# New Product Introduction

## October 2023

**SEMPER™ Nano NOR Flash S25FS256TDPBI113**

**62 mm with TRENCHSTOP™ IGBT7**

**BGA7P320 & BGA7P220 pre-drivers for wireless infrastructure**

**XENSIV™ - KP466P digital barometric air pressure sensors**

**84 W AC-DC reference design for battery chargers**

**EVAL_AUDIO_MA2304DNS_B**

**EVAL_AUDIO_MA2304PNS_B**

# SEMPER™ Nano NOR Flash S25FS256TDPBI113

**SEMPER™ Nano is Infineon's compact and power-efficient NOR Flash memory for small, battery-operated devices such as hearables, wearables, personal medical devices, industrial sensors, and IoT applications. This 1.8 V device features 256 Mbit density to support advanced features and data logging. Configurable sectors provide flexibility to optimize storage of code and data in a single device.**


### Features

- 256 Mb density for code and data storage
- Low power modes including standby and deep power-down
- Low read, program, erase currents
- Tiny form factor via WLCSP (packaged) and KGW (wafer) options; standard BGA available on request
- Configurable sector architecture
- Error Correcting Code (ECC)

### Benefits

- Optimized for code and data storage in same device
- Smallest form factors, including SiP & modules
- Longer battery life
- Higher reliability
- Fast time-to-market with Infineon SEMPER™ Solutions Hub
  - SEMPER™ Software Development Kit
  - Evaluation Kit (Pmod compatible memory module)

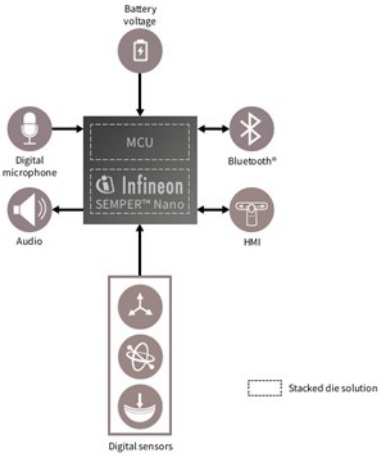
### Competitive advantage

- Small form factor
- Low power consumption
- High reliability
- Easy to integrate (with SEMPER™ SDK)

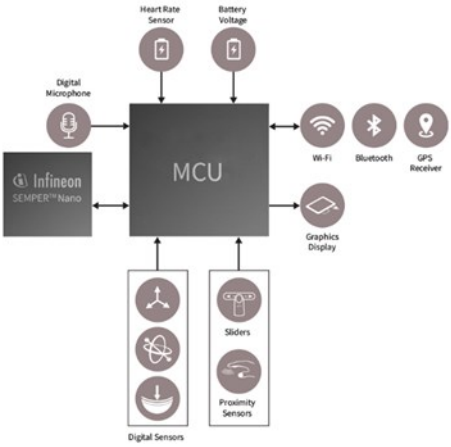
### Target applications

- Battery-powered hearables
- Wearables
- Compact industrial applications

### Block diagram Hearables (TWS Earbuds)




### Block diagram Smart watch & fitness band




### Product collaterals / Online support

Product page

Product family page

Evaluation board page

### Product overview incl. data sheet link

| OPN | SP Number | Package |
|---|---|---|
| S25FS256TDPBHI113 | SP005676056 | PG-BGA-24 |

# 62 mm with TRENCHSTOP™ IGBT7

**62 mm 1200 V, 450 A common emitter low sat & fast trench IGBT module with TRENCHSTOP™ IGBT7 and emitter controlled diode.**

**The new module configuration combines the 1200 V IGBT7 chip technology with a screw terminal and baseplate housing into a highly robust package to support parallel connection and 3 - level configuration.**

**These 62 mm modules are the perfect choice for various industrial applications with power ratings of > 100 kW and up to the MW range in parallel operation.**


