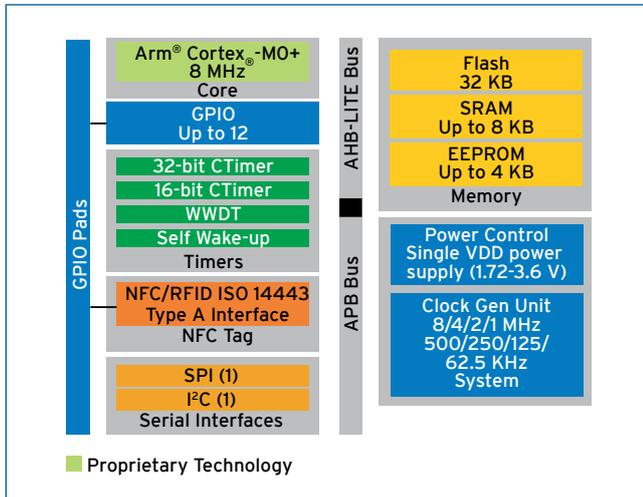
TECHNOLOGY SEGMENT

- High End Processing



LPC8N04: Smart Tagging in IoT

An entry-level MCU with integrated NFC connectivity for embedded IoT applications



LPC8N04 Block Diagram

NXP's LPC800 series MCUs offer a range of low-power, space efficient, low-pin-count options for basic microcontroller applications. Unique to low-end devices, the LPC800 series include differentiated product features, such as an NFC integration, mutual capacitive touch, switch matrix for flexible configuration of each I/O pin function, and patent-approved SCTimer/PWM, giving embedded developers unprecedented design-flexibility.

LPC8N04 combines NFC and MCU technology enabling energy harvesting and wireless communication for a diverse range of tagging and provisioning applications.

- **ARM® Cortex®-M0**
- **Integrated NFC connectivity**
- **The LPC8N04 can also be powered from the NFC field**
- **Scalable differentiated peripheral options**
- **Flexible Package Options: TSSOP, LQFP, QFN, XSON (tiny)**
- **Activation via NFC**

FEATURES

- ARM Cortex-M0+ core running at up to 8 MHz
- Nested Vectored Interrupt Controller (NVIC)
- ARM Serial Wire Debug (SWD)
- System tick timer
- IC reset input
- 32 KB on-chip flash
- 8 KB SRAM
- 4 KB on-chip EEPROM
- Up to 12 General-Purpose I/O (GPIO) pins with configurable pull-up/pull-down resistors and repeater mode
- GPIO pins which can be used as edge and level sensitive interrupt sources
- High-current drivers/sinks (20 mA) on four GPIO pins
- High-current drivers/sinks (20 mA) on two I2C-bus pins
- Programmable Watchdog Timer (WDT)
- NFC/RFID ISO 14443 type A interface
- Serial I2C-bus supporting full I2C-bus specification and Fast-mode with a data

rate of 400 kbit/s, with multiple address recognition and monitor mode

- SPI/SSP interface
- 8 MHz internal RC oscillator
- Timer oscillator operating at 32 kHz linked to the RTC timer unit
- Support for 1.72 V to 3.6 V external voltages
- Integrated Power Management Unit (PMU)
- Four reduced power modes for Arm Cortex-M0+: sleep, deep-sleep, deep power-down and battery-off
- Power gating for each analog peripheral for ultra-low power operation
- < 10 nA IC current consumption in Battery-off mode at 3.0 V
- Power-On Reset (POR)

KEY APPLICATIONS

- Led strips
- NFC applications

MARKET SEGMENT

- Smart Consumer & Building
- Healthcare & Wearables
- Industrial

SUB MARKET

- Toys, games and entertainment
- Home Appliances
- Asset Tracking
- Home & Building Security (Alarms, Access Control)
- Medical Diagnostic and Therapy
- Motion Control, Servo Drives
- Robotics
- Heating, Ventilation and Air Conditioning

TECHNOLOGY SEGMENT

- High End Processing



ACPL-C799

±50mV Optically Isolated Sigma-Delta Modulator



ACPL-C799

The ACPL-C799 is a 1-bit, second-order sigma-delta (Σ - Δ) modulator that converts an analog input signal into a high-speed data stream with galvanic isolation based on optical coupling technology. The ACPL-C799 operates from a 5V power supply with dynamic range of 77 dB with an appropriate digital filter. The differential inputs of ± 50 mV (full scale ± 80 mV) are ideal for direct connection to shunt resistors or other low-level signal sources in applications such as motor phase current measurement.

- 77 dB SNR typ
- 1.3 $\mu\text{V}/^\circ\text{C}$ maximum offset drift
- 10 MHz internal clock
- 1-bit, second-order sigma-delta modulator

FEATURES

- ± 50 mV linear range with single 5 V supply (± 80 mV full scale)
- 77 dB SNR typ
- 1.3 $\mu\text{V}/^\circ\text{C}$ maximum offset drift
- 10 MHz internal clock
- 1-bit, second-order sigma-delta modulator
- $\pm 1\%$ gain error
- 25 kV/ μs common-mode transient immunity
- Safety approval UL, CSA and IEC/EN/DIN EN 60747-5-5

KEY APPLICATIONS

- Motor phase and rail current sensing
- Power inverter current sensing
- General purpose current sensing
- Servo and Motor Drive

MARKET SEGMENT

- Industrial
- Smart Grid
- Smart Consumer & Building

SUB MARKET

- Elevators, Escalators, Moving Walkways
- Motion Control, Servo Drives
- Robotics
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Railway (Traction, Control, etc...)
- Home Appliances

TECHNOLOGY SEGMENT

- Analog & Power



AFBR-2529SIZ FO Receiver

DC-50MBd Versatile Link Fiber-Optic Receiver with Monitoring Output



AFBR-2529SIZ

The AFBR-2529SIZ receiver consists of an IC with an integrated photodiode providing a TTL logic family compatible output. It is a 4-pin device, packed in Versatile Link housing (can be interlocked to minimize space and to provide dual connections with the duplex connectors)

The AFBR-2529SIZ features a monitor output providing an analog voltage proportional to the average optical input power. For optical links with AFBR-2529SIZ, Broadcom's AFBR-16xxZ transmitters use a 650 nm LED source with integrated optics and driver IC recommended

- **Analog monitoring output (RSSI)**
- **Data transmission at signal rates from DC up to 50 MBd**
- **Integrated PIN diode + digitalizing IC with TTL output logic**
- **Up to 50m distance with 1 mm POF**

FEATURES

- RoHS-compliant
- Analog monitoring output (RSSI)
- Data transmission at signal rates from DC up to 50 MBd
- Integrated PIN diode and digitalizing IC with TTL output logic
- Up to 50m distance with 1 mm POF over operating temperature range (up to 200m at 10 MBd and 120m at 50 MBd with 200 µm Plastic-Clad Silica (PCS), respectively.)
- Up to 200m (10 MBd) distance and 120m (50 MBd) distance with 200 µm PCS over operating temperature range
- Operating temperature range of -40°C to +85°C
- Receiver power supply of 3.3V or 5.0V
- Compatible with the Broadcom's Versatile Link family of connectors for easy termination of fiber
- Various simplex and duplex connectors, as well as POF cables, available for Versatile Link components

