GLF4028
Ultra-low IQ, Asymmetrical Power Mux IC with Auto & Manual Input Selection

DESCRIPTION

The GLF4028 is an integrated power multiplexer switch with dual independent power switches connected to a single output pin to enable seamless transition between two input sources.

The GLF4028 provides 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 VIN1 only, select VIN2 only, or turn both switches off.

The GLF4028 features 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 GLF4028 blocks any cross-conduction current between two input power sources. When the switch is disabled, the GLF4028 prevents the reverse current to the input source from the output at any higher VOUT than VIN condition.

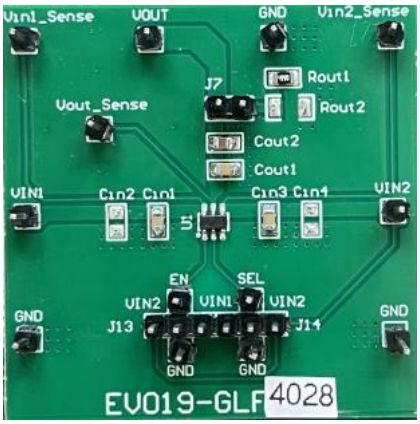
FEATURES

- Two-Input and Single-Output Power Multiplexer Switch
- Supply Voltage Range: 2.5 V to 5.5 V
- R_{ON}: 97 mΩ Typ. at 5.5 V_{IN1} or V_{IN2}
  105 mΩ Typ. at 4.5 V_{IN1} or V_{IN2}
- 2 A Continuous Output Current Capability Per Channel
- Ultra-Low Supply Current at Operation
  I_Q : 3 μA Typ at 5.5 V_{IN}
- Ultra-Low Stand-by Current
  I_{SD} : 5 nA Typ at 5.5 V_{IN}
- Smart Control Pins
  I_{EN} and I_{SEL} : 3 nab 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 °C to 85 °C
- HBM: 6 kV, CDM: 2 kV

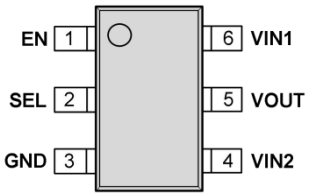
PRODUCT TABLE

Part Number	Top Mark	R_{ON} at 5.5 V_{IN}	Output Current, I_{OUT}	Ultra-low I_Q at 5.5 V_{IN}
GLF4028-T2G7	EP	97 mΩ	2 A	3 μA

EVALUATION BOARD & DEVICE PACKAGE



PIN CONFIGURATION AND DEFINITION



SOT23-6L

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

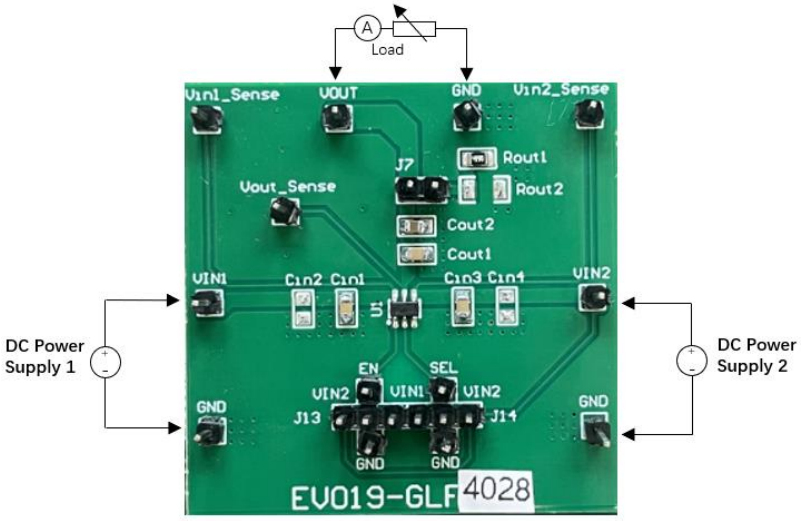
The evaluation board EV029 is easy to set up to evaluate the performance of GLF4028.

