

Parameters Subject to Change Without Notice

FEATURES

- 4.7V to 40V operating input range
- 600mA output current
- Up to 93% efficiency
- Internal Soft-Start
- 1.1MHz switching frequency
- FCC at light load
- Input under voltage lockout
- Available in SOT23-6 package
- Current run-away protection
- Short circuit protection
- Thermal protection

APPLICATIONS

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

DESCRIPTION

The JW5018 is a current mode monolithic buck switching regulator. Operating with an input range of 4.7V~40V, the JW5018 delivers 1A 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 continual conduction to maintain low output ripples. Current mode control provides tight load transient response and cycle-by-cycle current limit.

The JW5018 guarantees robustness with short-circuit protection, thermal protection, current run-away protection, and input under voltage lockout.

ELECTRICAL SPECIFICATIONS

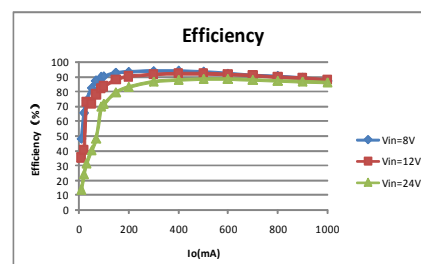
Parameter	Symbol	Value	Unit
Input Voltage	VIN	7.5~40	V
Output Voltage	VOUT	5	V
Output Current	IOUT	0~0.6	A

EVALUATION BOARD AND TYPICAL PERFORMANCE

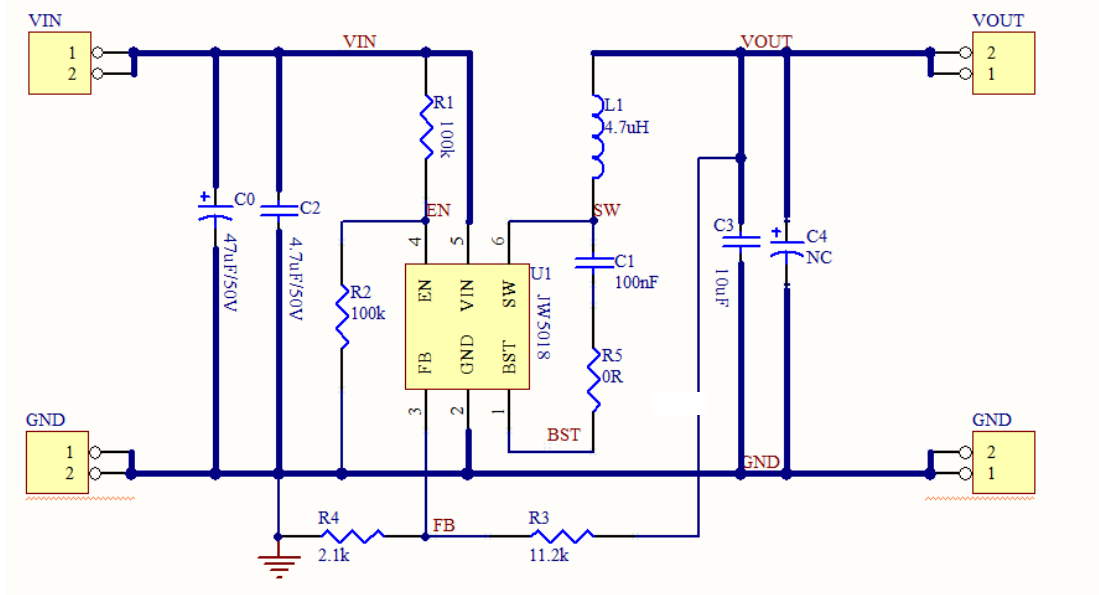
EV5018_S1_R0 60mm*49mm



Efficiency vs Load Current (Vout = 5V)