KEY APPLICATIONS

- Industrial control
- Factory automation

MARKET SEGMENT

- Industrial
- Smart Grid
- Communication & Infrastructure

SUB MARKET

- Telecom and Networking
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Railway (Traction, Control, etc...)
- Renewable Energy Generation
- Smart Grid Protection and Control
- Power Conversion (Inverters, Welding, Converters)

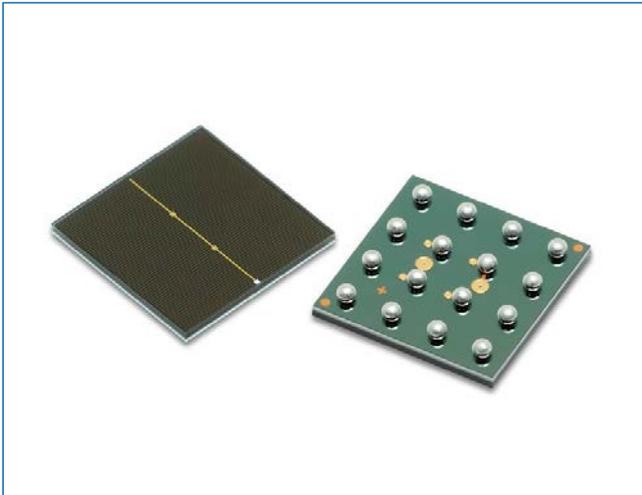
TECHNOLOGY SEGMENT

- Analog & Power



AFBR-S4N44P163

4x4 NUV Silicon Photomultiplier (SiPM) in HD Technology



Package AFBR-S4N44P163

The AFBR-S4N44P163 is a 4x4-pixel silicon photo multiplier (SiPM) array for the ultra-sensitive precision counting of single photons.

The device makes efficient use of surface area by using through silicon via (TSV) technology, allowing for a high packing density without wires. Larger detector areas can be covered by tiling multiple arrays almost without edge losses.

The detector has a broad response in the visible light spectrum with particular optimization towards blue and near UV light.

- Replacing bulky PMT solutions
- High PDE of more than 55% @ 420 nm

- High fill factors (pixel and tile)
- Excellent SPTR and CRT

FEATURES

- Excellent SPTR and CRT
- Uniformity of break down voltage ($\Delta < 300$ mV across tile)
- With TSV technology, arrays are 4-side tilable
- Cell pitch $30 \times 30 \mu\text{m}^2$
- Tile size $15.9 \times 15.9 \text{ mm}^2$
- Array thickness of only 1.28 mm
- Highly transparent glass protection layer
- 32 backside contacts, reflow solderable
- Operating temperature range from -20°C to $+50^\circ\text{C}$
- RoHS and REACH compliant
- A thin glass layer highly transparent down to UV wavelength protects the array, making it well suited for the detection of scintillation or Cherenkov light from the most common scintillators, such as LSO, LYSO, GSO, BGO, NaI, CsI, BaF, LaBr.

KEY APPLICATIONS

- X-ray and gamma ray detection
- Nuclear medicine
- Positron emission tomography
- Safety and security
- Physics experiments

MARKET SEGMENT

- Healthcare & Wearables
- Industrial

SUB MARKET

- Medical Diagnostic and Therapy
- Medical Instruments
- Instrumentation, Test and Measurement

TECHNOLOGY SEGMENT

- Analog & Power



AS22

AS22 Miniature Kit Encoder



AS-22

The Broadcom® AS22 is a series of miniature 3-channel reflective optical kit encoders designed for space-constrained applications.

To meet the growing demand of high-precision applications, the AS22 Series offers a wide range of incremental resolutions, ranging from 360 to 2048 counts per revolution (CPR).

- Compact size Ø 22x10.9mm
- Hassle free installation
- Incremental A, B and Index channels
- -20° C to 100° C operating temperature

FEATURES

- 5V operating voltage
- TTL and RS422 compatible differential output
- 360CPR to 2048 CPR
- Shaft diameter from 2mm up to ¼"
- Spatial play tolerance of Ø 0.15mm
- Allows motor shaft axial play of ±0.25mm
- RoHS compliance

KEY APPLICATIONS

- Industrial automation and robotic
- Industrial sewing and textiles machinery
- Stepper/servo motor
- Factory automation

MARKET SEGMENT

- Industrial

SUB MARKET

- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Robotics
- Motion Control, Servo Drives

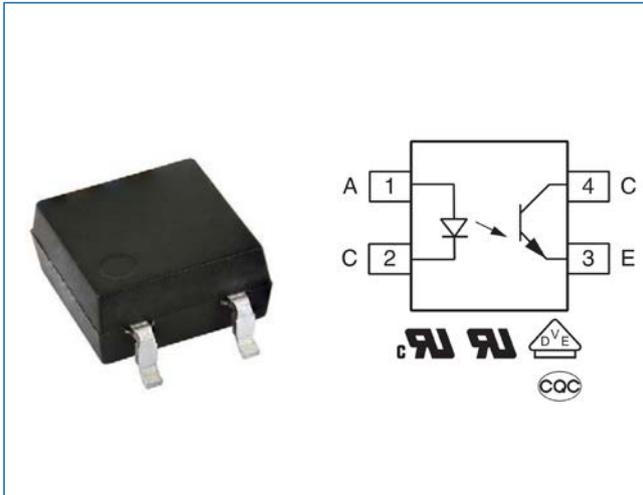
TECHNOLOGY SEGMENT

- Analog & Power



VOMA617A-X001T

Automotive qualified Optocoupler



VOMA617A – Package and function

The VOMA617A series has a GaAlAs infrared emitting diode, which is optically coupled to a silicon planar phototransistor detector, and is incorporated in a 4-pin mini-flat package.

It features a high current transfer ratio at low input current, low coupling capacitance, and high isolation voltage. The coupling devices are designed for signal transmission between two electrically separated circuits, specifically for use in automotive, as well as high reliable industrial applications.

