

2-3 Cell NVDC-1 Battery Charger Controller with Ultra-Fast Transient Response and High Light-Load Efficiency

Check for Samples: [bq24715](#)

FEATURES

- 6-24V Input SMBus NVDC-1 2-3S Battery Charger Controller
- System Instant-on Operation with No Battery or Deeply Discharged Battery
- Ultra-Fast Transient Response of 100 μ s
- Ultra-Low Quiescent Current of 500 μ A and High PFM Light Load Efficiency 80% at 20mA load to Meet Energy Star and ErP Lot6
- Switching Frequency: 600kHz/800kHz/1MHz
- Programmable System/Charge Voltage (16 mV/step), Input/Charge Current (64 mA/step) with High Accuracy
 - $\pm 0.5\%$ Charge Voltage Regulation
 - $\pm 3\%$ Input/Charge Current Regulation
 - $\pm 2\%$ 40x Input/16x Discharge Current Monitor Output
- Support Battery LEARN Function
- Maximize CPU Performance with Deeply Discharged Battery or No Battery
- Integrated NMOS ACFET and RBFET Driver
- 20-pin 3.5 x 3.5 mm² QFN Package

APPLICATIONS

- Ultrabook, Notebook, and Tablet PC
- Industrial and Medical Equipment
- Portable Equipment

DESCRIPTION

The bq24715 is a NVDC-1 synchronous battery charge controller with low quiescent current, high light load efficiency for 2S or 3S Li-ion battery charging applications, offering low component count.

The power path management allows the system to be regulated at battery voltage but does not drop below the programmable system minimum voltage.

The bq24715 provides N-channel ACFET and RBFET drivers for the power path management. It also provides driver of the external P-channel battery FET. The loop compensation is fully integrated.

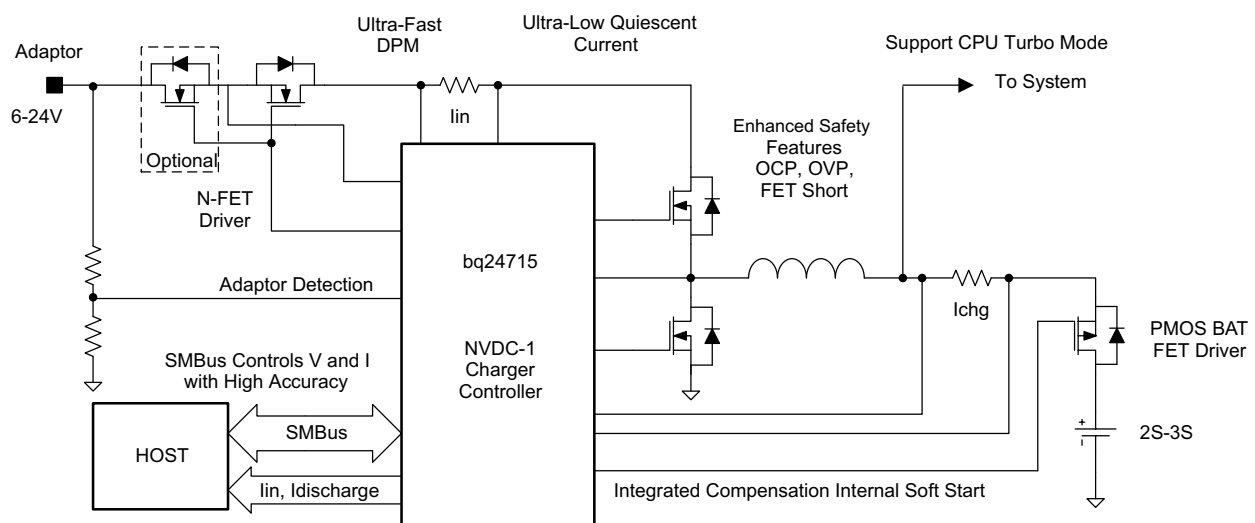
The bq24715 has programmable 11-bit charge voltage, 7-bit input/charge current and 6-bit minimal system voltage with very high regulation accuracies through the SMBus communication interface.

The bq24715 monitors adapter current or battery discharge current through the IOUT pin allowing the host to throttle down CPU speed when needed.

The bq24715 provides extensive safety features for over current, over voltage and MOSFET short circuit.

