GLF4000, GLF4001

Ultra-low Current Consumption Power Multiplexer Switch with Auto & Manual Selection

DECRIPTION

The GLF4001 and GLF4001 are integrated power multiplexer switch with dual independent power switches connected to a single output pin to enable seamless transition between two input sources.

The GLF4000 and GLF4001 provide an automatic selection mode as well as a manual selection mode by the combination of the logic input pins of EN and SEL. The EN input pin is used along with the select (SEL) input pin to select the automatic switching function, select VIN1 only, select VIN2 only, or turn both switches off. In the automatic selection mode, the GLF4000 and GLF4001 automatically select the higher input voltage source out of two input DC power supplies.

The GLF4000 and GLF4001 feature an ultra-efficient I_QSmart™ technology that offers quiescent current (I_Q) and shutdown current (I_{SD}) in the industry. Low R_{ON} reduces conduction losses while low I_Q and I_{SD} solutions help designers to reduce parasitic leakage current, improve system efficiency, and increase battery lifetime.

The GLF4000 and GLF4001 can block any cross conduction current between two input power sources.

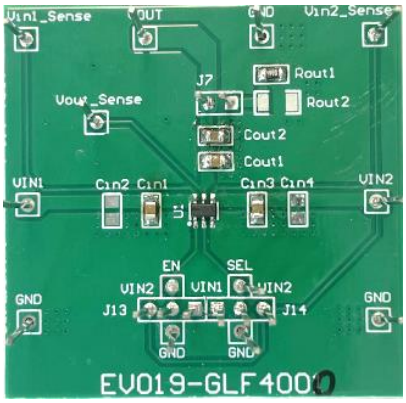
FEATURES

- Two-Input and Single-Output Power Multiplexer Switch
- Automatic and Manual Input Selection Mode
- Supply Voltage Range: 1.5 V to 5.5 V
  6 Vabs Max
- R_{ON} : 68 mΩ Typ. at 5.5 V_{IN1} or V_{IN2}
  77 mΩ Typ. at 3.3 V_{IN1} or V_{IN2}
- 2 A Continuous Output Current Capability Per Channel
- Ultra-Low Supply Current at Operation
  I_Q : 4 uA Typ at 5.5 V_{IN}
- Ultra-Low Stand-by Current
  I_{SD} : 20 nA Typ at 5.5 V_{IN}
- Smart Control Pins
  I_{EN} and I_{SEL} : 5 nA Typ at V_{EN} or V_{SEL} > V_{IH}
  R_{EN} and R_{SEL} : 500 kΩ Typ
- No Cross Conduction Between Two Inputs
- Reverse Current Blocking when Disabled
- Operating Temperature Range: -40 to 85 °C
- HBM: 6 kV, CDM: 2 kV

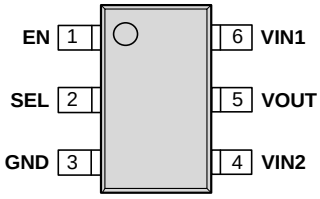
PRODUCT TABLE

Eval Board Ordering Info	Part Number	Top Mark	Output Discharge	RON at 5.5 V_{IN}	Output Current	Ultra-low I_Q at 5.5 V_{IN}
EV019-GLF4000	GLF4000-T2G7	BX	70 Ω	68 mΩ	2 A	4 uA
EV019-GLF4001	GLF4001-T2G7	AR	NA			

EVALUATION BOARD & DEVICE PACKAGE



PIN CONFIGURATION AND DEFINITION



Top view

Pin #	Name	Description
1	EN	Enable to control the switch. Do not leave the EN pin floating.
2	SEL	Input Source Selection. Do not leave the SEL pin floating.
3	GND	Ground
4	VIN2	Switch Input 2
5	VOUT	Switch Output
6	VIN1	Switch Input 1

QUICK START GUIDE

The evaluation board EV019 is easy to set up to evaluate the performance of GLF4000 and GLF4001.

1. Preset the input power supply to the desired voltage between 1.5 V to 5.5 V.

2. The load resistor, Rout1=499Ω, has been populated on the top of the PCB board. Shorting J7 to use Rout1 or Rout2 which is not populated. To increase the output current, connect an electronic load to VOUT and GND. The output current of GLF4000 and GLF4001 is rated for 2 A maximum output continuous current per each channel. Please ensure this absolute maximum is not exceeded.

3. Connect the positive and negative terminals of the input power supply to VIN and GND respectively. Vin1_Sense, Vin2_Sense, and Vout_Sense can be used for measurement point.

4. The input source selection function is set by the combination of SEL and EN. See Table 1 below. The SEL pin and the EN pin are connected to one of Input sources by J13 and J14 respectively.

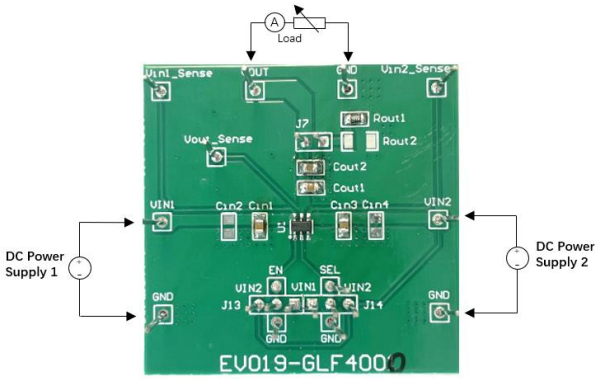
5. Turn on the input power supply.