- **Small SOP-4 Package**
- **Creepage and Clearance distance ≥ 5 mm**
- **Temperature range: -40...+110°C**
- **5 mA forward current**

FEATURES

- AEC-Q101 qualified
- High CTR with low input current
- SOP-4 low profile package
- High collector emitter voltage, VCEO = 80 V
- Isolation test voltage = 3750 VRMS
- Low coupling capacitance

KEY APPLICATIONS

- Galvanic and noise isolation
- Signal transmission
- (Hybrid-) electric vehicles
- Battery management
- 48V board net
- System control

MARKET SEGMENT

- Automotive
- Industrial

SUB MARKET

- Automotive Power Train and Chassis
- Commercial, Construction and Agricultural Vehicles
- Connected Car, Body Electronics and Automotive Lighting
- Motion Control, Servo Drives
- Robotics
- Factory Automation (PLCs, I/O, Sensors & Actuators)

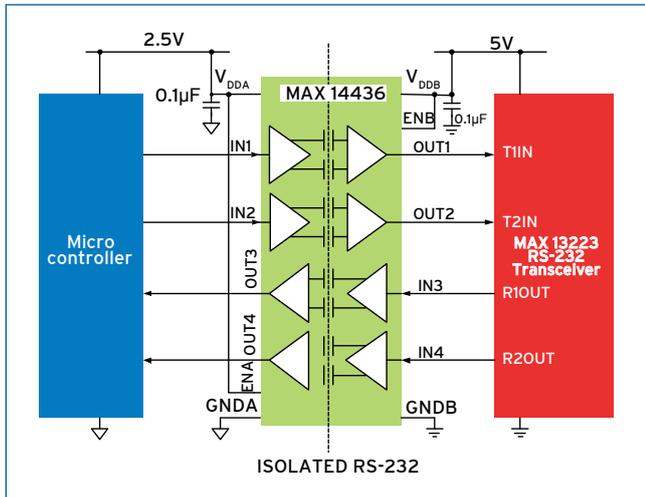
TECHNOLOGY SEGMENT

- Analog & Power



MAX14436

Four-Channel, Fast, Low-Power, 5kV_{RMS} Digital Isolators



Product Block Diagram

One of the Industry's Fastest Low Power Digital Isolators
The MAX14434–MAX14436 are among the fastest, lowest power, 4-channel, digital galvanic isolators on the market today using Maxim's proprietary process technology. These devices transfer digital signals between circuits with different power domains while using as little as 0.58mW per channel at 1Mbps with a 1.8V supply.

The MAX14434/5/6 have an isolation rating of 5kV_{RMS} for 60 seconds.

- Low Power Consumption
- 25Mbps or 200Mbps
- Robust Galvanic Isolation
- Three Possible Unidirectional Channel Configurations

FEATURES

- Robust Galvanic Isolation for Fast Digital Signals
- 200Mbps Data Rate
- Withstands 5kVRMS for 60s (VISO)
- Continuously Withstands 848V_{RMS} (V_{IOWM})
- Withstands ±10kV Surge between GND A and GND B with 1.2/50µs waveform
- High CMTI (50kV/µs, Typical)
- Low Power Consumption
 - 1.1mW per Channel at 1Mbps with V_{DD} = 3.3V
 - 3.5mW per Channel at 100Mbps with V_{DD} = 1.8V
- Options to Support a Broad Range of Applications
 - 2 Data Rates (25Mbps, 200Mbps)
 - 3 Channel Direction Configurations
 - 2 Output Default States (High/Low)

KEY APPLICATIONS

- Industrial Automation

MARKET SEGMENT

- Industrial
- Healthcare & Wearables

SUB MARKET

- Medical Diagnostic and Therapy
- Portable Personal Electronics & Wearables
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Instrumentation, Test and Measurement

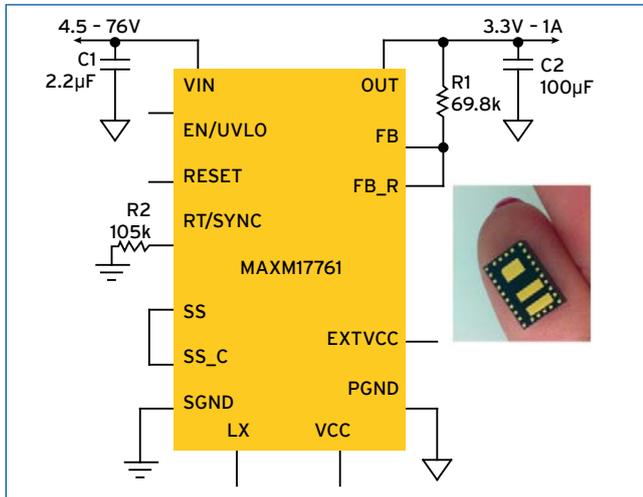
TECHNOLOGY SEGMENT

- Analog & Power



MAXM17761

4.5V to 76V, 1A High-Efficiency, DC-DC Step-Down Power Module with Integrated Inductor



The Himalaya series of voltage regulator ICs and Power Modules enable cooler, smaller, and simpler power supply solutions. The MAXM17761 is an easy-to-use power module that combines a synchronous step down DC-DC converter with integrated FETs, a fully shielded inductor, and the compensation components into a low-profile, thermally-efficient, system-in-package (SiP). The device operates over a wide input voltage range of 4.5V to 76V and delivers up to 1A continuous output current with excellent line and load regulation over an output voltage range of 0.8V to 5V.

- **76V Synchronous Step-Down DC-DC Converter**
- **6.5mm x 10mm x 2.92mm SiP Package**

- **-40°C to +125°C Ambient Operating Temperature**
- **Input voltage range of 4.5V to 76V**

FEATURES

- Reduces Design Complexity, Manufacturing Risks, and Time-to-Market
- Synchronous Step-Down DC-DC Converter With Integrated FETs
- Integrated Inductor
- Integrated Compensation Components
- Saves Board Space in Space-Constrained Applications
- Complete Integrated Step-Down Power Supply in a Single Package
- Small Profile 6.5mm x 10mm x 2.92mm SiP Package
- Simplified PCB Design with Minimal External BOM Components
- Offers Flexibility for Power-Design Optimization
- Wide Input Voltage Range from 4.5V to 76V
- Output-Voltage Adjustable Range from 0.8V to 5V

- Adjustable Frequency with External Synchronization (180kHz to 537kHz)
- Soft-Start Programmable
- Optional Programmable EN/UVLO
- Operates Reliably in Adverse Industrial Environments
- Integrated Thermal Fault Protection
- Robust Overcurrent Protection
- Active-Low RESET Output Voltage Monitoring
- High Industrial Operating Temp. Range
Ambient -40°C to +125°C
Junction -40°C to +150°C

KEY APPLICATIONS

- Distributed Supply Regulation
- FPGA and DSP Point-of-Load Regulator

MARKET SEGMENT

- Communication & Infrastructure
- Industrial
- Lighting
- Smart Consumer & Building

SUB MARKET

- Broadcast
- Home & Building Security (Alarms, Access Control)
- Heating, Ventilation and Air Conditioning
- Lighting Drivers and Electronic Control Gears
- Surveillance, Parking & Traffic Control
- Robotics
- Professional Gaming, Amusement & Casino Machines
- Point of Sales and Vending machines
- Information Kiosk & Advertising Panels
- Instrumentation, Test and Measurement
- Motion Control, Servo Drives
- Human Machine Interface
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Power Supplies (AC/DC, DC/DC)
- ... and many more

TECHNOLOGY SEGMENT

- Analog & Power



IPS4260L

Quad low-side intelligent power switch



Product Image

The IPS4260L is a monolithic high speed (FSW = 100 kHz) device, which can drive four independent capacitive, resistive or inductive loads with one side connected to supply voltage. Four integrated inductive catch diodes clamp the turn-off transients generated by inductive loads combined with proper external TVS allowing fast decay even with huge inductance. Each channel is protected against overload. Current limitation can be set by an external resistor. It also offers a built-in overtemperature protection and diagnostic features.

