

### DESCRIPTION

The EV26123DR-00A is an evaluation board for the MP26123, a high performance 2~3 cell Li-Ion battery switching charger with the built-in internal power MOSFET.

EV26123DR-00A achieves up to 2A charge current over a wide input supply range. The charge current can be programmed by sensing the current through an accurate sense resistor.

MP26123 regulates the charge current and full charge voltage using two control loops to realize high accuracy CC charge and CV charge.

Fault condition protection includes time out control, battery full terminated control, thermal protection, battery temperature monitoring and protection. The board also indicates AC adapter power good and charge status indications to the system.

### ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	$V_{IN}$	10~24	V
Charge Current	$I_{CHG}$	2	A

### FEATURES

- Charge 2-, 3- Series Li-Ion Cells
- Wide Operating Input Range
- Up to 2A Programmable Charging Current
- $\pm 0.75\%$   $V_{BATT}$  Accuracy
- Up to 90% Efficiency
- Fixed 600kHz Frequency
- Preconditioning for fully depleted batteries
- Charging Operation Indicator
- Input Supply and battery fault indicator
- Thermal Shutdown
- Battery Temperature Monitor and Protection

### APPLICATIONS

- Distributed Power Systems
- Chargers for 2-Cell or 3-Cell Li-Ion Batteries
- Pre-Regulator for Linear Regulators
- Smart Phones
- Net-book

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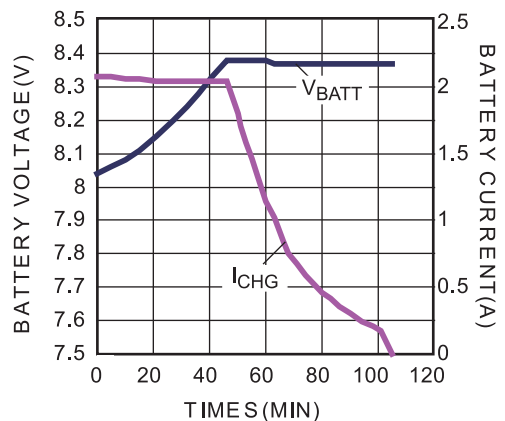
### EV26123DR-00A EVALUATION BOARD



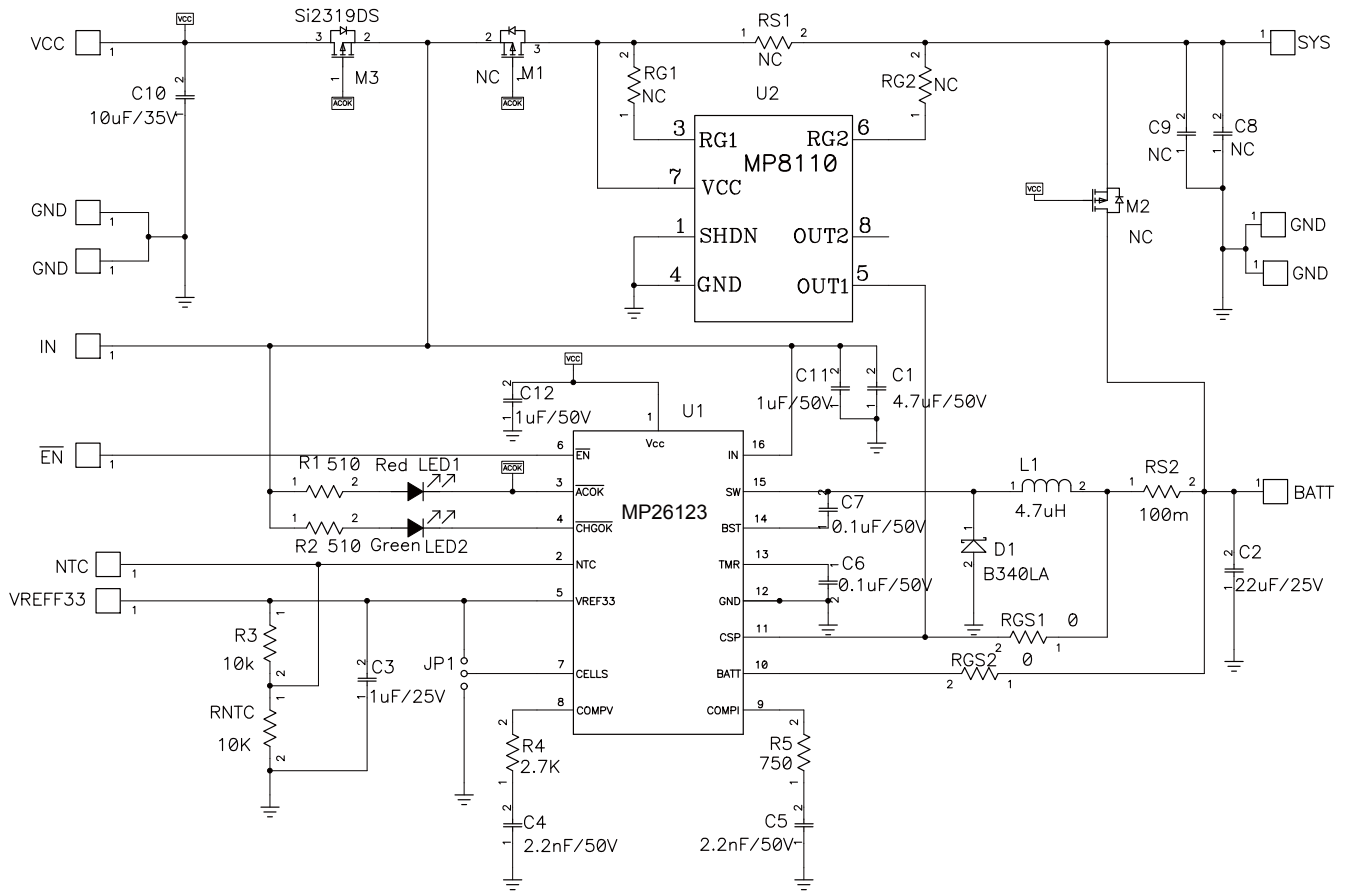
(L x W x H) 2.5" x 2.5" x 0.5"  
(6.35cm x 6.35cm x 1.2cm)

