

GLF76321

Integrated Load Switch with Deep Sleep Mode

DESCRIPTION

The EV012 evaluation board features the GLF76321 ultra-efficiency 2A rated load switch with a deep sleep mode by disconnecting the system from the battery pack completely to save input power capacity.

The /SRO pin offers a true deep sleep function enabling the load switch to completely disconnect the load from the input battery after a reasonable long delay time. This switch can help to significantly extend system battery life in mobile devices during shipping or the periods of extended off time.

FEATURES

- Integrated Delay Time(Hold Time) to Deep Sleep, 7 seconds
- Deep Sleep Mode by /SRO or OFF
- Ultra-Low I_Q: 3nA Typ at 3.6V_{BAT}
- Ultra-Low I_{SD}: 7nA Typ at 3.6V_{BAT}
9nA Typ at 4.2V_{BAT}
- LOW R_{ON} = 31mΩ Typ at 3.6V_{BAT}
29mΩ Typ at 4.2V_{BAT}
- Up to 2A Continuous Current
- 0.97mm x 1.47mm Wafer Level Chip Scale Package

NOTE: Please refer to the data specification for details

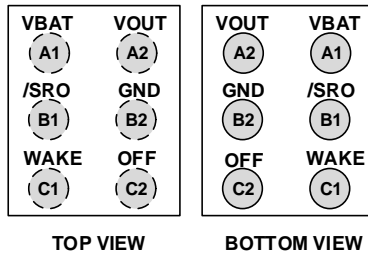
PRODUCT TABLE

Eval Board Ordering Info	Part Number	Top Mark	R _{ON} (Typ.) @ 3.6V _{in}	SRO Hold Time	Output Discharge
EV012-GLF76321	GLF76321	SF	31mΩ	7 s	85Ω

EVALUATION BOARD



PIN CONFIGURATION and DEFINITION



Pin #	Name	Description
A1	VBAT	Switch Input. VBAT pin is connected to the positive input of an external battery.
A2	VOUT	Switch Output.
B1	/SRO	Reset Input or Power-On. Active Low. It needs an external pull-up resistor. It is typically connected to the center between an external pull-up resistor which is directly tied with the battery and a mechanical key button on a device.
B2	GND	Ground
C1	WAKE	System Wake Input. It is triggered by the rising edge signal to change the main switch from off to on-state. It has an internal pull-down resistance, 10M Ω Typ. to keep the WAKE pin grounded. No need an external pull-down resistor.
C2	OFF	Main Switch Off Input. It is triggered by the rising edge signal to change the main switch from on to off-state. It has an internal pull-down resistance, 10M Ω Typ. to keep the OFF pin grounded. No need an external pull-down resistor.

QUICK START GUIDE

The evaluation board EV012 is easy to set up to evaluate the performance of GLF76321.

1. Preset the input power supply to the desired operating voltage before applying to the VBAT Pin. Connect the positive and negative terminals of the input power supply or a Li-Ion battery pack to VBAT and GND respectively. Otherwise, connect a charged Li-Ion battery to the VBAT pin.
2. With the J2 connected, the VBAT input turns on GLF76321 by the WAKE pin through R1 and C1.
3. The load resistor, $R_L=150\Omega$, has been populated on the PCB board. Short the J2 to use the R_L . To increase the output current, connect an electronic load to VOUT and GND. The output current for the GLF76321 is rated for 2A maximum output continuous current. Please ensure this absolute maximum is not exceeded.
4. The VIN_Sense and VOUT_Sense can be used for measurement points. Please make sure there is no high peak voltage generated when a VBAT input source is hot-plugged in.
5. When the /SRO pin is being held low for 7s duration, the main switch of the GLF76321 is disconnected from the input power supply / Li-battery for the reset duration time and then latched off to enter the deep sleep mode. Another way to enter the deep sleep mode is use the OFF pin. When the OFF pin is triggered by the rising-edge high signal, the GLF76321 is latched off after 7s.
6. In order to wake up GLF76321 again, either holding the /SRO pin down for 1.3s or a rising edge of the WAKE pin turns on.