- **Four independent protected channels**
- **High speed operation**
- **Programmable load current limitation**
- **Common open load diagnostic**

FEATURES

- 8 V to 50 V operating voltage range
- VCC undervoltage lock-out
- Typical operating load current: 0.5 A (per channel)/2 A (one channel)
- Programmable non-dissipative short-circuit protection
- Fast demagnetization of inductive loads with integrated catch diodes clamping turn-off transients
- Ground and VCC wire break protection
- VCC overvoltage protection
- Common thermal shutdown and overload diagnostic
- Per channel thermal shutdown diagnostic
- Designed to meet IEC 61131-2
- Miniaturized HTSSOP20 package

KEY APPLICATIONS

- Industrial / Factory Automation
- Robotics

MARKET SEGMENT

- Industrial

SUB MARKET

- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Motion Control, Servo Drives
- Robotics

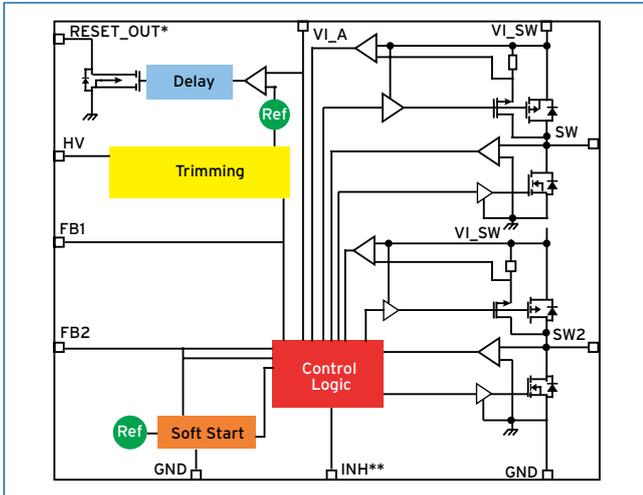
TECHNOLOGY SEGMENT

- Analog & Power



ST2S06

Dual synchronous rectification, 0.5 A, 1.5 MHz adjustable step-down switching regulator



Product Picture

The ST2S06A33 and ST2S06B are dual step-down DC-DC converters optimized for powering low-voltage digital cores in ODD applications and, generally, to replace high current linear solutions when the power dissipation may cause high heating of the application environment.

The device provides up to 0.5 A over an input voltage range of 2.5 V to 5.5 V. A high switching frequency of 1.5 MHz allows the use of tiny surface-mount components as well as a resistor divider to set the output voltage value. Only an inductor and two capacitors are required.

- Dual synchronous rectification
- Fixed or adjustable output voltage from 0.8 V
- 2% DC output voltage tolerance
- 0.5 A output current capability

FEATURES

- Step-down current mode PWM (1.5 MHz) DC-DC converter
- Reset function for A version
- Inhibit function for B version
- Internal soft start for startup current limitation and power ON delay of 50-100 μ s
- Typical efficiency: > 90%
- Non-switching quiescent current: max 1.2 mA over temperature range
- $R_{DS(ON)}$ 150 m Ω (typ.)
- Uses tiny capacitors and inductors
- Available in QFN12L (4x4 mm)

KEY APPLICATIONS

- Auxiliar Power Supplies
- Industrial control

MARKET SEGMENT

- Industrial
- Smart Consumer & Building

SUB MARKET

- Elevators, Escalators, Moving Walkways
- Power Supplies (AC/DC, DC/DC)
- Home Appliances
- Home & Building Security (Alarms, Access Control)
- Home & Building Control and Automation
- Heating, Ventilation and Air Conditioning
- Surveillance, Parking & Traffic Control
- Robotics
- Professional Gaming, Amusement & Casino Machines
- Point of Sales and Vending machines
- Motion Control, Servo Drives
- Instrumentation, Test and Measurement
- Information Kiosk & Advertising Panels
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Human Machine Interface
- Embedded Vision
- Toys, games and entertainment

TECHNOLOGY SEGMENT

- Analog & Power



STNRGPF01

Three-channel interleaved CCM PFC digital controller



Package picture STNRG

The STNRGPF01 is a digital controller designed specifically for interleaved PFC boost topologies and intended for use in high power applications.

The controller is capable of driving up to 3 interleaved channels, generating the proper signals in each condition. Moreover, it implements a flexible phase shedding strategy that enables the correct number of PFC channels based on the actual load condition. With this function, the STNRGPF01 is always able to guarantee the highest power efficiency across a wide range of load current requirements.

It is configured through the eDesignSuite tool.

- Up to 3 interleaved channels
- Inrush current control
- Operating temperature: -40 °C to 105 °C
- Soft start-up

FEATURES

- Interleaved boost PFC
- Up to 3 interleaved channels
- CCM, fixed frequency
- Average current control, cycle-by-cycle
- Inrush current control
- Burst mode support
- Overcurrent and thermal protection
- Soft start-up
- Flexible phase-shedding strategy
 - High operating frequency with small PFC inductor, suitable for high power-density applications
 - Low ripple current (input/output)
 - Simpler integration with other applications
- Flexible design customization to meet specific customer needs
- Firmware
 - Turnkey solution for quick design
 - eDesign Suite graphical user interface (GUI) for application configuration
- Embedded memory data retention 15 years with ECC

- Communication interfaces
 - UART asynchronous protocol for bootloader support
- Operating temperature: -40...+105° C

KEY APPLICATIONS

- Welding
- Industrial motors
- UPS
- Battery charger
- Power supplies

MARKET SEGMENT

- Industrial
- Smart Grid

SUB MARKET

- Elevators, Escalators, Moving Walkways
- Power Conversion (Inverters, Welding, Converters)
- Robotics
- Point of Sales and Vending machines
- Motion Control, Servo Drives

- Information Kiosk & Advertising Panels
- Embedded Vision
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Embedded Computing & Storage
- Power Supplies (UPS, Chargers)

TECHNOLOGY SEGMENT

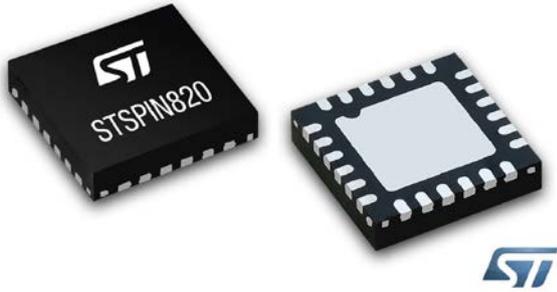
- Analog & Power



STSPIN820

Advanced 256 microsteps integrated motor driver with step-clock and direction interface

Advanced motor-driver IC
for smooth and silent precision robots



Package picture QFN24 4x4 mm

The STSPIN820 is a stepper motor driver which integrates, in a small QFN 4 x 4 mm package, both control logic and a low $R_{DS(on)}$ power stage. The integrated controller implements a PWM current control with fixed OFF time and a microstepping resolution up to 1/256th of the step.

