EV5069A

23V/6A Sync. Step-Down Converter Evaluation Board

Parameters Subject to Change Without Notice

FEATURES

- 4V to 23V operating input range
  6A continuous
- Up to 95% efficiency
- High efficiency at light load
- 500kHz switching frequency
- External bypass input
- Programmable valley current limit
- Power good indicator
- Input under voltage lockout
- Output discharge function
- Output Over Voltage latch off protection
- Output short protection
- Thermal protection
- Available in QFN3X3-20 package

APPLICATIONS

- Distributed Power Systems
- Networking Systems
- FPGA, DSP, ASIC Power Supplies
- Notebook Computers
- Green Electronics/ Appliances

DESCRIPTION

The JW®5069A is a monolithic buck switching regulator based on I2 architecture for fast transient response. Operating with an input range of 4V~23V, JW5069A delivers 6A of continuous output current with two integrated N-Channel MOSFETs. The internal synchronous power switches provide high efficiency without the use of an external Schottky diode. At light loads, the regulator operates in low frequency to maintain high efficiency and low output ripples.

JW5069A guarantees robustness with output short protection, thermal protection, current run-away protection, and input under voltage lockout.

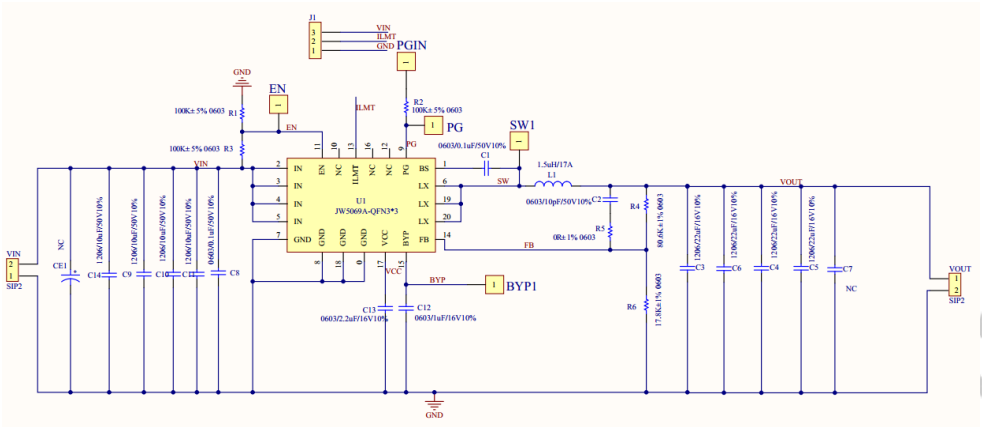
JW5069A is available in QFN3X3-20 package, which provide a compact solution with minimal external components.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Unit
Input Voltage	VIN	4~23	V
Output Voltage	VOUT	3.3	V
Output Current	IOUT	0~6	A

EVALUATION BOARD AND TYPICAL PERFORMANCE

SCHEMATIC



BILL OF MATERIALS

Qty	Designator	Value	Description	Package	Manufacturer	Manufacturer P/N
2	C1, C8	100nF	Ceramic capacitor 50V ,X7R	0603C	SAMSUNG	CL10B104K08NNNC
1	C2	10pF	Ceramic capacitor 50V ,X7R	0603C	MURATA	GRM31BR72H223KW10L
4	C3,C4,C5, C6	22uF	Ceramic capacitor 16V ,X7R	1206C	MURATA	GRM31BR72H225KW10L
0	C7	NC				
4	C9,C10, C11,C14	10uF	Ceramic capacitor 50V ,X7R	1206C	MURATA	GRM31BR73A222KW01L
1	C12	1uF	Ceramic capacitor 16V ,X7R	0603C	MURATA	CL21B105KOFVVVE
1	C13	2.2uF	Ceramic capacitor 16V ,X7R	0603C	MURATA	GRM31BR72H33KW10L
0	CE1	NC				
1	L1	1.5uH/17A	Inductor		WURTH	7447786122
3	R1, R2,R3	100k	Resistor,5%	0603R	uniohm	0603F3001T5E
1	R4	80.6k	Resistor,1%	0603R	uniohm	0603F3003T5E
1	R5	0R	Resistor,1%	0603R	uniohm	0603F3005T5E
1	R6	17.8k	Resistor,1%	0603R	uniohm	0603F3007T5E
1	VIN	4V~23V		TEST-Pole		
1	VOUT	3.3V/6A		TEST-Pole		
1	JW5069A	23V/6A	Buck	QFN3X3-20	Joulwatt	JW5069A

