

General Description

The EV0007 is a 2A evaluation board based on the MP1580 DC to DC Converter. The MP1580 is a monolithic step down switch mode converter with a built in internal Power MOSFET. It achieves 2A continuous output current over a wide input supply range with excellent load and line regulation.

Current mode operation provides fast transient response and eases loop stabilization. Fault condition protection includes cycle-by-cycle current limiting and thermal shutdown. In shutdown mode the regulator draws 23µA of supply current.

The MP1580 requires a minimum number of readily available standard external components. A synchronization pin allows the part to be driven to 600KHz.

Absolute Maximum Ratings

Supply Voltage (V_{VIN})	28V
Switch Voltage (V_{SW})	-1V to $V_{IN} + 1V$
Boost Voltage	$V_{SW} + 6V$
Feedback Voltage (V_{FB})	-0.3 to 6V
EN/UVLO Voltage (V_{EN})	-0.3 to 6V
COMP Voltage (V_{COMP})	-0.3 to 6V
Sync Voltage (V_{Sync})	-0.3 to 6V

Recommended Operating Conditions

Input Voltage V_{VIN}	4.75V to 25V
-------------------------	--------------

Ordering Information

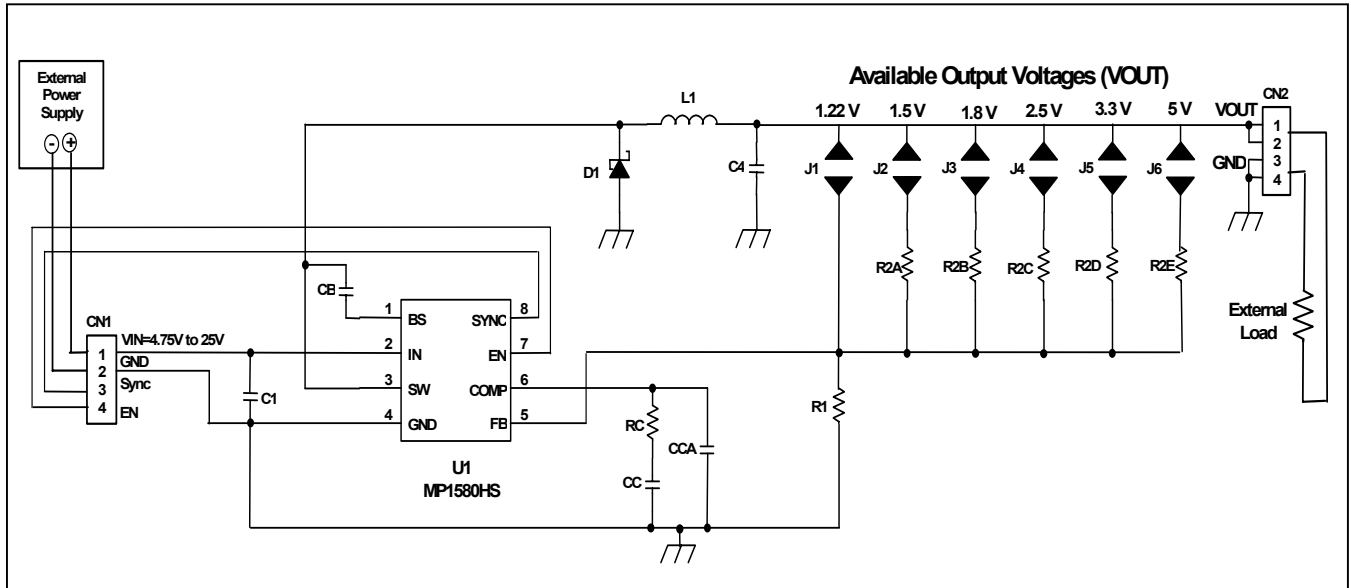
Board Number	MPS IC Number
EV0007	MP1580HS

* For Tape & Reel use suffix - Z (e.g. MP1580HS-Z)

Figure 1: EV0007 Evaluation Board



Figure 2: EV0007 Schematic



Board Operation

This board is laid out to accommodate most commonly used Inductors and Output Capacitors and to be programmed for most standard Output Voltages.

- 1) Attach positive end of load to pin 1 = 2 and negative end of load to pin 3 = 4 of connector CN2.
- 2) For the required output voltage ($V_{OUT} = 1.22, 1.5, 1.8, 2.5, 3.3$ or $5V$) solder blob the appropriate J1 thru J6 jumper respectively.
- 3) Attach input voltage (V_{IN}) and input ground (GND) to Pin 1 and 2 of connector CN1 respectively. **Note V_{IN} must be $4.75V < V_{IN} < 25V$.**
- 4) Pin 3 of CN1 is used to synchronize the internal oscillator frequency of the MP1580 to an external source. The synchronization rate can be vary from 380KHZ (normal operation) to 600KHz. There is an internal 11K Ω pull down resistor to GND **therefore leave this pin unconnected if unused.**
- 5) Applying a voltage greater than 2.495V to pin 4 of CN1 enables the MP1580. **Leave the input unconnected if unused.** An Under Voltage Lockout (UVLO) function can be implemented by the addition of a resistor divider from V_{IN} to GND. **For complete low current shutdown its needs to be less than 0.7V.**