TIMING DIAGRAM AND FUNCTION TABLE

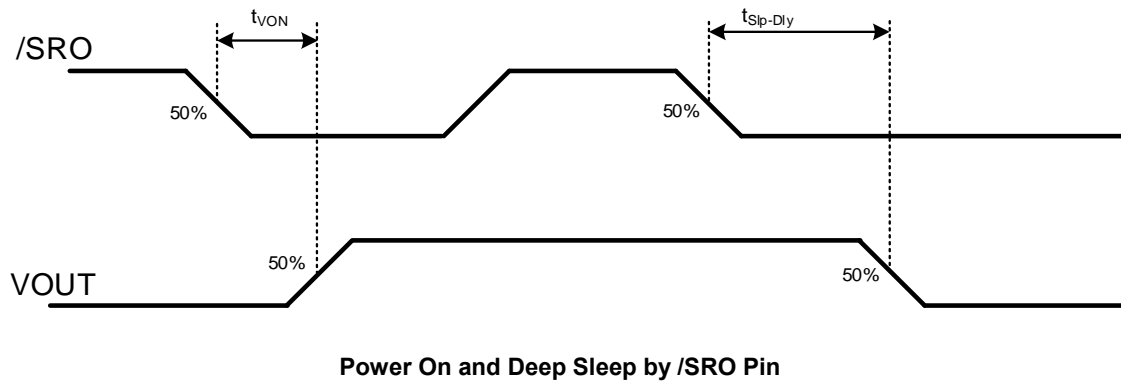
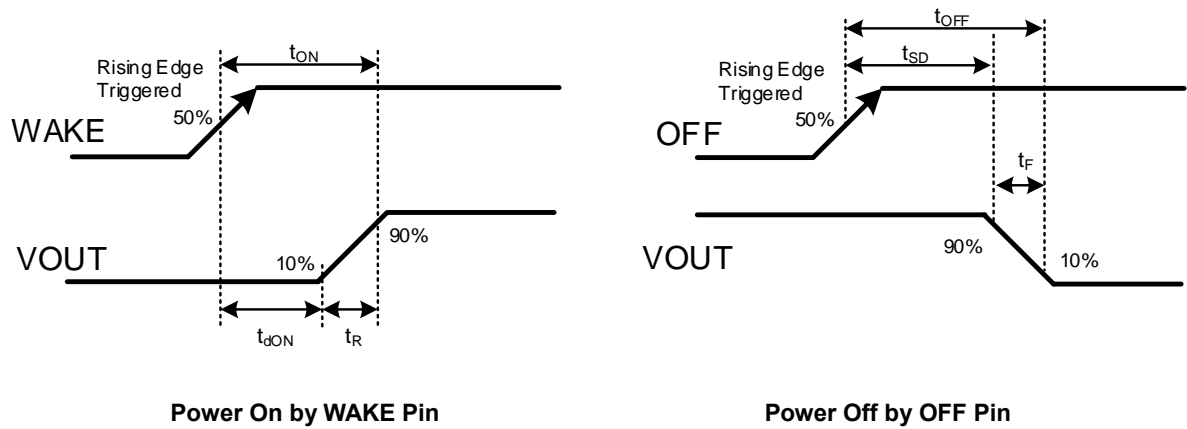


Table 1. Pin Default State With Input Power Source

Pin Name	/SRO	WAKE	OFF	VOUT
Default State	1	0	0	GND

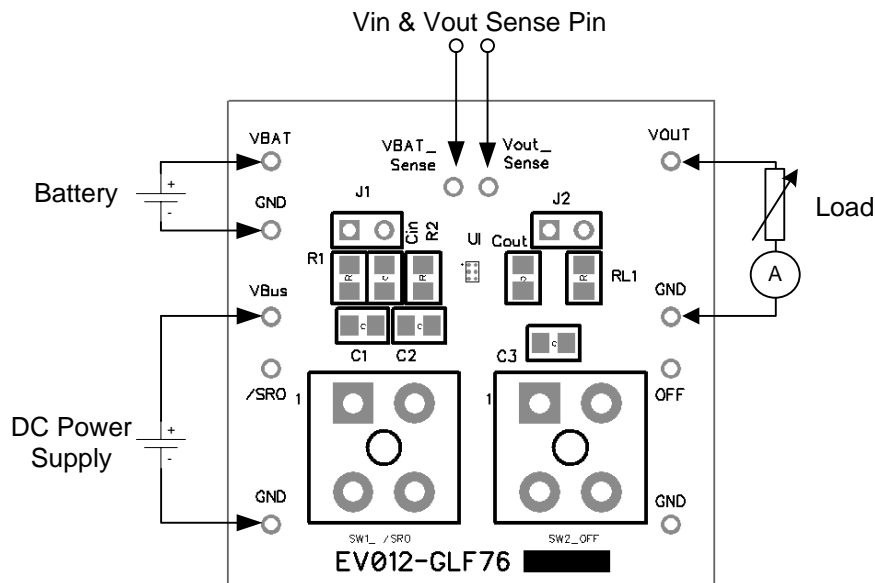
Notes: 1=Logic High, 0=Logic Low, The VOUT=GND means the internal load switch is off.