### Features

- Highest power density
- Best-in-class $V_{CE\ sat}$
- $T_{vj\ op}$ = 175°C overload
- High creepage and clearance distances
- Isolated base plate
- Standard housing
- RoHS compliant
- 4 kV AC 1 min Insulation
- Package with CTI > 400
- UL / CSA Certification with UL1557 E83336

### Benefits

- Existing packages with higher current capability, allows to increase inverter output power with same frame size
- Especially used for NPC2 topology in 3 - level configuration
- Highest power density
- Avoidance of paralleling of IGBT modules
- Reduced system costs by simplification of the inverter systems
- Flexibility and ready for three - level configuration
- Highest reliability

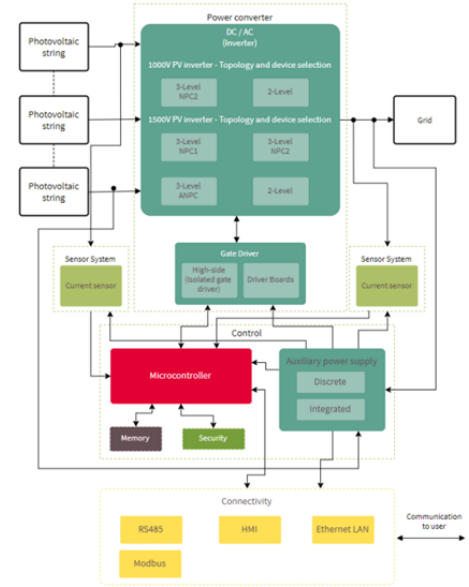
### Target applications

- Energy Storage Systems (ESS)
- Motor control and servo drives (GPD)
- Uninterruptible Power Supplies (UPS)
- EV Charging and Solar Central

### Competitive advantage

- Combination of “standard half bridge” and “common emitter” module for 3 - level application perfectly fits into the system requirements of UPS and Solar Central (utility scale)
- Scalability: easy paralleling of 62 mm modules
- Robustness: screw main terminals and high creepage and clearance distances
- Commercial: attractive price - performance ratio for system operator, high level of market acceptance

### Block diagram




### Product collaterals / Online support

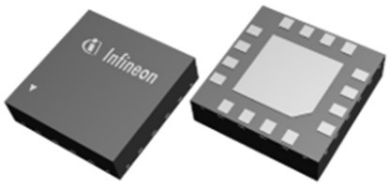
Product page

### Product overview incl. data sheet link

| OPN | SP Number | Package |
|---|---|---|
| FF450R12KE7HPSA1 | SP005723766 | AG-62MMHB-711 |

# BGA7P320 & BGA7P220 pre-drivers for wireless infrastructure

**The Infineon wireless infrastructure driver amplifiers can be used as pre-drivers or drivers in RF applications from massive MIMO 5G base stations to small cells and access points. The tiny but mighty amplifiers sit typically between transceiver IC and power amplifier but can also be used as power amplifier for low power applications. The driver amplifiers boast high linearity and an excellent wide-band gain flatness for optimum linearization results of the driven PA. The BGA P2 series operates at a supply voltage of 3.3 V and offers differential input interface.**




### Features

- Supply voltage: 3.3 V
- Gain flatness: ≤0.5 dB
- High gain: 34.4 dB
- High OP1dB: 27.5 dBm
- Frequency range: 2.3 – 2.7 and 3.3 – 4.2 GHz
- Differential input interface
- Internally matched to 50 Ω

### Benefits

- SiGe technology for an optimized performance: SiGe facilitates optimized performance and enhanced power efficiency
- High gain and high power: 27.5 dBm P1dB and 34.4 dB gain: minimum number of components in TX line-up, and low variation over process, voltage & temperature
- Wide BW covers 2.3 - 2.7 and 3.3 - 4.2 GH: ≤0.5 dB gain flatness in 100 MHz band for simplified compensation
- Internal matching: no need for external matching components: fewer external components, saving PCB area and cost
- Small 3 x 3 mm² 16-pin QFN package: easy design in and small area footprint

