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EV2363DN-00A

4.75V to 27V Input, Up to 3A Output Step-Down DC/DC Converter Evaluation Board

GENERAL DESCRIPTION

The EV2363DN-00A is the Evaluation Board for MPS' MP2363 Step-Down DC/DC Converter. It features a wide supply range of 4.75V to 27V and a continuous output current up to 3A. The output voltage is set to 2.5V, but can be easily adjusted to other levels from 0.92V.

A 370KHz high switching frequency allows the use of small, low cost capacitors and inductors. Current mode control and an integrated power MOSFET minimize component count, board area, and solution cost. Fault condition protection includes cycle-by-cycle current limiting, thermal shutdown, and under-voltage lockout. Soft-start reduces the turn-on stress. The small but thermally enhanced 8-pin SOIC package minimizes board area and provides excellent thermal management.

FEATURES

- Up to 3A Output Current
- Wide 4.75 to 27V Operating Input Range
- Fixed 370KHz Frequency
- All Ceramic Input and Output Capacitors
- Programmable Soft-Start
- Low Component Count
- Small SOIC Package
- Programmable Input Under-Voltage Lockout

APPLICATIONS

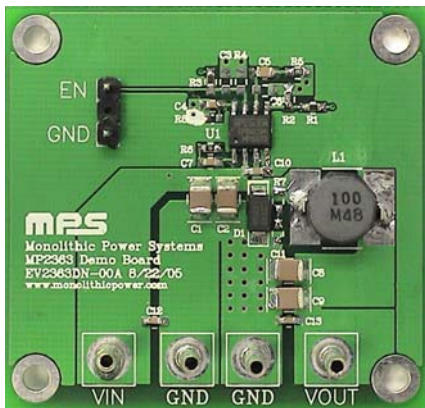
- Distributed Power Systems
- Battery Charger
- Pre-Regulator for Linear Regulators

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ELECTRICAL SPECIFICATION

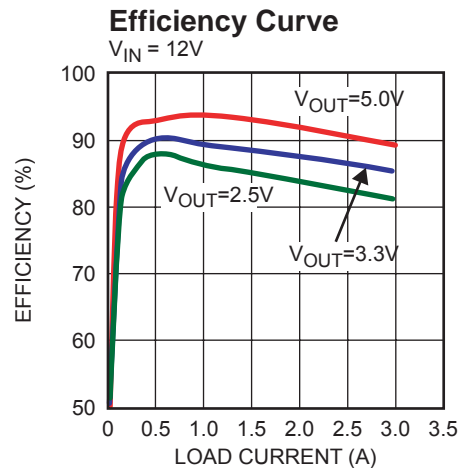
Parameter	Symbol	Value	Units
Supply Voltage	V_{IN}	4.75 – 27	V
Output Voltage	V_{OUT}	2.5	V
Output Current	I_{OUT}	0 – 3	A