PRODUCT PREVIEW

Simplified Application Diagram



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

To request a full data sheet, please send an email to:
bq24715_request@list.ti.com

PACKAGING INFORMATION

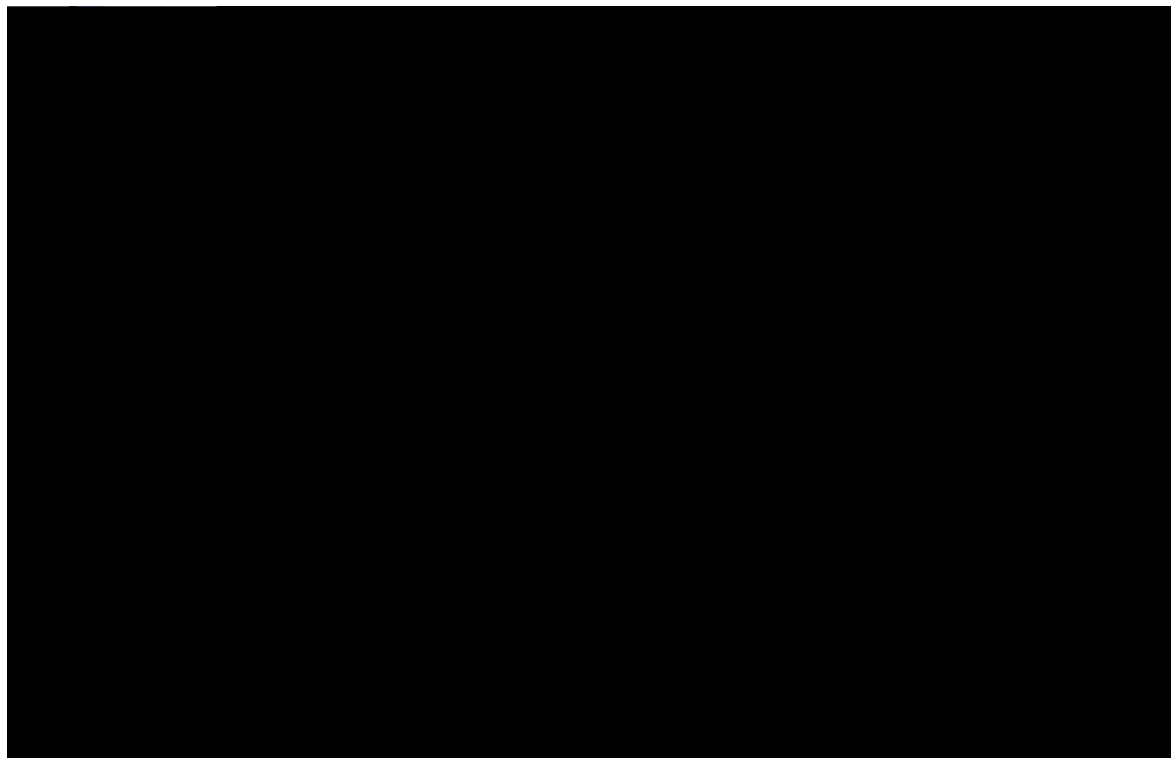
Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Top-Side Markings (4)	Samples
BQ24715RGRR	ACTIVE	VQFN	RGR	20	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR		BQ715	Samples
BQ24715RGRT	ACTIVE	VQFN	RGR	20	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-2-260C-1 YEAR		BQ715	Samples

⁽¹⁾ The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

TAPE AND REEL INFORMATION


*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
BQ24715RGRR	VQFN	RGR	20	3000	330.0	12.4	3.75	3.75	1.15	8.0	12.0	Q1
BQ24715RGRT	VQFN	RGR	20	250	180.0	12.4	3.75	3.75	1.15	8.0	12.0	Q1

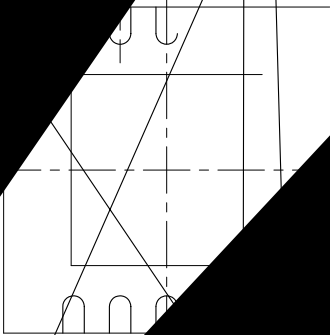
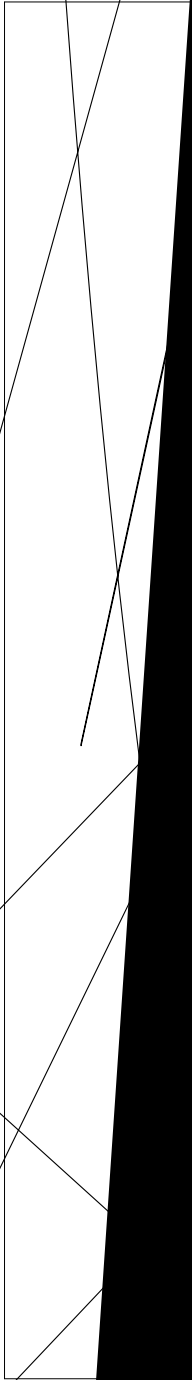
TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
BQ24715RGRR	VQFN	RGR	20	3000	367.0	367.0	35.0
BQ24715RGRT	VQFN	RGR	20	250	210.0	185.0	35.0

RGR (S-PV)



Package thermal pad

QFN/SON PCB Attachment, Texas Instruments Literature No. SLUA

is package are shown in the following illustration.

Exposed Therm ←

NOTE: All linear dimensions are in millimeters

0.125mm Stencil Thickness



64% solder cover |
area on center thermal pad

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