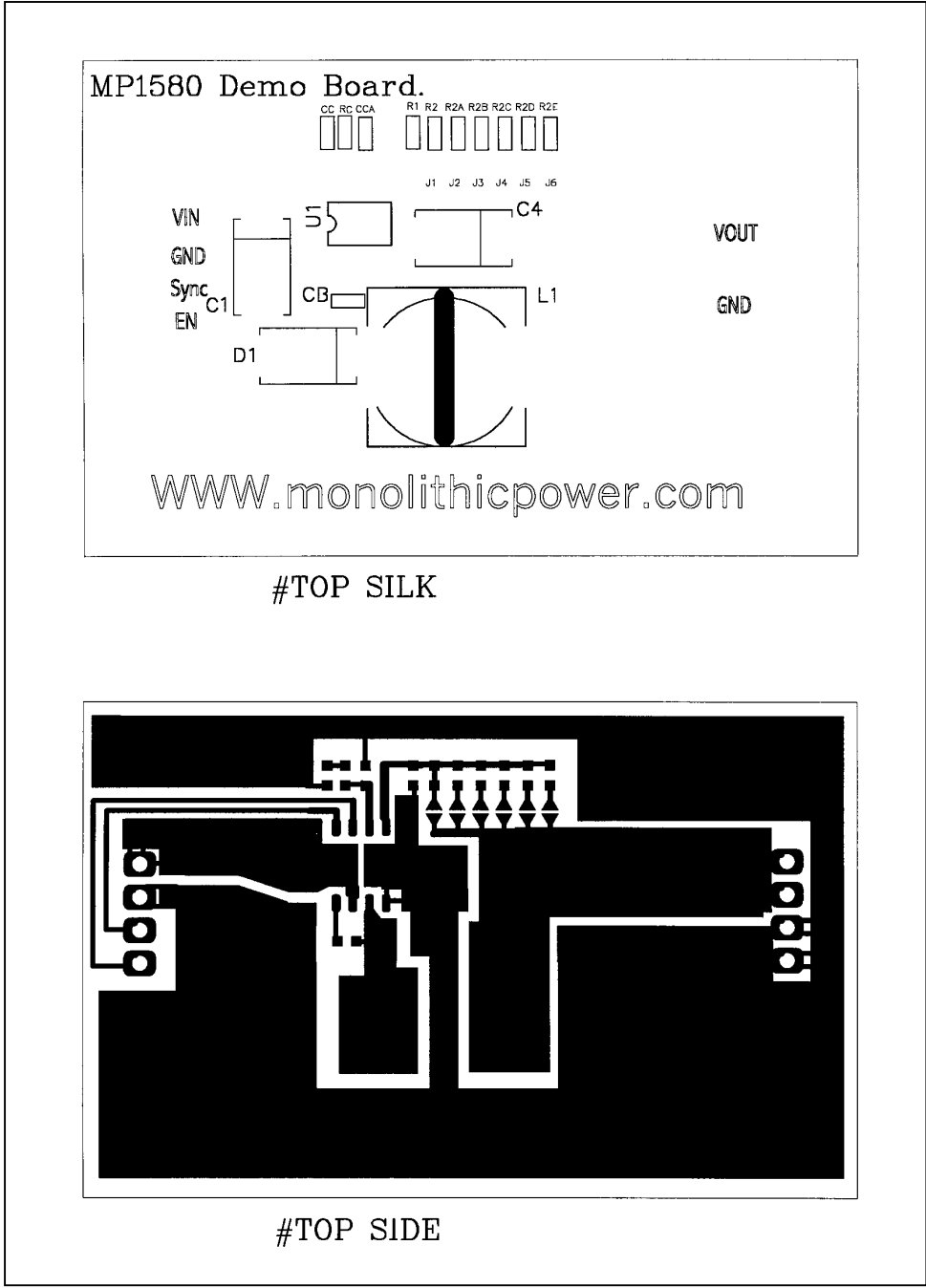
Table 1: EV0007 Bill of Materials

#	Qty	Reference	Part Number
1	1	U1	MP1580HS
2	2	CN1, CN2	4 Pin Connector
3	1	CB	10nF 0603
4	1	CC	22nF 0603
5	1	CCA	100pF 0603
6	1	C1	10 μ F 25V 1210
7	1	C4	22 μ F 10V Y5V 1210
8	1	D1	B230/SM 2A 30V Schottky
9	1	L1	22 μ H
10	2	RC, R1	10K Ω 1%
11	1	R2A	2.32K 1%
12	1	R2B	4.75K 1%
13	1	R2C	10.5K 1%
14	1	R2D	16.9K 1%
15	1	R2E	30.9K 1%

Table 2. Recommended components for standard output voltages

VOUT	Jumper Connection	L1 minimum	RC
1.22V	J1	6.8 μ H	4.7K Ω
1.5V	J2	6.8 μ H	4.7K Ω
1.8V	J3	10 μ H	4.7K Ω
2.5V	J4	10 μ H	10K Ω
3.3V	J5	15 μ H	10K Ω
5.0V	J6	22 μ H	10K Ω

Figure 3: EV0007 Layout



NOTICE: MPS believes the information in this document to be accurate and reliable. However, it is subject to change without notice. Please contact the factory for current specifications. No responsibility is assumed by MPS for its use or fit to any application, nor for infringement of patent or other rights of third parties.