The device can be forced into a low consumption state and offers a complete set of protection features including overcurrent, overtemperature and short-circuit protection.

- Operating voltage from 7 to 45 V
- Maximum output current 1.5 A_{rms}

- Microstepping up to 1/256th of step
- Full protection set

FEATURES

- $R_{DS(on)}$ HS + LS = 1 Ω typ.
- Current control with programmable OFF time
- Current sensing based on external shunt resistor
- Non-dissipative overcurrent protection
- Short-circuit protection
- Undervoltage lockout
- Thermal shutdown
- Standby low consumption

KEY APPLICATIONS

- 3D printers
- Medical equipment
- Industrial 2D printers
- Textile and sewing machines
- CCTV, security and dime cameras
- ATM and cash handling machines
- Office and home automation

MARKET SEGMENT

- Industrial

SUB MARKET

- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Motion Control, Servo Drives
- Point of Sales and Vending machines
- Professional Gaming, Amusement & Casino Machines
- Robotics
- Surveillance, Parking & Traffic Control

TECHNOLOGY SEGMENT

- Analog & Power



TB67S249 / TB67S279 / TB67S289

Toshiba Stepping Motor Driver with Active Gain Control (AGC)



Toshiba Stepper Motor Driver

The new TB67S249FTG, TB67S279FTG and TB67S289FTG stepper motor drivers feature AGC (Active Gain Control) and ACDS (Advanced Current Detect System) technology.

AGC constantly monitors motor torque and automatically optimises motor current to meet load requirements without the need for an additional microcontroller, guarding motors from stalling and possible damage while minimising power consumption and heat generation.

ACDS is a current detection method which does not require external sense resistors, reducing cost and PCB area.

- Achieving anti-stall and power saving during motor drive
- Reducing heat generation during motor drive
- Providing space and cost saving
- Noise reduction

FEATURES

- Built-in error detection functions like thermal shutdown, over current protection, under voltage lockout and motor load open detection
- Built-in output function of error detection flag

KEY APPLICATIONS

- Industrial equipment
- Surveillance camera
- Banking terminals (ATM, etc)
- POS terminals
- Chip mounters
- Factory automation equipment
- Office automation equipment (MFP, 3D printer, Label printer)
- Scanners

MARKET SEGMENT

- Industrial

SUB MARKET

- Motion Control, Servo Drives
- Professional Gaming, Amusement & Casino Machines

TECHNOLOGY SEGMENT

- Analog & Power



€ 0.98

100-up price
LPC845M301JBD64E

€ 0.98

1000-up price
LPC845M301JHI33Y

€ 0.98

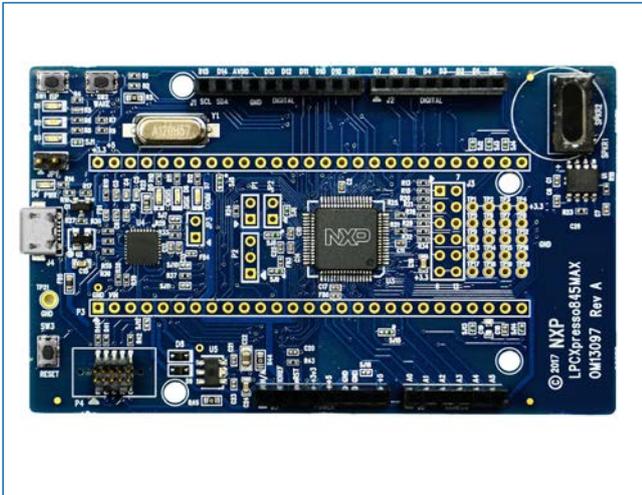
1000-up price
LPC844M201JHI33Y

€ 18.00

1-up price
OM13097UL

LPC84x

Cost-effective and power-efficient with best-in-class connectivity based on ARM Cortex-M0+



OM13097 - LPCXpresso845-MAX Board

Based on the ARM®Cortex®-M0+ core, LPC84x is a low-cost, 32-bit MCU family operating at frequencies of up to 30 MHz. It supports up to 64 KB of flash memory and 16 KB of SRAM. This family features exceptional power efficiency in the low-current mode using the FRO as the clock source. The peripheral complement of the LPC84x MCU family includes a CRC engine, four I²C-bus interfaces, up to five UARTs, up to two SPI interfaces, capacitive touch interface (enablement coming in Q3), one multi-rate timer, self-wake-up timer, SCTimer/PWM, one general purpose 32-bit counter/timer, a DMA, and many more.

- Low power, simple, flexible and small form factor
- Power efficiency in low-current mode
- Full range of timing features
- DAC ADC Integrated

FEATURES

- Low power, simple, flexible and small form factor
- Low-power, 30 MHz ARM Cortex-M0+ core with advanced power optimization
- Advanced peripherals for full range of timing functionality and design flexibility
- Best-in-class serial connectivity
- Small footprint in popular packages
- Exceptional power efficiency in low-current mode using the FRO as the clock source
 - Free Running Oscillator (FRO)
 - Five power modes
 - Power profile APIs for simple runtime power optimization
- More memory
 - 64 kB Flash, small 64 B page size suitable for EEPROM emulation
 - 16 kB RAM (Logic for Bit banding across all of SRAM)

- FAIM is used to configure the part at start-up
 - Pin configuration including direction and pull-up or pull-down
 - Clocks and PMU for low-power start-up
- Full range of timing features from basic to advanced (SCTimer/PWM)
 - Flexible triggers to optimize power use
- Accurate 1.2-Msps ADC: 12 ch, 12-bit
 - Ideal for oversampling to improve conversion accuracy
 - Flexible triggers to optimize power use
- Digital-to-Analog Converter (DAC): 2 ch, 10-bit
- Capacitive touch interface (enablement coming in Q3)
- More serial connectivity
 - 4 I²C for digital sensor interface and more
 - 2 SPI, 5 UART

- 54 GPIO with switch matrix, support input pattern match engine
- 25-ch DMA offloads core

KEY APPLICATIONS

- connectivity device

MARKET SEGMENT

- Industrial

SUB MARKET

- Automotive Power Train and Chassis
- Connected Car, Body Electronics and Automotive Lighting
- Point of Sales and Vending machines

TECHNOLOGY SEGMENT

- High End Processing



€ 245.00

100-up price
MRF13750H

€ 156.50

100-up price
MRF13750HS

MRF13750H

Amongst highest power RF transistors
for 915 MHz and 1300 MHz applications



MRF13750H 915 MHz reference circuit

These 750 W CW transistors, MRF13750H and MRF13750HS, are designed for industrial, scientific and medical (ISM) applications in the 700 to 1300 MHz frequency range. The transistors are capable of CW or pulse power in narrowband operation.