PRINTED CIRCUIT BOARD LAYEROUT

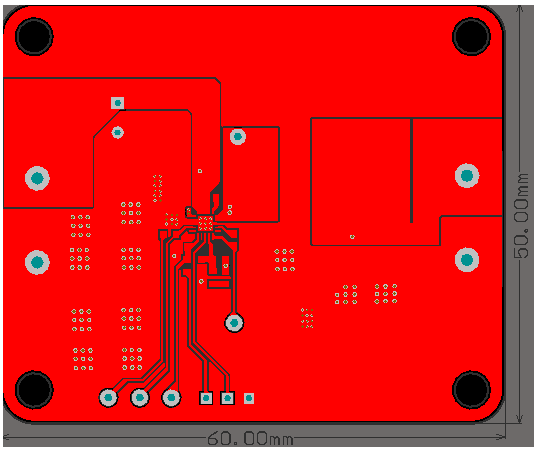


Figure1—Top Layer

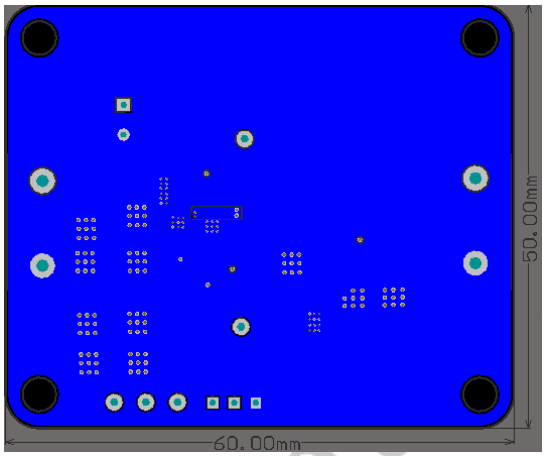


Figure2—Bottom Layer

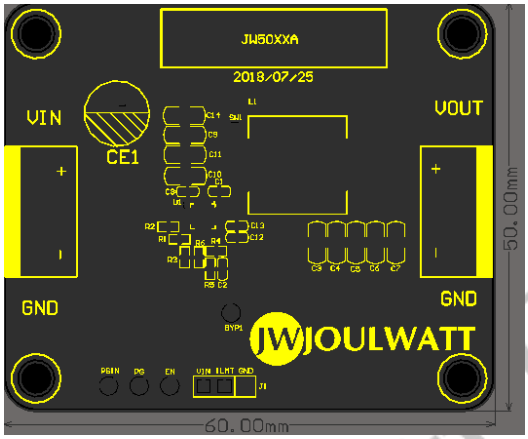


Figure3—Top Silk Layer

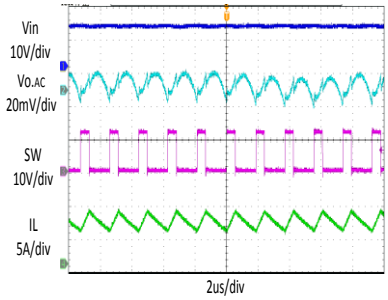
QUICK START GUIDE

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 4V~23V.
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 R6 and R4 on EVB.
   For example：Fixed R6 to16K,when adjusting the output voltage to 5V，
   R4=Vout/0.6*R6-R6.
5. For more information, please refer to the datasheet of JW5069A.

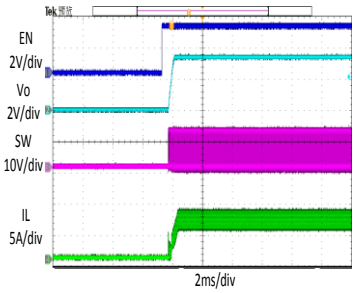
TYPICAL PERFORMANCE CHARACTERISTICS

VIN =12V, VOUT= 3.3V, L = 1.5μH, Cout = 4*22μF,TA = +25°C, unless otherwise noted

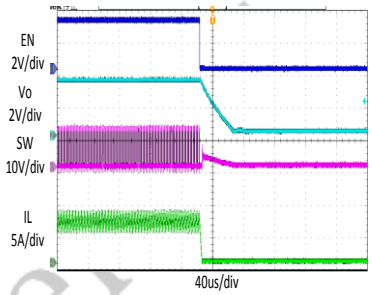
Steady State Test
VIN=12V, VOUT=3.3V
IOUT =6A



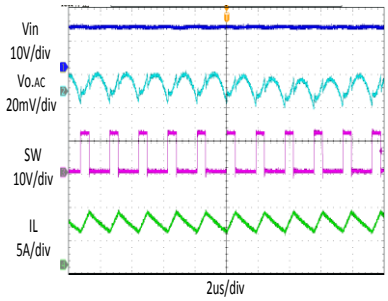
Startup through Enable
VIN=12V, VOUT =3.3V
IOUT =6A



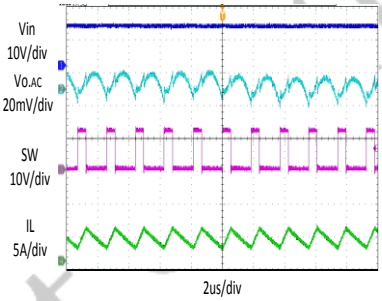
Shutdown through Enable
VIN=12V, VOUT =3.3V
IOUT =6A



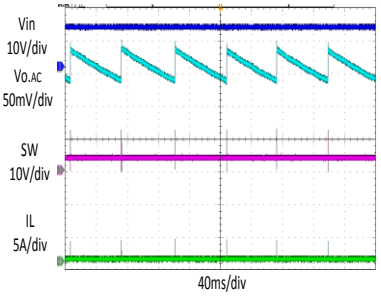
Heavy Load Operation
6A LOAD



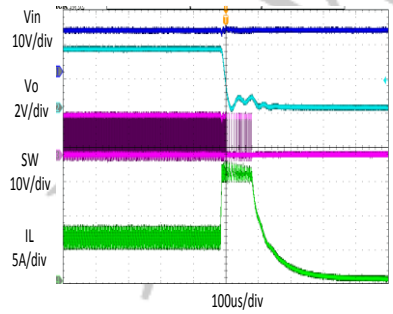
Medium Load Operation
3A LOAD



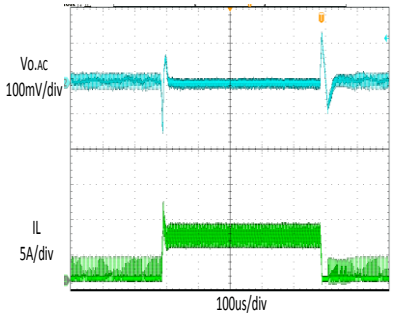
Light Load Operation
0 A LOAD



Short Circuit Protection
VIN=12V, VOUT =3.3V
IOUT =6A- Short



Load Transient
C1=10pF,R1=0k
0.6A LOAD → 6A LOAD → 0.6A LOAD



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