



# MIP

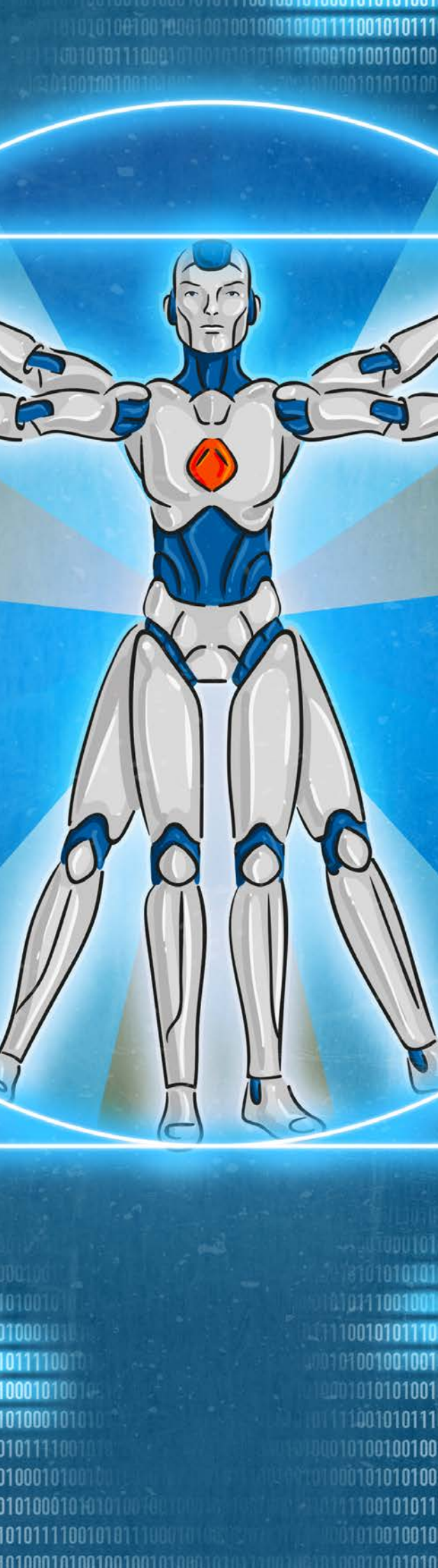
Marketing Innovative Products

2018/02

ROBOTIC  
EVOLUTION  
ARTIFICIAL  
INTELLIGENCE  
MACHINE  
LEARNING  
AUTARKIC  
DECISION  
MAKING



**EBV**Elektronik  
| An Avnet Company |



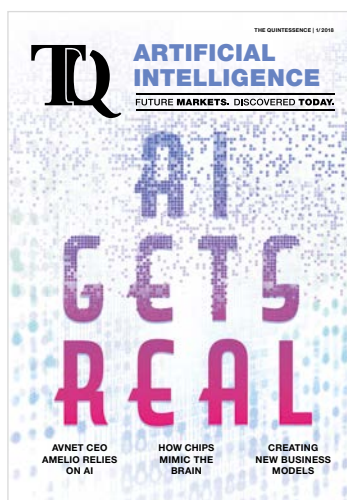
## Intelligent machines and self-teaching computers will open up exciting prospects for the electronics industry.

The idea of thinking, or even feeling, machines was long merely a vision of science-fiction authors. But thanks to rapid developments in semiconductors and new ideas for the programming of self-teaching algorithms, Artificial Intelligence (AI) is today a real market, opening up exciting prospects for businesses.

According to management consultants McKinsey, the global market for AI-based services, software and hardware is set to grow by as much as 25 per cent a year, and is projected to be worth USD 130 billion by 2025. Investment in AI is therefore booming, as the survey "Artificial Intelligence: the next digital frontier" by the McKinsey Global Institute affirms. It reports that, in the last year, businesses – primarily major tech corporations such as Google and Amazon – spent as much as USD 27 billion on in-house research and development in the field of intelligent robots and self-teaching computers. A further USD 12 billion was invested in AI in 2016 externally – that is, by private equity companies, by risk capital funds, or through mergers and acquisitions. This amounted in total to some USD 39 billion – triple the volume seen in 2013. Most current external investments (about 60 per cent) is flowing into machine learning (totalling as much as USD 7 billion). Other major areas of investment include image recognition (USD 2.5 to 3.5 billion) and voice recognition (USD 600 to 900 million).

AI is thus a vital market for the electronics industry as well. With our semiconductor solutions, experienced experts and extensive partner network, we will be glad to help you develop exciting new products.

**Read more about Artificial Intelligence  
in the latest issue of our TQ magazine**



**EBV**  **AppStore**


 App Store

 Google play




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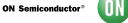

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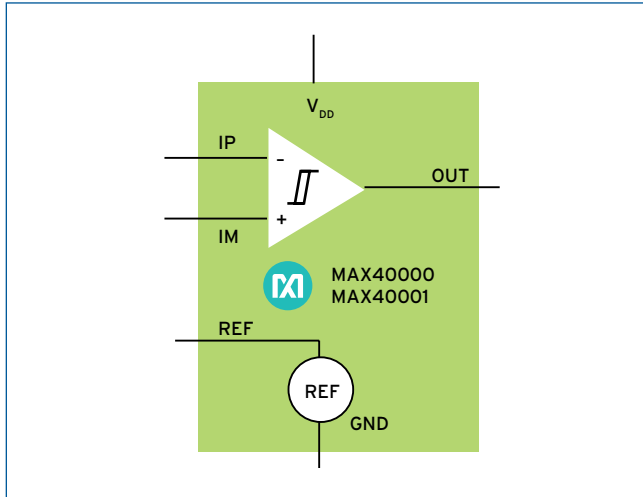


**SiC46X Synchronous microBUCK®:** New Devices in VSH microBUCK® Family Input Range 4.5V-60V and Peak Efficiencies of 98% 6



# MAX40001

## 1.7V, 0.9µA, Comparators with Built-in Reference



MAX40001

The MAX40000/MAX40001 are tiny, single comparators with built-in voltage references that are ideal for a wide variety of portable electronics applications. The devices offer a supply voltage range from 1.7V to 5.5V and consume only 0.9µA of supply current. They also feature internal filtering to provide high RF immunity, important in many portable applications.

