EV5027_S0_R0

2A, 24V Synchronous Step-Down Converter Evaluation Board

Parameters Subject to Change Without Notice

FEATURES

- 3.8V to 24V operating input range
  2A output current
- Up to 95% efficiency
- High efficiency (>80%) at light load
- Fixed 1.4MHz Switching frequency
- Input under voltage lockout
- Start-up current run-away protection
- Over current protection and Hiccup
- Thermal protection
- Available in SOT23-6 package

APPLICATIONS

- Distributed Power Systems
- Automotive Systems
- High Voltage Power Conversion
- Industrial Power Systems
- Battery Powered Systems

DESCRIPTION

The JW®5027 is a current mode monolithic buck voltage converter. Operating with an input range of 3.8V-24V, the JW5027 delivers 2A of continuous output current with two integrated N-Channel MOSFETs. At light loads, regulators operate in low frequency to maintain high efficiency and low output ripple.

The JW5027 guarantees robustness with short circuit protection, thermal protection, current run-away protection, and input under voltage lockout.

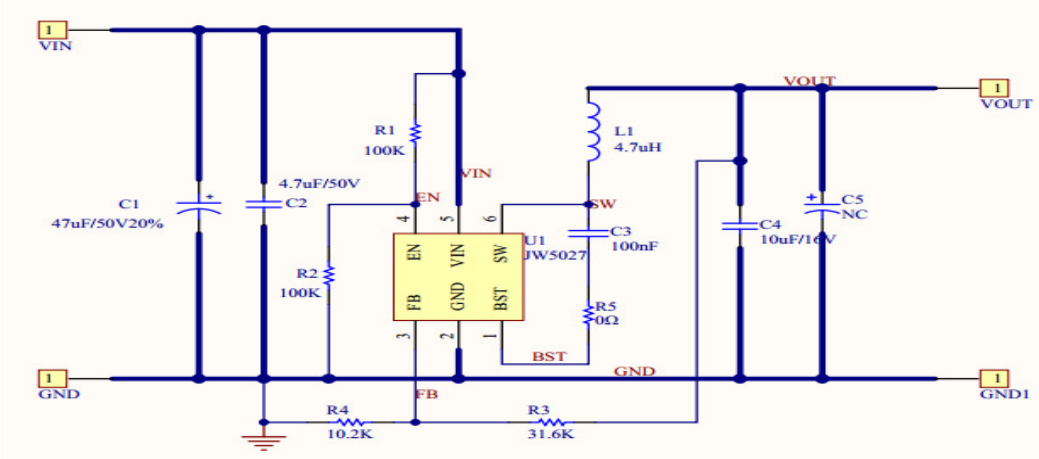
The JW5027 is available in a 6-pin SOT23 package, which provides a compact solution with minimal external components.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Unit
Input Voltage	VIN	5~24	V
Output Voltage	VOUT	3.3	V
Output Current	IOUT	0~2	A

EVALUATION BOARD

SCHEMATIC



BILL OF MATERIALS

Qty	Designator	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	47uF	Electrolytic capacitor 50V	RB.1/.2		
1	C2	4.7uF	Ceramic capacitor 50V ,X7R	1206C	SAMSUNG	CL31B475KBHNNNE
1	C3	100nF	Ceramic capacitor 50V ,X7R	0603C	SAMSUNG	CL10B104KO8NNNC
1	C4	10uF	Ceramic capacitor 16V ,X7R	1206C		
0	C5	NC				
1	L1	4.7uH/2.9A	Inductor	7332	WE	7447789004
1	R1	100k	Resistor,5%	0603R	Uniohm	0603J0104T5E
1	R2	100k	Resistor,5%	0603R	Uniohm	0603J0104T5E
1	R3	31.6k	Resistor,1%	0603R	Uniohm	0603F1132T5E
1	R4	10.2k	Resistor,1%	0603R	Uniohm	0603F2101T5E
1	R5	0Ω	Resistor,5%	0603R	Uniohm	0603J0000T5E

Qty	Designator	Value	Description	Package	Manufacturer	Manufacturer P/N
1	VIN	5V~24V		TEST-Pole		
1	VOUT	3.3V/2A		TEST-Pole		
1	JW5027	27V/2A	Buck	SOT23-6	Joulwatt	JW5027

