



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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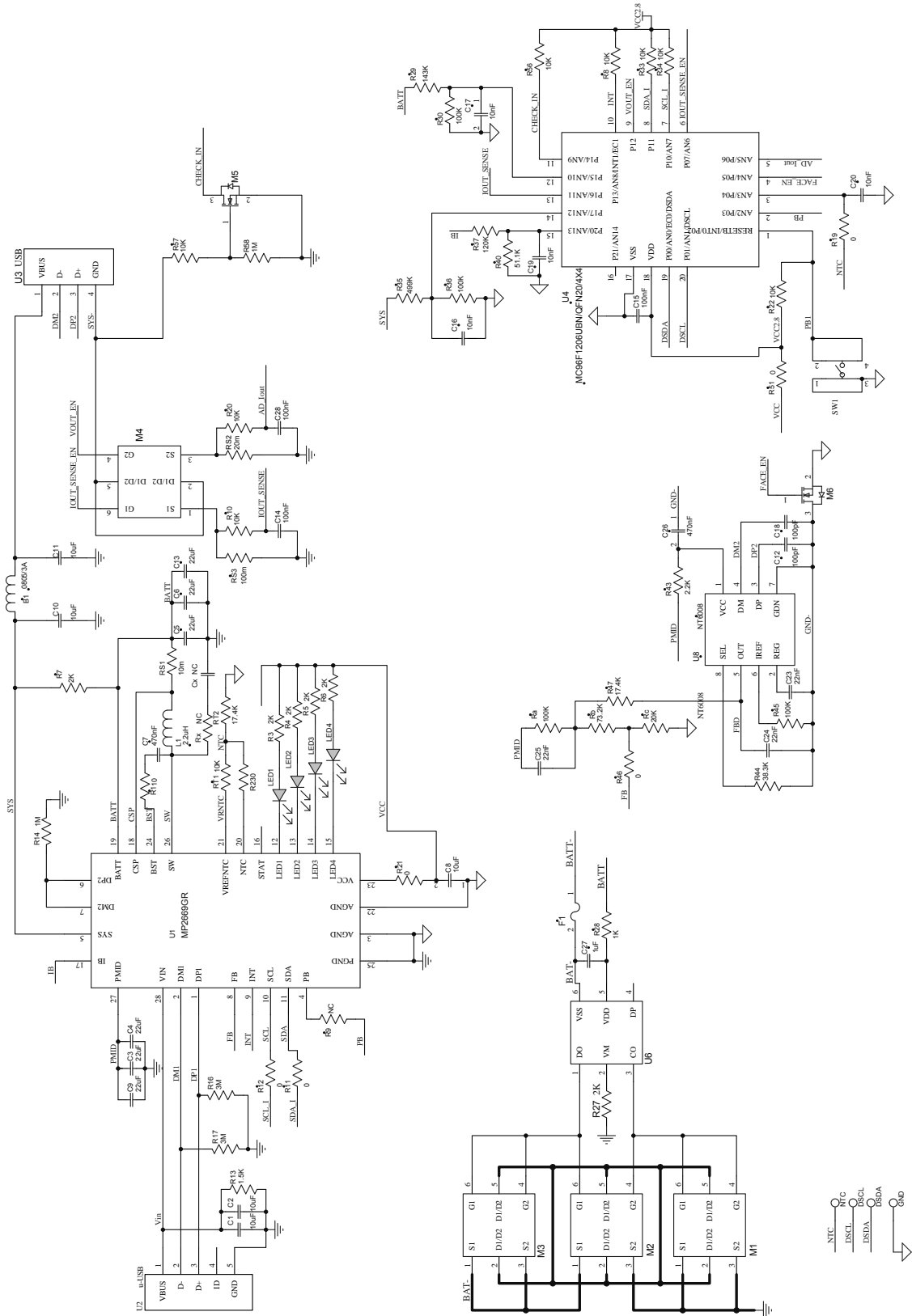
## EV2669-R-00A EVALUATION BOARD