5

AMPLIFIERS

- **Very low power - 0.9µA of supply current**
- **Small footprint 1.11mm x 0.76mm**
- **Initial accuracy of 1%**
- **Supply voltage range from 1.7V to 5.5V**

### FEATURES

- Micropower Operating Current (0.9µA typ, 1.7µA max) Preserves Battery Power
- Tiny 1.11mm x 0.76mm 6-Bump WLP and SOT23 Packages Save Board Space
- Internal Precision Reference Saves Space and Cost of an External Reference
  - < 1% at Room Temperature, < 2.5% Over Temp Reference
  - Multiple Reference Voltages (1.252V, 1.66V, 1.94V, and 2.22V)
- Input Voltage Range = -0.2V to 5.7V
- Supply Voltage Range (1.7V to 5.5V) Allows Operation from 1.8V, 2.5V, 3V, and 5V Supplies
- < 10µs Propagation Delay
- Push-Pull (MAX40000) or Open-Drain (MAX40001) Outputs

### KEY APPLICATIONS

- Portable Medical Instruments/Wearables
- Electronic Toys
- Tablets and Consumer Accessories

### MARKET SEGMENT

- Healthcare & Wearables
- Smart Consumer & Building

### SUB MARKET

- Personal Health, Sport & Fitness
- Portable Personal Electronics & Wearables
- Toys, games and entertainment

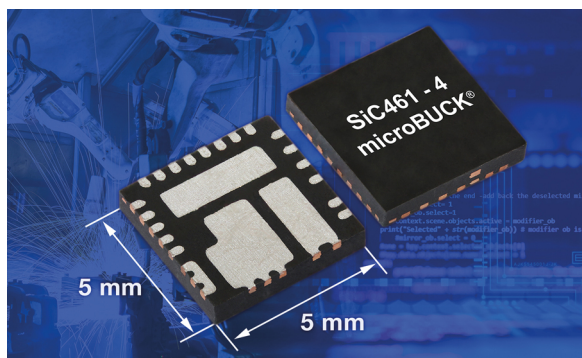
### TECHNOLOGY SEGMENT

- Analog & Power



# SiC46X Synchronous microBUCK®

**New Devices in VSH microBUCK® Family Input Range 4.5V-60V and Peak Efficiencies of 98%**



SiC461

Ideal for applications needing high voltage inputs or required to work with various battery voltage stacks, SiC46X devices contain all the silicon needed to design a high-performance buck regulator in a 5mm by 5mm package.

The devices can also replace non-synchronous buck regulators, which provide lower efficiency in larger footprints. The buck regulators allow one part to be used for a variety of input voltages, reducing the need to qualify multiple devices and improving safety margins for rugged and reliable operation.

- **Single supply operation from 4.5 V to 60 V input voltage**
- **Adjustable output voltage down to 0.8 V**
- **Scalable 2A (SiC464), 4A (SiC463), 6A (SiC462), 10A (SiC461)**
- **± 1 % output voltage accuracy at -40 °C to +125 °C**

## FEATURES

- Featuring high and low side MOSFETs with five times lower on-resistance than most other devices
- Combined with their ultra-low quiescent current, this results in high efficiencies over the full load range
- Synchronous buck topology reduces component count and weight
- High efficiency reduces power losses, enabling system designers to increase power density
- Combined with the superior thermal design of the MLP55-27L package, the devices' high efficiency enables cooler operation for improved long-term reliability, while eliminating the need for a heatsink
- Allows designers to shrink the PCB size, simplify thermal management, and reduce system costs
- Wide input voltage range is ideal for several applications:

- Loosely regulated nominal 24 V, 36 V, and 48 V inputs in noisy industrial environments
- Voltages up to 60 V cover the kick-back transients caused by motors in power tools, battery operated vehicles, robotic vacuum/garden equipment
- Wide range of battery packs up to 14S and fuel cells
- Battery management systems, high voltage battery chargers, aftermarket automotive applications
- All devices are footprint-compatible to provide designers with a scalable solution
- Voltage mode COT architecture delivers ultra-fast transient response with minimum output capacitance and tight ripple regulation at light loads
- Compatible with any output capacitor type
- Low jitter reduces EMC and EMI in noise sensitive applications

## KEY APPLICATIONS

- Industrial and Automation
- Home Automation
- Industrial computing
- Robots
- Base station power supplies
- Wall transformer regulation

## MARKET SEGMENT

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

## SUB MARKET

- Power Supplies (AC/DC, DC/DC)
- Personal Health, Sport & Fitness
- Embedded Computing & Storage
- Human Machine Interface
- Point of Sales and Vending machines
- Professional Gaming, Amusement & Casino Machines

## TECHNOLOGY SEGMENT

- Analog & Power



# BCM5810x - StrataGX™

## Secure Microcontroller Family with NFC



BCM5810x

The Broadcom® BCM5810X is a highly integrated System on a Chip (SoC) microcontroller family ideally suited for security applications requiring a small footprint and low power.