Table 2. Input Conditions and VOUT

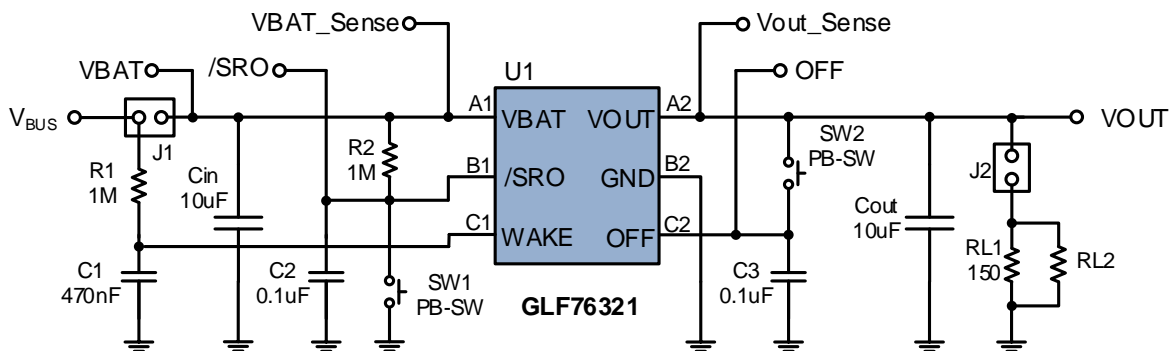
Function	/SRO	WAKE	OFF	Delay Time(Hold time)	VOUT Action
Power-On	High to Low & Hold for $t_{VON}=1.3\text{ s}$	X	X	$t_{VON}=1.3\text{ s}$	VOUT=VBAT
	High	Low to High Rising Edge Triggered	X	$t_{dON}=0.9\text{ ms}^{(2)}$	VOUT=VBAT
Power-Off into Deep Sleep	High to Low & Hold for $t_{Slp-Dly}=7\text{ s}$	X	X	$t_{Slp-Dly}=7\text{ s}$	VOUT to GND
	High	Low	Low to High Rising Edge Triggered	$t_{SD}=7\text{ s}$	VOUT to GND

Notes: 1. X = Don't Care
 2. The t_{dON} can be longer with an external capacitor on the WAKE pin due to a RC time-constant to the trigger level of rising edge.

TEST SETUP



SCHEMATIC



BILL OF MATERIALS

Qty	Reference	Value	Part Description	Manufacturer/Part Number
1	U1	GLF76321	GLF76321	GLF Integrated Power
1	Cin	10uF	Cap., X7R, 16V, 5% 0805	AVX # 0805YA103JAT2A
1	Cout	10uF	Cap., X7R, 16V, 5% 0805	AVX # 0805YA103JAT2A
1	C1	470nF	Cap., X7R, 16V, 5% 0805	AVX # 0805YA103JAT2A
1	C2	0.1uF	Cap., X7R, 16V, 5% 0805	AVX # 0805YA103JAT2A
1	C3	0.1uF	Cap., X7R, 16V, 5% 0805	AVX # 0805YA103JAT2A
2	R1, R2	1M	Res.	Panasonic # ERG-3SJ110A
1	RL1	150	Res.	Panasonic # ERG-3SJ110A
-	RL2	-	Res.	DNP (Do Not Place)
2	SW1, SW2	PB-SW	Tactile Switch	E-Switch / TL1105FF160Q
2	J1, J2	Jumper	Jumper	

PRINTED CIRCUIT BOARD LAYOUT

Fig 1. Top Layer

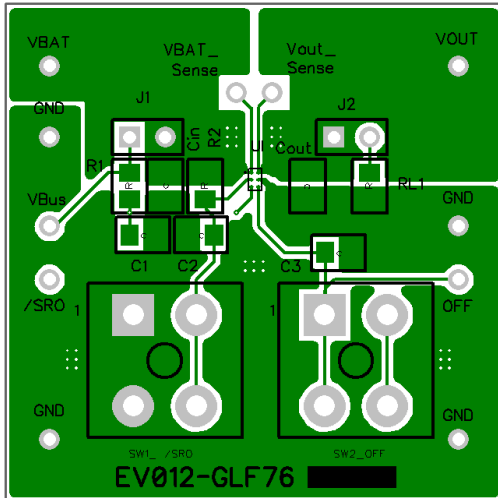
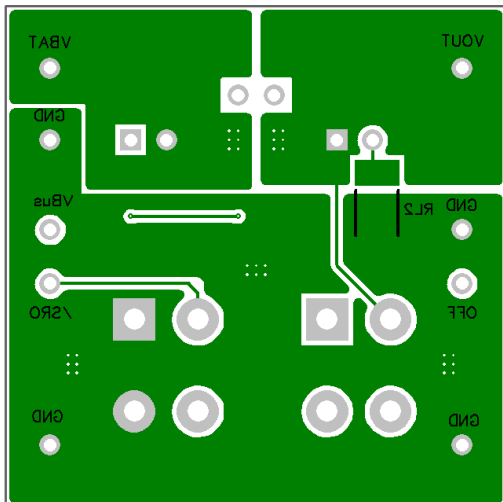


Fig 2. Bottom Layer



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