EV0063

MP1556: 600mA Step Down Converter

EVALUATION BOARD

General Description

The EV0063 evaluation board is designed for low dropout step down converter applications. It implements the MP1556 1.7MHz Fixed Frequency, Current Mode, PWM step-down converter. The device integrates a main switch and a synchronous rectifier for high efficiency without an external Schottky diode. It is ideal for powering portable equipments that runs from a single cell Lithium-Ion (Li+) Battery. The MP1556 can supply 600mA of load current from a 2.5V to 6V input voltage. The output voltage can be regulated as low as 0.6V.

The MP1556 is available in a low profile (1mm) 5 lead ThinSOT package.

Ordering Information

Board Number	MPS Part Number
EV0063	MP1556DJ

Absolute Maximum Ratings

V_{IN} to GND	-0.3V to +6.5V
V_{EN} to GND	-0.3V to +6.5V
SW Peak Current	1.4A

Recommended Operating Conditions

Supply Voltage V_{IN}	2.5V to 6V
Output Voltage V_{OUT}	0.6V to 6V

Features

- High Efficiency: Up to 95%
- 600mA Available Load Current
- 2.5V to 6V Input Voltage Range
- Output Voltage as Low as 0.6V
- 100% Duty Cycle in Dropout
- Short Circuit Protection
- Thermal Fault Protection
- <0.1μA Shutdown Current

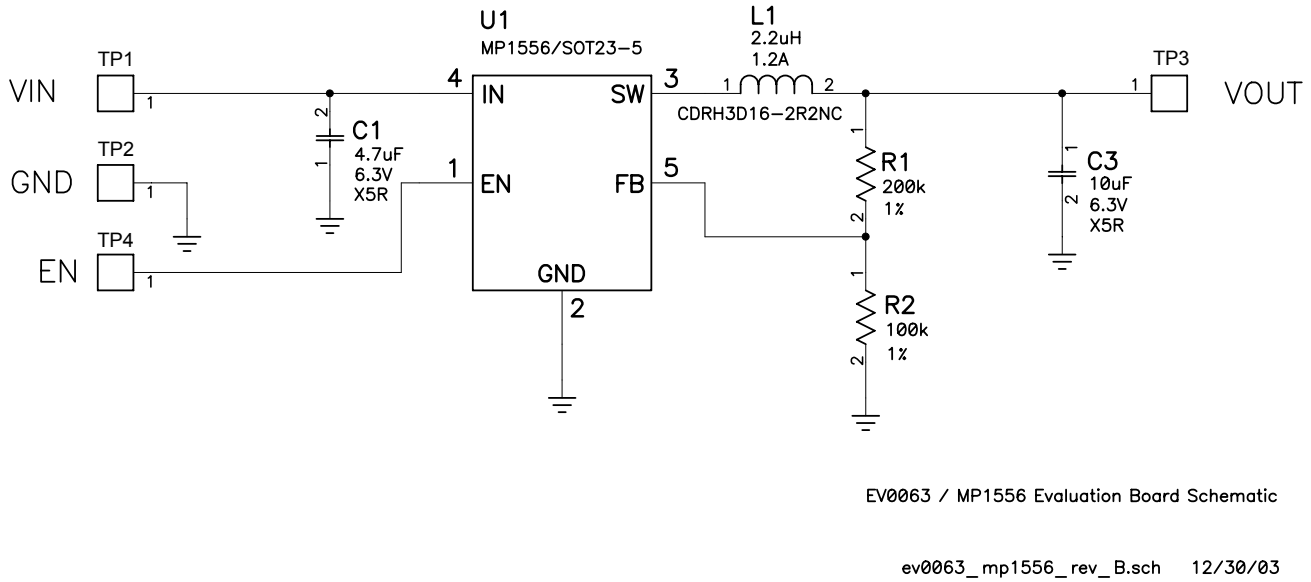
Applications

- Cellular and Smart Phones
- Microprocessors/DSP Core Supplies
- PDAs
- MP3 Players
- Digital Still and Video Cameras
- Portable Instruments

Figure 1: EV0063 Evaluation Board

(Actual Size = 2.0”X x 2.0”Y)

Figure 2: EV0063 Schematic



Board Operation

The output voltage of this board is set to 1.8V. The board layout accommodates most commonly used inductors and output capacitors.