- **ARM® Cortex™-M3 up to 250 MHz**
- **FIPS 140-2 level 3 certified**

- **PCI-compliant architecture**
- **Integrated RFID reader supports NFC**

### FEATURES

- BroadSAFE security capabilities
  - Physical tamper protection with internal wire mesh for critical key protection
  - Secure cache to support secure boot and secure execute-in-place (XIP) (10 total lines)
  - Battery-backed memory for device configuration and key information
  - Hardware accelerated Public Key Authentication (PKA)
  - Secure nonvolatile memory provided by secure, one-time programmable memory (SOTP)
  - Secure Protection Logic (SPL) with frequency, voltage, and temperature monitors
- ARM Cortex-M3 processor
  - Frequency scalable from 50 MHz–250 MHz
  - ETM, TPIU, NVIC, DWT, FPB, ITM, MPU
- Processor subsystem
  - 512 KB on-chip SRAM, 256 KB secure boot ROM
- Peripheral interfaces
  - NFC Reader ISO7816 smart card reader interface
  - Static memory controller for external SRAM and LCD
  - USB 2.0 Host port (HS/FS/LS), USB 2.0 Device port (HS/FS)
  - Up to 5 SPI, 4 UART, SMBus, 4 PWM channels, GPIO
  - Data acquisition that supports data communications by the 3.5 mms audio jack
  - Six channel ADC
  - JTAG with debug and test access
- Lower power states and management
  - Low power operation states by gating clock and power per user control
  - Four independent power domains: Core system domain, Always-on domain
- Secure battery logic
- NFC subsystem

### KEY APPLICATIONS

- Point-of-sale (POS) terminals, mPOS, embedded payment
- PC Client Security / multi-factor user authentication
- Authentication dongles, fobs, keyboards, mice
- Secure co-processor, add security capability

### MARKET SEGMENT

- Industrial
- Healthcare & Wearables
- Smart Consumer & Building

### SUB MARKET

- Point of Sales and Vending machines
- Human Machine Interface
- Information Kiosk & Advertising Panels

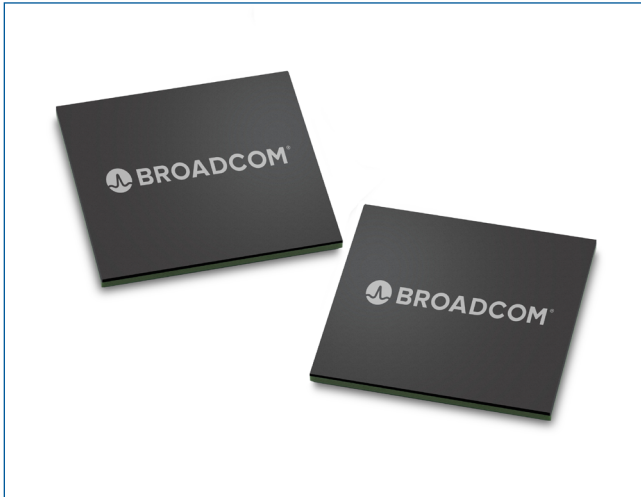
### TECHNOLOGY SEGMENT

- High End Processing



## BCM5830x

### StrataGX™ BCM5830X Endpoint Processor Family with Integrated Networking and Security



BCM5830x

The Broadcom® BCM5830x series of Secure Network Endpoint Processors is a family of highly integrated System-on-a-Chip (SoC) devices suitable for a wide range of secure payment, consumer electronics, and networking endpoint applications.

- High-performance, low-power embedded processing
- Built-in multimedia capability to support video/audio
- Supports networking and peripheral interfaces
- Power-saving modes for battery-powered applications

#### FEATURES

- Advanced ARM Cortex-A9 with NEON
  - I-cache, D-cache, and L2 cache
- Memory Interfaces
  - 16-bit DDR3(L)/LPDDR2 up to 1067 Mb/s
  - 8-bit NAND Flash SLC/MLC
- Security
  - TrustZone Secure Processing Architecture
  - Cryptographic acceleration
  - Secure boot
  - Security Protection Logic (Tamper, monitors, sensors BBRAM, etc.)
- Integrated networking and peripheral interfaces, which may include:
  - 10/100/1000 Ethernet Switch/MAC
  - 10/100/1000 Ethernet PHYs (EEE-compliant PHYs)
  - PCI Express (PCIe) gen 2
  - USB 2.0
  - Controlling Area Networking (CAN)
  - LCD Controller: Parallel and Serial LVDS

- Resistive Touchscreen Controller
- Keypad
- I2S/TDM
- Smart Card
- SDIO/UART/SPI/BSC/JTAG/GPIO
- Multiple PWM channels
- LDOs and Switch Regulators

#### KEY APPLICATIONS

- Point of sale (POS) terminals
- PIN Pad payment terminals
- Mobile POS (mPOS) terminals

#### MARKET SEGMENT

- Industrial
- Smart Consumer & Building

#### SUB MARKET

- Information Kiosk & Advertising Panels
- Professional Gaming, Amusement & Casino Machines
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Robotics

- Embedded Computing & Storage
- Point of Sales and Vending machines
- Home & Building Control and Automation
- Heating, Ventilation and Air Conditioning

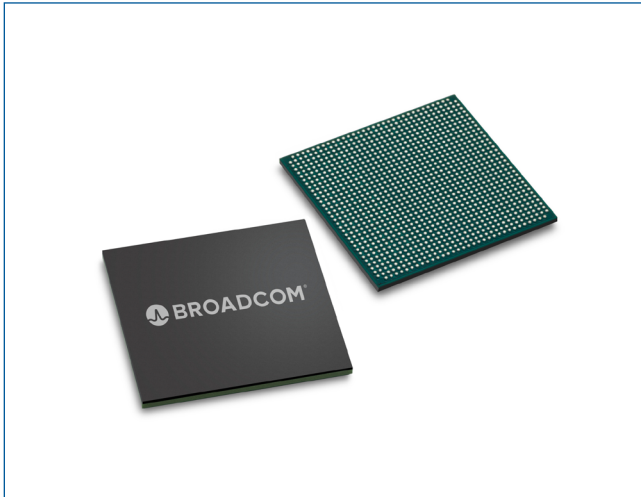
#### TECHNOLOGY SEGMENT

- High End Processing



## BCM89610

### Single-Port 10BASE-T/100BASE-TX/1000BASE-T Automotive Gigabit Ethernet Transceiver



BCM89610

The BCM89610 is a 10/100/1000Base-T Gigabit Ethernet (GbE) transceiver integrated into a single monolithic CMOS chip.

