GLF3006
Single Cell Li-Ion/Polymer Battery Protection IC

DESCRIPTION

The GLF3006 is a highly integrated solution for single cell rechargeable battery protection. It incorporates a low on-resistance power NFET along with high precision over voltage, over current, over discharge, and short circuit protection.

When the battery voltage exceeds the over-voltage detection threshold, the GLF3006 turns off the charging switch after a preset delay. Similarly, if the load current surpasses the over discharge current threshold, the discharge switch is turned off after a preset delay. If the discharge current reaches the short circuit protection level (I_{SC}), the GLF3006 immediately shuts down and remains off to prevent serious system damage. A short circuit delay is included to avoid false triggering.

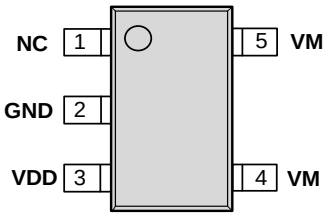
FEATURES

- Low R_{ON} : 25 mΩ Typ. @ 3.6 V_{DD}
- Low Quiescent Current, I_Q : 2.1 µA Typ. @ 3.6 V_{DD}
- Over Charge Voltage Detection, V_{OC} : 4.220 V_{DD} Typ.
  - Accuracy : ± 1%
- No Over Discharge Voltage function for Applications with High Pulsating Currents
- Over Charge Current Detection, I_{OC} : 4.4 A Typ.
  - I_{OC} with 10 ms Delay Time to avoid false trigger
- Over Discharge Current Detection, I_{OD} : 3.8 A Typ.
  - I_{OD} with 340 ms Delay Time to avoid false trigger
- Load Short Circuit Protection, I_{SC} : 8.4 A Typ.
- Battery and Charger Reverse Polarity Connection Protection

PRODUCT TABLE

Eval Board Ordering Info	Part Number	R_{ON} (Typ.) at 3.6 V V_{BAT}	Over charge Detection V_{OC} (Typ.)	Overcharge Current I_{OC} (Typ.)	Over discharge Current I_{OD} (Typ.)	Short Circuit Current I_{SC} (Typ.)
EV049-GLF3006	GLF3006-T17	25 mΩ	4.22 V	4.4 A	3.8 A	8.4 A

DEVICE PACKAGE AND PINOUT



SOT23-5L

Pin #	Name	Description
1	NC	Tie to GND.
2	GND	Ground, Battery Cell Negative Terminal.
3	VDD	Power Supply, Battery Cell Positive Terminal
4, 5	VM	Power Ground Pin.

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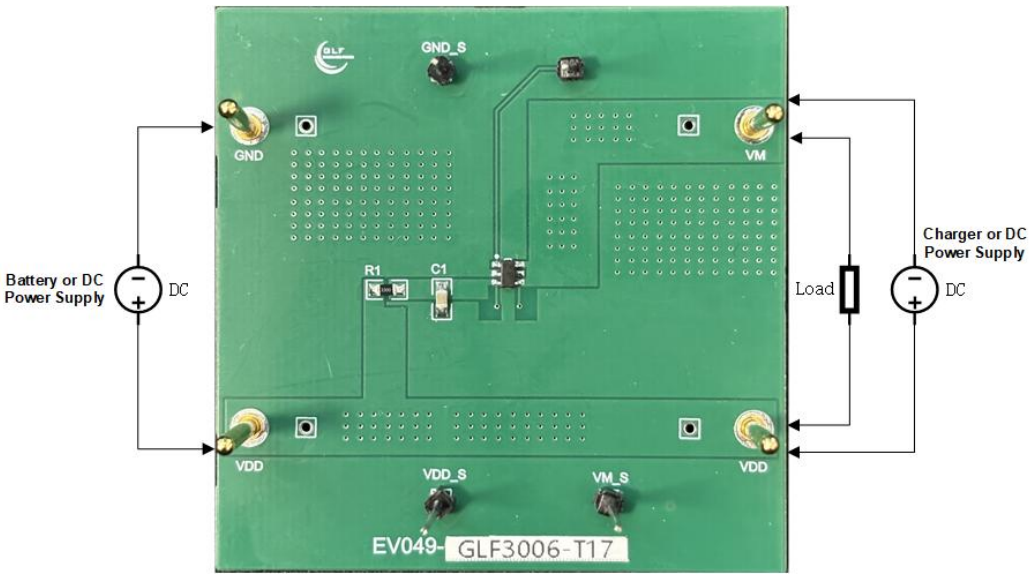
TEST SETUP