- Extraordinary high power RF transistor for microwave generators: 750 W CW @ 915 MHz
- Designed for narrowband ISM applications from 700 to 1300 MHz
- Engineered to replace magnetrons, for better ease of use and new use cases

- 750 W CW @ 915 MHz
- 700-1300 MHz

- 50 V LDMOS
- 0.15°C/W thermal resistance

FEATURES

- Input pre-matched, no output match
- Push-pull
- NI-1230 air-cavity ceramic package
- 0.15°C/W thermal resistance
- High ruggedness: handles 10:1 VSWR
- Warranted availability until 2032 minimum
- Internally input pre-matched for ease of use
- Device can be used single-ended or in a push-pull configuration
- Characterized for 30 to 50 V
- Suitable for linear applications with appropriate biasing
- Integrated ESD protection
- Recommended driver: MRFE6VS25GN (25 W)
- Included in our product longevity program with assured supply for a minimum of 15 years after launch.
- RoHS compliant

KEY APPLICATIONS

- 915 MHz industrial heating/welding systems
- 1300 MHz particle accelerators

MARKET SEGMENT

- Industrial

SUB MARKET

- Instrumentation, Test and Measurement

TECHNOLOGY SEGMENT

- RF & Microwave



Zynq® UltraScale+™ RF SoC

Integrated RF Analog-to-Digital Signal Chain



Integrating a Comprehensive RF Analog-to-Digital Signal Chain Zynq® UltraScale+™ RFSOCs integrate multi-giga-sample RF data converters and soft-decision forward error correction (SD-FEC) into an All Programmable SoC architecture.

Complete with an ARM® Cortex®-A53 processing subsystem, UltraScale+ programmable logic, and the highest signal processing bandwidth in a Zynq UltraScale+ device, the new family provides a comprehensive RF signal chain for wireless, cable access, test & measurement, early warning / radar, and other high performance RF applications.

RFSOC Functionalities

- 8x8 Channel RF-Analog
- Integrated SD-FEC Cores
- Application Processing Unit
- Dynamic Memory & High Speed Interfaces

FEATURES

- 8x 4GSPS 12-bit ADCs
- 8x 6.4GSPS 14-bit DACs
- Over 42 Gb/s LDPC Encode System Throughput
- Over 10Gb/s LDPC Decode System Throughput
- Over 7Gb/s Turbo Decode System Throughput
- Support for custom LDPC Code Construction
- Quad-core ARM Cortex-A53 MPCore up to 1.5GHz
- Real-Time Processing Unit
- Dual-core ARM Cortex-R5 MPCore up to 533MHz
- DDR4, LPDDR4, DDR3, DDR3L, LPDDR3
- PCIe® Gen4/3, USB 3.0, SATA 3.1 DisplayPort, Gigabit Ethernet
- Up to 930K system logic cells
- Up to 4,272 DSP slices
- Up to 22.5Mb UltraRAM

KEY APPLICATIONS

- High Performance RF Applications
- 4G and 5G Wireless Infrastructure
- Cable Access DOCSIS 3.1 Remote PHY
- Test and Measurement
- Remote Radio for M-MIMO
- Phased Array Early-Warning Radar
- Other High-performance RF Applications

MARKET SEGMENT

- Communication & Infrastructure

SUB MARKET

- Telecom and Networking
- Wireless Infrastructure

TECHNOLOGY SEGMENT

- RF & Microwave



ACHS-712x Hall Effect Sensors

ACHS-7121/-7122/-7123



With the new ACHS-712x family, Broadcom expands its capabilities for current sensing into the low end application range. The ACHS-712x product series is a fully integrated Hall Effect-based isolated linear current sensor device family designed for AC or DC current sensing in industrial, commercial and communications systems. The $\pm 10A / \pm 20A / \pm 30A$ rated ACHS-712x devices consist of a precise, low-offset, linear Hall circuit with a copper conduction path located near the surface of the die. Applied current flowing through this copper conduction path generates a magnetic field that the Hall IC converts into a proportional voltage.

- **Drop in replacement for Allegro ACS712 (obsolete part)**
- **Small footprint, low-profile SOIC8 package**
- **Wide Operating Temperature: -40°C ~ +110°C (125°C storage)**
- **80 kHz bandwidth**

KEY APPLICATIONS

- Chargers and Converters
- Switching Power Supplies
- Solar inverters
- Motor phase and rail current sensing
- Low-power inverter current sensing

MARKET SEGMENT

- Industrial
- Smart Grid

SUB MARKET

- Elevators, Escalators, Moving Walkways
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Motion Control, Servo Drives
- Robotics
- Power Supplies (UPS, Chargers)
- Renewable Energy Generation
- Railway (Traction, Control, etc...)

TECHNOLOGY SEGMENT

- Analog & Power



ZMID520x

Position Sensor Family



IDT's contactless position sensors are magnet-free, significantly reducing materials costs while providing immunity to magnetic stray fields, a requirement for many applications, particularly in automotive. Instead of magnets, the sensors interface with low-cost PCB-based coils and simple metallic targets, providing single-chip design flexibility for rotary end-of shaft (on-axis) sensors, rotary side shaft (off-axis) sensors, linear motion sensors, and arc motion sensors; from small angles up to full 360° absolute angle sensing. The devices are automotive-qualified and ISO 11452-8 compliant.

Position Sensing Application

- Inductive based with no magnet required
- Immune to magnetic stray fields
- Flexible; same IC for many applications
- Fully automotive qualified

FEATURES

- No magnets; reduces system cost
- Stray field immunity and ISO 11452-8 compliance
- Wide operating temperature range for harsh environments
- Ultra-thin position sensors design options (~2mm)
- Tolerance to mechanical misalignment
- High accuracy in all applications (angle, linear, and rotary)
- Single IC for on-axis and off-axis sensor designs
- AEC-Q100 Grade 0 automotive qualification
- Full resolution for every angle range

KEY APPLICATIONS

- position sensing
- angle sensing

MARKET SEGMENT

- Automotive
- Industrial
- Smart Consumer & Building

SUB MARKET

- Automotive Power Train and Chassis
- Automotive Infotainment & Cluster
- Factory Automation
- Point of Sales and Vending machines
- Robotics
- Home & Building Control and Automation
- Home appliance

TECHNOLOGY SEGMENT

- Smart Sensing & Connectivity



TOPLED® D5140

New photodiode for precise health monitoring



Thanks to the emergence of fitness trackers and similar applications in recent years it is now easier than ever before to monitor your own health.

