EV5231_S0_R0

1.5A, 5.5V Synchronous Step-Down Converter Evaluation Board

Parameters Subject to Change Without Notice

FEATURES

- 2.5V to 5.5V operating input range
- Up to 1.5A output current
- Up to 94% peak efficiency
- Internal Soft-Start
- 1.5MHz switching frequency
- Input under voltage lockout
- Short circuit protection
- Thermal protection
- Hot-plug in protection
- Output POK indication (available in SOT23-6 package)
- Available in SOT23-5/SOT23-6 package

APPLICATIONS

- 5V or 3.3V Point of Load Conversion
- Set Top Boxes
- Telecom/Networking Systems
- Storage Equipment
- GPU/DDR Power Supply

DESCRIPTION

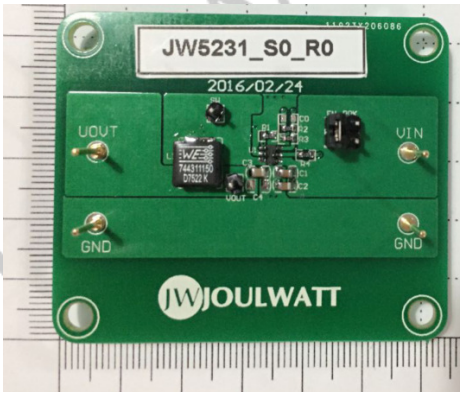
The JW®5231 is a current mode monolithic buck switching regulator. Operating with an input range of 2.5V-5.5V, the JW5231 delivers 1.5A of continuous output current with integrated P-Channel and N-Channel MOSFETs. The internal synchronous power switches provide high efficiency. Current mode control provides tight load transient response and cycle-by-cycle current limit.

The JW5231 guarantees robustness with hiccup output short-circuit protection, FB short-circuit protection, start-up current run-away protection, input under voltage lockout protection, hot-plug in protection, and thermal protection.

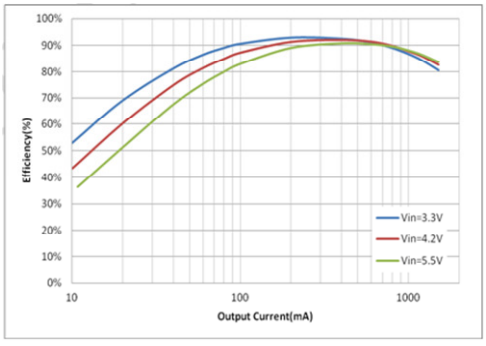
ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Unit
Input Voltage	VIN	2.5~5.5	V
Output Voltage	VOUT	1.8	V
Output Current	IOUT	0~1.5	A

TYPICAL PERFORMANCE



Efficiency@Vo=1.8V



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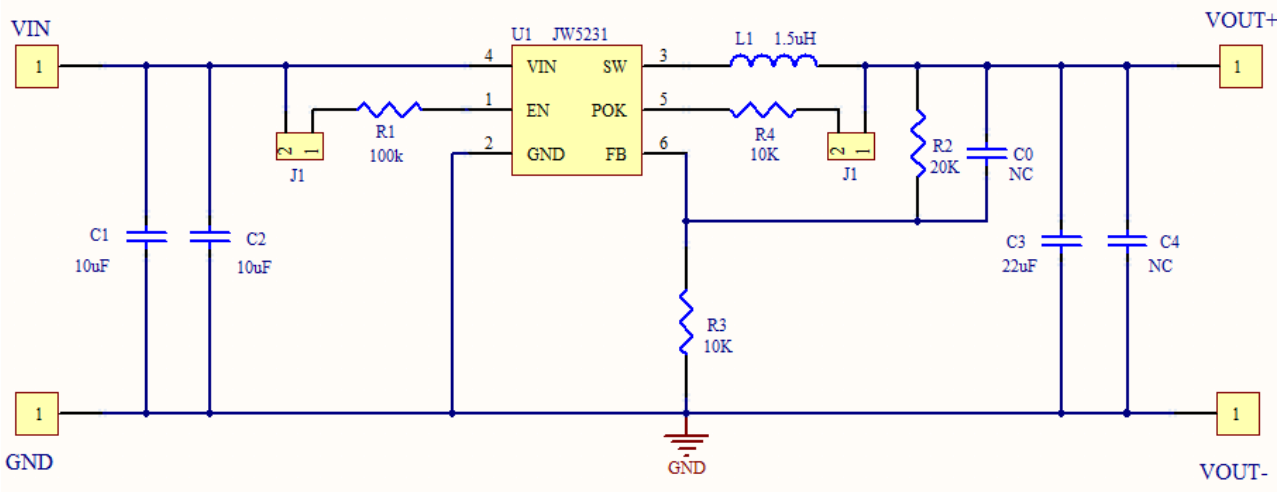
SCHEMATIC



