New Products Introduction

May 2018

Fully Integrated Dual H-Bridge for Powertrain applications
TLE9202ED

CIPOS™ Mini IM51x – series
IM512-L6A, IM513L6A

OptiMOS™5 80V and 100V in Toll - The power choice for 48V applications
IAUTxN08S5Nx, IAUTxN10S5Nx

High performance linear voltage regulator
TLS850B0TE V33, TLS850B0TB V50, TLS850B0TE V50, TLS850B0TB V33

Low Resistance SPDT Antenna Aperture Switch
BGSA 12UGL8

Low noise amplifier BGA5x1BN6 family
BGA5L1BN6, BGA5M1LBN6, and BGA5H1LBN6

Fully Integrated Dual H-Bridge for Industrial application
IFX9202ED

Distance2Go – XENSIV™ Radar 24Ghz demo board
DEMODISTANCE2GOTOBO1
Fully Integrated Dual H-Bridge for Powertrain applications

TLE9202ED

The TLE9202ED contains two independent general purpose 6 A H-Bridges in one Package. It is designed for (but not limited to) the control of DC motors or other inductive loads in automotive applications. The outputs can be pulse width modulated at frequencies up to 20 kHz. PWM/DiR control reduces the number of PWM capable pins needed on the microcontroller side. For load currents above the current limitation threshold (8 A typ.) the H-Bridge goes into chopper current limitation mode. It is protected against short circuits and over temperature and provides extensive diagnosis via SPI or basic error feedback via error flag. Open load can be detected when the bridge is disabled or during PWM operation of inductive loads.

Features

- R<sub>DSon</sub> of 100 mΩ per switch typ. at T<sub>j</sub> = 25° C
- Logic inputs 3.3 V and 5.0 V TTL / CMOS-compatible
- Low standby current
- Chopper current limitation
- Short circuit shut down with latch behavior
- Over temperature shut down with latch behavior
- Vs under voltage shutdown
- Open load detection in ON and OFF state
- Detailed SPI diagnosis or simple error flag

Benefits

- Small package saves board space
- Includes over current and over temperature protection
- Simple design with few external components
- SPI enables easy diagnosis

Qualification:

- Completely lead free
- Green product (RoHS compliant)
- AEC qualified

Competitive Advantage

- PCB size optimized design
- Fully compatibility with different Microcontrollers and voltage levels
- Simple design for various applications

Target applications

Automotive Powertrain

Application examples:

- Exhaust Gas Recirculation (EGR)
- Variable Geometry Turbo (VGT)
- Idle Speed Control
- Swirl and Tumble Flaps
- Variable Intake Manifold
- Turbo Charger Waste Gate
- Auxiliary Water Pumps

Products collaterals / online support

- Customer connector
- Sales presentation
- Product page
- Product brief

Evaluation Board

IFX9202ED_DEV_BOARD

The IFX9202ED shield in the Arduino format is an universal development kit for Infineon’s General Purpose Fully-Integrated Dual-H-Bridge IFX9202ED which is designed for (but not limited to) the control of DC motors or other inductive loads up to 6 A in industrial and home appliance applications. For automotive applications the TLE9202ED qualified according to AEC Q-100 is available as well and is pin and feature compatible for IFX9202ED (see more details on the webpages of TLE9202ED and IFX9202ED). The IFX9202ED shield can be easily used in combination with the XMC1100 Boot Kit, however can be adapted to other kits as well.

Product overview incl. data sheet link

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IMPORTANT: The information presented is valid from 1<sup>st</sup> of April 2018. Please check the latest Distribution Price Book for current prices and minimum quantities.
CIPOS™ Mini IM51x – series
IM512-L6A, IM513L6A

IM513 series are high efficient intelligent power modules (IPM) to control AC motors for low power motor drives up to 600W. The integrated CoolMOS™ MOSFETs significantly improve power efficiency comparing to IGBT based IPMs by reducing power loss, especially when a system is operated under light load conditions. This enables overall system energy and cost saving through reduced power consumption.

