GLF1531Q
2 A Power Switch with Programmable Slew Rate

DESCRIPTION

The GLF1531Q is an ultra-efficiency integrated N-channel power protection switch, with a wide input range from 0.8 V to 5.5 V.

The GLF1531Q provides the programmable output voltage (V_{OUT}) rise time by an external capacitor on the SR pin. It limits the inrush current at start up condition and helps to minimize the voltage drop. The integrated output discharge FET discharges output voltage quickly when the device is disabled.

The GLF1531Q offers the best-in-class on the size, on-resistance (R_{ON}) performance, and the wide operating temp range up to 125 °C.

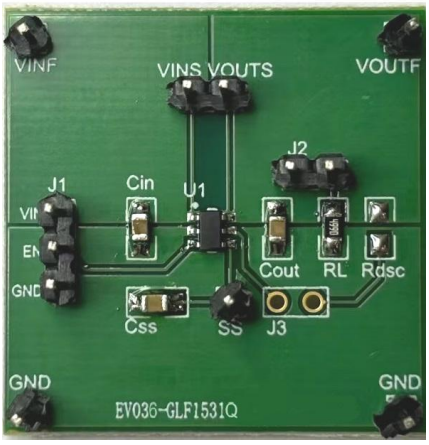
FEATURES

- AEC-Q100 Qualified
- Qualified for Automotive Applications:
  Temperature Grade 1:
  -40 °C to 125 °C Ambient Operating Temperature Range
- Supply Voltage Range: 0.8 V to 5.5 V
  6 V_{ABS} max
- Continuous Output Current: 2 A
- Low R_{ON}: 44 mΩ at 25 °C Typ. at 5 V_{IN}
- Low Quiescent Current I_Q:
  14 µA Typ. at 5 V_{IN}
  7 µA Typ. at 3.3 V_{IN}
- Low Shutdown Current I_{SD}:
  13 nA Typ. at 5 V_{IN}
  10 nA Typ. at 3.3 V_{IN}
- Programmable V_{OUT} Rising Time, SR Pin
- Quick Output Discharge
- ESD Performance Tested per AEC-Q100
- Moisture Sensitivity Level: MSL-3 and 260 °C Peak Reflow Temp
- Lead-free, Halogen-free and Adhere to RoHS Directive

PRODUCT TABLE

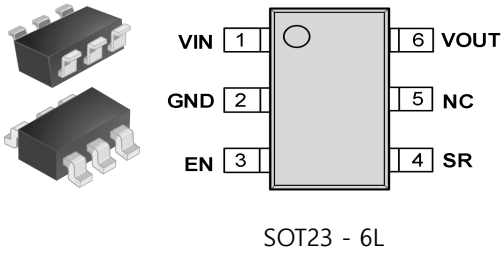
Eval Board Ordering Info	Part Number	R_{ON} (Typ.)	Output Discharge	t_R at 3.3 V_{IN} (C_{SR} = 1.0 nF)	EN Activity
EV036 - GLF1531Q	GLF1531Q	44 mΩ	21 Ω	2230 µs	High

EVALUATION BOARD & DEVICE PACKAGE



Note: The C_{SS} and SS on the board picture are same as C_{SR} and SR in the schematic respectively.

PIN CONFIGURATION AND DEFINITION



SOT23 - 6L

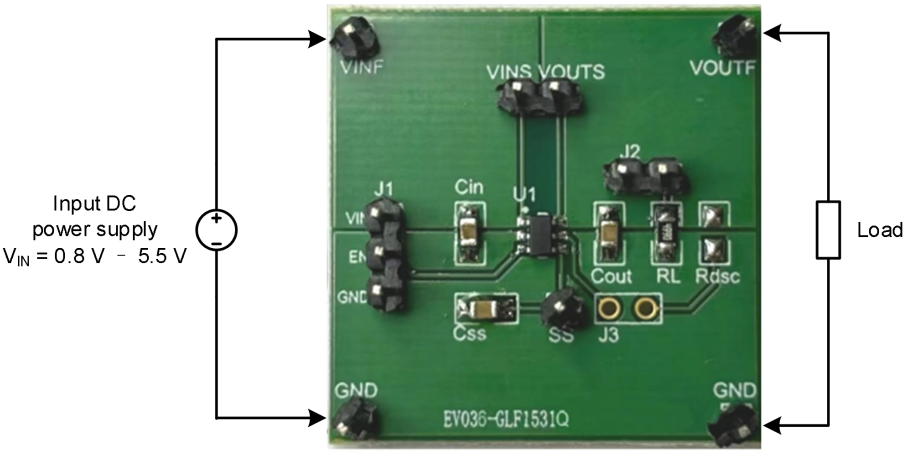
Pin No.	Name	Description
1	VIN	Switch Input. Supply Voltage
2	GND	Ground
3	EN	Active high signal to enable the switch
4	SR	Soft-start Pin by connecting a capacitor to control the output voltage rise time at turn-on.
5	NC	No connection. Leave this pin float or tie to GND.
6	VOUT	Switch Output

QUICK START GUIDE

The evaluation board EV036 is easy to set up to evaluate the performance of GLF1531Q.

