# EV2605DQ-00B
## Single-Cell 1A Linear Li-Ion Battery Charger Evaluation Board

**The Future of Analog IC Technology**

## DESCRIPTION

The EV2605DQ-00B is an evaluation board for the MP2605, a linear, high-performance single cell Li-Ion battery charger.

By integrating high voltage input protection into the charger IC, the MP2605 can tolerate an input surge up to 28V.

The MP2605 features constant current (CC) and constant voltage (CV) charging modes with programmable charge currents (200mA to 1A), Time out control battery full terminated control, 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
- Battery full terminated control
- Timer off control
- Fully Assembled and Tested

## APPLICATIONS

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

## EV2605DQ-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 |
|---|---|
| EV2605DQ-00B | MP2605DQ |

**I-V Charge Curve**
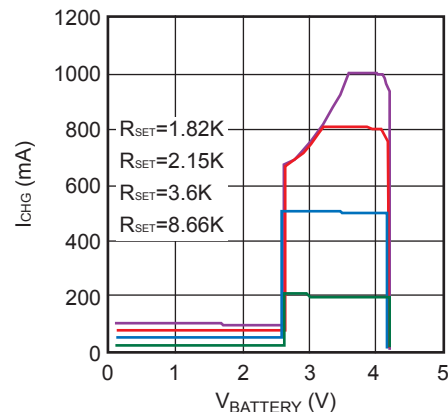
## EVALUATION BOARD SCHEMATIC
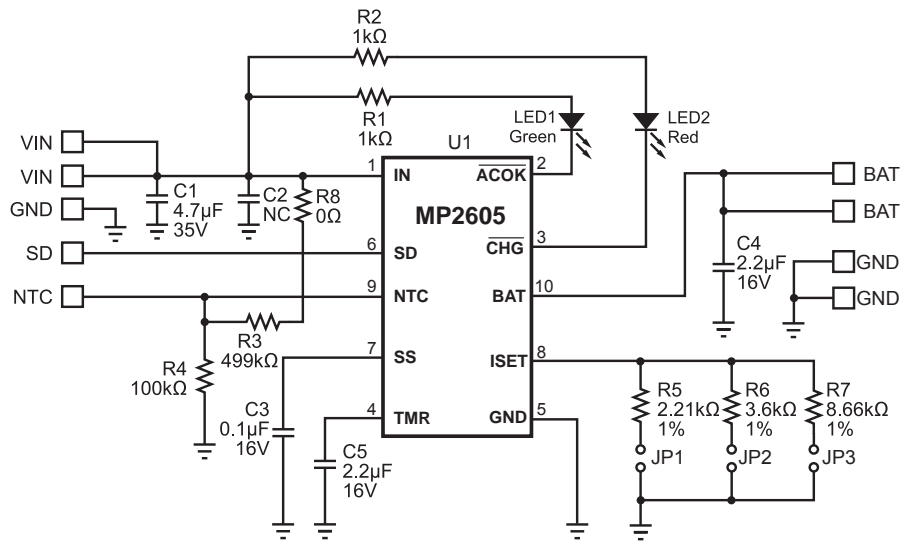


## EV2605DQ-00B BILL OF MATERIALS

| Qty | Ref | Value | Description | Package | Manufacturer | Manufacturer P/N |
|---|---|---|---|---|---|---|
| 1 | C1 | 4.7uF | Ceramic Cap, 35V, X7R | 1210 | Murata | GRM32ER71H475KA88L |
| | | | | | Holystone | C1210B475M035T |
| 1 | C2 | NC | Ceramic Cap, 35V, X7R | 1206 | TDK | C3216X7R1H105K |
| 1 | C3 | 0.1uF | Ceramic Cap, 16V, X7R | 603 | TDK | C1608X7R1C104K |
| 1 | C4 | 2.2uF | Ceramic Cap, 16V, X7R | 1210 | Murata | GRM32MR71C225MC01L |
| 1 | C5 | 2.2uF | Ceramic Cap, 16V, ±10%, X7R | 805 | TDK | C2012X7R1C225K |
| 2 | R1, R2 | 1K | Film Res, 5% | 603 | Panasonic | ERJ-3GEYJ102V |
| 1 | R3 | 499k | Film Res, 1% | 603 | Panasonic | ERJ-3EKF4993V |
| 1 | R4 | 100k | Film Res, 1% | 603 | Panasonic | ERJ-3EKF1003V |
| 1 | R5 | 2.21K | Film Res, 1% | 603 | Panasonic | ERJ-3EKF2211V |
| 1 | R6 | 3.6K | Film Res, 1% | 603 | YAGEO | 9C06031A3601FKHFT |
| 1 | R7 | 8.66K | Film Res, 1% | 603 | Panasonic | ERJ-3EKF8661V |
| 1 | R8 | 0Ω | Film Res, 5% | 603 | YAGEO | 9C06031A0000FKHFT |
| 1 | JP1, JP2, JP3 | | 3x2-Pin Connector Header, 0.100" | | Molex | 10-89-1601 |
| 1 | LED1 | | Led Green, Surface Mount | 805 | Panasonic | LNJ306G5URA |
| 1 | LED2 | | Led Red, Surface Mount | 805 | Panasonic | LNJ206R5RRX |
| 1 | U1 | | Linear Charger | QFN10 | MPS | MP2605DQ |