Board Number	MPS IC Number
EV26123DR-00A	MP26123DR

### 2 Cells Battery Charge Curve



## EVALUATION BOARD SCHEMATIC



**EV26123DR-00A BILL OF MATERIALS**

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	4.7µF	Ceramic Cap., 50V, X7R	1210	Murata	GRM32ER71H475KA88L
1	C2	22µF	Ceramic Cap., 25V, X5R	1210	Murata	GRM32ER61E226KE15L
1	C3	1µF	Ceramic Cap., 25V, X5R	0603	TDK	C1608X5R1E105K
2	C4, C5	2.2nF	Ceramic Cap., 50V, X7R	0603	TDK	C1608X7R1H222K
2	C6, C7	0.1µF	Ceramic Cap., 50V, X7R	0603	Murata	GRM188R71H104KA93D
1	C10	10µF	Ceramic Cap, 35V, X7R	1210	Murata	GRM32ER7YA106KA12L
2	C11, C12	1µF	Ceramic Cap., 50V, X7R	0805	Murata	GRM21BR71H105KA12L
2	R1, R2	510Ω	Film Res., 5%	0805	LIZ	0805J510R
1	R3	10kΩ	Film Res., 1%	0603	Royalohm	0603F1002T5E
1	R4	2.7kΩ	Film Res., 5%	0603	LIZ	CR0603JA0272K
1	R5	750Ω	Film Res., 1%	0603	Yageo	RC0603FR-07750RL
2	RGS1, RGS2	0Ω	Film Res., 5%	0603	Yageo	RC0603JR-070RL
1	RS2	100mΩ	Film Res., 1%	2512	CYNTEC	RL-3624-9-R100-FN
1	RNTC	10kΩ	Film Res., 1%	0603	Royalohm	0603F1002T5E
1	JP1		3-Pin Connector Header, 0.100"		Sullins	PTC03SAAN
1	LED1	Green	Led Green, Surface Mount	0805		
1	LED2	Red	Led Red, Surface Mount	0805		
1	D1		Diode Schottky, 40V, 3A	SMA	Diodes Inc	B340LA-13F
1	L1	4.7µH	Inductor, 6A, 19.5mΩ	SMD	Würth	744311470
			Inductor, 3.8A, 38mΩ	SMD	Toko	DS84LC-B1015AS-4R7N
			Inductor, 5.2A, 18mΩ	SMD	muRata	LQH88PN4R7N38
			Inductor, 3.78A, 29.7mΩ	SMD	Cooper	DR73-4R7-R
1	M1,	40V/2.4A	PMOS, 130mΩ	SOT23	Vishay	Si2319DS
1	U1		Switching Charger	QFN16	MPS	MP26123DR
1	U2	NC				
1	RS1	NC				
2	RG1, RG2	NC				
2	C8, C9	NC				
2	M2, M3	NC				

