



The Future of Analog IC Technology®

EV2669-R-00A

Fast Charge Power Bank EV Board

DESCRIPTION

The EV2669-R-00A is an evaluation board for the MP2669, a high-integrated, flexible switch-mode battery charge management and system power path management device.

EV2669-R-00A achieves up to 5A charge current with up to 14V input. The charge current can be automatically set by detecting the input adaptor types.

EV2669-R-00A achieves up to 18W boost output with up to 12V output voltage. All the parameters and control can be easily accessed via the I2C interface.

ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	V _{IN}	4-12	V
Charge Full Voltage	V _{BF}	4.2	V
Charge Current	I _{CHG}	Up to 5	A
Output Voltage	V _{OUT}	5-12	V
Output power	P _{OUT}	Up to 18	W
Output Current Limit	I _{OUT LIM}	3.0 / I2C	A

FEATURES

- 4.0V to 14V Operation Voltage Range
- Up to 24V Sustainable Input Voltage
- Compliant with BC1.2 and HV Fast Charge
- Input-Current-Based and Input-Voltage-Based Power Management
- Up to 5A Programmable Charge Current
- 4.2V Charge Voltage with 0.5% Accuracy
- 4 LEDs Battery Gauge Indicators
- Thermal Regulation and Thermal Shutdown
- Reverse Boost Operation Mode with up to 3A boost current and adjustable 5V to 12V boost voltage to support QC3.0
- USB Output Cable Impedance Compensation
- Complete Protection
Short Circuit Protection for Boost Mode and Pass-through Path
Over voltage protection for input and battery

APPLICATIONS

- Sub-Battery Applications
- Power-Bank Application

All MPS parts are lead-free, halogen free, and adhere to the RoHS directive. For MPS green status, please visit MPS website under Quality Assurance.

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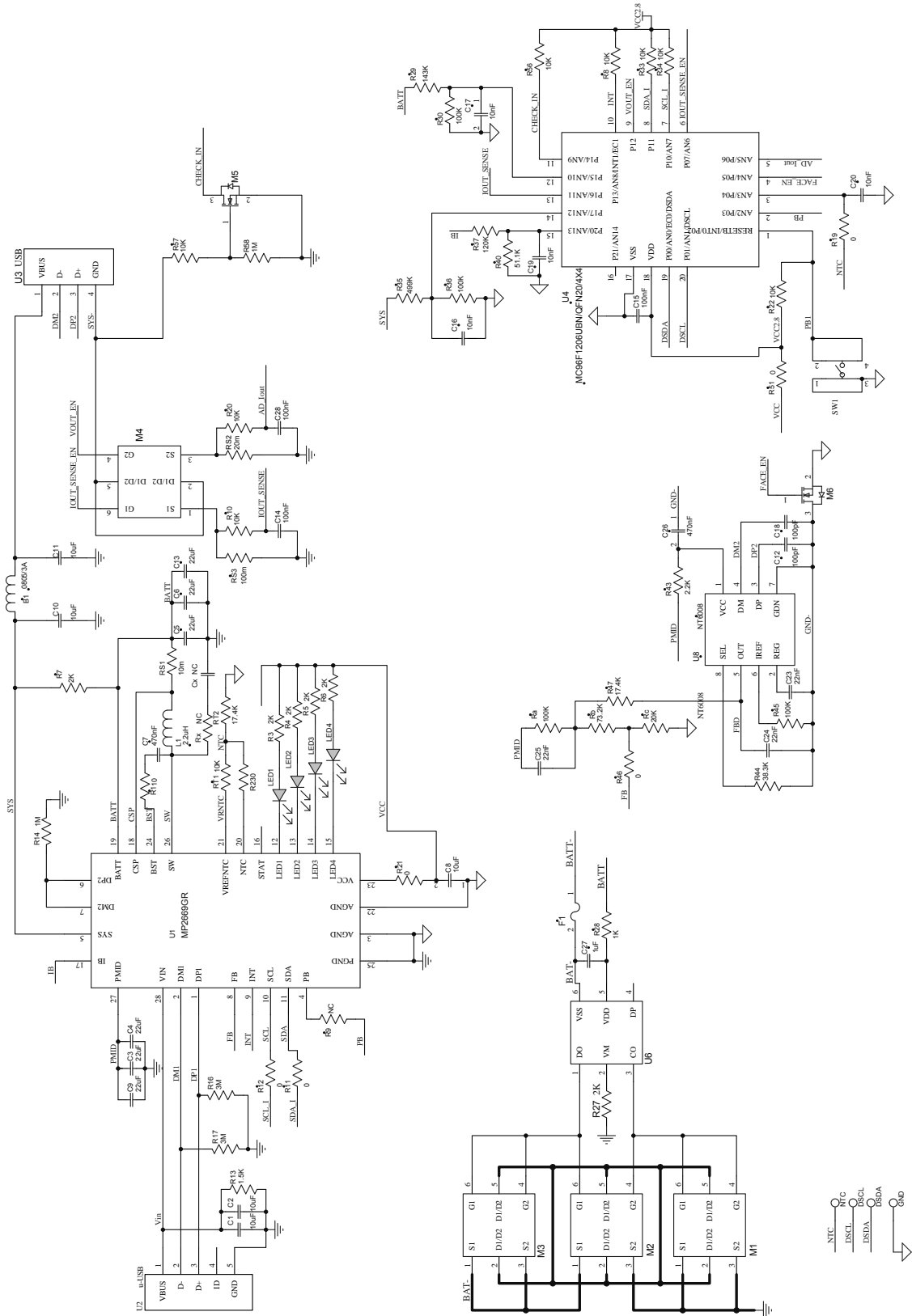
EV2669-R-00A EVALUATION BOARD