EV2363DN-00A EVALUATION BOARD

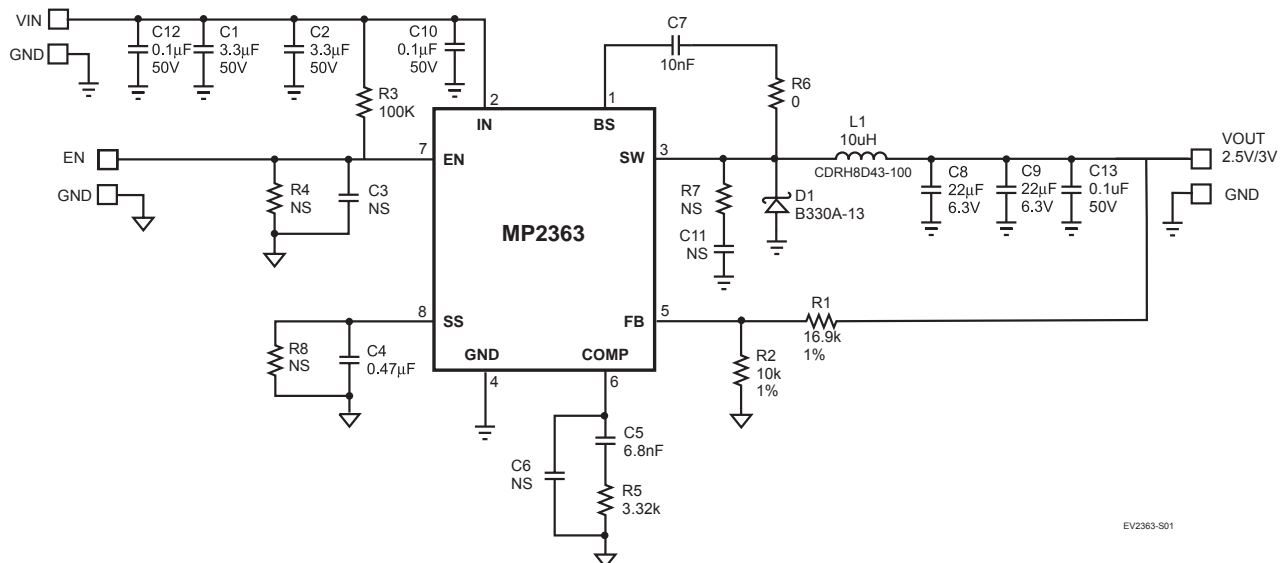


(L x W x H) 2.0" x 1.9" x 0.4"
(5.0cm x 4.8cm x 1.0cm)

Board Number	MPS IC Number
EV2363DN-00A	MP2363



MP2363-EC01

EVALUATION BOARD SCHEMATIC

EV2363DN-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
2	C1, C2	3.3uF	Ceramic Cap., 50V, X7R	1210	TDK	C3225X7R1H335M
	C3, C6, C11		Do Not Stuff			
1	C4	0.47uF	Ceramic Cap., 10V, X5R	603	TDK	C1608X5R1A474K
1	C5	6.8nF	Ceramic Cap., 50V, X7R	603	Panasonic	ECJ-1VB1H682K
1	C7	10nF	Ceramic Cap., 50V, X7R	603	TDK	C1608X7R1H103K
2	C8, C9	22uF	Ceramic Cap., 6.3V, X5R	1210	TDK	C3225X5R0J226M
3	C10, C12, C13	0.1uF	Ceramic Cap., 50V, X7R	805	TDK	C2012X7R1H104K
1	D1		Diode Schottky, 30V, 3A	SMA	Diodes Inc.	B330A-13
			Diode Schottky, 40V, 3A	SMA	Diodes Inc	B340A
1	L1	10uH	Inductor, 4A	SMD	Sumida	CDRH8D43-100NC
1	R1	16.9k	Res., 1%	603	Panasonic	ERJ-3EKF1692V
1	R2	10k	Res., 1%	603	Panasonic	ERJ-3EKF1002V
1	R3	100k	Res., 1%	603	Panasonic	ERJ-3GEYJ104V
2	R4, R7, R8		Do Not Stuff			
1	R5	3.32k	Res., 1%	603	Panasonic	ERJ-3EKF3321V
2	R6	0	Res., 1%	603	Panasonic	ERJ-3GEYJ0R00V
1	U1		Step-Down Converter, 3A, 27V, 370KHz	SO-8	MPS	MP2363DN

