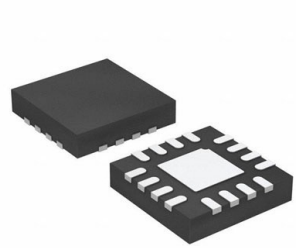
LM5158QRTERQ1

Conv DC-DC 1.5V to 60V Step Up Single-Out 2V to 83V 1A Automotive 16-Pin WQFN EP T/R

Manufacturer:	Texas Instruments, Inc
Package/Case:	WQFN-16
Product Type:	Power Management ICs
RoHS:	RoHS Compliant/Lead free
Lifecycle:	Active



Images are for reference only

Inquiry

General Description

The LM5158x -Q1 device is a wide input range, non-synchronous boost converter with an integrated 85-V, 3.26-A (LM5158 -Q1) or 85-V, 1.63-A (LM51581 -Q1) power switch.

The device can be used in boost, SEPIC, and flyback topologies. It can start up from a single-cell battery with a minimum of 3.2 V. It can operate with the input supply voltage as low as 1.5 V if the BIAS pin is greater than 3.2 V.

The BIAS pin operates up to 60 V (65-V absolute maximum) for automotive load dump. The switching frequency is dynamically programmable from 100 kHz to 2.2 MHz with an external resistor. Switching at 2.2 MHz minimizes AM band interference and allows for a small solution size and fast transient response.

The device provides a selectable Dual Random Spread Spectrum to help reduce the EMI over a wide frequency range.

The device features an accurate peak current limit over the input voltage, which avoids overdesigning the power inductor. Low operating current and pulse-skipping operation improve efficiency at light loads.

The device has built-in protection features such as overvoltage protection, line UVLO, thermal shutdown, and selectable hiccup mode overload protection.

Additional features include low shutdown I_Q, programmable soft start, precision reference, a power-good indicator, and external clock synchronization.

Key Features

AEC-Q100 qualified for automotive applications
Temperature grade 1: –40°C to +125°C T_A

Functional Safety-Capable
Documentation available to aid functional safety system design

Suited for wide operating range for car battery applications
3.2-V to 60-V input operating range (65-V abs max)

83-V maximum output (85-V abs max)

Minimum boost supply voltage of 1.5 V when BIAS ≥ 3.2 V

Input transient protection up to 65 V

Minimized battery drain
Low shutdown current (I_Q ≤ 2.6 µA)

Low operating current (I_Q ≤ 670 µA)

Small solution size and low cost
Maximum switching frequency up to 2.2 MHz

16-pin QFN package (3 mm × 3 mm) with wettable flanks

Integrated error amplifier allows primary-side regulation without optocoupler (flyback)

Minimized undershoot during cranking

Accurate current limit (see the *Device Comparison Table*)

EMI mitigation
Selectable dual random spread spectrum

Lead-less package

Higher efficiency with low-power dissipation
133-mΩ R_{DSON} switch

Fast switching, small switching loss

Avoid AM band interference and crosstalk
Optional clock synchronization

Dynamically programmable wide switching frequency from 100 kHz to 2.2 MHz

Integrated protection features
Constant current limiting over input voltage

Selectable hiccup mode overload protection

Programmable line UVLO

OVP protection

Thermal shutdown

Accurate ±1% accuracy feedback reference

Adjustable soft start

PGOOD indicator

Create a custom design using the LM5158x -Q1 with the WEBENCH Power Designer

Recommended For You

LM2637M

Texas Instruments, Inc

SOP24

LM5116MH

Texas Instruments, Inc

TSSOP20

LM234Z-3

Texas Instruments, Inc

TO-92

LM27761DSGR

Texas Instruments, Inc

WSON8

LM74700QDBVRQ1

Texas Instruments, Inc

SOT23-6

LM2991S

Texas Instruments, Inc

TO-263

LM74800QDRRRQ1

Texas Instruments, Inc

WSON-12

LMR14030SDDAR

Texas Instruments, Inc

SOP8

LM2940CT-12

Texas Instruments, Inc

TO-220

LM536035QPWPTQ1

Texas Instruments, Inc

HTSSOP-16

LM5575MH

Texas Instruments, Inc

TSSOP16

LM536013QDSXTQ1

Texas Instruments, Inc

WSON-10

LM5160QPWPRQ1

Texas Instruments, Inc

HTSSOP14

LM5576MH

Texas Instruments, Inc

TSSOP20

LMQ61460AFSQRJRRQ1

Texas Instruments, Inc

VQFN-14