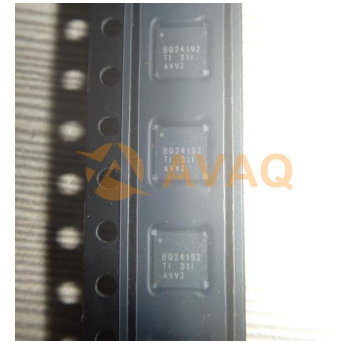



Switching Battery Charger Li-Ion/Li-Pol 4500mA 3.5V to 4.4V 24-Pin VQFN EP T/R



Images are for reference only

[Inquiry](#)

Manufacturer:	<u>Texas Instruments, Inc</u>
Package/Case:	VQFN24
Product Type:	Power Management ICs
RoHS:	RoHS Compliant/Lead free 
Lifecycle:	Active

General Description

The bq24190, bq24192, and bq24192I are highly-integrated switch-mode battery charge management and system power path management devices for single cell Li-Ion and Li-polymer battery in a wide range of tablet and other portable devices.

Its low impedance power path optimizes switch-mode operation efficiency, reduces battery charging time and extends battery life during discharging phase. The I2C serial interface with charging and system settings makes the device a truly flexible solution.

The device supports a wide range of input sources, including standard USB host port, USB charging port and high power DC adapter. To set the default input current limit, the bq24190 detects the input source following the USB battery charging spec 1.2, and the bq24192 and bq24192I take the results from detection circuit in the system, such as USB PHY device. The bq24190, 192, and 192I are compliant with USB 2.0 and USB 3.0 power specifications with input current and voltage regulation. Meanwhile, the bq24190, bq24192, and bq24192I meet USB On-the-Go operation power rating specification by supplying 5 V on the VBUS with a current limit up to 1.3 A.

The power path management regulates the system slightly above battery voltage but does not drop below 3.5-V minimum system voltage (programmable). With this feature, the system maintains operation even when the battery is completely depleted or removed. When the input current limit or voltage limit is reached, the power path management automatically reduces the charge current to zero. As the system load continues to increase, the power path discharges the battery until the system power requirement is met. This supplement mode operation prevents overloading the input source.

The devices initiate and complete a charging cycle without software control. It automatically detects the battery voltage and charges the battery in three phases: pre-conditioning, constant current and constant voltage. At the end of the charging cycle, the charger automatically terminates when the charge current is below a preset limit in the constant voltage phase. When the full battery falls below the recharge threshold, the charger will automatically start another charging cycle.

The bq24190, bq24192, and bq24192I provide various safety features for battery charging and system operation, including dual pack negative thermistor monitoring, charging safety timer and over-voltage/over-current protections. The thermal regulation reduces charge current when the junction temperature exceeds 120°C (programmable).

The STAT output reports the charging status and any fault conditions. The PG output in the bq24192 and bq24192I indicates if a good power source is present. The INT immediately notifies the host when a fault occurs.

The bq24190, bq24192, and bq24192I are available in a 24-pin, 4.00 × 4.00 mm² thin VQFN package.

Key Features

High Efficiency 4.5-A Switch Mode Charger

92% Charge Efficiency at 2 A, 90% at 4 A

Accelerate Charge Time by Battery Path Impedance

Compensation

Compatible with MaxLife Technology for Faster
Charging When Used in Conjunction With bq27531
Highest Battery Discharge Efficiency with 12-mΩ
Battery Discharge MOSFET up to 9-A Discharge Current
Single Input USB-compliant/Adapter Charger
USB Host or Charging Port D+/D- Detection
Compatible to USB Battery Charger Spec 1.2
Input Voltage and Current Limit Supports USB2.0
and USB3.0
Input Current Limit: 100 mA, 150 mA, 500 mA, 900 mA,
1.2 A, 1.5 A, 2 A and 3 A
3.9-V to 17-V Input Operating Voltage Range
Support All Kinds of Adapter with Input
Voltage DPM Regulation
USB OTG 5 V at 1.3-A Synchronous Boost Converter
Operation
93% 5-V Boost Efficiency at 1 A
Narrow VDC (NVDC) Power Path Management
Instant-on Works with No Battery or Deeply
Discharged Battery
Ideal Diode Operation in Battery Supplement Mode
1.5-MHz Switching Frequency for Low Profile Inductor
Autonomous Battery Charging with or without Host
Management
Battery Charge Enable
Battery Charge Preconditioning
Charge Termination and Recharge
High Accuracy (0°C to 125°C)
High Integration
Power Path Management
Synchronous Switching MOSFETs
Integrated Current Sensing
Bootstrap Diode

Internal Loop Compensation

Safety

Battery Temperature Sensing and Charging

Safety Timer

Thermal Regulation and Thermal Shutdown

Input System Over-Voltage Protection

MOSFET Over-Current Protection

Charge Status Outputs for LED or Host

Processor

Low Battery Leakage Current and Support Shipping

Mode

4.00 mm × 4.00 mm VQFN-24 Package



Recommended For You

BQ51013BRHLR

Texas Instruments, Inc

VQFN20

BQ51050BRHLT

Texas Instruments, Inc

QFN

BQ51050BRHLR

Texas Instruments, Inc

VQFN-20

BQ24045DSQR

Texas Instruments, Inc
WSQN10

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

BQ2000SN-B5

Texas Instruments, Inc
SOP8

BQ24105RHRLR

Texas Instruments, Inc
VQFN20

BQ24190RGER

Texas Instruments, Inc
VQFN24

BQ24010DRCR

Texas Instruments, Inc
QFN

TPS54360BQDDAQ1

Texas Instruments, Inc
SOP-8

TLV431BQDBZRQ1

Texas Instruments, Inc
SOT23