PRINTED CIRCUIT BOARD LAYOUT

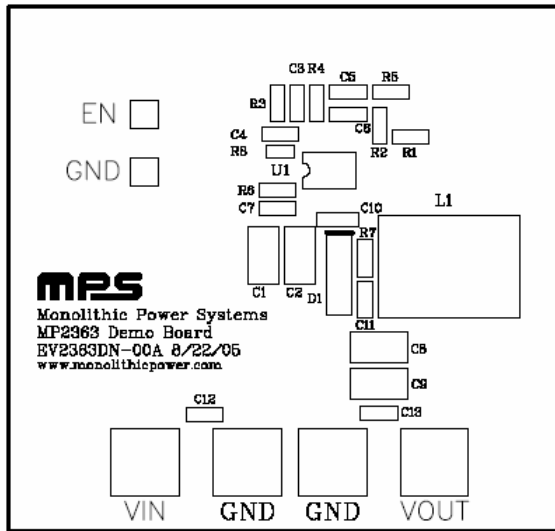


Figure 1—Top Silk Layer

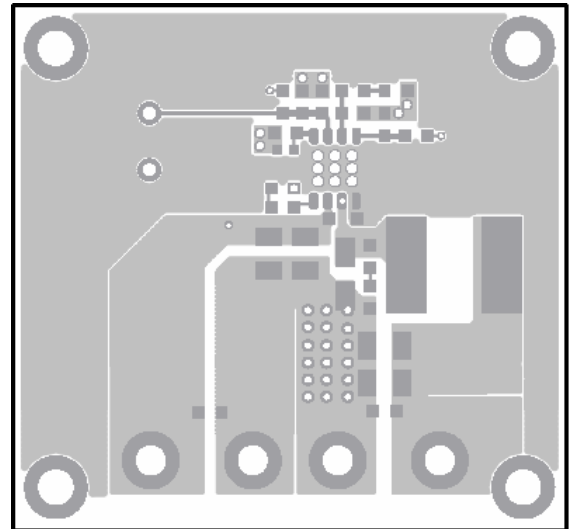


Figure 2—Top Layer

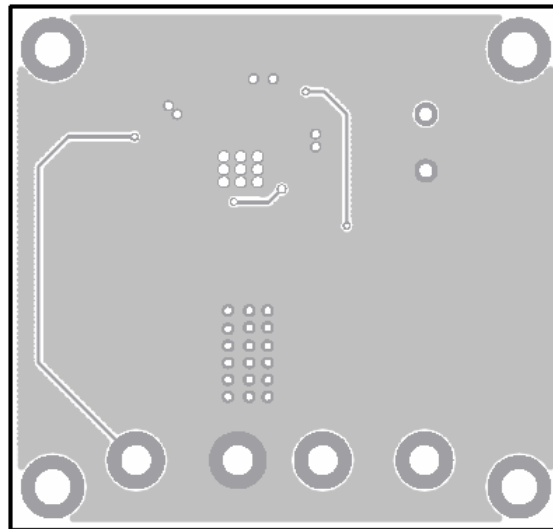


Figure 3— Bottom Layer

QUICK START GUIDE

1. Connect the positive terminal of the load to VOUT pin, and the negative terminal of the load to GND pin.
2. Preset the power supply output to 4.75V – 27V and turn off the power supply.
3. Connect the positive terminal of the power supply output to the VIN pin and the negative terminal of the power supply output to the GND pin.
4. Turn the power supply on. The MP2363 will automatically startup.
5. To use the Enable function, apply a digital input to EN pin. Drive EN higher than 2.5V to turn on the regulator, drive EN less than 0.7V to turn it off.
6. An input under voltage lockout (UVLO) function can be implemented by the addition of a resistor divider R3 and R4.

The EN threshold is 2.5V, so V_{IN} UVLO threshold is $\left(1 + \frac{R3}{R4}\right) \times 2.5V$.

RECOMMENDED COMPONENTS FOR STANDARD OUTPUT VOLTAGES

The output voltage of this board is set to 2.5V. This board is laid out to accommodate most commonly used inductors and output capacitors and to be programmed for most standard output voltages. The following table lists recommended components for some standard output voltages.

Listed compensation components (R5, C5) values are based on the output capacitor installed on this board. For other capacitors, refer to the Application Information section in the MP2363 datasheet.

Table 1—Recommended Components for Standard Output Voltages

VOUT	R1	R5	C5	L1
1.8V	9.53kΩ	5.6kΩ	3.3nF	4.7μH
2.5V	16.9kΩ	3.32kΩ	6.8nF	4.7–10μH
3.3V	26.1kΩ	4.02kΩ	8.2nF	6.8–10μH
5V	44.2kΩ	6.49kΩ	10nF	10–15μH
12V	121kΩ	15kΩ	4.7nF	15–20μH

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