This is made possible by various sensors, such as optical sensors that measure heart rate and oxygen saturation by the amount of light absorbed by the blood pulsing at your wrist. Fitness trackers usually come with LEDs and photo diodes operating at multiple wavelengths. While green light is needed to measure the heart rate, red and infrared are used for monitoring the athlete's blood oxygen level.

- **Green sensitivity 36% higher compared to SFH 2200**
- **Low capacitance => Fast switching time + Saving energy**
- **Blue sensitivity is increased by 59%**
- **SFH 2201 interchangeable with SFH 2200**

FEATURES

- With 36% higher green sensitivity compared to the SFH 2200 the new SFH 2201 sets a benchmark for all solutions currently available on the market. This high sensitivity plays a particularly important role in obtaining accurate results for vital sign monitoring, such as pulse rate, blood pressure measurement.
- In addition, blue sensitivity is increased by 59%. This makes SFH 2201 also as ideal for industrial applications such as smoke detectors, particle counters and bank note scanners.
- SFH 2201 is designed to have a low capacitance and fast switching time. This is the key for the application to save energy and to increase measurement accuracy by operating at higher sampling rates.

- With dimensions of 4.0 mm x 5.1 mm x 0.85 mm, SFH 2201 has the same compact footprint as SFH 2200 so they are interchangeable.

KEY APPLICATIONS

- Health monitoring
- Industrial detectors & scanners
- Control and drive circuits
- Photo interrupters

MARKET SEGMENT

- Healthcare & Wearables

SUB MARKET

- Personal Health, Sport & Fitness

TECHNOLOGY SEGMENT

- Smart Sensing & Connectivity



VL53L1X

Long distance and fast ranging sensor based on ST's FlightSense™ Time-of-Flight technology



Product Image

The VL53L1X is a state-of-the-art, Time-of-Flight (ToF), laser-ranging sensor, enhancing the ST FlightSense™ product family. It is the fastest miniature ToF sensor on the market with accurate ranging up to 4 m and fast ranging frequency up to 50 Hz.

Unlike conventional IR sensors, the VL53L1X uses ST's latest generation ToF technology which allows absolute distance measurement whatever the target color and reflectance. It is also possible to program the size of the ROI on the receiving array, allowing the sensor FoV to be reduced.

- **Fast and accurate long distance ranging up to 400 cm**
- **Programmable ROI position on the receiving array**
- **Can be hidden behind many cover window materials**
- **Single power supply (2v8)**

FEATURES

- Fast and accurate long distance ranging
 - Up to 400 cm distance measurement
 - Up to 50 Hz ranging frequency
- Pin-to-pin compatible with the VL53L0X FlightSense™ ranging sensor
- Programmable ROI position on the receiving array, providing multizone operation control from the host
- Easy integration
 - Single reflowable component
 - Can be hidden behind many cover window materials
 - Software driver and code examples for turnkey ranging
 - Single power supply (2v8)
 - I2C interface (up to 1 MHz)
 - Shutdown and interrupt pins

KEY APPLICATIONS

- User detection (Autonomous low-power mode)
- People user detection and gesture control

- Service robots and vacuum cleaners
- Drones (landing assistance, hovering, ceiling)

MARKET SEGMENT

- Industrial
- Lighting
- Smart Consumer & Building

SUB MARKET

- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Home & Building Security (Alarms, Access Control)
- Home & Building Control and Automation
- Specialty Lighting (Digital Signage, Signals, Entertainment, Transportation)
- Surveillance, Parking & Traffic Control
- Robotics
- Professional Gaming, Amusement & Casino Machines
- Point of Sales and Vending machines
- Information Kiosk & Advertising Panels

- Human Machine Interface
- Toys, games and entertainment

TECHNOLOGY SEGMENT

- Smart Sensing & Connectivity

EBV EUROPEAN HEADQUARTERS

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

EBV REGIONAL OFFICES | Status July 2018

AUSTRIA

AT-1120 Wien
Grünbergstraße 15 / Stiege 1 / 7. OG
Phone: +43 1 89152 0
Fax: +43 1 89152 30

BELGIUM

BE-1831 Diegem
De Kleetlaan 3
Phone: +32 2 716001 0
Fax: +32 2 72081 52

BULGARIA

BG-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 2 34091 011
Fax: +420 2 34091 010

DENMARK

DK-8230 Åbyhøj
Ved Lunden 10-12, 1. sal
Phone: +45 8 6250 466
Fax: +45 8 6250 660

DK-2730 Herlev
Lyskær 9, 1. sal
Phone: +45 39 6905 11
Fax: +45 39 6905 04

ESTONIA

EE-10414 Tallinn
Niine 11
Phone: +372 62 5799 0
Fax: +372 62 5799 5
Cell. +372 513 2232

FINLAND

FI-02240 Espoo
Pihatörmä 1 a
Phone: +358 9 2705279 0
Fax: +358 9 27055498

FI-90100 Oulu
Nahkatehtaankatu 2
Phone: +358 8 4152627 0
Fax: +358 8 4152627 5

FRANCE

FR-13856 Aix-en-Provence
1330 Rue G.G. de la Lauziere
Europarc Pichauray, Bâtiment A2
Phone: +33 442 3965 40
Fax: +33 442 3965 60

FR-92184 Antony Cedex (Paris)
2-6 Place Du General De Gaulle -
CS70046
Phone: +33 1 409630 00
Fax: +33 1 409630 30

FR-35510 Cesson Sévigné (Rennes)
35, av. des Peupliers
Phone: +33 2 998300 50
Fax: +33 2 998300 60

FR-67400 Illkirch Grafenstaden
35 Rue Gruningier
Phone: +33 3 904005 92
Fax: +33 3 886511 25

FR-31500 Toulouse
8 chemin de la terrasse
Parc de la plaine
Phone: +33 5 610084 61
Fax: +33 5 610084 74

FR-69693 Venissieux (Lyon)
Parc Club du Moulin à Vent
33, Av. du Dr. Georges Lévy
Phone: +33 4 727802 78
Fax: +33 4 780080 81

GERMANY

DE-85609 Aschheim-Dornach
Einsteinring 1
Phone: +49 89 38882 351
Fax: +49 89 38882 444

DE-10587 Berlin
Englische Straße 28
Phone: +49 30 747005 0
Fax: +49 30 747005 55

DE-30938 Burgwedel
Burgdorfer Straße 2
Phone: +49 5139 8087 0
Fax: +49 5139 8087 70

DE-59439 Holzwickede
Wilhelmstraße 1
Phone: +49 2301 94390 0
Fax: +49 2301 94390 30

DE-41564 Kaarst
An der Gumpgesbrücke 7
Phone: +49 2131 9677 0
Fax: +49 2131 9677 30

DE-71229 Leonberg
Neue Ramtelstraße 4
Phone: +49 7152 3009 0
Fax: +49 7152 759 58

DE-90471 Nürnberg
Lina-Ammon-Straße 19B
Phone: +49 911 817669 0
Fax: +49 911 817669 20

