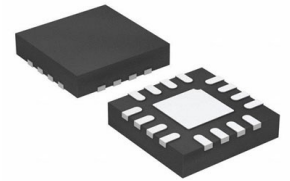


Conv DC-DC 3.8V to 36V Synchronous Step Down Single-Out 1V to 24V 4A Automotive 12-Pin WQFN EP T/R



Images are for reference only

Manufacturer: [Texas Instruments, Inc](#)

Package/Case: WQFN-13

Product Type: Power Management ICs

RoHS: RoHS Compliant/Lead free 

Lifecycle: Active

[Inquiry](#)

General Description

The LM604x0-Q1 automotive-qualified regulator is an easy-to-use, synchronous, step-down DC/DC converter that delivers best-in-class efficiency for automotive applications. The LM60430-Q1 drives up to 3-A of load current, and the LM60440-Q1 is industry's smallest 4A step-down converter.

The LM604x0-Q1 is available in an ultra-miniature WQFN package with wettable flanks and a standard QFN pin-out with a thermal pad to enhance thermal performance. This enhanced QFN package features extremely small parasitic inductance and resistance, enabling very high efficiency while minimizing switch node ringing and dramatically reducing EMI.

The LM604x0-Q1 uses peak-current-mode control to automatically fold back frequency at light load to ensure exceptional efficiency across the entire load range. The low power dissipation paired with a thermally optimized QFN package enables a power dense solution size. In addition the device requires few external components and has a pinout designed for simple PCB layout. The small solution size and feature set of the LM604x0-Q1 are designed to simplify implementation for a wide range of end equipment.

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

Low EMI and switching noise
Meets CISPR25 class 5 standard

Enhanced QFN package minimizes parasitic inductance and switch node ringing

Configured for automotive applications
Standard QFN footprint: single large thermal pad and all pins accessible from perimeter

Pin compatible variants:
LM60440-Q1 (36 V, 4 A)

LM60430-Q1 (36 V, 3 A)

Junction temperature range -40°C to $+150^{\circ}\text{C}$

$\pm 1.5\%$ total output regulation accuracy

Frequency: 400 kHz

Output voltage range: 1 V to 24 V

High efficiency power conversion at all loads
Peak efficiency $> 95\%$

90% PFM efficiency at 10-mA, 12 V_{IN} , 5 V_{OUT}

Low operating quiescent current of 25 μA

Create a custom design using the LM60440-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

WSON-10

LM5160QPWPRQ1

Texas Instruments, Inc

HTSSOP14

LM5576MH

Texas Instruments, Inc

TSSOP20

LMQ61460AFSQRJRRQ1

Texas Instruments, Inc

VQFN-14