Features
> Fully isolated Dual In-Line molded module
> Full-bridge or 3 phase inverter configuration
> Lower conduction loss with CoolMOS™ Power MOSFET Technology
> Built-in NTC thermistor for temperature monitoring
> UL1577 certified

Benefits
> Excellent light load efficiency improves overall power consumption
> Allows system cost saving through thinner insulation panel usage
> Enables larger inner space that provides value for end customers

Value Propositions
> Appliance efficiency standards prohibit the production and import or sale of appliances which are less efficient than the minimum requirements.
> For refrigerators, the energy efficiency at light is very important to improve overall system power efficiency.
> CIPOS™ Mini IPM, IM51x-series significantly improve power efficiency by reducing power loss, especially under light load conditions. This enables overall system energy and cost saving through reduced power consumption

Competitive Advantage
> Overall system energy and cost saving through reduced power consumption (>1%)
> No external NTC thermistor needed for temperature monitoring

Target Application
> Refrigerator Compressors
> Motor drivers
> Pumps
> Fans

Example: High efficiency refrigerator compressor

Sample Schematic

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Evaluation Board
> EVAL CIPOS INV 1-SHUNT [application note]
> EVAL CIPOS INV 3-SHUNT [application note]

Product collaterals / online support
> Customer [connector]
> Sales [presentation]
> CIPOS™ MINI portfolio [page]
> IM512-L6A product [page]
> IM513-L6A product [page]
> CIPOS™ Mini [technical description]

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OptiMOS™5 80V and 100V in Toll - The power choice for 48V applications
IAUTxN08S5Nx, IAUTxN10S5Nx

Infineon introduces a new product family of 80V and 100V MOSFETs based on OptiMOS-5TM Silicon technology in the TOLL package (JEDEC name PG-HSOF-8). The family features unmatched lowest RDSon products in a 10mmx11mm footprint (1.2mΩ in 80V and 1.5mΩ in100V) and a broad selection of additional products to address the cost-performance demand of our customers’ applications. With this family Infineon intends to challenge the traditional SMD packages like D2PAK (TO263) and the though hole packages providing high current capability in much small form factor, without sacrificing thermal performance. This is achieved thanks to the superior Silicon frontend technology and the extremely low thermal resistance of TOLL.

Features

> RDSon down to 1.2mOhm (80V) and 1.5mOhm (100V)
> Low profile Leadless package
> Lower package resistance and inductance

Benefits

> Reduced conduction losses
> Optimized switching performance
> Reduced form factor compared to traditional SMD packages

Value Propositions

> Compact design
> Higher power density
> Reduced system costs
> Highest efficiency

Competitive Advantage

> Best in class RDSon
> Lower package resistance and inductance
> Extensive portfolio

Target Application

> 48V starter generators
> 48V disconnect switches
> 48V-12V phase switches
> 48V e-booster
> 48V e-suspensions

Training for the distributor sales & FAEs

> ATV Mosfet Online Training

Completing products

> MOSFET driver TLE9180

Qualification

> Automotive

Evaluation Board

Battery disconnect switch

> DEMO_BATT_SW_V3 / SP001332050

Block diagram

Application example: 48V STARTER GENERATOR
DC/DC: TLF35584 / Microcontroller: Aurix TC21, TC26 / Driver IC: TLE9180

Product collaterals / online support

> Customer connector
> Sales presentation
> 80V Simulation Model
> 100V Simulation Model

Downloaded from Arrow.com.
### High performance linear voltage regulator

TLS850B0TE V33, TLS850B0TB V50, TLS850B0TE V50, TLS850B0TB V33

The Automotive Low Quiescent Linear Voltage Regulator Family TLS850B0xx is a high-performance, very low dropout linear voltage regulator for 3.3 V and 5.0 V supply in a TO263-5 and TO252-5 package. The input voltage range of 3.0 V to 40 V and a very low quiescent current of 20 µA make it the perfect match for automotive or other supply systems connected to the battery permanently.