(L x W x H) (6.3cm x 2.3cm x 1.2cm)

Board Number	MPS IC Number
EV2669-R-00A	MP2669GR

EVALUATION BOARD SCHEMATIC



EV2669-R-00A BILL OF MATERIALS

Qty	RefDes	Value	Description	Package	Manufacturer	Manufacturer_P/N
1	B1	0805/3A	Magnetic Bead 0805/3A	0805	Würth	742792063
4	C1, C2, C10, C11	10µF	Ceramic Capacitor;25V;X5R	1206	muRata	GRM31CR61E106KA12L
3	C3, C4, C9	22µF	Ceramic Capacitor;25V;X5R;	1206	muRata	GRM31CR61E226KE15
3	C5, C6, C13	22µF	Ceramic Capacitor;6.3V;X5R	1206	muRata	GRM31CR60J226KE19L
2	C7, C26	470nF	Ceramic Capacitor;16V;X7R	0603	muRata	GRM188R71C474KA88D
1	C8	10µF	Ceramic Capacitor;6.3V;X5R	0603	muRata	GRM188R60J106ME470
2	C12, C18	100pF	Ceramic Capacitor;50V;C0G	0603	TDK	C1608COG1H101J
3	C14, C15, C28	100nF	Capacitor;16V;X7R	0603	Murata	GCM188R71C104KA37D
4	C16, C17, C19, C20	10nF	Ceramic Capacitor;50V;X7R	0603	muRata	GRM188R71H103KA01D
3	C23, C24, C25	22nF	Ceramic Capacitor;25V;X7R;	0603	Murata	GRM188R71E223JA01D
1	C27	1µF	Ceramic Capacitor;16V;X7R	0603	muRata	GRM188R71C105KA12D
1	Cx,R9	NC				
4	DSCL, DSDA, GND, NTC		Connector;			
1	F1	3216FF7-R	Fuse;32V;7A;	1206	COOPER BUSSMANN	3216FF7-R
1	L1	2.2µH	Inductor;2.2uH;14u;13A	SMD	Würth	744311220
4	LED1, LED2, LED3, LED4	BL-HUF35A-TRB	Red	0805	BRIGHT LED	BL-HUF35A-TRB
5	M1, M2, M3, M4, U6	8205A	N-Channel Dual Mosfet;	SOT23-6		
2	M5, M6	2N7002-F	N-Channel Mosfet;60V;115m	SOT-23	JCST	2N7002-F
1	R1	10	Film Resistor;5%;	0603		0603SAJ0100T5E
6	R3, R4, R5, R6, R7, R27	2k	Film Resistor;5%;1/10W	0603	LIZ	CR0603JA0202G
9	R8, R10, R20, R22, R33, R34, R56, R57, RT1	10k	Film Resistor;5%;	0603	Yageo	RC0603JR-0710K

EV2669-R-00A BILL OF MATERIALS (continued)