PRINTED CIRCUIT BOARD LAYEROUT

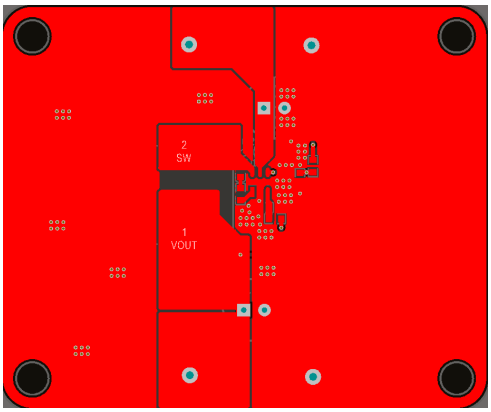


Figure1—Top Layer

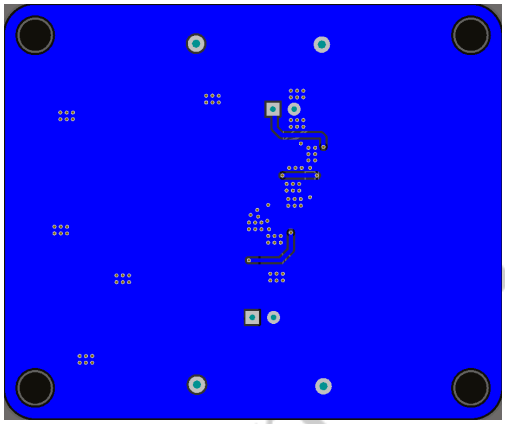


Figure2—Bottom Layer

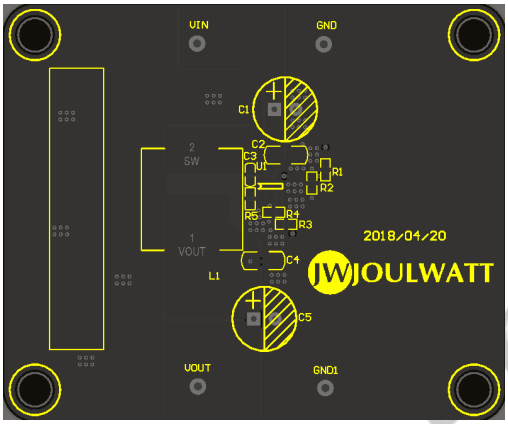


Figure3—Top Silk Layer

QUICK START GUIDE

1. Connect the positive terminal and negative terminal of the load to Vout and GND of EVB, respectively.
2. Connect a power supply between VIN and GND with the supply in “OFF” state. Set the output voltage of the power supply to 5V~24V.
3. Turn on the power supply and the evaluation board starts operating in normal condition.
4. The output voltage can be adjusted by varying the R3 and R4 on EVB.
   For example：Fixed R4 to10.2K,when adjusting the output voltage to3.3V，
   R3=Vout/0.8*R4-R4.

For more information, please refer to the datasheet of JW5027.

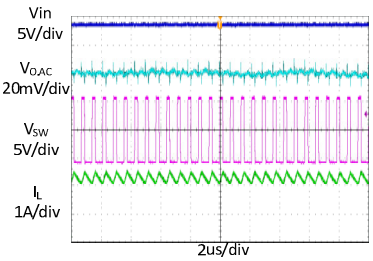
TYPICAL PERFORMANCE CHARACTERISTICS

Vin = 12V, Vout = 3.3V, L = 4.7μH, Cout = 10μF, TA = +25°C, unless otherwise noted

Steady State Test

VIN=12V, Vout=3.3V

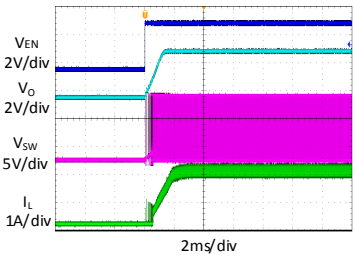
Iout=2A



Startup through Enable

VIN=12V, Vout=3.3V

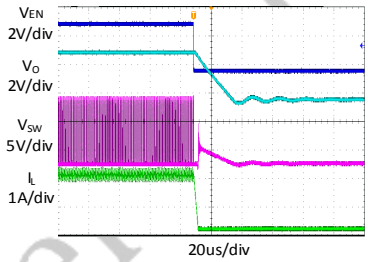
Iout=2A(Resistive load)



Shutdown through Enable

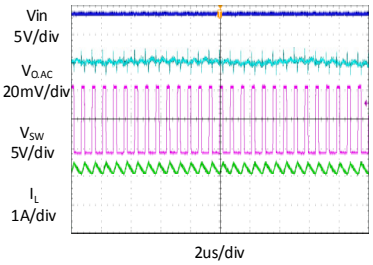
VIN=12V, Vout=3.3V

Iout=2A(Resistive load)



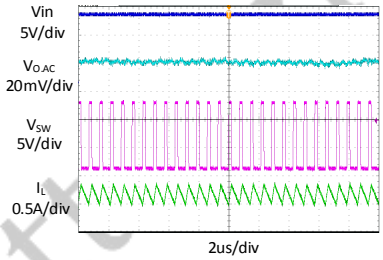
Heavy Load Operation

2A LOAD



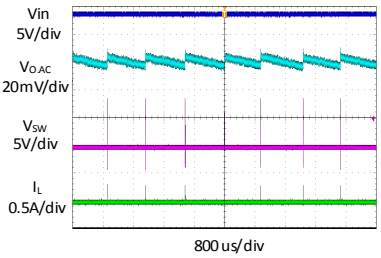
Medium Load Operation

0.2A LOAD



Light Load Operation

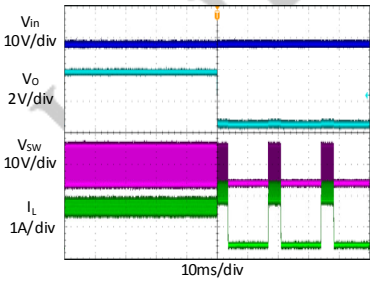
0 A LOAD



Short Circuit Protection

VIN=12V, Vout=3.3V

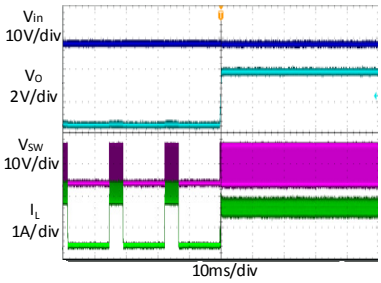
Iout=2A- Short



Short Circuit Protection

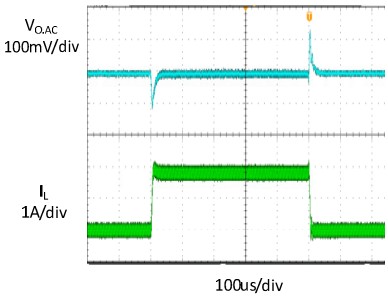
VIN=12V, Vout=3.3V

Iout= Short –2A



Load Transient

0.2A LOAD → 2A LOAD →0.2A LOAD



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