## PRINTED CIRCUIT BOARD LAYOUT
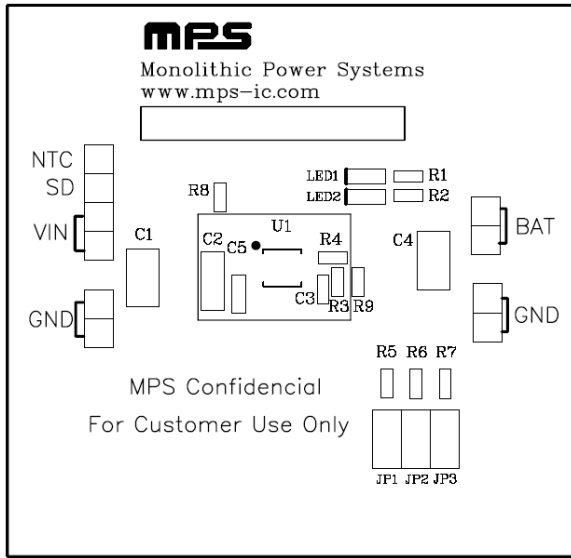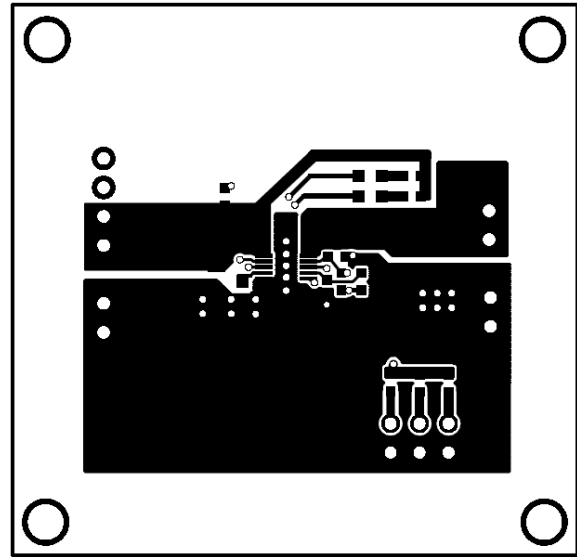


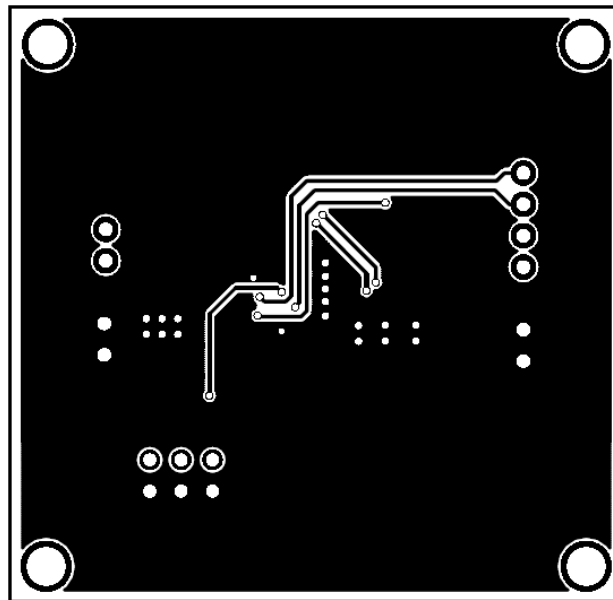Figure 1—Top Silk Layer



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.  The timer cap, C5 on EVB is 2.2µF. This will set the oscillator frequency to be 5HZ. For different oscillator frequency setting, please follow the formula:

$$F_{osc} = 5Hz \times \frac{2.2\mu F}{C_5}$$

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