

Automotive Fully Integrated Wireless Power Receiver IC

Manufacturer: [Texas Instruments, Inc](#)

Package/Case: VQFN20

Product Type: Power Management ICs

Lifecycle: Active



Images are for reference only

[Inquiry](#)

General Description

The BQ51013B-Q1 device is a single-chip, advanced, flexible, secondary-side device for wireless power transfer in portable applications capable of providing up to 5 W. The BQ51013B-Q1 devices provide the receiver (RX) AC-to-DC power conversion and regulation while integrating the digital control required to comply with the Wireless Power Consortium (WPC) Qi v1.2 communication protocol. Together with the BQ50012A primary-side controller (or other Qi transmitter), the BQ51013B-Q1 enables a complete contactless power transfer system for a wireless power supply solution. Global feedback is established from the secondary to the primary to control the power transfer process using the Qi v1.2 protocol.

The BQ51013B-Q1 integrates a low-resistance synchronous rectifier, low-dropout regulator (LDO), digital control, and accurate voltage and current loops to ensure high efficiency and low power dissipation.

The BQ51013B-Q1 also includes a digital controller that calculates the amount of power received by the mobile device within the limits set by the WPC v1.2 standard. The controller then communicates this information to the transmitter (TX) to allow the TX to determine if a foreign object is present within the magnetic interface and introduces a higher level of safety within magnetic field. This Foreign Object Detection (FOD) method is part of the requirements under the WPC v1.2 specification.

Key Features

Qualified for automotive applications

AEC-Q100 qualified with the following results:

Device temperature grade 1: -40°C to +125°C ambient operating temperature

Device HBM ESD classification level 2

Device CDM ESD classification level C4B

Integrated wireless power supply receiver solution

93% overall peak AC-DC efficiency

Full synchronous rectifier

WPC v1.2 compliant communication control

Output voltage conditioning

Only IC required between Rx coil and output

Wireless power consortium (WPC) v1.2 compliant (FOD enabled) highly accurate current sense

Dynamic rectifier control for improved load transient response

Dynamic efficiency scaling for optimized performance over wide range of output power

Adaptive communication limit for robust communication

Supports 20-V maximum input

Low-power dissipative rectifier overvoltage clamp ($V_{OVP} = 15\text{ V}$)

Thermal shutdown

Multifunction NTC and control pin for temperature monitoring, charge complete, and fault host control

Recommended For You

BQ51013BRHLR

Texas Instruments, Inc

VQFN20

BQ51050BRHLT

Texas Instruments, Inc

QFN

BQ51050BRHLR

Texas Instruments, Inc

VQFN-20

BQ24045DSQR

Texas Instruments, Inc

WSO10

BQ24725ARGRT

Texas Instruments, Inc

QFN

BQ7693000DBT

Texas Instruments, Inc

TSSOP30

BQ25896RTWT

Texas Instruments, Inc

QFN24

TL432BQDBZR

Texas Instruments, Inc

SOT23-3

BQ2050HSN-A508

Texas Instruments, Inc

SOP16

BQ24192RGER

Texas Instruments, Inc

VQFN24

BQ2000SN-B5

Texas Instruments, Inc

SOP8

BQ24105RHLR

Texas Instruments, Inc

VQFN20

BQ24190RGER

Texas Instruments, Inc

VQFN24

BQ24010DRCR

Texas Instruments, Inc

QFN

TPS54360BQDDAQ1

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