

LM5157 Q1 Wide Vin Boost Converter With Dual Random Spread Spectrum

Manufacturer:	Texas Instruments, Inc	<input type="text" value="LM51571QRTERQ1 Image"/>
Package/Case:	WQFN-16	Images are for reference only
Product Type:	Power Management ICs	<input type="button" value="Inquiry"/>
RoHS:	RoHS Compliant/Lead free 	
Lifecycle:	Active	

General Description

The LM5157x-Q1 device is a wide input range, non-synchronous boost converter with integrated 50-V, 6.5-A (LM5157-Q1) or 50-V, 4.33-A (LM51571-Q1) power switch.

The device can be used in boost, SEPIC, and flyback topologies. The device can start up from a single-cell battery with a minimum of 2.9 V. It can operate with the input supply voltage as low as 1.5 V if the BIAS pin is greater than 2.9 V.

Key Features

AEC-Q100 qualified for automotive applications
 Temperature grade 1: -40°C to $+125^{\circ}\text{C}$ T_A

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

Suited for wide operating range for car battery applications
 2.9-V to 45-V input operating range

48-V maximum output (50-V abs max)

Minimum boost supply voltage of 1.5 V when BIAS \geq 2.9 V

Input transient protection up to 50 V

Minimized battery drain
 Low shutdown current ($I_Q \leq 2.6 \mu\text{A}$)

Low operating current ($I_Q \leq 700 \mu\text{A}$)

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

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

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

Minimized undershoot during cranking (start-stop application)

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

EMI mitigation
Selectable dual random spread spectrum

Lead-less package

Higher efficiency with low-power dissipation
45-m Ω R_{DS(on)} 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

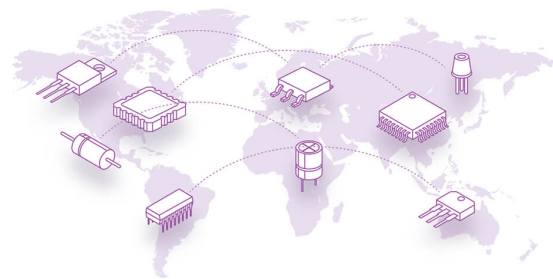
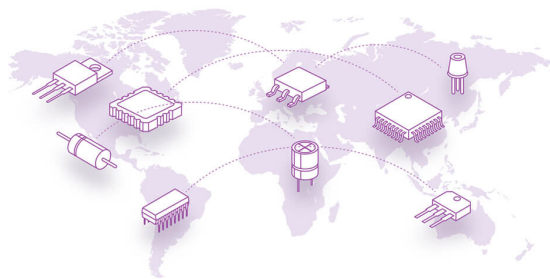
Thermal shutdown

Accurate $\pm 1\%$ accuracy feedback reference

Adjustable soft start

PGOOD indicator

Create a custom design using the LM5157x-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
WSO8

LM74700QDBVRQ1

Texas Instruments, Inc
SOT23-6

LM2991S

Texas Instruments, Inc
TO-263

LM74800QDRRRQ1

Texas Instruments, Inc
WSO8-12

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
WSO8-10

LM5160QPWPRQ1

Texas Instruments, Inc
HTSSOP14

LM5576MH

Texas Instruments, Inc
TSSOP20

LMQ61460AFSQRJRRQ1

Texas Instruments, Inc
VQFN-14