The device performs all of the physical layer (PHY) functions for 1000Base-T, 100Base-TX, and 10Base-T Ethernet packets over copper wire, such as FlexRay™. The 10Base-T Ethernet can also run on standard categories 3, 4, and 5 UTP. The BCM89610 is designed to exceed automotive specifications for noise cancellation and transmission jitter, providing consistent and reliable operation over the broadest range of existing cable plants.

- Triple-speed 10/100/1000Base-T GbE transceiver
- Highly optimized for multiple in-car endpoint applications

- Advanced power savings with Green technology
- Enhanced design for stringent automotive requirement

#### FEATURES

- Supports various interface options for connectivity to external devices, making it the perfect solution for in-car applications such as onboard diagnostics
- Single-chip integrated triple-speed Ethernet transceiver. Support for the following copper line interfaces:
  - 1000Base-T IEEE 802.3ab
  - 100Base-TX IEEE 802.3u
  - 10Base-T IEEE 802.3
- Supports Ethernet@Wirespeed(TM)
- 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.

#### KEY APPLICATIONS

- Automotive
- Industrial Automation
- Broadband Access

#### MARKET SEGMENT

- Automotive
- Communication & Infrastructure

#### SUB MARKET

- Connected Car, Body Electronics and Automotive Lighting

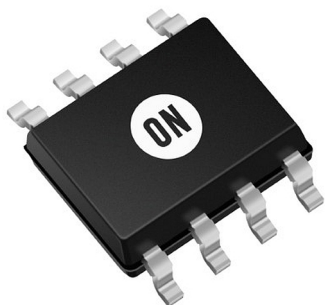
#### TECHNOLOGY SEGMENT

- High End Processing



# NCV7342

## High Speed CAN Transceiver



NCV7342 Package

The NCV7342 CAN transceiver is the interface between a controller area network (CAN) protocol controller and the physical bus and may be used in both 12 V and 24 V systems. The transceiver provides differential transmit capability to the bus and differential receive capability to the CAN controller. The NCV7342 is an addition to the CAN high-speed transceiver family complementing NCV734x stand-alone CAN transceivers and previous generations such as AMIS42665, AMIS3066x, etc. This device is featured as a shield (CAN-GEVB) within ON Semiconductor's IDK.

- **High Speed (up to 1 Mbps)**
- **Common Mode Stabilization**
- **Very Low Current Consumption**
- **Excellent EMS Level Over Full Frequency Range**

### FEATURES

- Bus Pins Protected Against >15 kV System EDS Pulses
- Transmit Data Dominant Time-out function in Standby Mode
- Thermal Protection

### KEY APPLICATIONS

- Tyre Guard ECU
- Electronic Steering Lock
- Window and Sun Hood Lifter
- Mirror Control function
- Receiver for Key application

### MARKET SEGMENT

- Automotive
- Industrial

### SUB MARKET

- ADAS, Automotive Infotainment & Cluster
- Automotive Power Train and Chassis
- Commercial, Construction and Agricultural Vehicles
- Connected Car, Body Electronics and Automotive Lighting

### TECHNOLOGY SEGMENT

- Analog & Power



# ST25RU3993

## UHF RFID Reader IC



ST25RU

The ST25RU3993 is an EPC Class 1 Gen 2 RFID reader IC that implements all the relevant protocols, including ISO 18000-6C, the ISO 29143 air-interface protocol for mobile RFID interrogators, and ISO 18000-6A/B for operation in direct mode. It includes an on-chip VCO and power amplifier and offers a complete set of RFID features including Dense Reader Mode (DRM) functionality and support for frequency-hopping, low-level transmission coding, low-level decode, data framing and CRC checking. The ST25RU3993 operates at very low-power, making it suitable for use in portable and battery-powered apps.

- **Supply voltage range 3.0 to 3.6 V**
- **Frequency hopping support**

- **ASK or PR-ASK modulation**
- **Phase bit for tag tracking with 8-bit linear RSSI**

### FEATURES

- Supply voltage range 3.0 to 3.6 V
  - Limited operation possible down to 2.7 V
  - Maximum PA supply voltage 4.3 V
  - Peripheral I/O supply range 1.65 to 5.5 V
- Protocol support for:
  - ISO 18000-6C (EPC Class1 Gen2)
  - ISO 29143 (Air interface for mobile RFID)
  - ISO 18000-6A/B through direct mode
- DRM: 250 kHz and 320 kHz filters for M4 and M8
- Integrated supply regulators
- Frequency hopping support
- ASK or PR-ASK modulation
- Automatic I/Q selection
- Phase bit for tag tracking with 8-bit linear RSSI
- Temperature range: -40° C to 85° C
- 48-pin QFN (7x7x0.9 mm) package

### KEY APPLICATIONS

- Battery powered NFC readers
- Authentication
- Stationary readers in shops
- Dongle reader

### MARKET SEGMENT

- Smart Consumer & Building
- Industrial

### SUB MARKET

- Home & Building Security (Alarms, Access Control)
- Embedded Computing & Storage

### TECHNOLOGY SEGMENT

- Analog & Power



## AEMD Family

### New Cost-effective SMT Lamp Family



AEMD SMT Lamp Family

Broadcom offers the Surface Mount High-Brightness Round and Oval LED lamps for electronic sign applications as one of the first in the industry. The SMT lamps are essentially like a conventional high-brightness through-hole LED in the form of a surface mount device. They are compatible with industrial reflow soldering processes and made with advanced optical grade epoxy to provide superior performance in outdoor applications. For easy pick and place assembly, the LEDs are shipped in tape and reel, whereby every reel is shipped from a single intensity and color bin for better uniformity.

