PRODUCT BRIEF

BGT24ATR22

XENSIV™ 24GHz pulsed doppler radar transceiver

The BGT24ATR22 is a Monolithic Microwave Integrated Circuit (MMIC) for 24GHz radar applications. It provides building blocks for analog signal generation and reception, operating in the frequency range from 24GHz up to 24.25GHz.

The device features 2 transmit channels, 2 receive channels, a fundamental Voltage-Controlled Oscillator (VCO), an integrated Analog Base Band (ABB) with offset compensation for Intermediate Frequency (IF) signal conditioning, and a 12-bit Analog-to-Digital Converter (ADC). A digital Finite State Machine (FSM) guarantees power efficient control of the individual submodules including ultra-low power modes.

Furthermore, the radar transceiver has integrated radar data preprocessing. The Digital Radar Data Processing (DRDP) unit with integrated Fast Fourier Transform (FFT) analyzes the data, controls other modules, stores the acquired radar data, and preprocesses it such that a simple radar data evaluation including motion detection can be executed.

The device was designed with pulsed doppler radar applications in mind, while keeping the transmit signal inside the 24GHz frequency band without any external PLL. It may also be used in other types of radar modulation schemes such as Frequency-Shift-Keying (FSK). The device is tailored for use in automotive applications which require ultra-low power consumption.

The BGT24ATR22 is manufactured using Infineon's automotive qualified 130 nm SiGe-BiCMOS Radio Frequency (RF) technology and is housed in a compact leadless VQFN-32 package which can be processed in standard Surface Mount Technology (SMT) flow.

Key application

- Automotive short-range radar
- Hands-free trunk and door opening
- Motion detection
- Touchless switches

Key features

- 24GHz radar transceiver
- 2 Tx channels
- 2 Rx channels
- Low-phase-noise VCO with automatic frequency control
- Analog base band with automatic DC-offset compensation
- State machine with ultra-low power modes
- 12-bit ADC for dynamic range and detection performance
- Digital radar data processing unit with integrated FFT
- Wide ambient temperature range: -40°C to +105°C
- VQFN-32 RoHS compliant, leadless package
- AEC-Q100 qualified

Key benefits

- Compact PCB design due to high level of integration
- Ultra-low power consumption modes for 24/7 use cases
- Low system costs due entry-level only microcontrollers
- Autonomous motion sensing
- Globally approved 24GHz radar with excellent characteristics for robust and reliable performance in harsh environmental conditions

AEC Qualified

RoHS

Ultra-low power

Smart trunk opener

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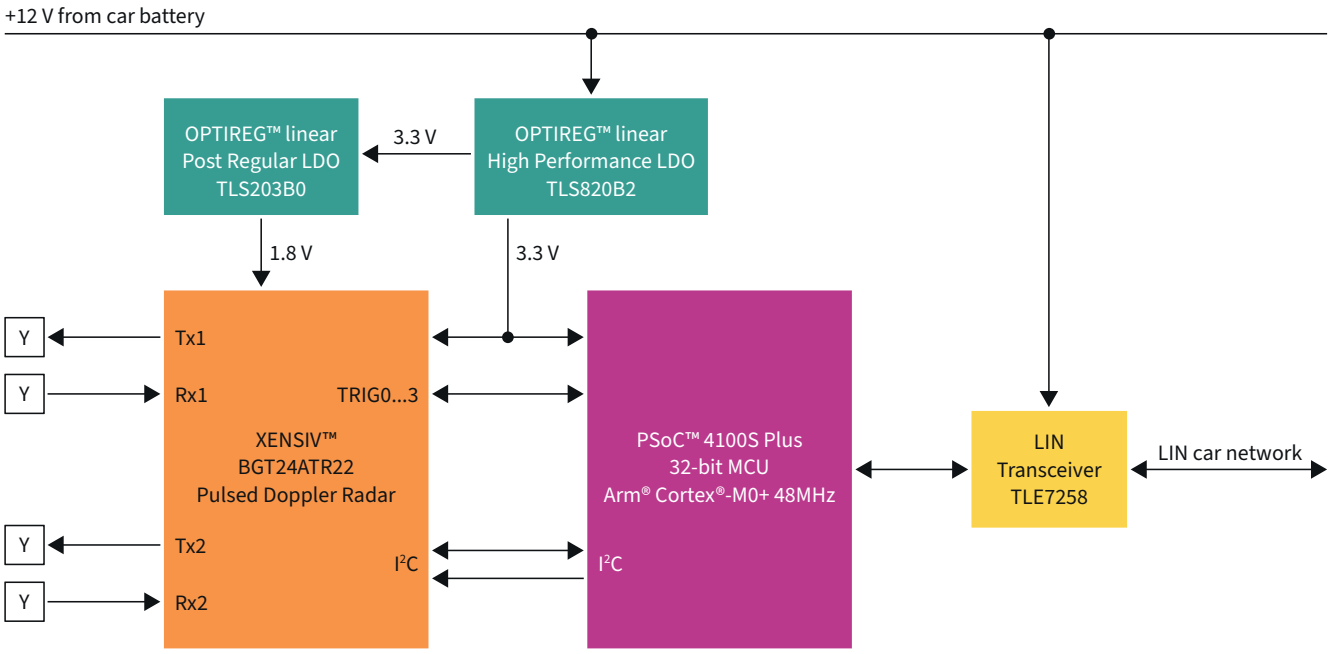
Smart trunk opener system diagram



Product table

Product name	Orderable part number	Frequency [GHz]	Single-sideband noise figure	Package
BGT24ATR22	BGT24ATR22E6433XUMA1	24 – 24.25	NFSSB: 13 dB @ 1kHz	VQFN-32-9

More information is available at www.infineon.com/BGT24ATR22

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