BILL OF MATERIALS

Qty.	Designator	Value	Description	Package	Manufacturer	Manufacturer P/N
0	C0	NC				
2	C1,C2	10uF	Ceramic capacitor 10V ,X7R	0805C		
1	C3	22uF	Ceramic capacitor 6.3V ,X7R	0805C		
0	C4	NC				
1	L1	1.5uH/3A	Inductor		Wurth Elektronik	
1	R1	100k	Resistor,5%	0603R		
1	R2	20k	Resistor,1%	0603R		
1	R3	10k	Resistor,1%	0603R		
1	R4	10k	Resistor,5%	0603R		
1	VIN	2.5V~5.5V		TEST-Pole		
1	VOUT	1.8V/1.5A		TEST-Pole		
1	JW5231	5.5V/1.5A	Buck	SOT23-6	Joulwatt	JW5231

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PRINTED CIRCUIT BOARD LAYEROUT

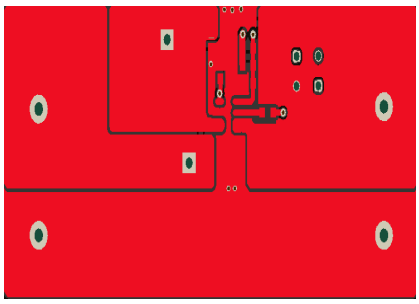

Figure1—Top Layer

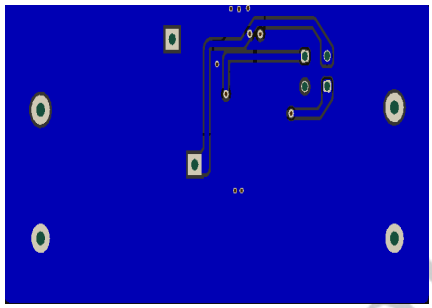

Figure2—Bottom Layer

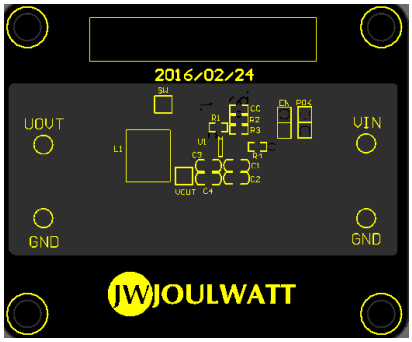

Figure3—Silk Layer

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 2.5V~5.5V.
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 R2 and R3 on EVB.
   For example：Fixed R3 to10K,when adjusting the output voltage to 3.3V，
   R2=Vout/0.6*R3-R3.
5. For more information, please refer to the datasheet of JW5231.

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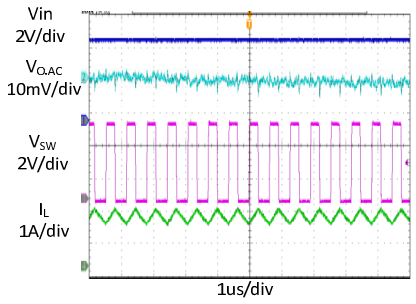
TYPICAL PERFORMANCE CHARACTERISTICS

Vin = 5V, Vout = 1.8V, L = 1.5μH, Cout = 22μF, TA = +25°C, unless otherwise noted