Qty	RefDes	Value	Description	Package	Manufacturer	Manufacturer_P/N
7	R11, R12, R19, R21, R23, R46, R51	0	Film Resistor;5%;	0603	Yageo	RC0603JR-070RL
1	R13	1.5k	Film Resistor;5%;1/10W	0603	LIZ	CR0603JA0152G
2	R14, R58	1M	Film Resistor;5%	0603	Yageo	RC0603JR-071ML
2	R16, R17	3M	Resistor;1%	0603	Yageo	RC0603FR-073ML
1	R28	1k	Film Resistor;5%;	0603		0603SAJ0102T5E
1	R29	143k	Film Resistor;1%	0603	Yageo	RC0603FR-07143KL
4	R30, R36, R45, Ra	100k	Film Resistor;1%;	0603	Yageo	RC0603FR-07100KL
1	R35	499k	Film Resistor;1%;	0603	Yageo	RC0603FR-07499KL
1	R37	120k	Film Resistor;1%;	0603	Yageo	RC0603FR-07120KL
1	R40	51.1k	Film Resistor;1%;	0603	Yageo	RC0603FR-0751K1L
1	R43	2.2k	Film Resistor;5%;1/10W	0603	LIZ	CR0603JA0222G
1	R44	38.3k	Film Resistor;1%	0603	Yageo	RC0603FR-0738K3L
2	R47, RT2	17.4k	Film Resistor;1%;	0603	Yageo	RC0603FR-0717K4L
1	Rb	73.2k	Film Resistor;1%	0603	Yageo	RC0603FR-0773K2L
1	Rc	20k	Film Resistor;1%;1/10W;	0603	Yageo	RC0603FR-0720KL
1	RS1	10m	Film Resistor;1%;1W;	2512	CYNTEC	RL3264-6-R010-FN
1	RS2	20m	Film Resistor;1%	1206	Vishay	WSL1206-18
1	RS3	100m	Film Resistor;1%;1/2W;	1206	CYNTEC	RL1632H-R100-FN
1	Rx	NC				
1	SW1		Push Button	SMT		
1	U1			QFN4x4-28	MPS	MP2669GR-0000
1	U2	micro-USB	micro-USB			
1	U3	USB-TypeA	USB-TypeA			
1	U4		MCU	QFN4x4-20	ABOV	MC96F1206UBN
1	J1		Single Row Pin			
1	U6	FS312F-P	battery protection	SOT23-6	FORTUNE	FS312F-P
1	U8	NT6008	Chip;FA072545AR1W8;1052;R1W8		EOSMEM	NT6008

