

## DESCRIPTION

The EV2604DQ-00A is an evaluation board for the MP2604, a linear, high-performance single cell Li-Ion battery charger. By integrating high voltage input protection into the charger IC, the MP2604 can tolerate an input surge up to 28V.

The MP2604 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 and reverse current blocking. The device also provides AC adapter power good and charge status indications to the system.

## ELECTRICAL SPECIFICATIONS

| Parameter        | Symbol           | Value | Units |
|------------------|------------------|-------|-------|
| Input Voltage    | V <sub>IN</sub>  | 5     | V     |
| Charging Current | I <sub>CHG</sub> | 0.8   | A     |
| Charging Voltage | V <sub>BAT</sub> | 4.2   | V     |

## FEATURES

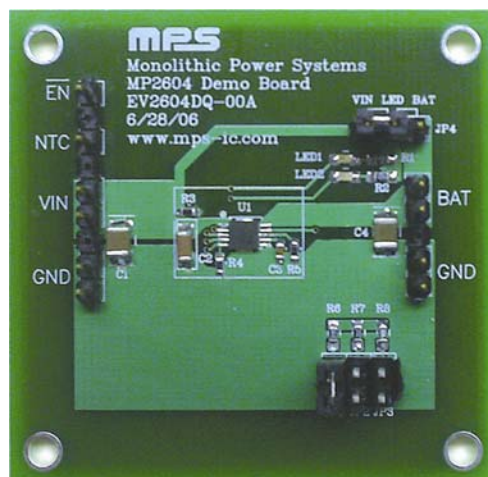
- Input Surge up to 28V
- Adapter or USB Input
- Programmable Charge Current: 200mA to 1A
- AC Adapter Power Good Indicator
- Charge Status Indicator
- Programmable Charge Termination Current Threshold
- Fully Assembled and Tested

## APPLICATIONS

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

"MPS" and "The Future of Analog IC Technology" are Registered Trademarks of Monolithic Power Systems, Inc.

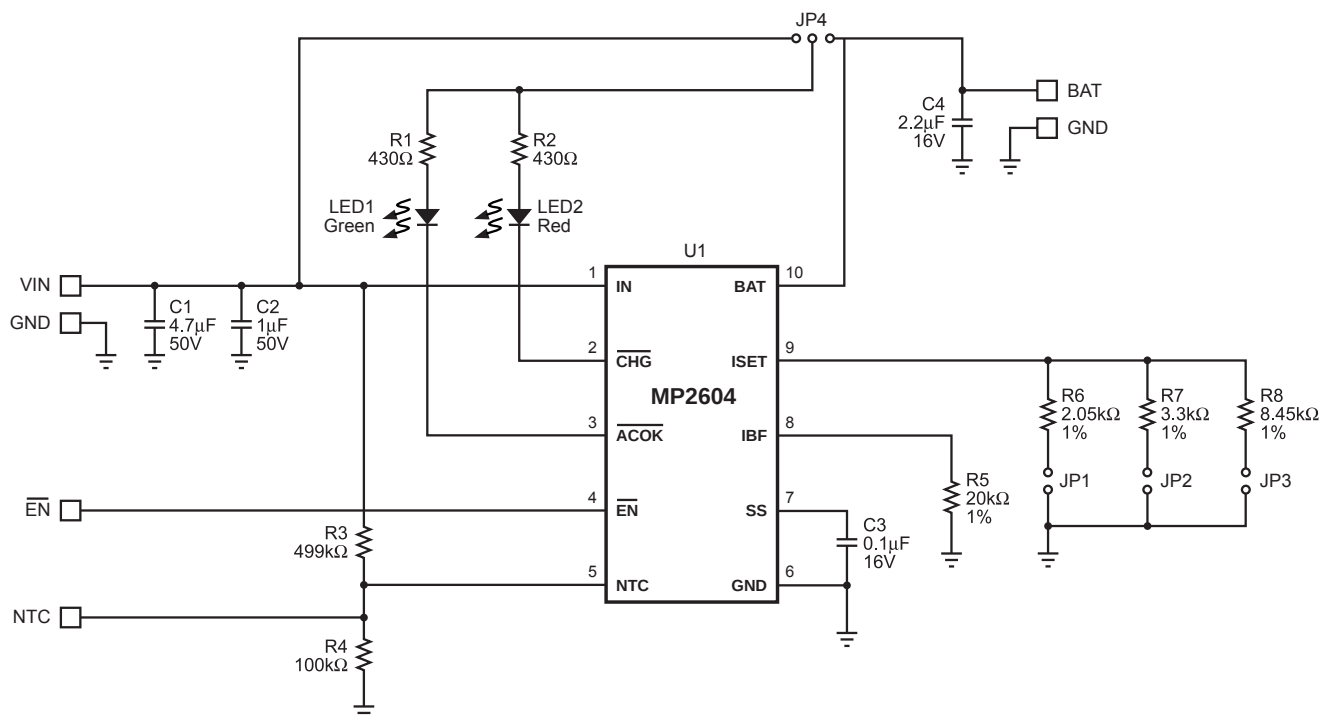
## EV2604DQ-00A EVALUATION BOARD



(L x W x H) 2.0" x 1.9" x 0.6"  
5.1cm x 4.8cm x 1.5cm

| Board Number | MPS IC Number |
|--------------|---------------|
| EV2604DQ-00A | MP2604DQ      |