- **Compact form factor**
- **Moisture sensitivity level (MSL) 2A**
- **Compatible with industrial reflow soldering process**
- **Lens: Tinted for SMT Round, Tinted and diffused for SMT Oval**

#### FEATURES

- Three-pin, cost-effective AEMD-xxxx family of round and oval SMT lamps
- Available in:
  - InGaN green and blue
  - AlInGap red and amber colors
- Covering the full array of signage needs

#### KEY APPLICATIONS

- Traffic signals
- Variable message signs
- Full colour signs
- mono color

#### MARKET SEGMENT

- Lighting

#### SUB MARKET

- Specialty Lighting (Digital Signage, Signals, Entertainment, Transportation)

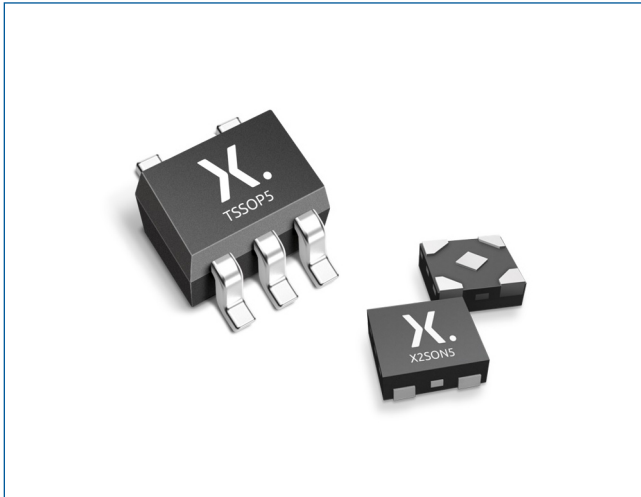
#### TECHNOLOGY SEGMENT

- Analog & Power



## 74AUP1T & 74LV1T Translators

**Nexperia single supply voltage translators with integrated boolean function**



Packages for Translators

Nexperia 74AUP1Txx & 74LV1Txxx logic families provide solutions that integrate voltage level translation with a Boolean function. 74AUP1Txx & 74LV1Txxx types are single supply general-purpose voltage-translating devices, respectively operating in the 2.3 V to 3.6 V and 1.6 V to 5.5 V supply range. These parts are ideal for solving single line level shifter issues combined with a logic gate function.

- **74LV1Txxx: Wide supply voltage range 1.6 V to 5.5 V**
- **Up and down translation possible**
- **Overvoltage tolerant inputs**
- **Up to 50 MHz operation at 3.3 V**

### FEATURES

- 2.3 V to 3.6 V supply voltage range
- Up and down translation possible
- $I_{OFF}$  circuitry for partial power-down operation
- Schmitt-trigger inputs
- Overvoltage tolerant inputs
- Up to 50 MHz operation at 3.3 V
- Low static power use

### KEY APPLICATIONS

- Automotive Applications

### MARKET SEGMENT

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

### SUB MARKET

- ADAS, Automotive Infotainment & Cluster
- Home Appliances
- Home & Building Security (Alarms, Access Control)
- Home & Building Control and Automation
- Audio and Video
- Instrumentation, Test and Measurement
- Embedded Vision
- Embedded Computing & Storage
- Personal Health, Sport & Fitness
- Medical Instruments
- Medical Diagnostic and Therapy
- Telecom and Networking
- Connected Car, Body Electronics and Automotive Lighting
- Metering (Electricity, Flow, Heat)

### TECHNOLOGY SEGMENT

- High End Processing



€ 4.28

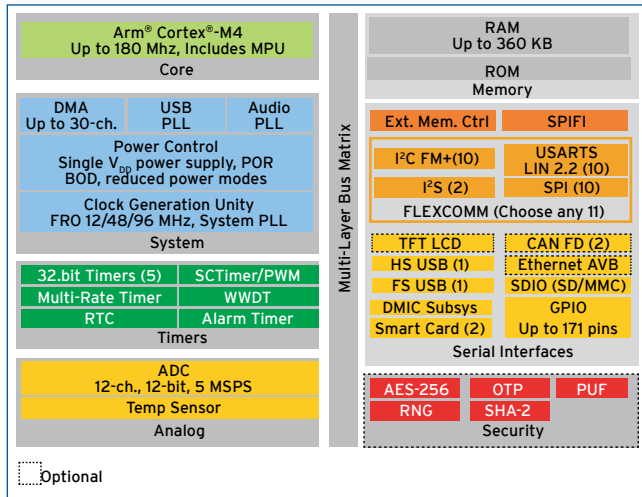
100-up price  
LPC54018JET180E

€ 32.00

1-up price OM40007UL

## LPC540xx

A flashless MCU solution with a 180-MHz Cortex-M4 core, with integrated SRAM



LPC540XX MCU Family Block Diagram

Offering flashless design and security, the LPC540xx family combines a 180 MHz ARM Cortex-M4 with a power-efficient architecture, advanced HMI and communication peripherals for real-time performance in the next-generation IoT.

The LPC540xx provides the ability to adapt as requirements change. Compatibility within the LPC54000 series enables to provide a seamless migration path for increasing processing and additional advanced peripherals.

For added security, the LPC54S0xx MCUs provide hardware AES engine to protect the image and accelerate processing for data integrity and proof of origin.

