

DESCRIPTION

The EV26124-R-00A is an evaluation board for the MP26124, a high performance 4 cell Li-Ion battery switching charger with the built-in internal power MOSFET.

EV26124-R-00A achieves 1A charge current over a wide input supply range. The charge current can be programmed by sensing the current through an accurate sense resistor.

MP26124 regulates the charge current and full charge voltage using two control loops to realize high accuracy CC charge and CV charge.

MP26124 integrates trickle charge, auto recharge, charger timer functions.

Fault condition protection includes thermal protection, battery temperature monitoring and protection. The IC also indicates AC adapter power good and charge status to the system.

ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	V _{IN}	10~24	V
Charge Current	I _{CHG}	1	A

FEATURES

- Charge 4-Series Li-Ion Cells
- Wide Operating Input Range
- 1A Charging Current
- ±0.75% V_{BATT} Accuracy
- Up to 96% 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 4-Cell Li-Ion Batteries
- Pre-Regulator for Linear Regulators
- Robots
- Cleaners

All MPS parts are lead-free and adhere to the RoHS directive. For MPS green status, please visit MPS website under Products, Quality Assurance page. "MPS" and "The Future of Analog IC Technology" are registered trademarks of Monolithic Power Systems, Inc.

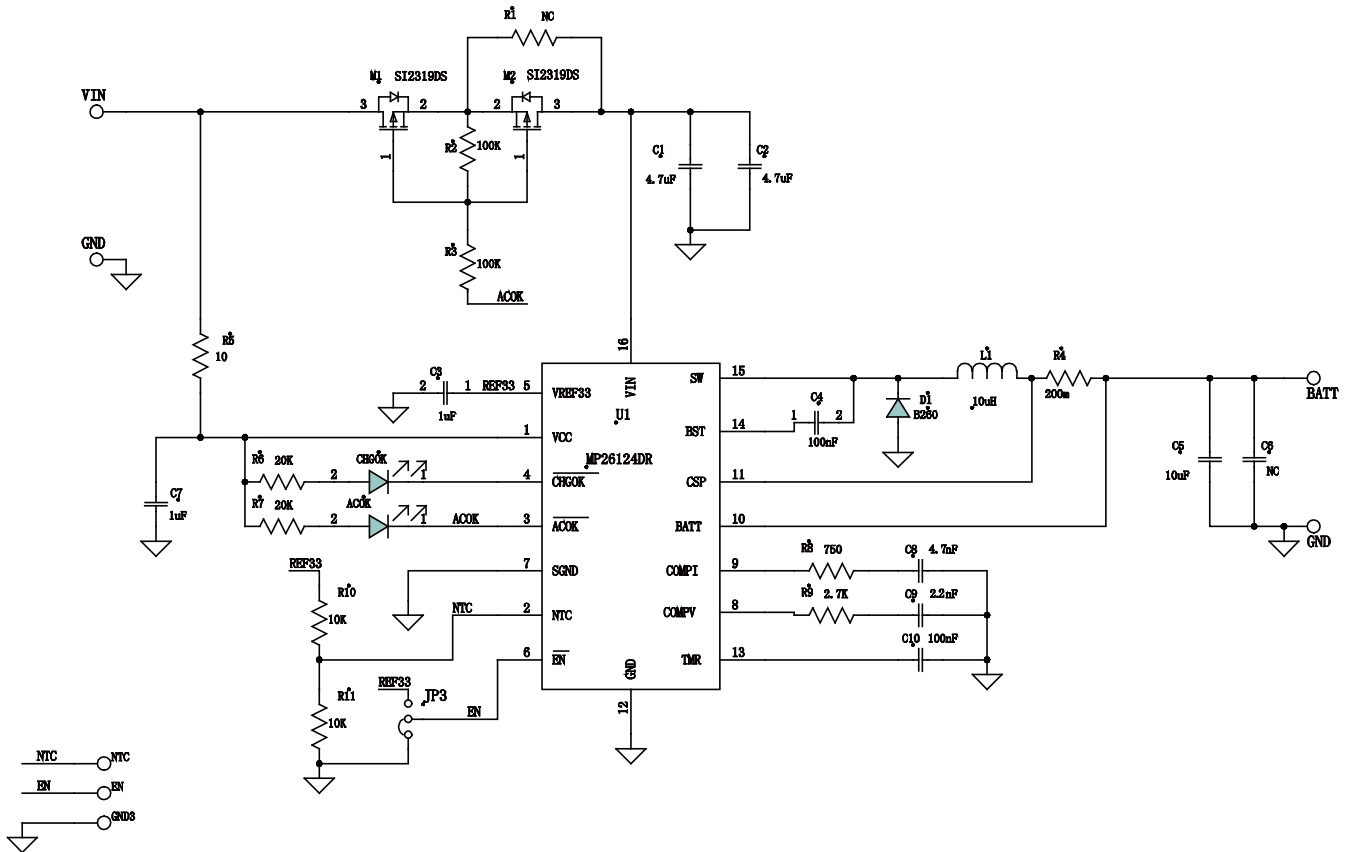
EV26124-R-00A EVALUATION BOARD



(L x W x H) (6.25cm x 6.35cm x 1.2cm)