(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

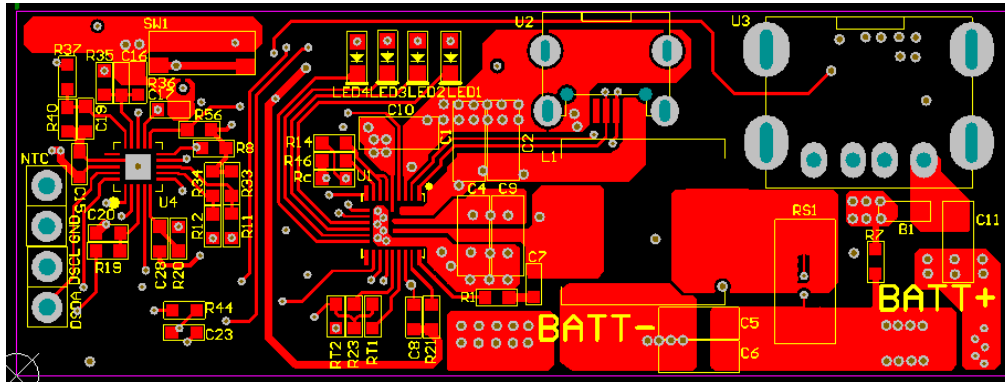


Figure 1—Top Layer

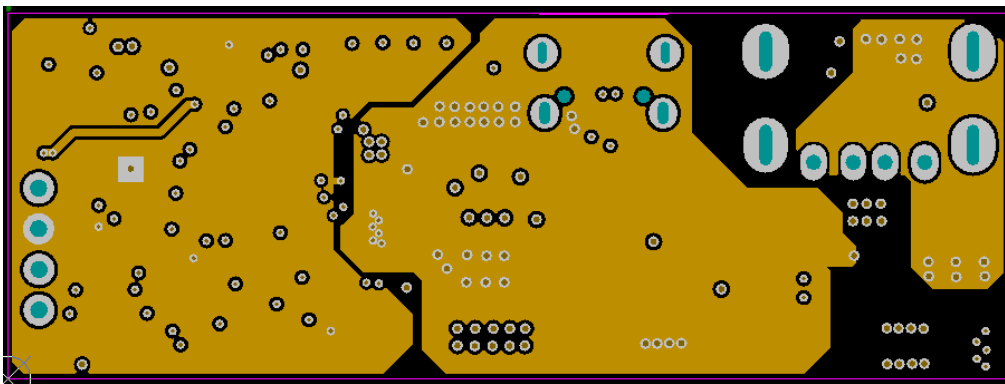


Figure 2—Mid Layer1

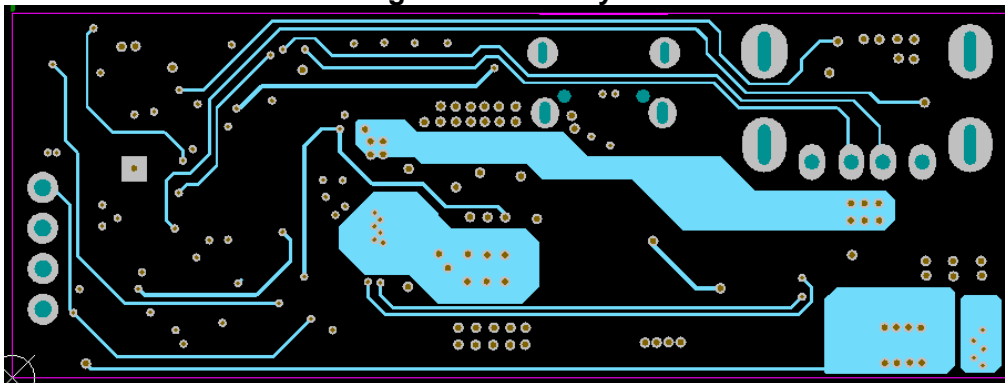


Figure 3—Mid Layer2

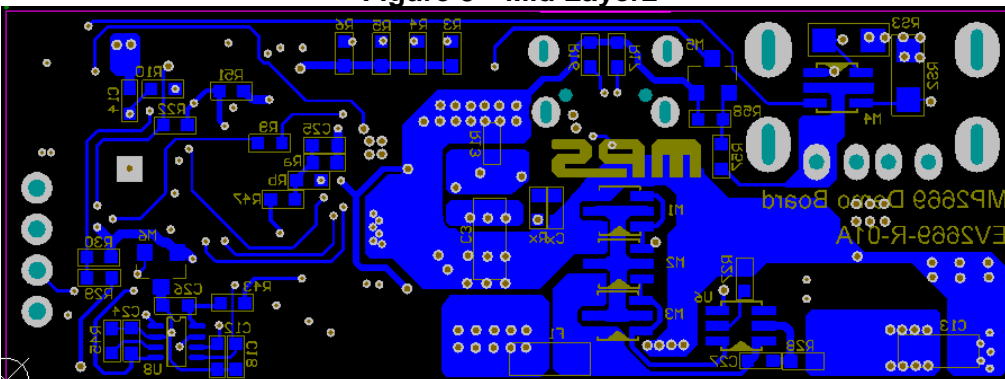


Figure 4—Bottom Layer

## **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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