SCHEMATIC



BILL OF MATERIALS

Qty	Designator	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C0	47uF	Electrolytic capacitor 50V	RB.1/2		
1	C1	100nF	Ceramic capacitor 50V ,X7R	0603C	SAMSUNG	CL10B104KO8N NNC
1	C2	4.7uF	Ceramic capacitor 50V ,X7R	1206C	SAMSUNG	CL31B475KBHN NNE
1	C3	10uF	Ceramic capacitor 16V ,X7R	1210C		
0	C4	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	11.2k	Resistor,1%	0603R	Uniohm	0603F1122T5E
1	R4	2.1k	Resistor,1%	0603R	Uniohm	0603F2101T5E
1	R5	0Ω	Resistor,5%	0603R	Uniohm	0603J0000T5E

Qty	Designator	Value	Description	Package	Manufacturer	Manufacturer P/N
1	VIN	7.5V~40V		TEST-Pol e		
1	VOUT	5V/600mA		TEST-Pol e		
1	JW5018	40V/600mA	Buck	SOT23-6	Joulwatt	JW5018

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PRINTED CIRCUIT BOARD LAYOUT

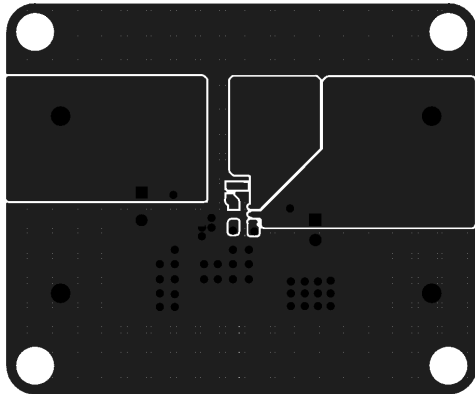


Figure1—Top Layer

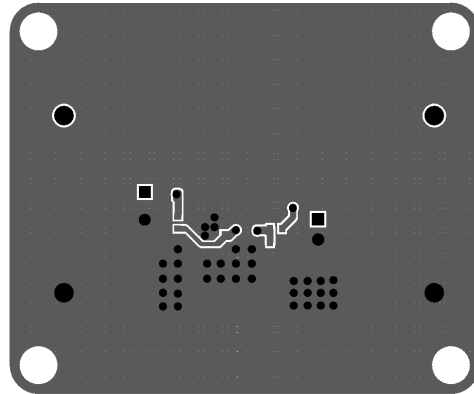


Figure2—Bottom Layer

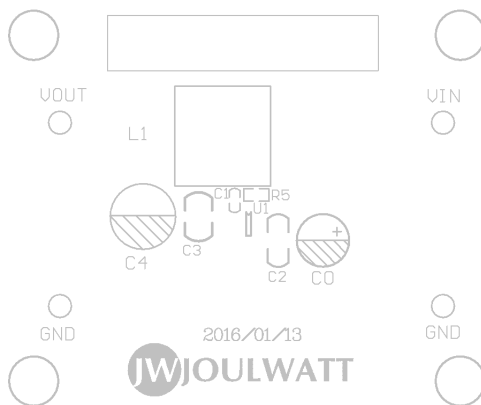


Figure3—Silk Layer



Figure4—Silk Layer

QUICK START GUIDE

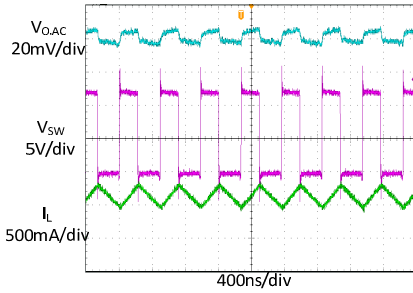
1. Connect the positive terminal and negative terminal of the load to Vout and GND of EVB, respectively.
2. Connect a power supply between VIN and GND with the supply in “OFF” state. Set the output voltage of the power supply to 7.5V~40V.
3. Turn on the power supply and the evaluation board starts operating in normal condition.
4. The output voltage can be adjusted by varying the R3 and R4 on EVB.
For example: Fixed R4 to 2.1K, when adjusting the output voltage to 5V,
 $R3 = V_{out} / 0.8 * R4 - R4$.
5. For more information, please refer to the datasheet of JW5018.