### PRINTED CIRCUIT BOARD LAYOUT

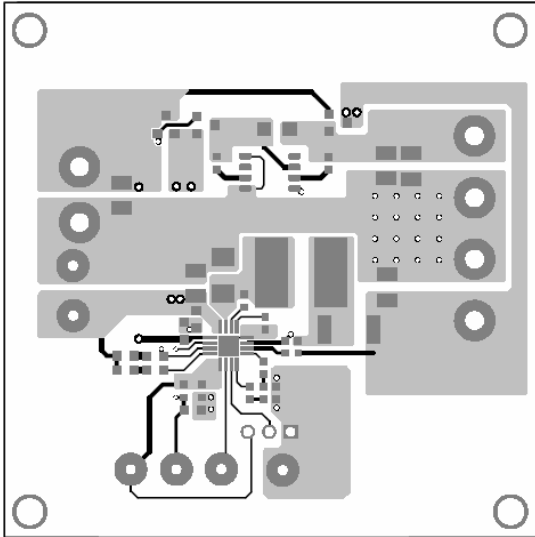


Figure 1—Top Layer

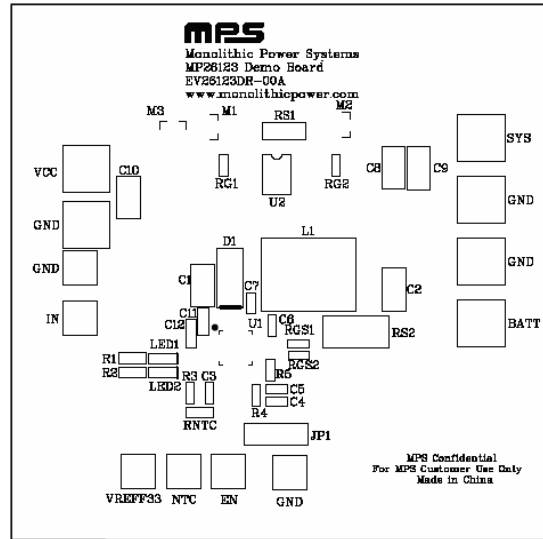


Figure 2—Top Silk Layer

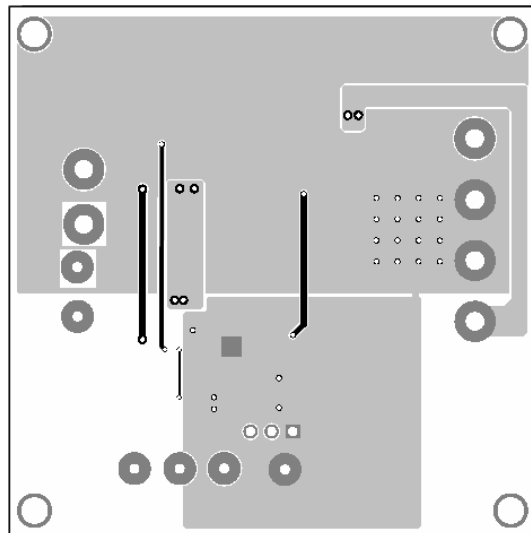


Figure 3—Bottom Layer

## QUICK START GUIDE

This board is used for the MP26123 application of standalone switching charger which can charge 2- or 3-cell Li-ion batteries. The board layout accommodates most commonly used capacitors.

The default output voltage on this board is preset to 8.4V for 2-cell Li-ion battery. Connect CELLS pin to VREF33 to regulate the output to 12.6V for 3-cell Li-ion battery.

The two LEDs are operating status indicators. When the input is OK for charging the battery load, LED1 will be on. Otherwise it is off. When the charging operation is normal, the LED2 is on. And if any event including battery full, NTC fault, timer out, thermal protection and EN disabled occurs, LED2 will be off.

Particularly, LED2 will be twinkling if BATT is floated.

### 1. Charge current setting:

The charge current can be programmed by the sense resistor RS2, the formula is as:

$$I_{\text{CHG}}(\text{A}) = \frac{200\text{mV}}{\text{RS2}(\text{m}\Omega)}$$

2. Preset the power supply output to 19V, and then turn off. Attach the positive and negative ends of the power supply output to the VIN and GND pins, respectively.
3. Attach the positive and negative ends of the battery to the BATT and GND pins, respectively.
4. Turn the power supply on. The board will automatically startup if EN is pulled to GND.
5. To use the Enable function, apply a digital input to the EN pin. Drive EN higher than 1.8V to turn off the charger, drive EN less than 0.4V to turn it on.
6. For power path application, it needs additional current sensing circuit stuffed, including MP8110, RG1, RG2, C8, C9, RS1, M1 and M2. Please contact us for customize EVB if you need.

Please see the datasheet of MP26123 for further detailed information.

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