### Features

- Output voltage accuracy: ±2 percent
- Dropout voltage: 100 mV
- Current consumption: 20 µA
- Available in TO252 and TO263 package
- Wide operating temperature range: -40°C ≤ Tj ≤ 150°C

### Benefits

- Wide input voltage range
- Robust TO252 and TO263 package
- Reduces energy consumption
- Suitable for stand-by operation
- Minimized external BOM

### Value Propositions

High performance, easy to use voltage regulator for automotive applications

### Target Application

- General automotive power supply
- Dashboard, instrument cluster
- Body electronics, HVAC panel

### Qualification

- Automotive AEC qualified
- Green Product (RoHS compliant)

### Competitive Advantage

- High speed regulation loop reduces external components to minimum
- High immunity robustness
- High quality, designed for harsh automotive environment

### Application Examples

- Microcontroller supply in Body Systems
- Power Supply for CAN network
- System Supply for 2-wheeler Dashboard

### Evaluation Board

Low quiescent LDO demo board TLS850B family

- TLS850B0TBV33: [TLS850B0TB33 Board](#)
- TLS850B0TBV50: [TLS850B0TB50 Board](#)
- TLS850B0TEV33: [TLS850B0TE33 Board](#)
- TLS850B0TEV50: [TLS850B0TE50 Board](#)

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Low Resistance SPDT Antenna Aperture Switch
BGSA 12UGL8

The BGSA12UGL8 is a versatile Single Pole Double Throw (SPDT) RF antenna aperture switch optimized for low Coff as well as low Ron enabling applications up to 6.0 GHz. This single supply chip integrates with a 2 bits control logic featuring also a low current standby mode. Unlike GaAs technology, the 0.1 dB compression point exceeds the switch maximum input power level, resulting in linear performance at all signal levels and external DC blocking capacitors at the RF ports are only required if DC voltage is applied externally. Due to its very high RF voltage ruggedness, it is suited for switching any reactive devices such as inductors and capacitors in RF matching circuits without significant losses in quality factors.

**Features**

- Ultra low RON resistance of 0.6 Ω at each port in ON state
- Low COFF capacitance of 300 fF at each port in OFF state
- High max RF voltage OFF state handling
- Low harmonic generation
- GPIO control interface - including 4 control states
- Supply voltage range: 1.8 to 3.6 V
- Small form factor 1.1 mm x 1.1 mm

**Benefits**

- Low cross-band interference due to ultrahigh linearity feature
- Enables high voltage operation safety
- Higher antenna efficiency performance due to ultralow Ron resistance [0.6Ω]

**Target Application**

- Impedance Tuning
- Antenna Tuning
- Inductance Tuning

**Competitive Advantage**

- Improved operating voltage
- Lowest Ron
- Smallest size

**Evaluation Board**

- EVAL BGSA12UGN8 / SP001692020

**Product collaterals / online support**

- Customer [connector](#)
- Sales [presentation](#)
- TLS850B0TE V33 [product page](#)
- TLS850B0TB V50 [product page](#)
- TLS850B0TE V50 [product page](#)
- TLS850B0TB V33 [product page](#)
- TLS8050B0-family [product brief](#)
Product overview incl. data sheet link

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**Low noise amplifier BGA5x1BN6 family**

BGA5L1BN6, BGA5M1BN6, and BGA5H1BN6

The BGA5x1BN6 is a high gain LNA family (+18 dBm) for LTE. The devices cover a wide frequency range, low (600 - 1000 MHz) mid (1805 - 2200 MHz) and high band (2300 - 2690 MHz). This product family provides best-in-class low noise figure and competitive insertion loss levels. The operating supply voltage range is from 1.5 V to 3.6 V. Infineon BGA5x1BN6 family is based upon Infineon Technologies’ newest B9HF Silicon Germanium technology. The devices feature a single-line two-state control (Bypass- and High gain-Mode). OFF-state can be enabled by powering down VCC.

**Features**

- Multi-state control: bypass- and high gain-mode
- Ultra small TSNP-6-2 and/or TSNP-6-10 leadless package
- Low external component count
- Size 0.7 x 1.1 mm²

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<td>Low current consumption</td>
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<td>1805 - 2200 MHz</td>
<td>2300 - 2690 MHz</td>
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**Benefits**

- System sensitivity increased by 0.4 dB
- High input power up to +25 dBm
- Up to 75% PCB space savings
- Increased data rate

**Target Application**

Smart phones with
- LTE
- GSM

**Competitive Advantage**

- Value added BGA5x1BN6 in Qualcomm SDR660 newest reference platform
  - Up to 75% PCB space savings by substituting Qualcomm QLN1030 & QLN1020 bypass LNAs
- Perfect for regions where there is frequency overlap of band 5 and 8 (e.g. China). High gain LTE LNA decreases device performance risk for traveler users