- **Extremely Low Active Power with 180MHz Performance**
- **Advanced Security**
- **Advanced HMI & Flexible Communication Peripherals**
- **Comprehensive enablement**

### FEATURES

- 180MHz Cortex-M4 with FPU & MPU
- 360 KB RAM
- Stereo DMIC subsystem
  - (PDM, decimator, HW VAD)
- 1x HS USB (H/D) w/ on-chip HS PHY
- XTAL-less FS USB (H/D)
- 11 SPI, 10 I2C, 10 UART, 2 I2S channels. Max 11 channels for FlexComm
- Graphic LCD with resolutions up to 1024x768
- 10/100 Ethernet (AVB, PTP IEEE1588 v2)
- 2 x CAN-FD controller
- 2 x ISO 7816 Smart Card Interfaces with DMA support
- XIP from QSPI via SPIFI
- External Memory Ctrl (up to 32 bits)
- Advanced Security
- AES-256, SHA-2, RNG\*
- HW diversified OTP Key Storage\*
- Secure boot using 2048-bit RSA authentication and SHA-2 verification\*
- Single and dual-image boot support\*

- PUF block that can generate, store, and reconstruct key sizes from 64 to 4096 bits\*
- LQFP208 (28 x 28 mm)
- TFBGA180 (12 x 12 mm)
- LQFP100 (14 x 14 mm)
- TFBGA100 (9 x 9 mm)
- Operating voltage: 1.71 to 3.6V
- Temperature range: -40 to 105 °C

### KEY APPLICATIONS

- PLC
- Industrial Control

### MARKET SEGMENT

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

### SUB MARKET

- Personal Health, Sport & Fitness
- Medical Instruments

- Portable Personal Electronics & Wearables
- Surveillance, Parking & Traffic Control
- Embedded Computing & Storage
- Information Kiosk & Advertising Panels
- Toys, games and entertainment
- Home Appliances
- Home & Building Security (Alarms, Access Control)
- Home & Building Control and Automation
- Heating, Ventilation and Air Conditioning
- Asset Tracking
- Human Machine Interface
- Instrumentation, Test and Measurement
- Point of Sales and Vending machines
- Connected Car, Body Electronics and Automotive Lighting

### TECHNOLOGY SEGMENT

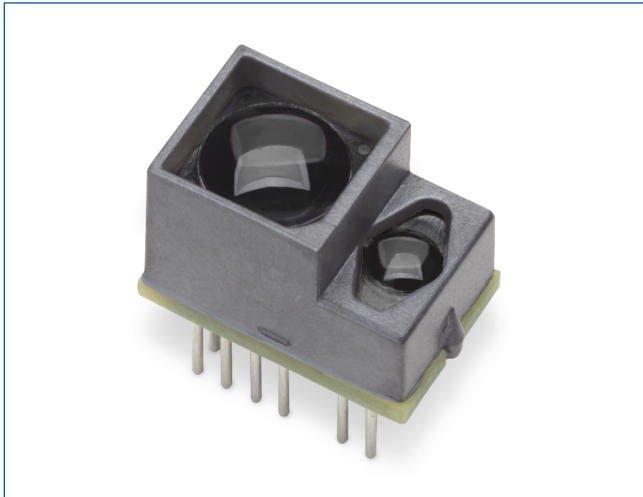
- High End Processing

\*Only available with LPC54S0xx MCUs



## AFBR-S50 Family

### Time of Flight Sensor for Multi-Pixel Distance Measurement



AFBR-S50 Family

Broadcom's multi-pixel distance and motion measurement sensor based on the optical Time of Flight principle excels by supporting up to 3000 frames per second with up to 16 illuminated pixels.

The sensor has been developed with a special focus on precise distance sensing and gesture sensing applications with the need for highest speed, small size, and very low power consumption. Through its excellent ambient light suppression of up to 200k Lux, there is no problem to use it in outside environments.

- Up to 3000 frames p/s
- Highest speed, small size and very low power consumption
- For precise distance sensing and gesture sensing
- Up to 16 illuminated pixels

#### FEATURES

- Optimized to measure distances of up to 10m (black target) with an accuracy of < 1% on a wide variety of surfaces
- Works equally well on white, black, colored as well as on metallic reflective surfaces
- The module has an integrated 680nm/850nm laser light source and uses a single voltage supply of 5V, the data is transferred via a digital SPI interface
- First samples will be available in 07/2018 and official market release in 11/2018
- Integrated Laser light source
- Between 1 - 16 illuminated Pixels
- Very fast measurement rates of up to 3 kHz
- Variable distance range up to 10m
- Operation up to 200k Lux ambient light
- Works well on all surface conditions
- SPI digital interface (up to 20MHz)
- Single voltage supply 5V
- Integrated clock source
- Laser Class 1
- Accuracy < 1%
- Drop in compatible within the AFBR-S50 Sensor Plattform

#### KEY APPLICATIONS

- Industrial sensors
- Gesture sensing
- Distance measurement
- Robotics
- Automation and control

#### MARKET SEGMENT

- Industrial

#### SUB MARKET

- Robotics
- Elevators, Escalators, Moving Walkways
- Motion Control, Servo Drives

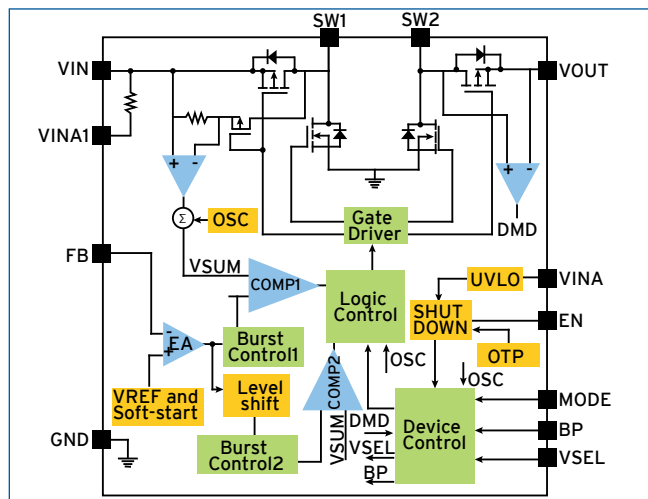
#### TECHNOLOGY SEGMENT

- Analog & Power



# STBB2

## 800 mA 2.5 MHz, high efficiency dual mode buck-boost DC-DC converter



STBB2 Block Diagram

The STBB2 is a fixed frequency, high efficiency, buck-boost DC-DC converter which provides output voltages from 1.2 V to 4.5 V starting from input voltage from 2.4 V to 5.5 V. The device is suitable for single Li-Ion, multi-cell alkaline or NiMH applications where the output voltage is within the battery voltage range. The low- $R_{DS(on)}$  N-channel and P-channel MOSFET switches are integrated and help to achieve high efficiency. The device also includes soft-start control, thermal shutdown, and current limit.

