

BGT24LTR11: Ultra Low Power Sensing Using New Generation of 24GHz Radar



BGT24LTR11 is a Silicon Germanium radar MMIC transceiver for signal generation and reception, operating in the 24.0GHz to 24.25GHz ISM band. It is based on a 24GHz fundamental voltage controlled oscillator (VCO). The device was designed with Doppler-radar applications in mind – as it is capable of keeping the transmit signal inside the ISM band without any external PLL – and may also be used in other types of radar such as FMCW or FSK.

Radar used in motion detection applications is superior to passive infrared technology by allowing precise measurement of object detection. Radar is also superior to camera-based systems by allowing detection of the objects while keeping identities anonymous. There are multiple applications for using radar sensors to make your system smarter than the competition.

A built-in voltage source delivers a VCO tuning voltage which is proportional to absolute temperature (PTAT). When connected to the VCO tuning pin it compensates for the inherent frequency drift of the VCO over-temperature, thus stabilizing the VCO within the ISM band and eliminating the need for a PLL/microcontroller. An integrated 1:16 frequency divider also allows for external phase lock loop VCO frequency stabilization.

It is packaged in a 16-pin leadless RoHS compliant TSNP package.

Package size reduction compared with BGT24MTR11:



FEATURES

- MMIC transceiver
- Fully integrated low phase noise VCO
- Built-in temperature compensation circuit for VCO stabilization
- Low power consumption
- Fully ESD protected device
- Single ended RF and IF terminals
- Single supply voltage 3.3V

BENEFITS

- Intelligent motion sensing
- Precise measurement of object detection compared to PIR
- Operates in harsh environments
- Further enabler of IoT – type motion sensing applications
- Smallest package in industry

Motion detection applications such as:

- Building and home automation (IoT)
- Door opening and lighting
- Robotics
- UAV – drone altimeter



Sense2GoL Demo Board

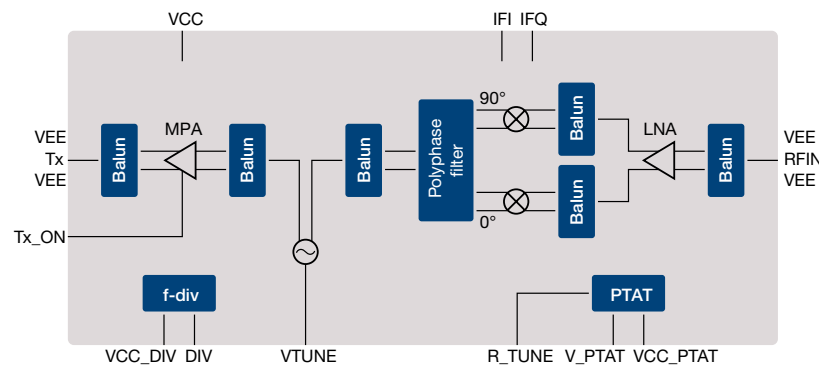
Easy to Use Design Tools

- Chip evaluation board performs basic measurements (EVAL_BGT24LTR11_BOARD)
- Demo kit showcases the motion detection capability using the 24GHz radar sensing solution (Sense2GoL)

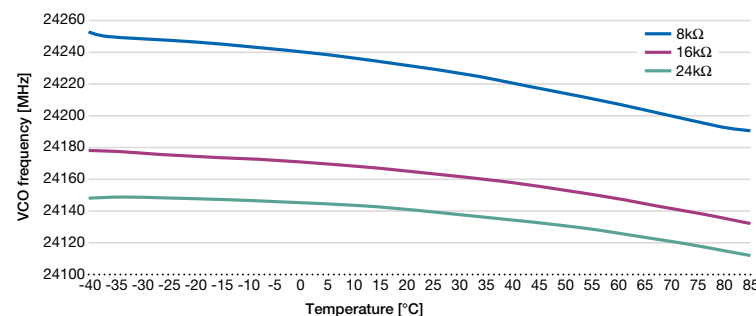


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Block Diagram



The VCO frequency is kept within the ISM band using the internal PTAT circuit; no external PLL or tuning circuitry required for frequency stabilization. The frequency band can be shifted using an external tuning resistor. Stable performance over wide temperature range.