Board Number	MPS IC Number
EV26124-R-00A	MP26124GR

EVALUATION BOARD SCHEMATIC



EV26124-R-00A BILL OF MATERIALS

Qty	RefDes	Value	Description	Package	Manufacturer	Manufacturer_P/N
2	C1, C2	4.7µF	Ceramic Capacitor; 50V;X7R	1210	muRata	GRM32ER71H475KA88L
1	C3	1µF	Ceramic Capacitor;25V; X7R	0603	muRata	GRM188R71E105KA12D
2	C4, C10	100nF	Ceramic Capacitor;50V; X7R	0603	TDK	C1608X7R1H104K
1	C5	10µF	Ceramic Capacitor;35V; X7R	1210	muRata	GRM32ER7YA106KA12L
1	C6	NC	Ceramic Capacitor; 35V;X7R	1210	muRata	GRM32ER7YA106KA12L
1	C7	1µF	Ceramic Capacitor; 50V;X7R	0805	muRata	GRM21BR71H105KA12L
1	C8	4.7nF	Ceramic Capacitor; 50V;X7R;0603	0603	TDK	C1608X7R1H472K
1	C9	2.2nF	Ceramic Capacitor; 50V;X7R;0603	0603	TDK	C1608X7R1H222K
1	D1	B260A	schottky diode 2A 60V;	SMB	Diodes	B260A
1	CHGOK		LED, Green	0805		BL-HGB35A-TRB
1	L1	10µH	Inductor;10uH;36m;3.2A	SMD	TMP	SPC-08045-100GP
2	M1, M2	SI2319 DS	P-Channel MOSFET; - 40V; 130mohm	SOT-23	Vishay	SI2319DS
1	R1	NC	Film Resistor;5%;	0805		0805S8J0000T5E
2	R2, R3	100K	Resistor;5%;	0603	Royalohm	0603J0104T5E
1	R4	200m	Film Resistor;1%;2W;	2512	Yageo	
1	R5	10	Film Resistor;5%;	0603		0603SAJ0100T5E
2	R6, R7	20K	Film Resistor;5%;	0603		653610846CR03T03705N J20K
1	R8	750	Film Resistor;1%	0603	Yageo	RC0603FR-07750RL
1	R9	2.7K	Film Resistor;5%;1/10W	0603	LIZ	CR0603JA0272G
2	R10, R11	10K	Film Resistor;1%;	0603	Yageo	RC0603FR-0710KL
1	ACOK		LED, Red	0805		BL-HUF35A-TRB
1	U1		Switching charger	QFN4*4 16	MPS	MP26124GR