- Operating input voltage range from 2.4 V to 5.5 V
- $\pm 2\%$  output voltage tolerance over process and temperature
- 2.5 MHz switching frequency
- 50  $\mu$ A max. quiescent current

### FEATURES

- Typical efficiency higher than 90%
- Bypass power save function
- Selectable output voltage with dedicated VSEL pin
- Very fast line and load transients
- Power save mode (PS) at light load
- Flip Chip 20 bumps 0.4 mm pitch 2.1 x 1.8 mm

### KEY APPLICATIONS

- Memory card supply

### MARKET SEGMENT

- Healthcare & Wearables
- Industrial
- Smart Consumer & Building

### SUB MARKET

- Medical Diagnostic and Therapy
- Medical Instruments
- Personal Health, Sport & Fitness
- Portable Personal Electronics & Wearables
- Embedded Vision
- Factory Automation (PLCs, I/O, Sensors & Actuators)
- Human Machine Interface
- Information Kiosk & Advertising Panels
- Point of Sales and Vending machines
- Professional Gaming, Amusement & Casino Machines

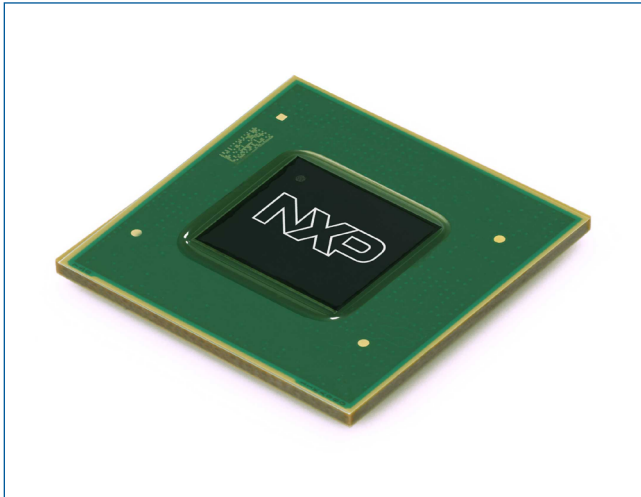
### TECHNOLOGY SEGMENT

- Analog & Power



## i.MX 8M

### Outstanding solution for media and broad embedded applications



i.MX 8M

NXP's i.MX 8M family of processors has up to four 1.5 GHz ARM Cortex®-A53 and Cortex®-M4 cores. Additionally to its high performance, it has flexible memory options and high-speed connectivity interfaces. The processors feature full 4K UltraHD and HDR (Dolby Vision, HDR10, and HLG) video quality, the highest levels of pro audio fidelity, up to 20 audio channels and DSD512 audio.

They are outstanding parts in regards to media capabilities, but also are very competitive in a broad spectrum of general applications, due to their great performance, reduced power consumption and competitive price.

- **Outstanding Video Performance**
- **Scalable CPU Performance**

- **Excellent Audio Interfaces**
- **High Performance at Low Power**

#### FEATURES

- Up to 4K video decoding
  - 4Kp75 HEVC / H.265, 4Kp60 VP9, 4Kp30 H.264
  - 1080p60 MPEG2, MPEG4p2, VC1, VP8, RV9, H.263, DiVX
- High Dynamic Range (HDR) support
  - Dolby Vision and HDR10 formats
- HDMI 2.0a support with HDCP 2.2 / 1.4
- Single, Dual, Quad Cortex®-A53 up to 1.5 GHz
- Cortex-M4 up to 266 MHz
  - Offload Tasks, Optimize Power, Increase Security
- HW based resource isolation & safe sharing between Cortex®-A and Cortex®-M
- Enables concurrent execution of multiple software environments to provide high performance with real-time responsiveness
- 20+ audio channel inputs/outputs
- 32-bit @ 384KHz interfaces (some up to 768 KHz)

- DSD512 Support
- S/PDIF Tx and Rx
- HDMI Audio Return Channel (ARC)
- Scalable power using mobile power architecture
- Independent power gate on each core
- DVFS support on CPU, GPU, and VPU
- Dynamic DRAM frequency scaling support
- Flexible clock gating on each IP module
- Support Cortex®-M4 running with A53 and high-speed modules power gated

#### KEY APPLICATIONS

- Audio Video Applications
- Digital Signage

#### MARKET SEGMENT

- Smart Consumer & Building
- Industrial

#### SUB MARKET

- Audio and Video
- Professional Gaming, Amusement & Casino Machines
- Motion Control, Servo Drives
- Instrumentation, Test and Measurement
- Embedded Vision
- Surveillance, Parking & Traffic Control
- Point of Sales and Vending machines
- Information Kiosk & Advertising Panels
- Human Machine Interface
- Heating, Ventilation and Air Conditioning
- Home Appliances
- Home & Building Security (Alarms, Access Control)
- Home & Building Control and Automation
- Robotics

#### TECHNOLOGY SEGMENT

- High End Processing



# SPC570S50E1

## 32-bit Power Architecture MCU for Automotive Chassis and Safety Applications

18

PROCESSOR



SPC570S

The 32-bit SPC570Sx automotive microcontrollers, (ASIL-D compliant) are a family of system-on-chip (SoC) devices designed to meet the challenges of the next generation of entry-level vehicle safety-critical applications such as ABS and Airbag. The SPC570Sx microcontrollers operate at speeds up to 80 MHz and offer high-performance processing with low power consumption. They are compatible with the existing development infrastructure of current Power Architecture® devices and are supported with software drivers, operating systems, and configuration code to assist with application development.