## EVALUATION BOARD SCHEMATIC

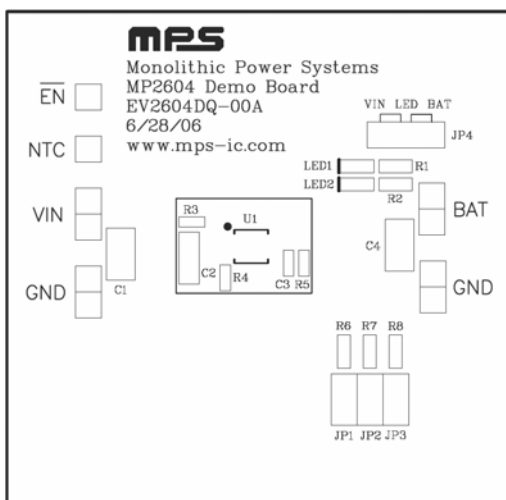
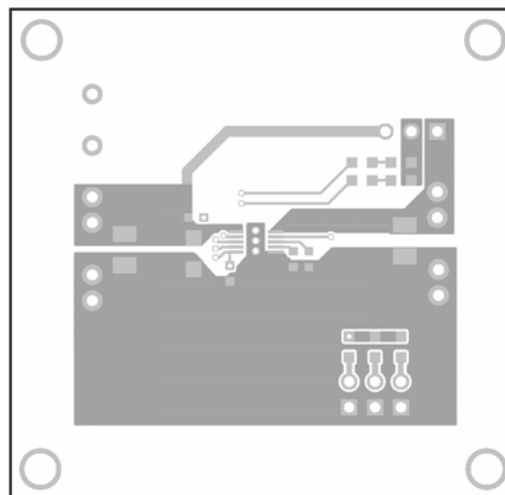
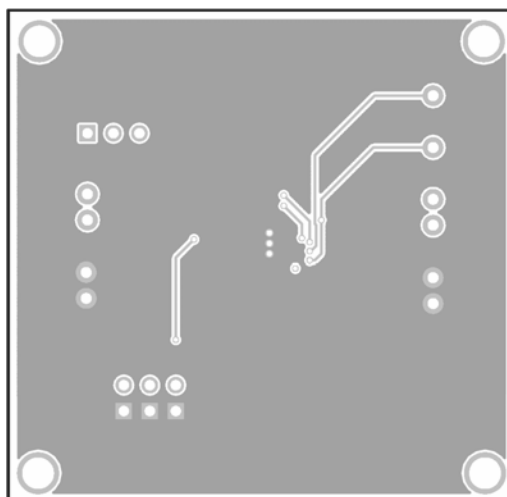


## EV2604DQ-00A BILL OF MATERIALS

| Qty | Ref              | Value | Description                    | Package | Manufacturer P/N                                              |
|-----|------------------|-------|--------------------------------|---------|---------------------------------------------------------------|
| 1   | C1               | 4.7µF | Ceramic Capacitor, 50V, X7R    | 1210    | Murata:<br>GRM32ER71H475KA88L<br>Holystone:<br>C1210B475M035T |
| 1   | C2               | 1µF   | Ceramic Capacitor, 50V, X7R    | 1206    | TDK:<br>C3216X7R1H105K                                        |
| 1   | C3               | 0.1µF | Ceramic Capacitor, 16V, X7R    | 0603    | TDK:<br>C1608X7R1C104K                                        |
| 1   | C4               | 2.2µF | Ceramic Capacitor, 16V, X7R    | 1210    | Murata:<br>GRM32MR71C225MC01L                                 |
| 3   | JP1, JP2,<br>JP3 |       | 2-Pin Connector Header, 0.100" |         | Sullins:<br>PTC02SAAN                                         |
| 1   | JP4              |       | 3-Pin Connector Header, 0.100" |         | Sullins:<br>PTC03SAAN                                         |
| 1   | LED1             |       | Green LED, Surface Mount       | 0603    | Lumex:<br>SML-LX0603GW-TR                                     |
| 1   | LED2             |       | Red LED, Surface Mount         | 0603    | Lumex:<br>SML-LX0603IW-TR                                     |
| 2   | R1, R2           | 430Ω  | Resistor, 5%                   | 0603    | Panasonic:<br>ERJ-3GEYJ431V                                   |
| 1   | R3               | 499kΩ | Resistor, 1%                   | 0603    | Panasonic:<br>ERJ-3EKF4993V                                   |
| 1   | R4               | 100kΩ | Resistor, 1%                   | 0603    | Panasonic:<br>ERJ-3EKF1003V                                   |

**EV2604DQ-00A BILL OF MATERIALS (continued)**

| Qty | Ref | Value  | Description    | Package | Manufacturer P/N            |
|-----|-----|--------|----------------|---------|-----------------------------|
| 1   | R5  | 20kΩ   | Resistor, 1%   | 0603    | Panasonic:<br>ERJ-3EKF2002V |
| 1   | R6  | 2.05kΩ | Resistor, 1%   | 0603    | Yageo:<br>9C06031A2051FKHFT |
| 1   | R7  | 3.3kΩ  | Resistor, 1%   | 0603    | Yageo:<br>9C06031A3301FKHFT |
| 1   | R8  | 8.45kΩ | Resistor, 1%   | 0603    | Panasonic:<br>ERJ-3EKF8451V |
| 1   | U1  |        | Linear Charger | QFN10   | MPS:<br>MP2604DQ            |

**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.

**NOTICE:** The information in this document is subject to change without notice. Users should warrant and guarantee that third party Intellectual Property rights are not infringed upon when integrating MPS products into any application. MPS will not assume any legal responsibility for any said applications.