PRINTED CIRCUIT BOARD LAYOUT

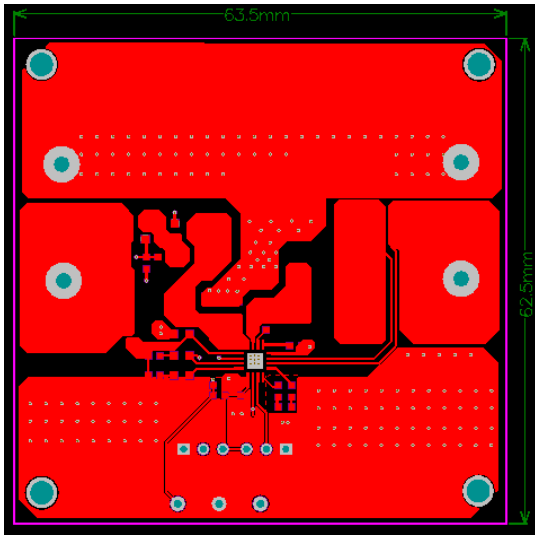


Figure 1—Top Layer

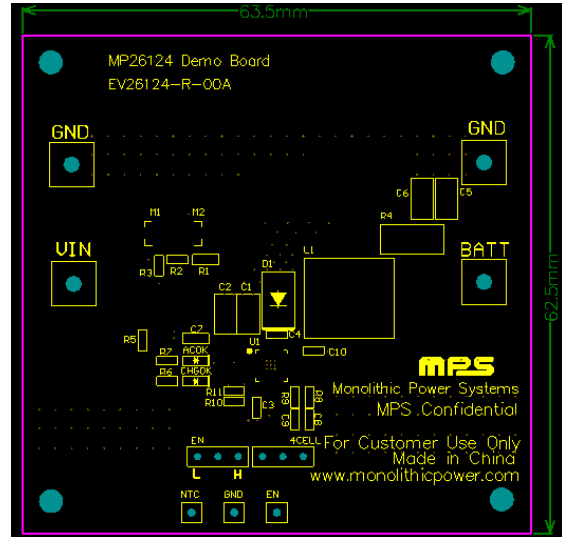


Figure 2—Top Silk Layer

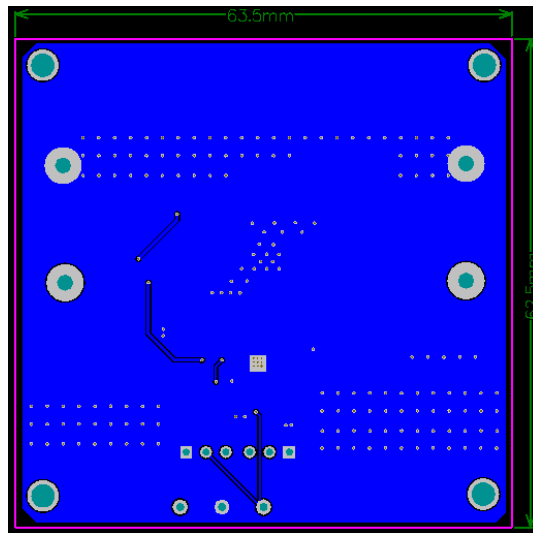


Figure 3—Bottom Layer

QUICK START GUIDE

This board is used for the MP26124 application of standalone switching charger which can charge 4-Li-ion batteries. The board layout accommodates most commonly used capacitors.

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

Particularly, CHGOK LED will be twinkling if BATT is floated.

1. Charge current setting:

The charge current can be programmed by the sense resistor R4, the formula is as:

$$I_{\text{CHG}}(\text{A}) = \frac{200\text{mV}}{R4(\text{m}\Omega)}$$

2. Preset the power supply output to 24V, 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.

Please see the datasheet of MP26124 for further detailed information.

NOTICE: The information in this document is subject to change without notice. Please contact MPS for current specifications. 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.