GLF4003

Ultra-low IQ, Asymmetrical Power Mux IC with Auto, Manual & Priority Input Selection

DESCRIPTION

The GLF4003 is an integrated power multiplexer IC with dual independent power switches connected to a single output pin to enable seamless transition between two input sources. The GLF4003 features asymmetrical power FET characteristics. Channel 1 (VIN1) provides lower conduction resistance to support 2.0 A continuous current capability. The current rating of another channel (VIN2) is 1.5 A. It is an ideal solution for a power system with an internal back up power source.

The GLF4003 provides an automatic selection, a manual selection and VIN1 priority selection mode. The switching of these three modes is executed by combining the EN and SEL pin settings. The EN input pin has an internal threshold voltage to offer a preference to select the channel 1 (VIN1) power source. In the automatic input selection mode, the GLF4003 automatically selects a higher input voltage source between two input power sources.

The GLF4003 prevents cross conduction current between two input sources. When VOUT is higher than VIN, the GLF4003 prevents the reverse current from the output to the input, no matter which input supply is applied.

FEATURES

- Two-Input and Single-Output Power Multiplexer Switch
- Auto and Manual Input Selection Mode
- VIN1 Priority Selection Mode
- Wide Input Range: 1.5 V to 4.8 V
- Low R_{ON}
  - Channel 1, VIN1 = 45 mΩ Typ at 4.8 V_{IN}
  - Channel 2, VIN2 = 77 mΩ Typ at 4.8 V_{IN}
- I_{OUT} Max
  - Channel 1 = 2.0 A
  - Channel 2 = 1.5 A
- Ultra-Low Supply Current at Operation
  - I_Q: 1.1 µA Typ at 4.8 V_{IN}
- Ultra-Low Stand-by Current
  - I_{SD}: 400 nA Typ at 4.8 V_{IN}
- True Reverse Current Blocking
- Operating Temperature Range:
- -40 °C to 85 °C

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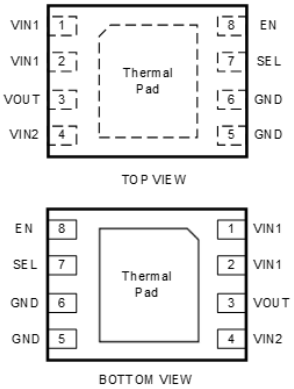
PRODUCT TABLE

Eval Board Ordering Info	Part Number	Channel 1 (VIN1)		Channel 2 (VIN2)	
		R_{ON1} at 4.8 V_{IN}	I_{OUT}	R_{ON2} at 4.8 V_{IN}	I_{OUT}
EV038 - GLF4003	GLF4003-D3G7	45 mΩ	2.0 A	77 mΩ	1.5 A

PIN CONFIGURATION AND DEFINITION



DFN 2x3-8L

Pin #	Name	Description
1, 2	VIN1	IC Input 1
3	VOUT	IC Output
4	VIN2	IC Input 2
5, 6	GND	Ground
7, 8	SEL, EN	Logic control, SEL and EN high and low combinations determine the selection mode. Refer to table 1.

Table 1. Truth Table of Input Source Selection

Mode	SEL	EN	VOUT	Function
Manual	High	> V_{TH}	VIN1	VIN1 is selected
	High	< V_{TH}	VIN2	VIN2 is selected
	Low	> V_{TH}	High-Z	Both channels are off
Auto	Low	< V_{TH}	Higher voltage between VIN1 and VIN2	Auto-Input selection
VIN1 Priority	Connect to VIN1	> V_{TH} by resistor divider from VIN1	VIN1	VIN1 is selected
		< V_{TH} by resistor divider from VIN1	VIN2	VIN2 is selected

Note : $V_{IN}x$ or $V_{IN}y$ ≥ 1.5 V (V_{IN_MIN}), High = V_{SEL} > V_{IH}, Low = V_{SEL} < V_{IL}

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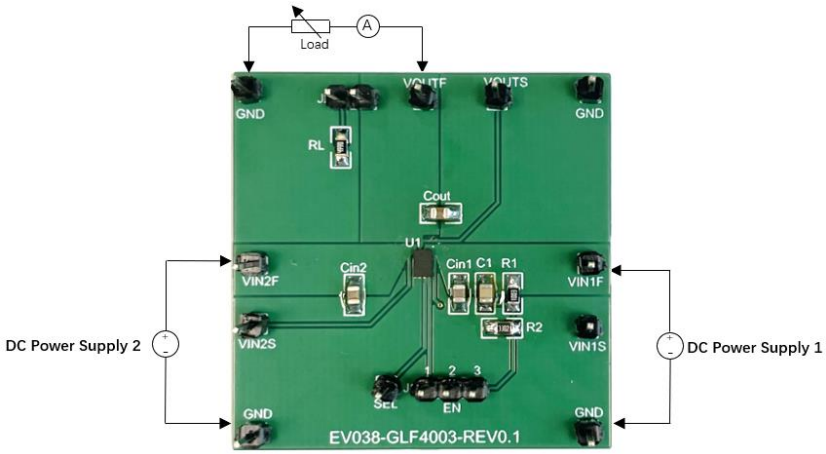
TEST SETUP

