



The Future of Analog IC Technology®

## EV2602-Q-00B

### Single-Cell 1A Linear Li-Ion Battery Charger Evaluation Board

#### DESCRIPTION

The EV2602-Q-00B is an evaluation board for the MP2602, a linear, high-performance single cell Li-Ion battery charger.

By integrating high voltage input protection into the charger IC, the MP2602 can tolerate an input surge up to 28V.

The MP2602 features constant current (CC) and constant voltage (CV) charging modes with programmable charge currents (200mA to 1A), programmable battery full threshold, thermal protection, battery temperature monitoring, reverse current blocking and trickle charge. The device also provides AC adapter power good and charge status indications to the system.

#### ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	$V_{IN}$	5	V
Charge Current	$I_{CHG}$	0.8	A

#### FEATURES

- Input Surge up to 28V
- Adapter or USB Input
- Programmable Charge Current: 200mA to 1A
- Proprietary Over-Voltage Protection
- 0.75%  $V_{BATT}$  Accuracy
- Battery Temperature Monitoring
- AC Adapter Power Good Indicator
- Charge Status Indicator
- Fully Assembled and Tested

#### APPLICATIONS

- Cell Phones
- MP3 Players
- Smart Phones
- PDAs
- Digital Cameras

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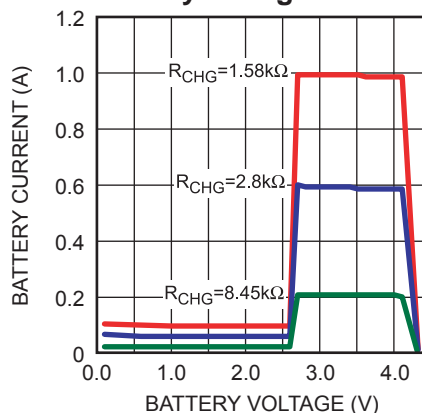
#### EV2602-Q-00B EVALUATION BOARD



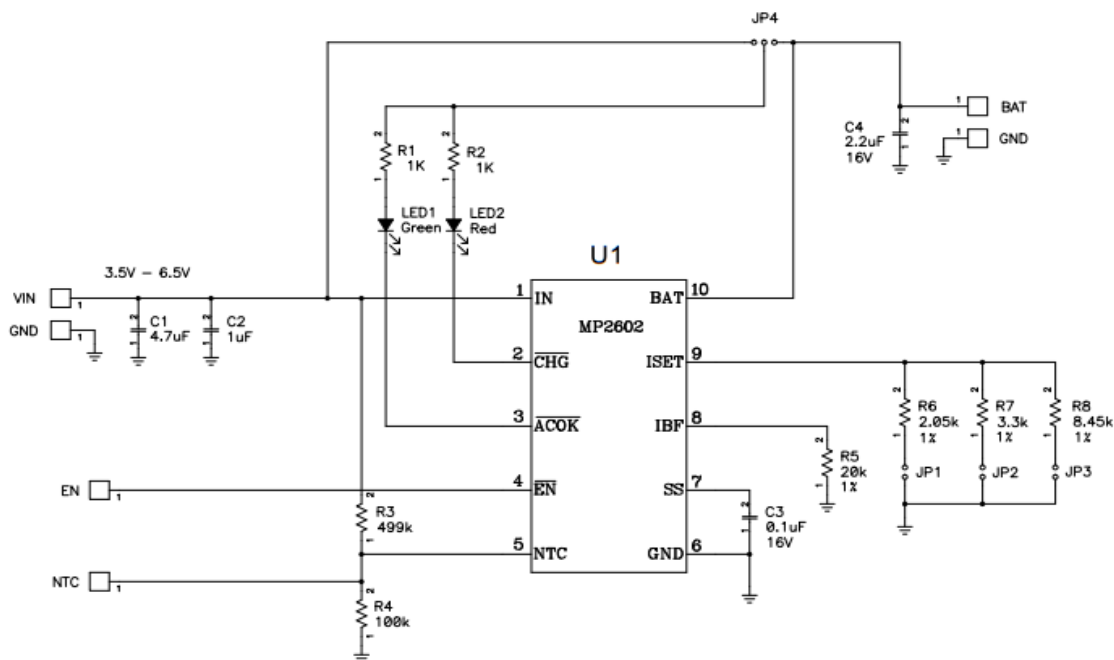
(L x W x H) 2.0" x 1.9" x 0.5"  
(5.0cm x 4.8cm x 1.2cm)