### Product collaterals / Online support

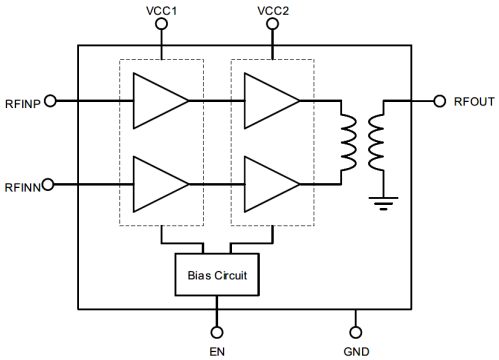
Product page BGA7P220

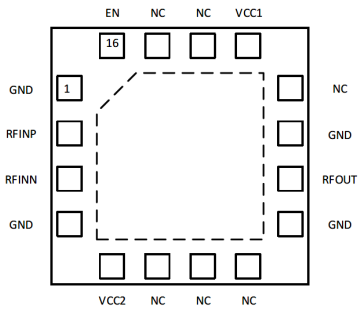
Product page BGA7P320

### Target applications

- 5G massive MIMO
- Small cells
- Base stations
- Distributed antenna systems

### Block diagram




### Product overview incl. data sheet link

| OPN | SP Number | Package |
|---|---|---|
| BGA7P220E6327XTSA1 | SP005557782 | PG-TSNP-16 |
| BGA7P320E6327XTSA1 | SP005557778 | PG-TSNP-16 |

# XENSIV™ - KP466P digital barometric air pressure sensors

**The latest member of our digital BAP sensor family, the KP466P is specifically designed for advanced seat comfort & satellite battery monitoring applications, dedicated for the detection of the pressure rise inside the battery pack due a failing battery cell. Highly accurate, highly sensitive and reliable features make the sensor the ideal fit for advanced automotive, but also for industrial and consumer use cases.**


### Features

- Monitoring pressure & temperature
- High accuracy
- High reliability
- Advanced diagnostic functions
- Lowest power consumption (Supply current: 3.5 mA without SPI communication, in power down mode: 10 µA)
- High & flexible resolution
- Small package (4.5 x 5.1 x 1.75 mm³)
- High operating temperature range from -40°C to 125°C
- Backwards compatibility to excisting pressure sensors

### Benefits

- Robust system & high quality solution
- Allows to reduce power budget to maximize system efficiency
- Robust sensor failure detection
- Best fitting configuration to the application needs
- Minimized design efforts by reusing existing software and PCB layout
- Optimized/lower fuel consumption
- Lower emissions of CO2 and other pollutants => achieving power target / no penalties

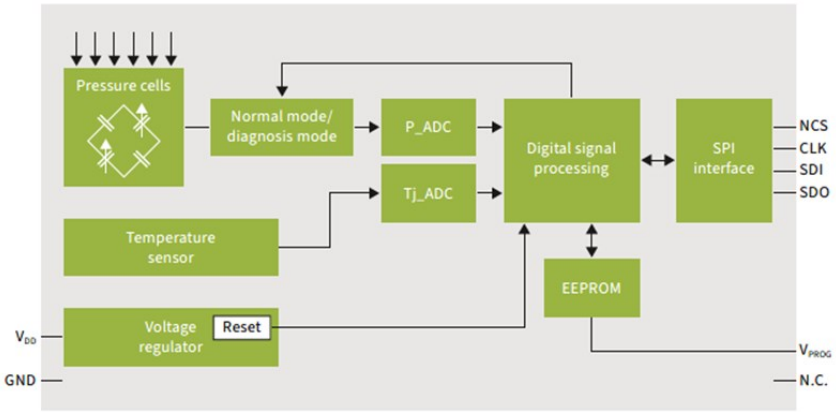
### Competitive advantage

- Lowest power consumption
- High quality
- Superior logistics

### Target applications

- Battery pack monitoring

### Block diagram




### Product collaterals / Online support

Product page

### Product overview incl. data sheet link

| OPN | SP Number | Package |
|---|---|---|
| KP466PXTMA1 | SP005866675 | PG-DFN-8 |