PRINTED CIRCUIT BOARD LAYOUT

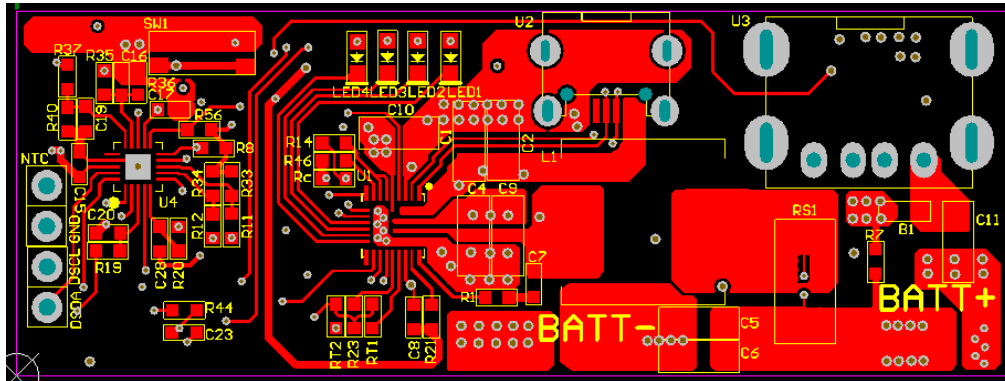


Figure 1—Top Layer

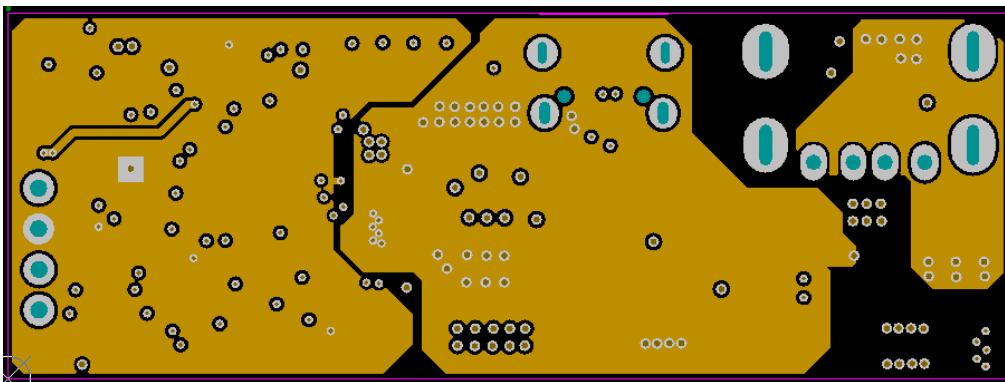


Figure 2—Mid Layer1

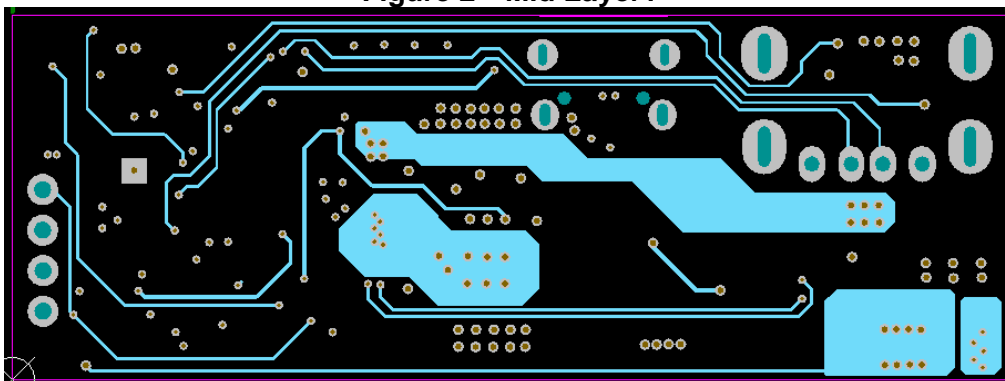


Figure 3—Mid Layer2

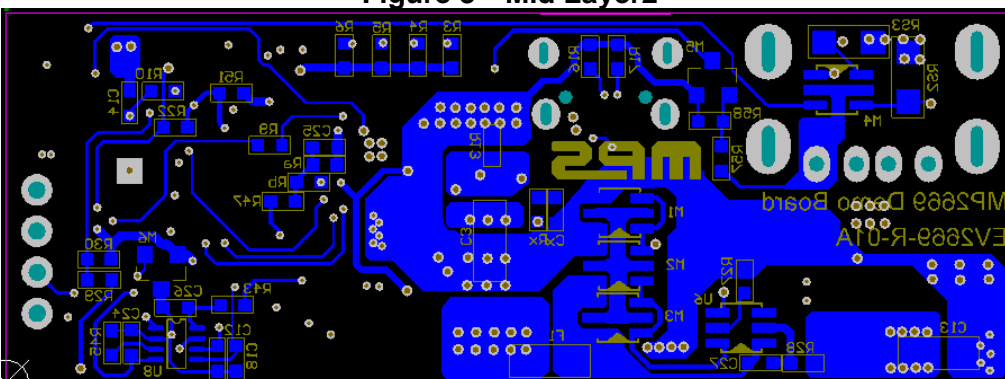


Figure 4—Bottom Layer

QUICK START GUIDE

This board is designed for MP2669 used as a fast charge power bank total solution.

- 1, Connect the battery to the BATT+ and BATT- connector.
- 2, Plug in an adaptor to USB1 port and the battery protection IC will wake up.
- 3, now the demo board can act as a complete power bank and is ready to run with Charge/discharge function.

Note1:

- 1) Please charge first to avoid the BATT_UVLO lockout (BATT<3V).
- 2) when 12V/9V HVDCP plugged in, the power on sequence is USB1 detection first.
 - 2.1) if no load at USB2, USB1 keeps at the (QC 12V/9V).
 - 2.2) if there is load at USB2, force the Vin @ 5V.

❖Notes❖

1. For the other detailed description on the operation of this part, please contact local FAE to apply the latest datasheet and the MCU coding.

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