TYPICAL PERFORMANCE CHARACTERISTICS

Vin = 12V, Vout = 5V, L = 4.7μH, Cout = 10μF, TA = +25°C, unless otherwise noted

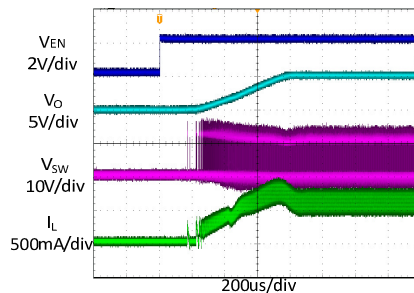
Steady State Test

VIN=12V, Vout=5V
Iout=600mA



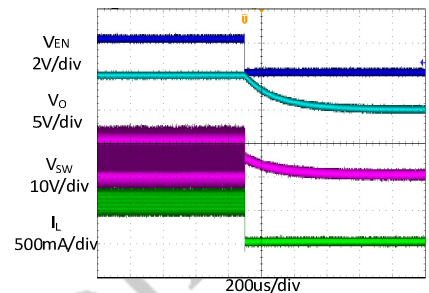
Startup through Enable

VIN=12V, Vout=5V
Iout=600mA(Resistive load)



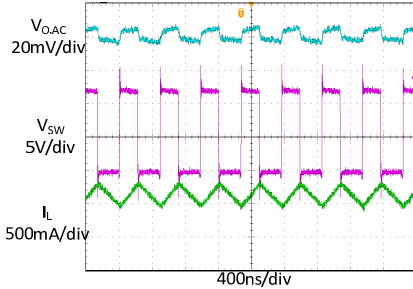
Shutdown through Enable

VIN=12V, Vout=5V
Iout=600mA(Resistive load)



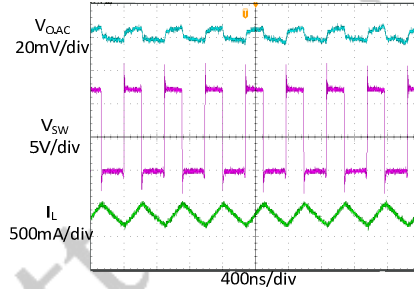
Heavy Load Operation

600mA LOAD



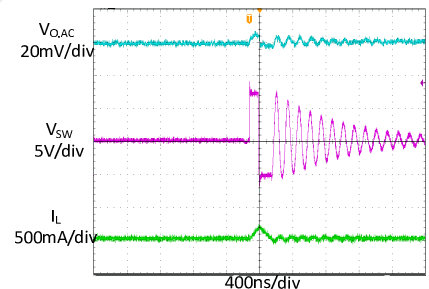
Medium Load Operation

300mA LOAD



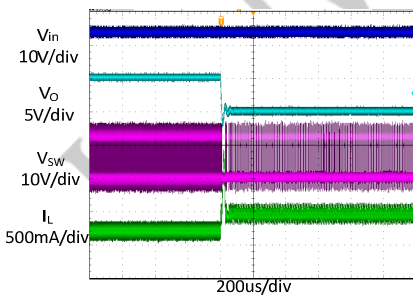
Light Load Operation

0 A LOAD



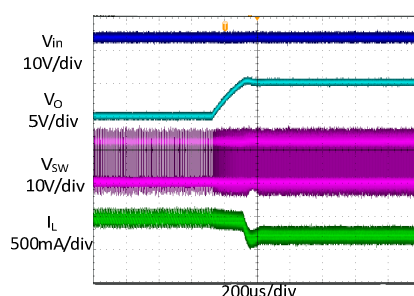
Short Circuit Protection

VIN=12V, Vout=5V
Iout=600mA- Short



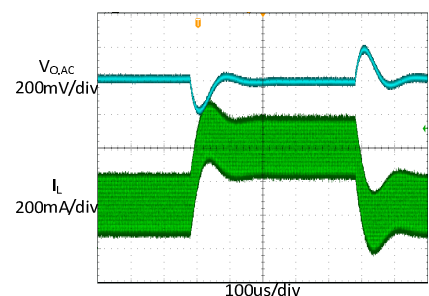
Short Circuit Recovery

VIN=12V, Vout=5V
Iout= Short-600mA



Load Transient

300mA LOAD → 600mA LOAD
→ 300mA LOAD



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