1. Set the input power supply to between 0.8 V and 5.5 V.
2. The load resistor (RL= 499 Ω) has been populated on the top of the PC board. Short the J2 to use the RL= 499 Ω which is not populated on the bottom. To increase the output current, connect an electronic load to VOUT and GND. The output current for the GLF1531Q is rated for 2 A maximum output continuous current. Please ensure this absolute maximum is not exceeded.
3. Connect the positive and negative terminals of the input power supply to VINF and GND terminals respectively. VINS and VOUTS can be used for measurement points.
4. Turn on the input power supply.
5. Configure EN as required. NOTE - The GLF1531Q has an internal pull-down resistor to ensure that the device is in proper operating condition. (Enable logic is active high).
6. By varying the size of the capacitor C_{SR}, the range of the rise time of the output voltage (VOUT) can be varied.

TEST SETUP



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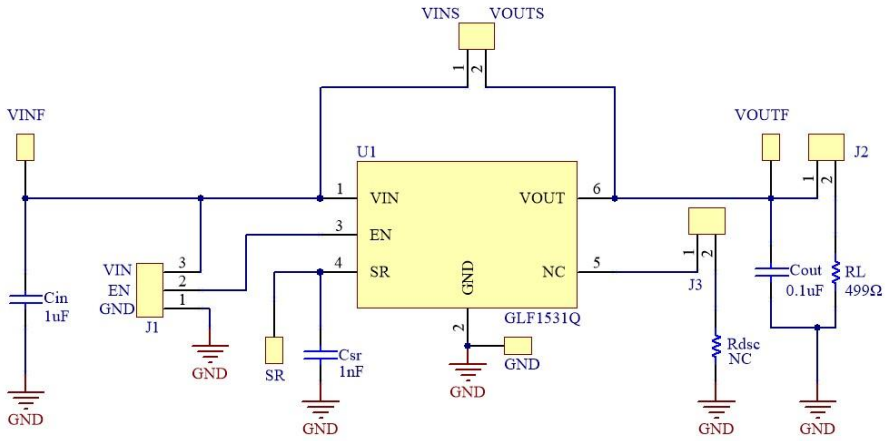
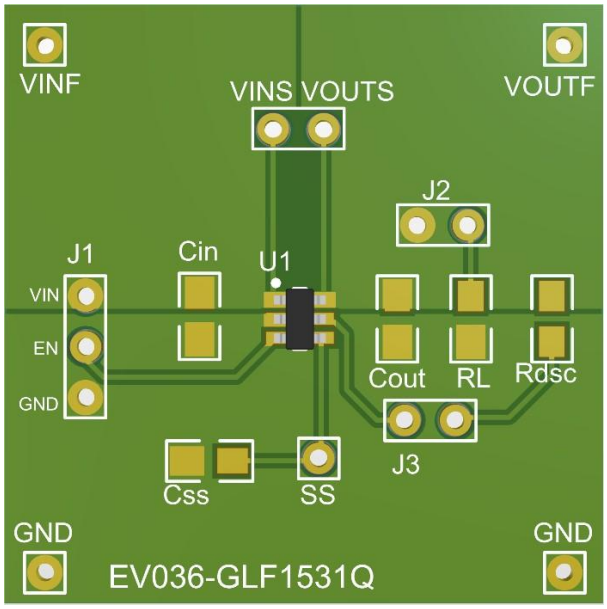
SCHEMATIC



BILL OF MATERIALS

Qty	Reference	Value	Part Description	Manufacturer Part Number
1	U1	GLF1531Q	GLF1531Q	GLF Integrated Power
1	C_{IN}	1.0 μF	Cap., X7R, 50 V, 10% 0805	YAGEO CC0805KKX7R9BB105
1	C_{OUT}	0.1 μF	Cap., X7R, 50 V, 10% 0805	YAGEO CC0805KRX7R9BB104
1	C_{SR}	1.0 nF	Cap., NPO, 50 V, 5% 0805	YAGEO CC0805JRNP09BN102
1	RL	499 Ω	Load Resistor	YAGEO AC0805FR-07499RL
1	J1	Jumper	Jumper，2.54 mm	3 Pin
1	J2	Jumper	Jumper，2.54 mm	2 Pin

PRINTED CIRCUIT BOARD LAYOUT



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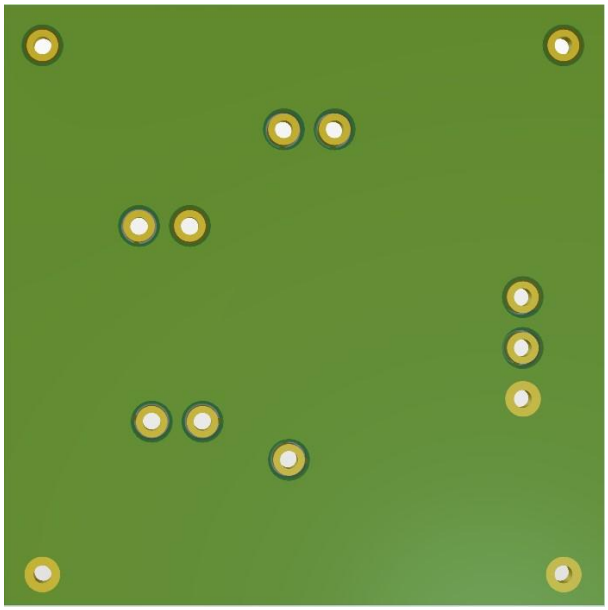
Top Layer



Bottom Layer

NOTICE: The evaluation board provided by GLF Integrated Power is intended for use for ENGINEERING DEVELOPMENT, OR EVALUATION PURPOSES ONLY and is not for any commercial use. The user assumes all responsibility and liability for proper and safe handling of the goods.