LM5141QRGERQ1

DC/DC Cntrlr Single-OUT Step Down 2300kHz Automotive 24-Pin VQFN EP T/R

Manufacturer:	Texas Instruments, Inc
Package/Case:	VFQFN-24
Product Type:	Power Management ICs
RoHS:	RoHS Compliant/Lead free
Lifecycle:	Active

Images are for reference only

Inquiry

General Description

The LM5141-Q1 is a synchronous buck controller, intended for high voltage wide V_{IN} step-down converter applications. The control method is peak current mode control. Current mode control provides inherent line feed-forward, cycle-by-cycle current limiting, and ease-of-loop compensation. The LM5141-Q1 features slew rate control to simplify the compliance with CISPR and automotive EMI requirements.

The LM5141-Q1 has two selectable switching frequencies: 2.2 MHz and 440 kHz. Gate drivers with slew rate Control that can be adjusted to reduce EMI. In light or no-load conditions, the LM5141-Q1 operates in skip cycle mode for improved low power efficiency. The LM5141-Q1 has a high voltage bias regulator with automatic switch-over to an external bias to reduce the I_Q current from V_{IN}. Additional features include frequency synchronization, cycle-by-cycle current limit, hiccup mode fault protection for sustained overload, and power good output.

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

V_{IN}: 3.8 V to 65 V (70 V Absolute Maximum)

Output: Fixed 3.3 V, 5 V, or Adjustable From
1.5 V to 15 V with ±0.8% Accuracy

Fixed 2.2-MHz or 440-kHz Switching Frequency with ±5% Accuracy

High-Side and Low-Side Gate Drive With Slew-Rate Control

Optional Frequency Shift by Varying an Analog Voltage or RT Resistor

Optional Synchronization to an External Clock

Optional Spread Spectrum

Shutdown Mode I_Q: 10 µA Typical

Low Standby Mode I_Q: 35 µA Typical

75-mV Current Limit Threshold with ±0.9% Accuracy

External Resistor or DCR Current Sensing

Output Enable Logic Input

Hiccup Mode for Sustained Overload

Power-Good Indication Output

Selectable Diode Emulation or Forced Pulse-Width Modulation

24-pin VQFN Package With Wettable Flanks

Create a Custom Design Using the LM5141-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