# 84 W AC-DC reference design for battery chargers

**This AC-DC reference design is a flyback converter with secondary-side regulated (SSR) and constant current (CC) output. The input voltage range can be set to low-line by a jumper wire.**
**The output load ranges from 11 V to 21 V and it is intended to be used for 9 V to 18 V battery charging.**

### Features

- SSR with adjustable CC output up to 4 A
- Outout load range from 11 V to 21 V
- 21 V eff. 92% @ 230 $V_{AC}$, 90% @ 110 $V_{AC}$
- Standby power < 250 mW @ 230 $V_{AC}$

### Benefits

- High eff. & low EMI with QR operation
- Configurable brown-in and -out levels
- Adaptive brown-out to protect components
- QR operation for high efficiency
- Comprehensive set of protections

### Target applications

- Battery chargers

### Product collaterals / Online support

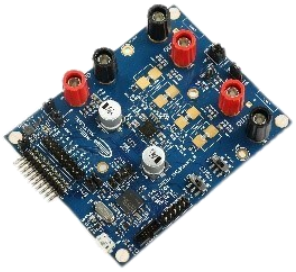
Board page

### Product overview incl. application note link

| OPN | SP Number |
|---|---|
| REFICC80QSG84W3BPATOBO1 | SP005960477 |

# EVAL_AUDIO_MA2304DNS_B

**The EVAL_AUDIO_MA2304DNS_B is the evaluation board that features the MERUS™ multilevel MA2304DNS stereo class D amplifier. It features ultralow idle power consumption, highest efficiency in the market at typical listening levels and reduced EMI in comparison to traditional 2 and 3 level class D amplifiers. Additionally, MA2304DNS includes an integrated DSP for audio system tuning to facilitate development in a fast time to market environment.**



### Features

- MERUS™ multilevel switching technology
- Output power: 2*37 W
- Ultralow idle power consumption: 60 mW
- Configurable switching edge steepness
- PWM sync for reduced EMI in multichannel systems
- 79% efficiency @ 1 W 8 Ohm
- Digital I2S / TDM inputs
- Output noise: 52 uVrms A-weighted
- Integrated DSP

### Benefits

- Extended battery life and reduced EMI
- Lower system cost and simple implementation without the need of dynamic rail tracking power supplies
- Inductor-less and ferrite bead operation without compromising audio performance, efficiency and idle power consumption
- Reduced footprint size and PCB area
- Integrated DSP for audio system correction and tuning

### Target applications

- Battery powered speakers
- Bluetooth / wireless / smart speakers and soundbars
- Conference speakers
- Multichannel / multiroom audio systems

### Competitive advantage

- Only 1/5 idle power of traditional Class D amplifier solutions
- No inductors are needed for output filtering.
- Much better EMI performance

### Product collaterals / Online support

Board page

### Product overview incl. user manual link

| OPN | SP Number |
|---|---|
| EVALAUDIOMA2304DNSBTOBO1 | SP005924519 |

# EVAL_AUDIO_MA2304PNS_B

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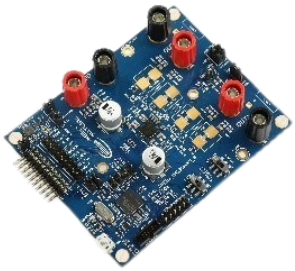

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- Configurable switching edge steepness
- PWM sync for reduced EMI in multichannel systems
- 79% efficiency @ 1 W 8 Ohm
- Digital I2S / TDM inputs
- Output noise: 52 uVrms A-weighted
- Volume control & peak limit

### Benefits

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### Product collaterals / Online support

Board page

### Product overview incl. user manual link

| OPN | SP Number |
|---|---|
| EVALAUDIOMA2304PNSBTOBO1 | SP005924554 |