GLF4007
Ultra-low IQ, Asymmetrical Power Mux IC with Auto, Manual & Priority Input Selection

DESCRIPTION

The GLF4007 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 GLF4007 features asymmetrical power FET characteristics. Channel 1 (VIN1) provides lower conduction resistance to support 4.0 A continuous current capability. The current rating of another channel (VIN2) is 3.0 A. It is an ideal solution for a power system with an internal back up power source.

The GLF4007 provides an automatic selection mode, a manual selection and VIN1 priority selection mode. The switching of these three modes is executed by combining the S1 and S2 pin settings. The S1 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 GLF4007 automatically selects a higher input voltage source between two input power sources.

The GLF4007 prevents cross conduction current between two input sources. When VOUT is higher than VIN, the GLF4007 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 5.5 V
- Low R_{ON}
  - Channel 1, VIN1 = 20 mΩ Typ at 5.5 V_{IN}
  - Channel 2, VIN2 = 30 mΩ Typ at 5.5 V_{IN}
- I_{OUT} Max
  - Channel 1 = 4.0 A at 2.0 V_{IN} to 5.5 V_{IN}
  - Channel 1 = 3.5 A at 1.5 V_{IN} to 2.0 V_{IN}
  - Channel 2 = 3.0 A at 1.5 V_{IN} to 5.5 V_{IN}
- Ultra-Low Supply Current at Operation
  - I_Q: 1.1 μA Typ at 5.5 V_{IN}
- Ultra-Low Stand-by Current
  - I_{SD}: 550 nA Typ at 5.5 V_{IN}
- True Reverse Current Blocking
- Operating Temperature Range:
  - 40 °C to 85 °C

PRODUCT TABLE

Eval Board Ordering Info	Part Number	Channel 1 (VIN1)		Channel 2 (VIN2)	
		R_{ON1} at 5.5 V_{IN}	I_{OUT}	R_{ON2} at 5.5 V_{IN}	I_{OUT}
EV048-GLF4007	GLF4007-S57	20 mΩ	4.0 A	30 mΩ	3.0 A

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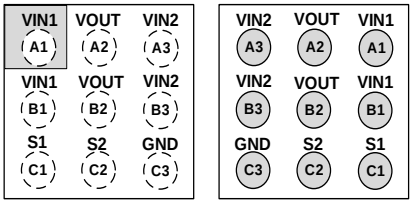
PIN CONFIGURATION AND DEFINITION



1.27 mm x 1.27 mm x 0.55 mm WLCSP

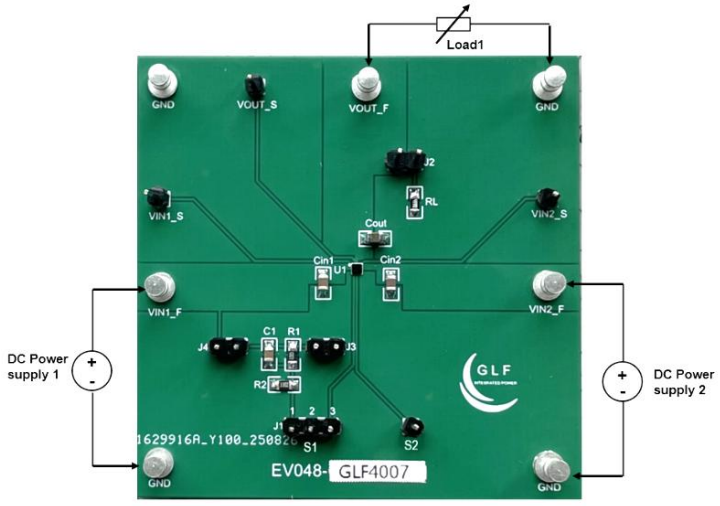
Pin #	Name	Description
A1, B1	VIN1	IC Input 1
A2, B2	VOUT	IC Output
A3, B3	VIN2	IC Input 2
C3	GND	Ground
C1	S1	Selects between VIN1 and VIN2.
C2	S2	With the S2 pin high, VIN1 is selected when S1 is higher than V_{TH}, VIN2 is chosen when S1 is low.