6. Note : The GLF4000 and GLF4001 has an internal EN and SEL pull-down resistor to ensure the part is in a defined state.

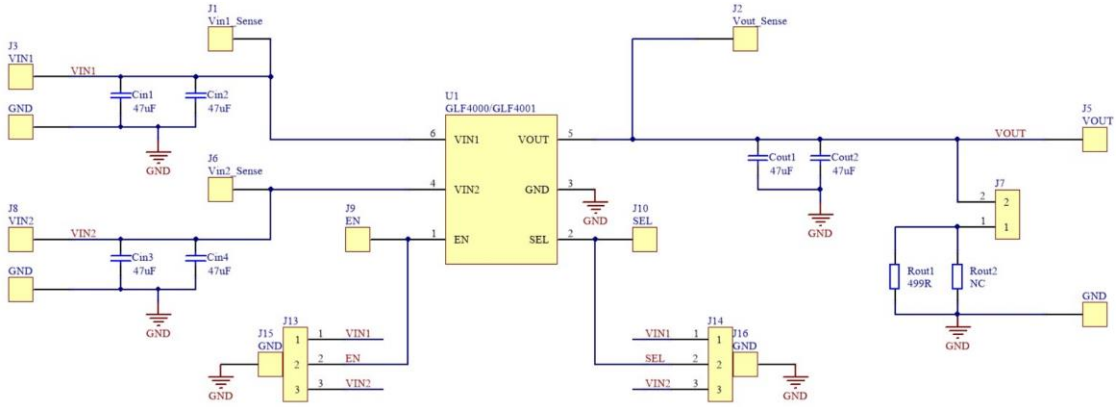
Table 1. Truth Table of Input Source Selection

SEL	EN	Function	VOUT
0	0	Both switches are off	GND: GLF4000 High-Z: GLF4001
0	1	Auto-Input selection. VOUT is connected to a higher input source automatically	Higher Input between VIN1 and VIN2
1	0	Only VIN1 is selected	VIN1
1	1	Only VIN2 is selected	VIN2

TEST SETUP



SCHEMATIC



BILL OF MATERIALS

Qty	Reference	Value	Part Description	Manufacturer/Part Number
1	U1	GLF4000/GLF4001	Power Mux	GLF Integrated Power
2	Cin1, Cin3	1uF	Cap., X7R, 50V, 10% 0805	YAGEO CC0805KKX7R9BB105
2	Cout1, Cout2	47uF	Cap., X5R, 10V, 20% 0805	TDK C2012X5R1A476M125AC
1	Rout1	499Ω	Output Resistor	YAGEO RC0805FR-07499RL
2	Cin2 Cin4	-		Not populated
1	Rout2	-	Load Resistor	Not populated
3	J7,J13,J14	Jumper	Jumper	

PRINTED CIRCUIT BOARD LAYOUT

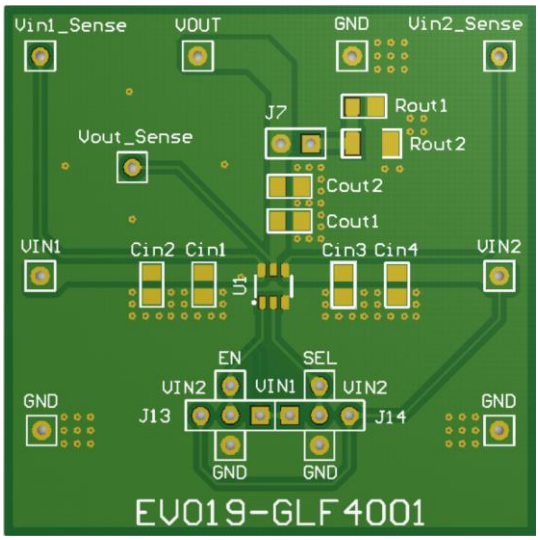


Fig 1. Top Layer

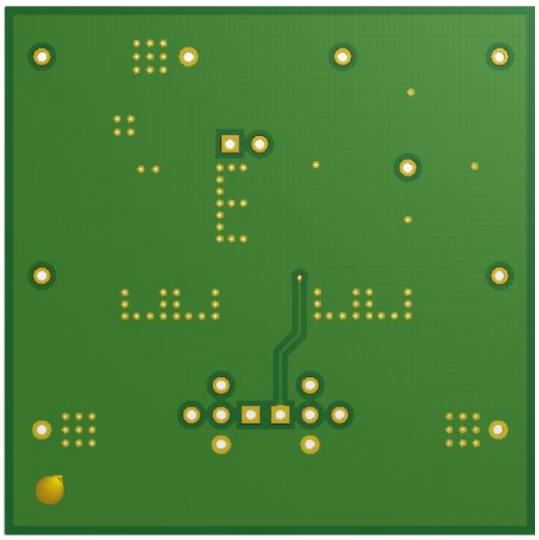


Fig 2. Bottom Layer

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.