- High performance e200z0h dual core
- Comprehensive new generation ASILD safety concept
- Two enhanced 12-bit SAR analog converters
- 4 general purpose eTimer units (6 channels each)

### FEATURES

- High performance e200z0h dual core
- 32-bit Power Architecture technology CPU
- Core frequency as high as 80 MHz
- Single issue 4-stage pipeline in-order execution core
- Variable Length Encoding (VLE)
- Up to 544 KB (512 KB code + 32 KB data, suitable for EEPROM emulation) on-chip flash memory: supports read during program and erase operations, and multiple blocks allowing EEPROM emulation
- Up to 48 KB on-chip general-purpose SRAM
- Multi-channel direct memory access controller (eDMA) with 16 channels
- Comprehensive new generation ASILD safety concept
- Dual phase-locked loops with stable clock domain for peripherals and FM modulation domain for computational shell

- Nexus Class 3 debug and trace interface
- Communication interfaces
  - 2 LINFlexD modules
  - 3 deserial serial peripheral interface (DSPI) modules
  - Up to 2 FlexCAN interfaces with 32 message buffers each
- On-chip CAN/UART Bootstrap loader with Boot Assisted Flash (BAF). Physical Interface (PHY) can be
  - UART
  - CAN
- Two enhanced 12-bit SAR analog converters
  - 1.5 µs conversion time
  - 16 physical channels (fully shared between the 2 SARADC units)
  - Supervisor ADC concept
  - Programmable Cross Triggering Unit (CTU)
- Single 3.3 V or 5V voltage supply
- 4 general purpose eTimer units (6 channels each)
- Junction temperature range -40° C to 150° C

### KEY APPLICATIONS

- ABS systems
- Airbags
- ASIL-D systems
- Motor control

### MARKET SEGMENT

- Automotive

### SUB MARKET

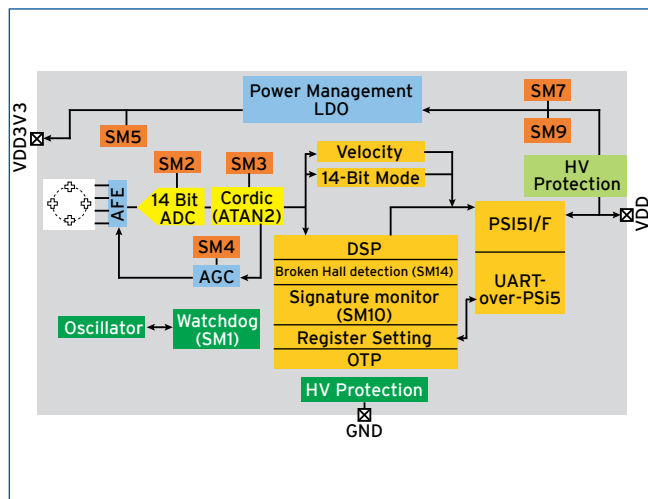
- ADAS, Automotive Infotainment & Cluster
- Automotive Power Train and Chassis

### TECHNOLOGY SEGMENT

- High End Processing

## AS5172 with PSI5 interface

## Magnetic Position Sensor compliant with ISO-26262



AS5172

EBV presents the AS5172 which complements the ams 70-series of high-resolution angular position sensors. The AS5172 has a highly reliable and fast PSI5-bus interface, which can transmit a 12-bit angle information over high secure data bus according to newest PSI5 standards (PSI5 specification Version 1.3 and 2.1). Ideal for safety-critical automotive applications due to the ISO-26262 compliance.

- 12-bit resolution @90° minimum arc
- Low output noise, low inherent INL
- Magnetic stray field immunity
- Functional safety, diagnostics

## FEATURES

- System cost reduction – no PCB and additional components are needed
- AEC-Q100 Grade 0 qualified (AS5172B), AEC-Q100 Grade 1 qualified (AS5172A)
- Developed in compliance to the functional safety standard ISO26262
- Resolve small angular excursion with high accuracy
- Accurate angle measurement
- Higher durability and lower system costs (no shield needed)
- Enabler for safety critical applications
- Suitable for automotive applications
- SIP Package

## KEY APPLICATIONS

- Brakes
- Gas pedals
- Throttle valve and tumble flaps
- Steering angle sensors
- Chassis ride height
- EGR system
- Fuel-level measurement systems
- 2/4WD switch
- Contactless potentiometers

## MARKET SEGMENT

- Automotive
- Industrial

## SUB MARKET

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

## TECHNOLOGY SEGMENT

- Smart Sensing & Connectivity



# LC823450

## Low Power & High-Resolution Audio Processing System LSI



Advanced Audio Processor

LC823450 is an audio processing system LSI for record and playback with High-Resolution 32-bit & 192 kHz audio processing capability. It features Dual CPU and DSP with high processing capability, and internal 1656K-Byte SRAM, which allows the implementation of large scale programs. Integrated analogue functions (low-power Class D HP amplifier, PLL, ADC etc.) reduce PCB space and system cost, and has various interfaces (USB, SD, SPI, UART, etc.) to make extensibility high. In addition LC823450 is provided with various functions including SBC/AAC codec by DSP and UART and ASRC for Bluetooth® audio.

- **ARM® Cortex®-M**
- **32-bit fixed point, dual-MAC original DSP**
- **High-Resolution Audio processing capability**
- **Integrated analog functions**

### FEATURES

- ARM®Cortex®-M3 Dual Core and original DSP clock max frequency
- Oscillation controller to switch dynamically clock frequency
- Cortex®-M3 Single Core power consumption: 0.11 mW/MHz @1.0 V

### KEY APPLICATIONS

- IC Recorders
- Wireless Headsets
- Portable Audio Players
- Wireless Speakers

### MARKET SEGMENT

- Smart Consumer & Building
- Healthcare & Wearables

### SUB MARKET

- Audio and Video
- Portable Personal Electronics & Wearables
- Personal Health, Sport & Fitness

### TECHNOLOGY SEGMENT

- Smart Sensing & Connectivity

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