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

DE-78048 VS-Villingen
Marie-Curie-Straße 14
Phone: +49 7721 99857 0
Fax: +49 7721 99857 70

DE-65205 Wiesbaden
Borsigstraße 36
Phone: +49 6122 8088 0
Fax: +49 6122 8088 99

HUNGARY

HU-1117 Budapest
Budafoki út 91-93, West Irodaház
Phone: +36 1 43672 29
Fax: +36 1 43672 20

IRELAND

IE-Dublin 12
Calmount Business Park
Unit 7, Block C
Phone: +353 1 40978 02
Fax: +353 1 45685 44

ISRAEL

IL-40600 Tel Mond
Drorim South Commercial Center
P.O. Box 149
Phone: +972 9 77802 60
Fax: +972 3 76011 15

ITALY

IT-20092 Cinisello Balsamo (MI)
Via C. Fropa, 34
Phone: +39 02 660962 90
Fax: +39 02 660170 20

IT-50019 Sesto Fiorentino (FI)
EBV Elektronik Srl
Via Lucchese, 84/B
Phone: +39 05 543693 07
Fax: +39 05 542652 40

IT-41126 Modena (MO)
Via Scaglia Est, 33
Phone: +39 059 292 4211
Fax: +39 059 292 9486

IT-80128 Napoli (NA)
Via G. Capaldo, 10
Phone: +39 081 193016 03
Fax: +39 081 198061 24
Cell. +39 335 83905 31

IT-00155 Roma (RM)
Via Edoardo D'Onofrio 212
Phone: +39 06 4063 665/778
Fax: +39 06 4063 777

IT-35030 Sarmeola di Rubano (PD)
Piazza Adelaide Lonigo, 8/11
Phone: +39 049 89747 01
Fax: +39 049 89747 26

IT-10144 Torino (TO)
Via Treviso, 16
Phone: +39 011 26256 90
Fax: +39 011 26256 91

NETHERLANDS

NL-3606 AK Maarssenbroek
Planetenbaan 116
Phone: +31 346 5830 10
Fax: +31 346 5830 25

NORWAY

Postboks 101, Manglerud
Ryensvingen 3B
NO-0681 Oslo
Phone: +47 22 67178 0
Fax: +47 22 67178 9

POLAND

PL-80-833 Gdansk
Targ Rybny 11/12
Phone: +48 58 30781 00

PL-02-676 Warszawa
Postepu 14
Phone: +48 22 25747 06

PL-50-062 Wrocław
Pl. Solny 16
Phone: +48 71 34229 44
Fax: +48 71 34229 10

PORTUGAL

Unipessoal LDA
Edifício Tower Plaza
Rotunda Eng.º Edgar Cardoso, 23 - 14ºG
PT-4400-676 Vila Nova de Gaia
Phone: +351 22 092026 0
Fax: +351 22 092026 1

ROMANIA

4C Gara Herastrai Street
Building B, 2nd Floor - 2nd District
Bucharest
RO 014472
Phone: +40 21 52816 12
Fax: +40 21 52816 01

RUSSIA

RU-620028 Ekaterinburg
Tatischeva Street 49A
Phone: +7 343 31140 4
Fax: +7 343 31140 46

RU-127486 Moscow
Korovinskoye Shosse 10,
Build 2, Off.28
Phone: +7 495 730317 0
Fax: +7 495 730317 1

RU-195197 St. Petersburg
Plustrovsky Prospect 43,
Office 421
Phone: +7 812 635706 3
Fax: +7 812 635706 4

SERBIA

Balkanska 2
XS-11000 Belgrade
Phone: +381 11 40499 01
Fax: +381 11 40499 00
Mobile: +381 63 204506
Mobile: +381 62 780012

SLOVAKIA

SK-82109 Bratislava
Turčianska 2
Green Point Offices
Phone: +421 2 3211114 1
Fax: +421 2 3211114 0

SLOVENIA

SI-1000 Ljubljana
Dunajska 167
Phone: +386 1 5609 778
Fax: +386 1 5609 877

SOUTH AFRICA

ZA-7700 Rondebosch, Cape Town
1st Floor, Unit 0030
Belmont Office Park, Belmont Road
Phone: +27 21 402194 0
Fax: +27 21 4196256

ZA-3629 Westville
Forest Square, 11 Derby Place
Suite 4, Bauhinia Building
Phone: +27 31 27926 00
Fax: +27 31 27926 24

ZA-2157 Woodmead,
Johannesburg
Woodlands Office Park
141 Western Service Road
Building 14-2nd Floor
Phone: +27 11 23619 00
Fax: +27 11 23619 13

SPAIN

ES-08014 Barcelona
c/Tarragona 149 - 157 Planta 19 1º
Phone: +34 93 47332 00
Fax: +34 93 47363 89

ES-39005 Santander (Cantabria)
Racing nº 5 baje
Phone: +34 94 22367 55
Phone: +34 94 23745 81

ES-28760 Tres Cantos (Madrid)
Centro Empresarial Euronova
C/Ronda de Poniente, 4
Phone: +34 91 80432 56
Fax: +34 91 80441 03

SWEDEN

SE-164 40 Kista
Isafjordsgatan 32B, Floor 6
Phone: +46 859 47023 0
Fax: +46 859 47023 1

SWITZERLAND

CH-8953 Dietikon
Bernstrasse 394
Phone: +41 44 74561 61
Fax: +41 44 74561 00

CH-1010 Lausanne
Av. des Boveresses 52
Phone: +41 216 5401 01
Fax: +41 216 5401 00

TURKEY

Canan Residence
Hendem Cad. No: 54 Ofis A2
Serifali Umraniye
TR-34775 Istanbul
Phone: +90 216 528831 0
Fax: +90 216 528831 1

Armada Is Merkezi
Eskisehir Yolu No: 6 , Kat: 1406
Ofis No: 1406
Sogutozu
TR-06520 Ankara
Phone: +90 312 2956 361
Fax: +90 312 2956 200

UKRAINE

UA-03040 Kiev
Vasilovskaya str. 14
off. 422-423
Phone: +380 44 496222 6
Fax: +380 44 496222 7

UNITED KINGDOM

South East
2, The Switchback
Gardner Road
Maidenhead
GB-Berkshire, SL6 7RJ
Phone: +44 16 28778556
Fax: +44 16 28783811

South West & Wales
12 Interface Business Park
Binknoll Lane
Royal Wootton Bassett
GB-Wiltshire, SN4 8SY
Phone: +44 17 93849933
Fax: +44 17 93859555

North
Manchester International
Office Centre, Suite 3E (MIOC)
Styal Road
GB-Manchester, M22 5WB
Phone: +44 16 149934 34
Fax: +44 16 149934 74

Scotland
1st Floor
180 St. Vincent Street
GB-Glasgow, G2 5SG
Phone: +44 141 242482 0
Fax: +44 141 2211916