**Completing Products**

For RF front-end in a mobile phone
- LTE LNA:BGA5xB1N6
- RF Switch: BGS family
- Antenna Tuning: BGSA family

**Product collaterals / online support**

- Customer connector
- Sales presentation
- BGA5L1BN6 product page
- BGA5M1BN6 product page
- BGA5H1BN6 product page

Downloaded from Arrow.com
Block diagram

Product overview incl. data sheet link

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Fully Integrated Dual H-Bridge for Industrial application
IFX9202ED

The IFX9202ED is a dual general purpose 6A H-bridge for industrial applications, home appliance and building automation, power tools battery management and medical applications, designed for the control of small DC motors and inductive loads is available from Infineon. The outputs can be pulse width modulated at frequencies up to 20kHz - that enables operation above the human sonic range - by means of PWM/DIR control. While the signal at the direction input defines the direction of the DC motor, the PWM signal controls the duty cycle. For load currents above the current limitation threshold (8A typ.) the H-Bridge switches into chopper current limitation mode. The IFX9202ED is protected against short circuits and over temperature and provides diagnosis via SPI or basic error feedback via status flag. Open load can be detected when the bridge is disabled or during PWM operation of inductive loads. The robust PG-DSO-36-72 package provides excellent thermal performance.

Features
- RDSon of 100 mΩ per switch typ. at Tj = 25° C
- Logic inputs 3.3 V and 5.0 V TTL / CMOS-compatible
- Low standby current
- Chopper current limitation
- Short circuit shut down with latch behavior
- Over temperature shut down with latch behavior
- Vss under voltage shutdown
- Open load detection in ON and OFF state
- Detailed SPI diagnosis or simple error flag

Benefits
- Small package saves board space
- Includes over current and over temperature protection
- Simple design with few external components
- SPI enables easy diagnosis

Qualification:
- Completely lead free
- Green product (RoHS compliant)
- Industrial
Competitive Advantage

- PCB size optimized design
- Fully compatibility with different Microcontrollers and voltage levels
- Simple design for various applications

Target applications

- DC motor control for industrial applications
- Stepper motors in industrial applications

Application examples:

- Home and building automation
- Power tools battery management
- Industrial robotic
- Medical applications
- Stepper Motors
- 3D printers
- Industrial Laser Markers

Completing Products

XMC1000 series 32-bit Microcontrollers with ARM® Cortex® M0

Evaluation Board

**IFX9202ED_DEV_BOARD**

The IFX9202ED shield in the Arduino format is an universal development kit for Infineon’s General Purpose Fully-Integrated Dual-H-Bridge IFX9202ED which is designed for (but not limited to) the control of DC motors or other inductive loads up to 6 A in industrial and home appliance applications. For automotive applications the TLE9202ED qualified according to AEC Q-100 is available as well and is pin and feature compatible for IFX9202ED (see more details on the webpages of TLE9202ED and IFX9202ED). The IFX9202ED shield can be easily used in combination with the XMC1100 Boot Kit, however can be adapted to other kits as well.

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### Distance2Go – XENSIV™ Radar 24Ghz demo board

**DEMODISTANCE2GOTOBO1**

XENSIV™ is the Infineon radar demo board based on the BGT24MTR11 – FMCW & Doppler for measurement of distance, speed, and direction of movement detection.

#### Features

- Capability to detect distance of moving and static targets (Targets include humans)
- Capability to detect motion, speed and direction of movement (approaching or retreating)
- BGT24MTR11 - 24 GHz highly integrated RF MMIC
- Integrated antennas

#### Benefits

- This development kit allows the user to implement and test several sensing applications at the 24 GHz ISM band.

#### Qualification:

- Industrial and Standard
Completing Products

- XMC4200 ARM® - Cortex® - M4 - 32-bit industrial microcontroller
  (Requires external debugger)

Target applications

- Drone landing assist
- Drone obstacle avoidance
- Smart home
- Building security
- Street lighting
- Industrial automation
- Tank level sensing

Block diagram

24 GHz sensor development kit utilizing Infineon BGT24MTR11 RF transceiver and XMC4200 32-bit ARM® Cortex®-M4 MCU series

Products collaterals / online support

- Distance2Go Kit Setup Guide
- Demo Distance2Go Quick Start Guide
- Product page
- Product brief
- Application note

Product overview incl. data sheet link

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