1. Preset the input power supply to the desired voltage between 2.5 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 J1 to use the RL1. To increase the output current, connect an electronic load to OUTF and GND. The output current for the GLF4028 is rated for 4.5 A maximum output continuous current on CH1 and 2.5 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 VINx and GND respectively. VIN1_Sense, VIN2_Sense and VOUT_Sense can be used for test points.
4. The input source selection function is set by the combination of SEL and EN. See Table 1 below. Note – Do not leave the SEL and EN pins floating.
5. Turn on the input power supply.

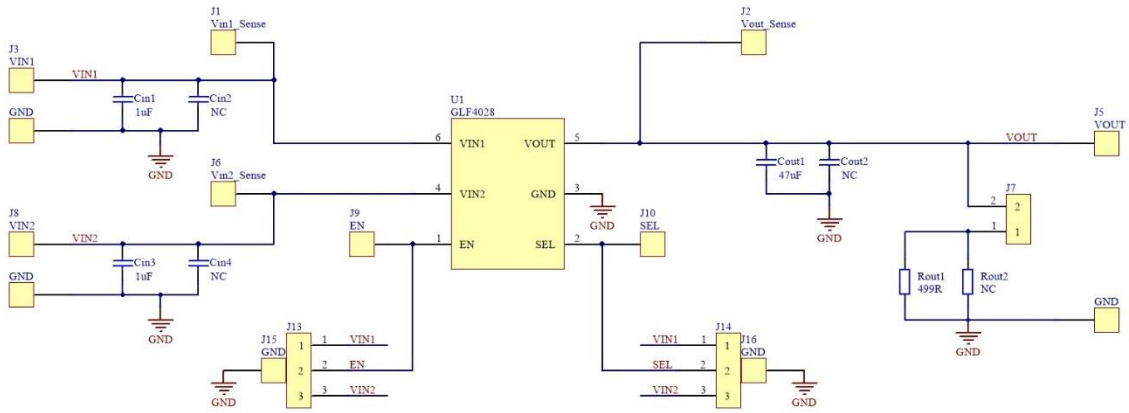
Table 1. Truth Table of Input Source Selection

SEL	EN	VOUT	Function
0	0	High-Z	Both switches are off
1	0	VIN1	Only VIN1 is selected
1	1	VIN2	Only VIN2 is selected

TEST SETUP



SCHEMATIC



BILL OF MATERIALS

Qty	Reference	Value	Part Description	Manufacturer/Part Number
1	U1	GLF4028	GLF4028	GLF Integrated Power
2	Cin1, Cin3	1 μF	Cap., X7R, 50V, 10% 0805	YAGEO CC0805KKX7R9BB105
2	Cout1, Cout2	47 μF	Cap., X5R, 10V, 20% 0805	TDK C2012X5R1A476M125AC
1	Rout1	499 Ω	Output Resistor	YAGEO RC0805FR-07499RL
2	Cin2, Cin4			Not populated
1	Rout2			Not populated
3	J7,J13,J14	Jumper	Jumper	

PRINTED CIRCUIT BOARD LAYOUT

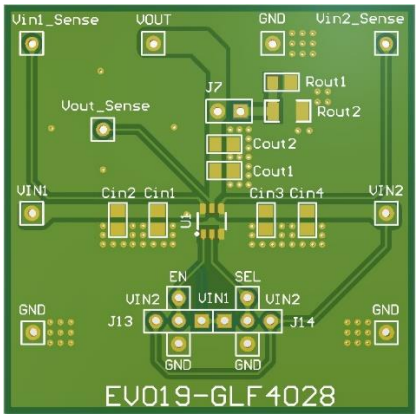


Fig 1. Top Layer

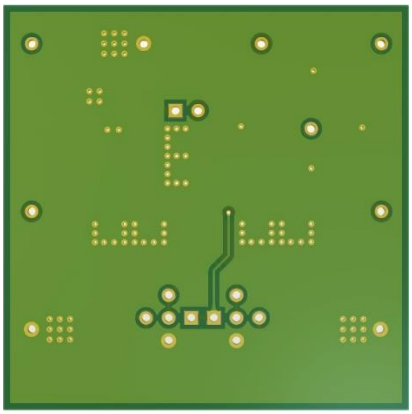


Fig 2. Bottom Layer

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.