Steady State Test

VIN=5V, Vout=1.8V

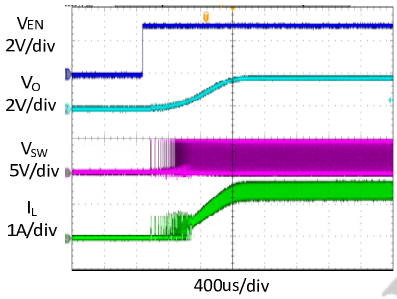
Iout=1.5A



Startup through Enable

VIN=5V, Vout=1.8V

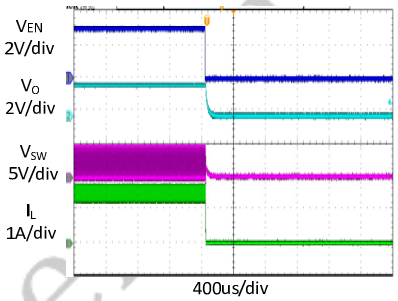
Iout= 1.5A(Resistive load)



Shutdown through Enable

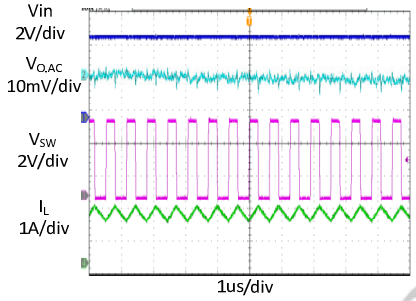
VIN=5V, Vout=1.8V

Iout=1.5A(Resistive load)



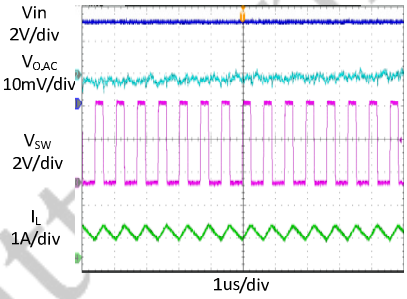
Heavy Load Operation

1.5A LOAD



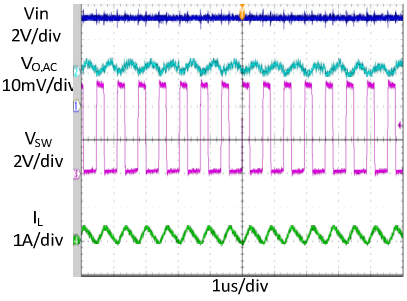
Medium Load Operation

0.75A LOAD



Light Load Operation

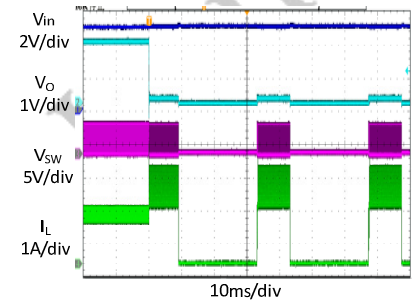
0 A LOAD



Short Circuit Protection

VIN=5V, Vout=1.8V

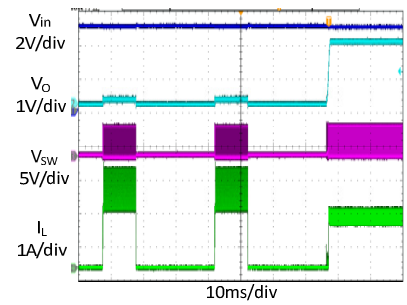
Iout=1.5A- Short



Short Circuit Protection

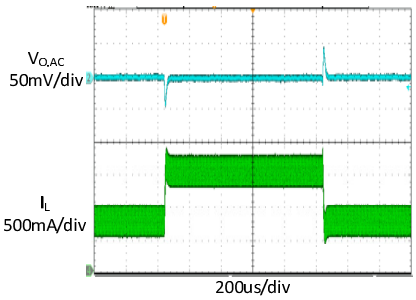
VIN=5V, Vout=1.8V

Iout= Short-1.5A



Load Transient

0.75A LOAD→1.5A LOAD→0.75A LOAD



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