1. Attach positive end and negative end of load to VOUT and GND pins respectively.
2. Attach input voltage $2.5V \le V_{IN} \le 6V$ and input ground to VIN and GND pins respectively.
3. To enable the MP1556 apply a voltage, $1.5V \le V_{EN} \le 6V$, to the EN pin. To disable the MP1556 connect the EN pin to ground.
4. The output voltage V_{OUT} can be changed by varying R2. Calculate the new value by formula:

$$R2 = \frac{R1}{\left[\frac{V_{OUT}}{V_{FB}}\right] - 1}$$ where V_{FB} = 0.6V and R1 = 200KΩ

For example, for V_{OUT} = 2.5V:

$$R2 = \frac{200K\Omega}{\left[\frac{2.5V}{0.6V}\right] - 1}$$ = 63.157KΩ. Therefore use a 63.4KΩ standard 1% value.

Table 1: EV0063 Bill of Materials

Component	Description	Manufacturer Part Number	Package	Qty
U1	Step Down Converter	MP1556DJ	TSOT23-5	1
C1	4.7µF, 6.3V, X5R, Ceramic	ANY	0603	1
C3	10µF, 6.3V, X5R, Ceramic	ANY	0805	1
L1	2.2µH, 1.2A	Sumida CDRH3D16-2R2NC	CDRH3D16	1
R1	200KΩ, 1%	ANY	0805	1
R2	100KΩ, 1%	ANY	0805	1
			Total	**6**

***NS = No Stuff**

Figure 3: Top Silk Layer

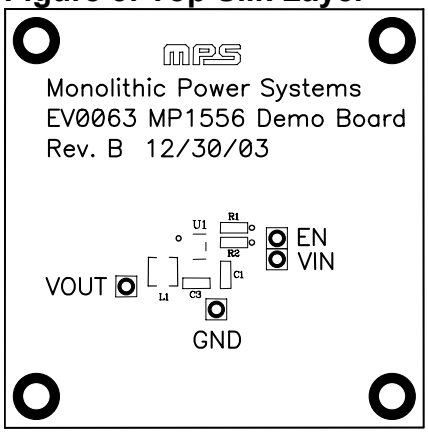


Figure 4: Top Layer

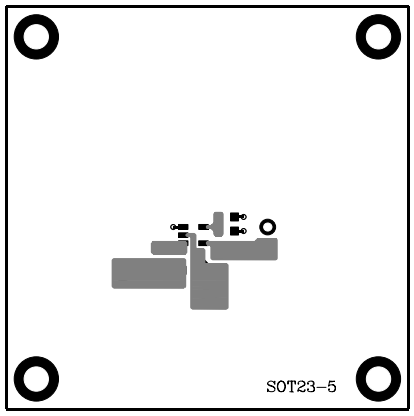


Figure 5: Bottom Layer

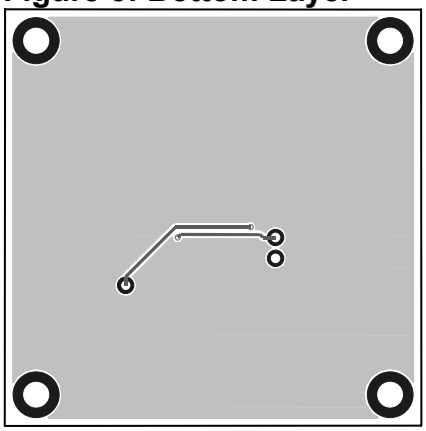


Figure 6: Bottom Silk Layer