Table 1. Truth Table of Input Source Selection

Mode	S2	S1	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_{INX} or V_{INY} ≥ 1.5 V (V_{IN_MIN}), High = V_{S2} > V_{IH}, Low = V_{S2} < V_{IL}

TEST SETUP



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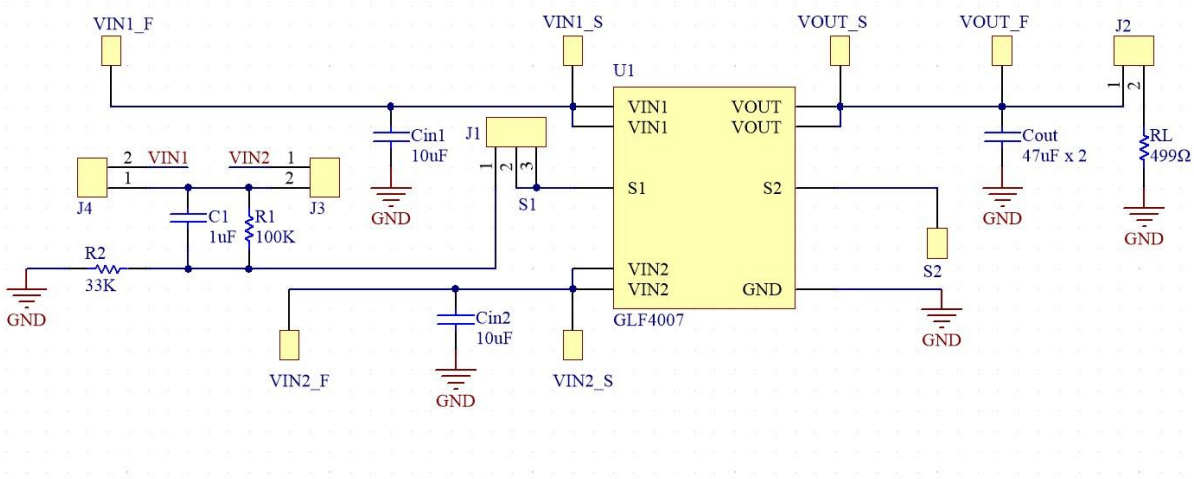
QUICK START GUIDE

The evaluation board EV048 is easy to set up to evaluate the performance of GLF4007.

1. Preset the input power supply to the desired voltage between 1.5 V to 5.5 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 VOUT_F and GND. The output current for the GLF4007 is rated for 4.0 A maximum output continuous current on CH1 and 3.0 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 VINx_F and GND respectively. VIN1_S VIN2_S and VOUT_S can be used for measurement point.
4. Connect S1 to VIN1, #1 and #2 short of J1 and short J4 will be configured for VIN1 priority selection mode. Manual selection mode and Automatic selection mode, Refer to Table 1. Note: Do not leave the S2 and S1 pins floating.
5. Turn on the input power supply.

SCHEMATIC



BILL OF MATERIALS

Qty	Reference	Value	Part Description	Manufacturer/Part Number
1	U1	GLF4007	Power Mux IC	GLF Integrated Power
2	Cin1, Cin2	10 µF	Cap., X5R, 25V, 10% 0805	YAGEO CC0805KKX5R8BB106
2	Cout	47 µF	Cap., X5R, 10V, 20% 0805	YAGEO CC0805MKX5R6BB476
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, J3, J4	Jumper	Jumper	

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PRINTED CIRCUIT BOARD LAYOUT

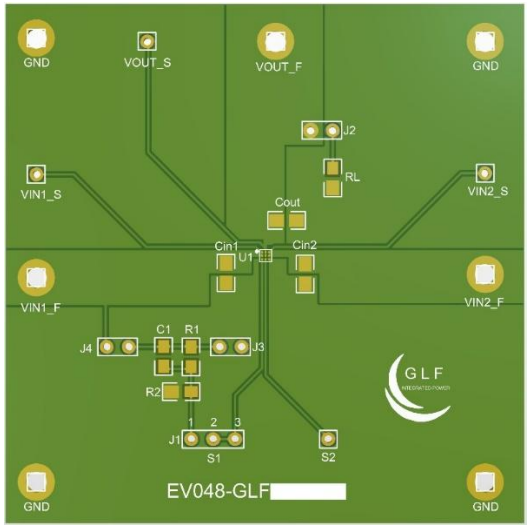

Fig 1. Top Layer

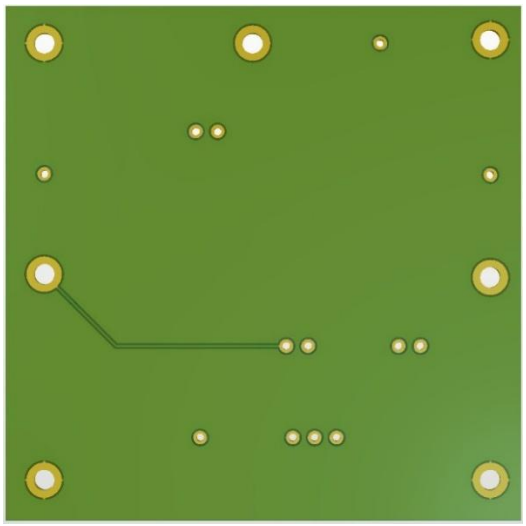

Fig 2. Bottom Layer

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