QUICK START GUIDE

1. Connect the positive and negative terminals of the Input Power Supply or a Li-battery voltage higher than 1.5 V to VDD and GND respectively. The GLF3006 device will turn on the main switches for charging and discharging. Make sure there is no high peak voltage generated when a VDD input source is hot-plugged in.
2. To set the output current, connect an electronic load to VDD and VM.
3. When the voltage between VDD and GND reaches the VOC, the GLF3006 switch is turned off after a delay of 150 mS (Typ.) to stop charging and get back to the on state as the VDD voltage decreases by 140 mV (V_{OC_HYS}) below VOC.
4. When the charging current reaches I_{OC}, the GLF3006 switch is turned off after a delay of 10 ms (Typ.) When the charger is unplugged and then a charger with a charging current lower than the IOC is connected between VDD and VM, the charging path is activated again.
5. When the discharging current exceeds IOD, the GLF3006 will be turned off after a delay of 340 ms (Typ.). When discharging current exceeds I_{SC}, the GLF3006 will be turned off after a delay of 80 µs (Typ.). After the over discharging current load or short circuit load is unplugged, the GLF3006 device will automatically turn on the main switch between VM and GND.
6. VDD_S, VM_S, and GND_S are used to connect measuring instruments.

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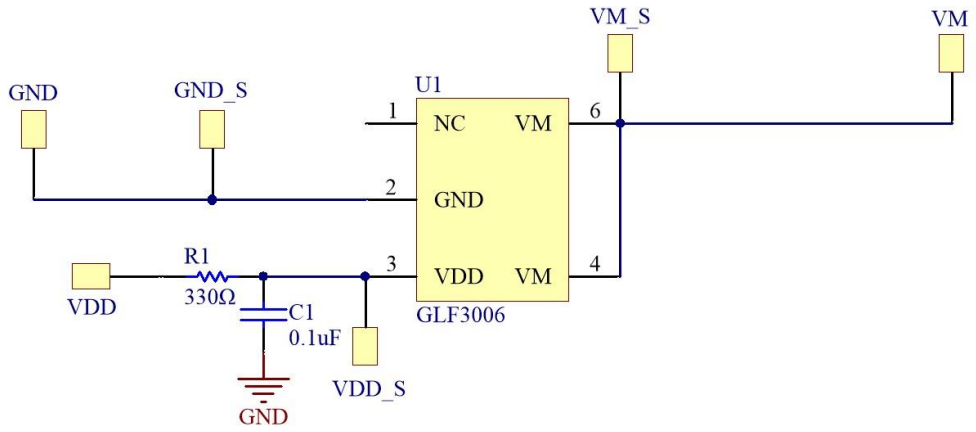
SCHEMATIC



BILL OF MATERIALS

Qty	Reference	Value	Part Description	Note
1	U1	GLF3006	Battery Protection IC	GLF Integrated Power
1	C1	0.1 μF	Cap, X7R, 50 V, 10 % 0805	YAGEO CC0805KKX7R9BB104
1	R1	330 Ω	Resistor, 1 % 0805	YAGEO RC0805FR-07330RL

PRINTED CIRCUIT BOARD LAYOUT

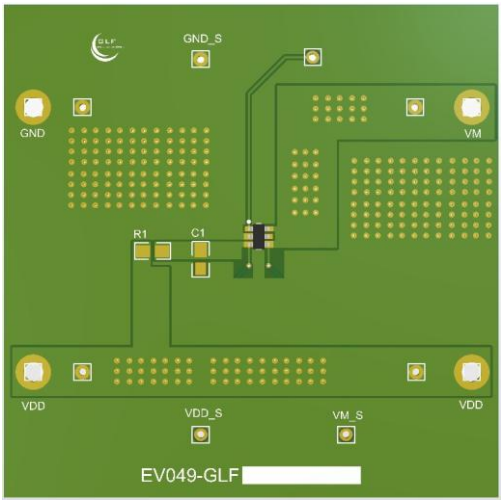


Fig 1. Top Layer

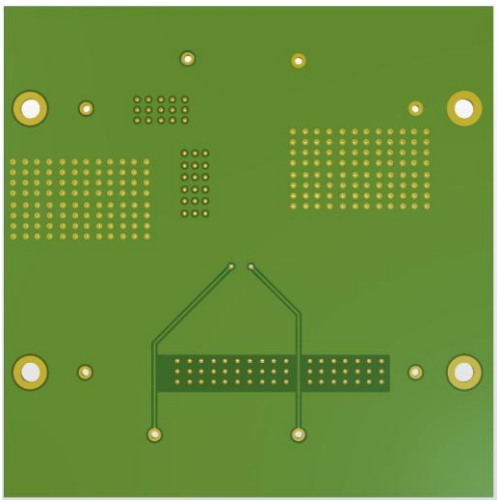


Fig 2. Bottom Layer

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