EV26121DQ-00A

28V 1A Linear Li-Ion Battery Charger Evaluation Board

DESCRIPTION

The EV26121DQ-00A is an evaluation board for the MP26121, a linear, high-performance single cell Li-Ion battery charger.

By integrating high voltage input protection into the charger IC, the MP26121 can tolerate an input surge up to 28V.

The MP26121 features constant current (CC) and constant voltage (CV) charging modes with programmable charge currents (200mA to 1A), reverse current blocking and trickle charge. An outstanding feature of MP26121 is that it can fit most type of NTC resistor with two extra programming resistors.

The device also provides time out control, battery full terminated control; thermal protection and charge status indications to the system.

FEATURES

- Input Surge Protection up to 28V
- Programmable Charge Current:200mA to 1A
- Trickle Charge
- 40uA shutdown current
- 0.75% V_{BATT} Accuracy
- 7V Input OVP
- Auto Recharge
- Thermal Protection
- Fault and Charge Status Indicator
- Fully Assembled and Tested

APPLICATIONS

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

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ELECTRICAL SPECIFICATION

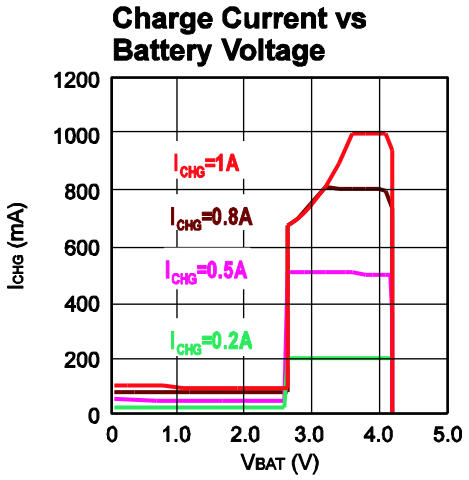
Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	3.5 to 6.5	V
Charge Current	I_{CHG}	500	mA

EV26121DQ-00A EVALUATION BOARD

TBD

(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
EV26121DQ-00A	MP26121DQ



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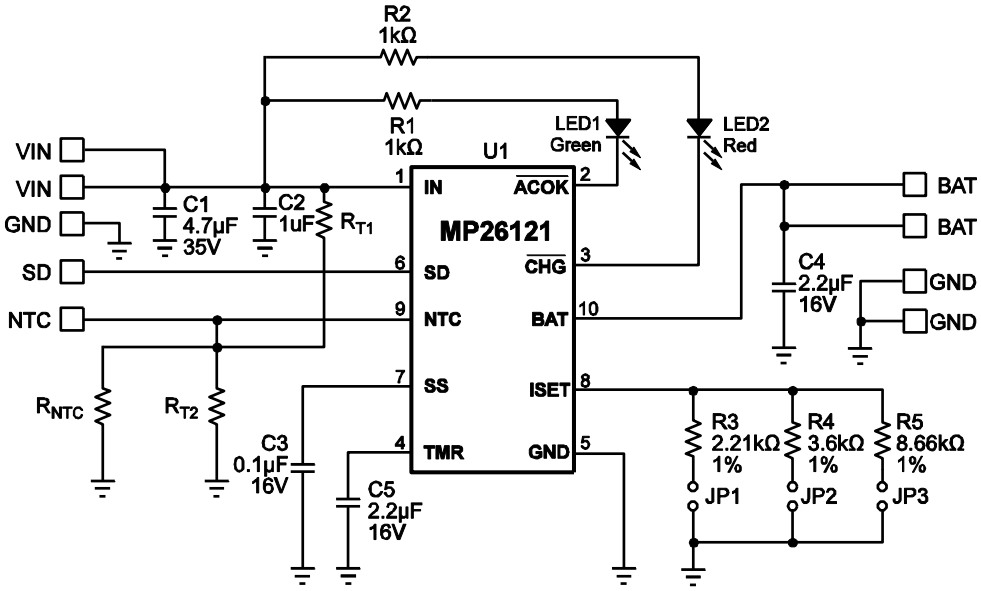
EVALUATION BOARD SCHEMATIC



EV26121DQ-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	4.7uF	Ceramic Cap, 50V, X7R	1210	Murata	GRM32ER71H475KA88L
					AVX	12105C475KAT2A
1	C2	1uF	Ceramic Cap,50V, X7R	1206	TDK	C3216X7R1H105K
1	C3	0.1uF	Ceramic Cap, 16V, X7R	0603	Murata	GRM188R71C104KA01D
1	C4	2.2uF	Ceramic Cap, 16V, X7R	1210	Murata	GRM32MR71C225MA01
1	C5	2.2uF	Ceramic Cap, 16V, X7R	0805	TDK	C2012X7R1C225K
1	LED1		Led Green, Surface Mount	0805		
1	LED2		Led Red, Surface Mount	0805		
1	RT1	20k	Film Res, 5%	0603		Any
1	RT2	10k	Film Res, 5%	0603		Any
2	R1, R2	1k	Film Res, 5%	0603		Any
1	R3	2.21k	Film Res, 1%	0603	Yageo	RC0603FR-072K21L
1	R4	3.6k	Film Res, 1%	0603	ROYALOHM	0603 F3601T5E
1	R5	8.66k	Film Res, 1%	0603	ROYALOHM	0603SAF8661T5E
1	RNTC	NS	Not Stuffed			
1	U1		Linear Charger	QFN10		MP26121DQ