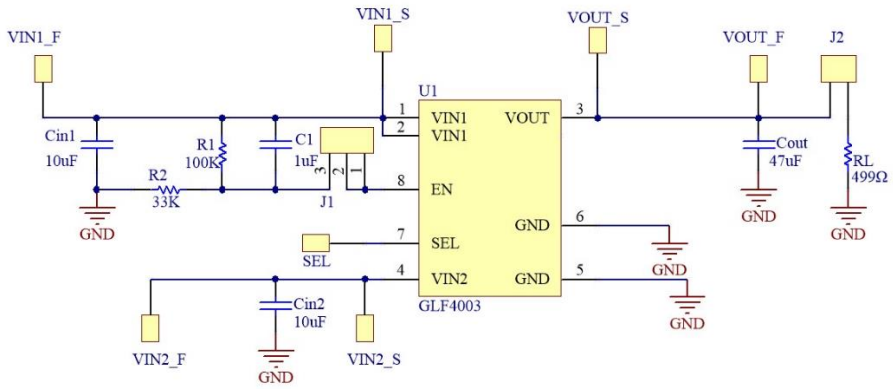


QUICK START GUIDE

The evaluation board EV038 is easy to set up to evaluate the performance of GLF4003.

1. Preset the input power supply to the desired voltage between 1.5 V to 4.8 V.
2. The load resistor, RL= 499 Ω, has been populated on the top of the PCB board. Short the jumper J2 to use the RL. To increase the output current, connect an electronic load to VOUTF and GND. The output current for the GLF4003 is rated for 2.0 A maximum output continuous current on CH1 and 1.5 A maximum output continuous current on CH2. Please ensure the absolute maximum currents are not exceeded.
3. Connect the positive and negative terminals of the input power supply to VINxF and GND respectively. VIN1S VIN2S and VOUTS can be used for measurement point.
4. Connect SEL to VIN1, #2 and #3 short of J1 will be configured for VIN1 priority selection mode. Manual selection mode and Automatic selection mode, Refer to Table 1. Note – Do not leave the SEL and EN pins floating.
5. Turn on the input power supply.

SCHEMATIC



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BILL OF MATERIALS

Qty	Reference	Value	Part Description	Manufacturer/Part Number
1	U1	GLF4003	GLF4003	GLF Integrated Power
2	Cin1, Cin2	10 μF	Cap., X5R, 25V, 10% 0805	YAGEO CC0805KKX5R8BB106
1	Cout	47 μF	Cap., X5R, 10V, 20% 0805	TDK C2012X5R1A476M125AC
1	C1	1 μF	Cap., X7R, 16V, 5% 0805	YAGEO CC0805JKX7R7BB105
1	R1	100 KΩ	Res.	YAGEO RC0805FR-07100KL
1	R2	33 KΩ	Res.	YAGEO RC0805FR-0733KL
1	RL	499 Ω	Res.	YAGEO RC0805FR-07499RL
2	J1, J2	Jumper	Jumper	

PRINTED CIRCUIT BOARD LAYOUT

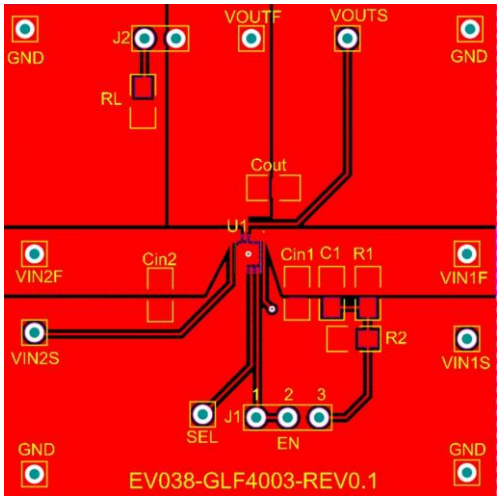

Fig 1. Top Layer

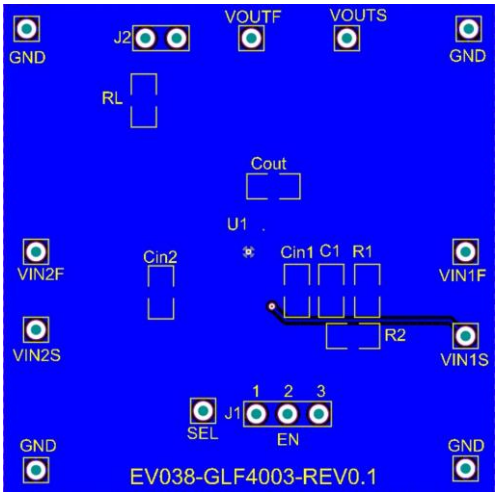

Fig 2. Bottom Layer

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