8A Step Down Regulator Achieves Up to 97% Efficiency



The ISL8018 from Intersil is a synchronous step down DC-DC converter IC which can supply up to 8A continuous output current from a 2.7V to 5.5V input supply.

The output voltage of the ISL8018 is adjustable in a range from 0.6V up to the value of the input voltage. It uses a current-control architecture to provide a fast response to transient events and excellent loop stability.

The ISL8018 integrates a pair of P- and N-channel MOSFETs, helping to minimize the external component count. With a dropout of less than 250mV at an output current of 8A, the regulator achieves very high efficiency of up to 97%. In addition, adjustable frequency and synchronization allow the ISL8018 to be used in applications requiring low noise.

The ISL8018 can be configured for discontinuous or forced continuous operation at light-loads. Forced continuous operation reduces noise and RF interference, while discontinuous mode provides high efficiency by reducing switching losses at light-loads.

The ISL8018 is supplied in a 3 x 4mm QFN package with exposed-pad lead frames for excellent thermal performance.

FEATURES

- ±10% output voltage margining
- Adjustable current limit
- Start-up with pre-biased output
- Internal soft start
- Frequency adjustable between 500kHz and 4MHz
- Short circuit protection
- Over-temperature protection



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APPLICATIONS

- Point-of-load modules
- Power supplies for microcontrollers, microprocessors, FPGAs and DSPs
- DC-DC converter modules for routers and switches
- Portable instruments
- Test and measurement systems
- Devices powered by a lithium-ion battery

Evaluation Board

Part Supported: ISL8018
Board Part Number: ISL8018EVAL3Z
Description: The ISL8018EVAL3Z evaluation board is intended for use in point-of-load applications sourcing between 2.7V and 5.5V. The complete converter circuit occupies an area of 439mm².

Efficient New Buck-Boost Regulator for Battery-Powered Portables Carries Up to 3A



Intersil has launched the ISL9127IR, a buck-boost regulator that offers high conversion efficiency up to 96% and a high current capability.

Supplied in a QFN package, the regulator has a compact footprint that makes it ideal for use in battery-powered and portable devices. In addition, it offers a low quiescent current of 30µA for superior light-load efficiency. It includes on-board power MOSFETs rated for a maximum current of 4.5A.

In handheld devices, where the input voltage might at different times be higher or lower than the output voltage, a buck-boost regulator improves efficiency and provides longer battery run-time than a circuit based on a boost regulator plus bypass.

The ISL9127IR operates in buck, boost or buck-boost mode, depending on the relation between input and output voltages, and provides smooth transitions between modes to prevent noise and glitches.

The new buck-boost regulator's wide input voltage range of 1.8V to 5.5V makes it suitable for various battery topologies. The part's output voltage ranges between 1V and 5.2V.

The ISL9127IR provides for dynamic adjustment of the output voltage. Programmable over an I²C interface, this feature eliminates the need for feedback resistors and allows the re-use of the same hardware design in products with different output voltages.

FEATURES

- Output current up to 3A in boost mode
- Under-voltage, short circuit and thermal protections
- 2.5MHz switching frequency

APPLICATIONS

- Handheld and battery-powered consumer and medical devices
- Wireless communications devices
- RF power amplifiers



High Efficiency, High Current Buck-Boost Regulators for Battery-Powered Portables

Evaluation Board

Part Supported: ISL9127IR
Board Part Numbers: ISL9127IRN-EVZ, ISL9127IRA-EVZ
Description: The ISL9127IRN-EVZ and ISL9127IRA-EVZ platforms enable quick evaluation of the features of the ISL9127IR buck-boost regulator series. The ISL9127IRA-EVZ has a programmable output voltage, and the ISL9127IRN-EVZ has a fixed 3.3V output voltage.