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PRINTED CIRCUIT BOARD LAYOUT

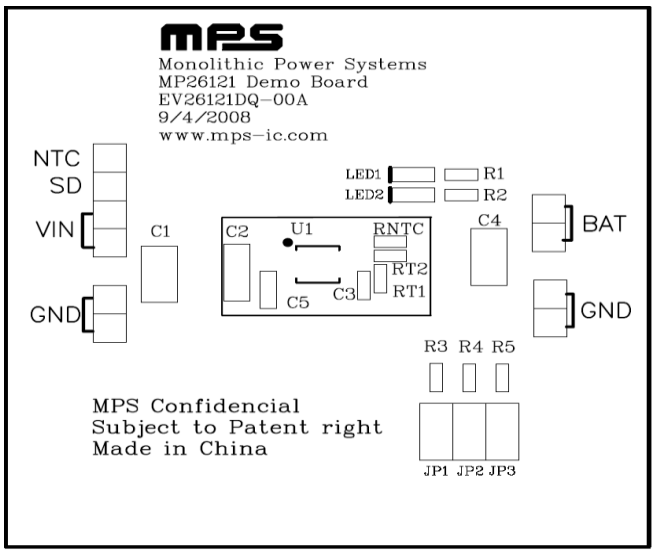

Figure 1—Top Silk Layer

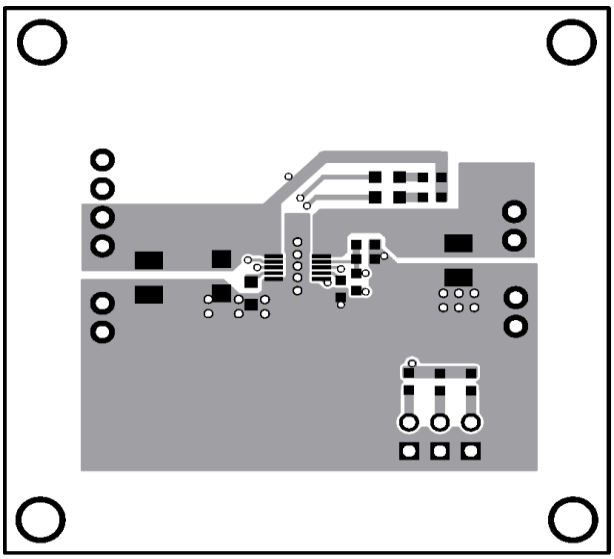

Figure 2—Top Layer

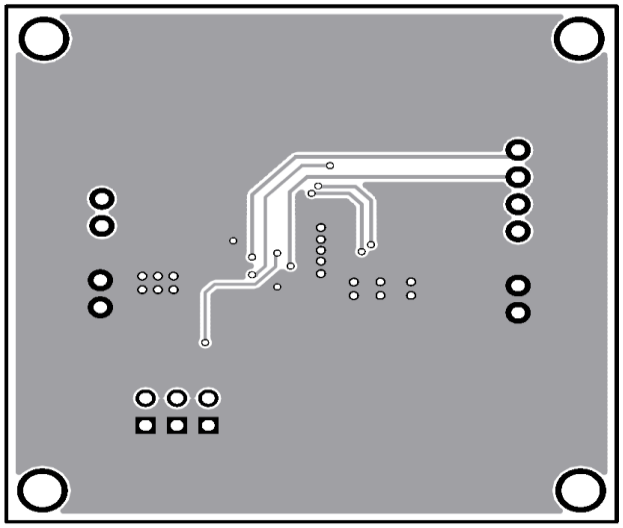

Figure 3—Bottom Layer

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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 ICHG using the jumpers JP1, JP2 and JP3 per the following table:

JP1	JP2	JP3	ICHG
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 (VIN=5V) and the input ground to the VIN and GND pins, respectively.
4. The TMR pin is used to set the internal oscillator frequency:

Set the Timer C5: $F_{OSC} = 11Hz \times \frac{\mu F}{C5}$

1) If the charger stays in trickle mode for longer than 32768 cycles, it will be terminated and a fault will be set by floating CHG pin.

2) If the total charge time exceeds 262144 cycles and the battery full has not been qualified, the charger will be terminated and a fault will also be set by flashing CHG pin at the rate of half the internal oscillation frequency.

5. MP26121 can fit most type of NTC resistor with two extra programming resistors, RT1 & RT2 depends on the type of NTC. Select RT1 and RT2:

$$R_{T2} = \frac{0.308 \times R_{NTCH} \times R_{NTCL}}{0.108 \times R_{NTCL} - 0.416 \times R_{NTCH}}$$

$$R_{T1} = 0.828 \times (R_{T2} // R_{NTCL})$$

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