Board Number	MPS IC Number
EV2602-Q-00B	MP2602DQ

#### Battery Current vs Battery Voltage



## EVALUATION BOARD SCHEMATIC



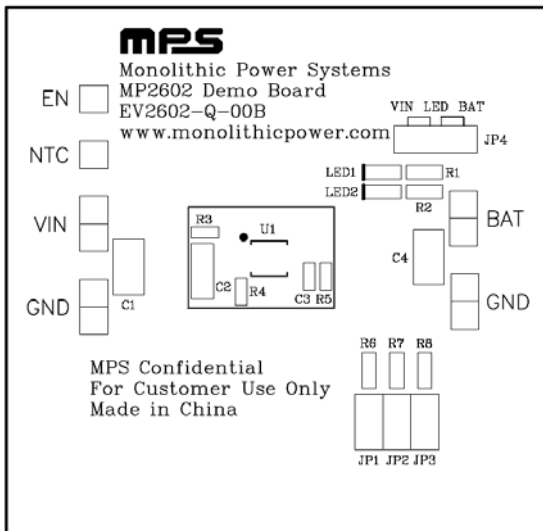
## EV2602-Q-00B BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer P/N
1	C1	4.7µF	Ceramic Cap, 50V, X7R	1210	Murata: GRM32ER71H475KA88L
1	C2	1µF	Ceramic Cap, 50V, X7R	1206	Holystone: C1210B475M035T
1	C3	0.1µF	Ceramic Cap, 16V, X7R	0603	TDK: C3216X7R1H105K
1	C4	2.2µF	Ceramic Cap, 16V, X7R	1210	TDK: C1608X7R1C104K
3	JP1, JP2, JP3		2-Pin Connector Header, 0.100"		Murata: GRM32MR71C225MC01L
1	JP4		3-Pin Connector Header, 0.100"		Sullins: PTC02SAAN
1	LED1		Led Green, Surface Mount	0805	Sullins: PTC03SAAN
1	LED2		Led Red, Surface Mount	0805	Panasonic: LNJ306G5URA
2	R1, R2	1kΩ	Resistor, 5%	0603	Panasonic: LNJ206R5RRX
1	R3	499kΩ	Resistor, 1%	0603	Panasonic: ERJ-3GEYJ102V
					Panasonic: ERJ-3EKF4993V

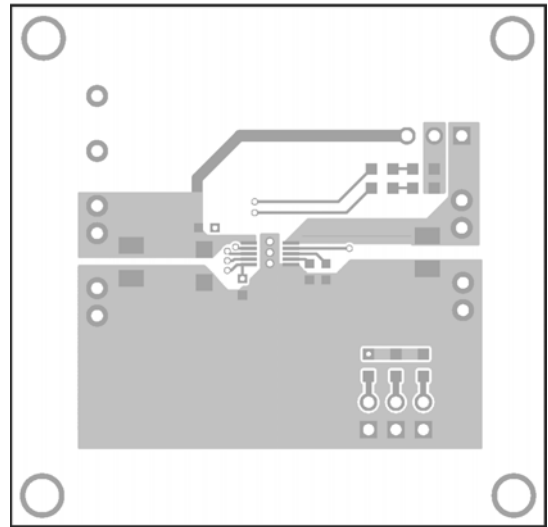
**EV2602-Q-00B BILL OF MATERIALS** *(continued)*

Qty	Ref	Value	Description	Package	Manufacturer P/N
1	R4	100kΩ	Resistor, 1%	0603	Panasonic: ERJ-3EKF1003V
1	R5	20kΩ	Resistor, 1%	0603	Panasonic: ERJ-3EKF2002V
1	R6	2.21kΩ	Resistor, 1%	0603	Panasonic: ERJ-3EKF2211V
1	R7	3.3kΩ	Resistor, 1%	0603	Panasonic: ERJ-3EKF3301V
1	R8	8.45kΩ	Resistor, 1%	0603	Panasonic: ERJ-3EKF8451V
1	U1		Linear Charger	QFN10	MPS: MP2602DQ

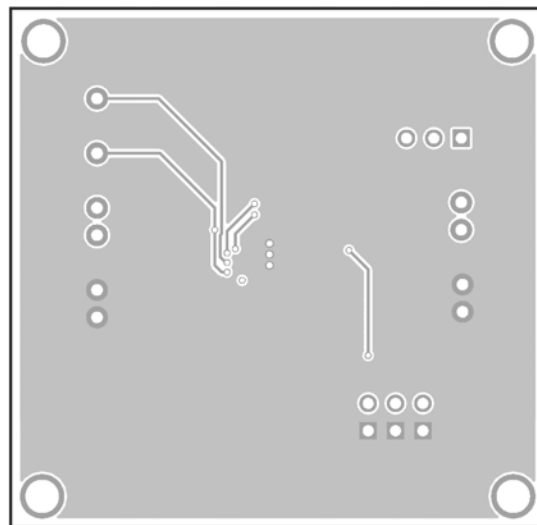
## PRINTED CIRCUIT BOARD LAYOUT



**Figure 1—Top Silk Layer**



**Figure 2—Top Layer**



**Figure 3—Bottom Layer**

## QUICK START GUIDE

The output voltage on this board is preset to 4.2V (for a single cell battery). The board layout accommodates most commonly used capacitors.

The LEDs are power indicators. When LED1 is on, the 5V input is present (LED1 is off when the input is disconnected). When LED2 is on, the battery is charging, and when the battery is full or there is no battery connected, LED 2 will turn off.

1. Set the charge current  $I_{CHG}$  using the jumpers JP1, JP2 and JP3 per the following table:

JP1	JP2	JP3	$I_{CHG}$
X		X	1000mA
X			800mA
	X	X	700mA
	X		500mA
		X	200mA

Where "X" indicates a connection.

2. Attach the positive and negative ends of the load to the VOUT and GND pins, respectively.
3. Attach the input voltage ( $V_{IN}=5V$ ) and the input ground to the VIN and GND pins, respectively.
4. Set the battery full threshold  $I_{FB}$  using R5:

$$I_{FB} = \frac{1700}{R5(\Omega)}$$

5. Set the LED1 and LED2 input power from the VIN side or BAT side using JP4.

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