

DESCRIPTION

The EV1584EN-00A is an evaluation board for the MP1584, a high frequency step-down regulator with an integrated power MOSFET.

The MP1584 integrates a 150mΩ MOSFET that provides 3A load current over a wide operating input voltage of 4.5V to 28V.

Current mode control provides fast transient response and eases loop stabilization. An internal soft-start prevents inrush current at turn-on.

The EV1584EN-00A is a fully assembled and tested PCB. It generates a +3.3V output voltage at load current up to 3A from an 8V to 28V input range. Switching frequency is set at 500KHz.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	8 – 28	V
Output Voltage	V_{OUT}	3.3	V
Output Current	I_{OUT}	3	A

FEATURES

- 3A Output Current
- Wide 8V to 28V Operating Input Range
- Adjustable Output from 0.8V to 25V
- Programmable Switching Frequency up to 1.5MHz

APPLICATIONS

- Game Machines
- Automotive Systems
- Industrial Power Systems
- Distributed Power Systems
- Printer Systems
- Battery Powered Systems

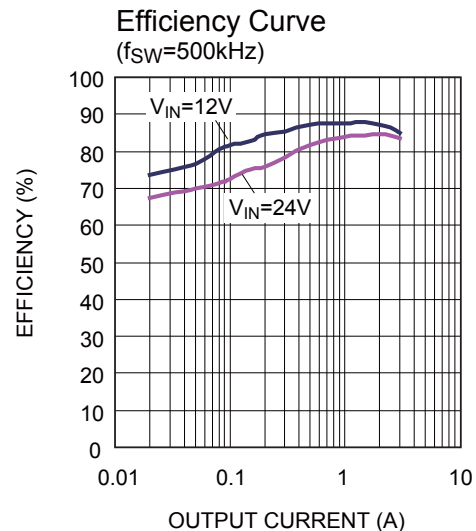
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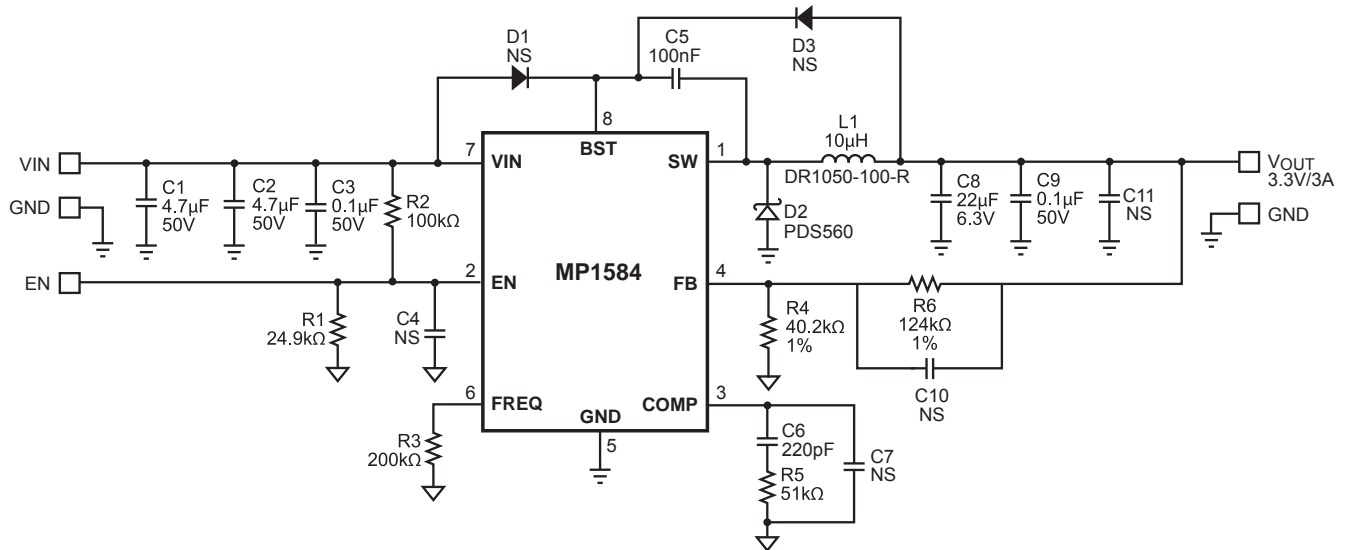
EV1584EN-00A EVALUATION BOARD



(L x W x H) 2.5" x 2.5" x 0.4"
(6.35cm x 6.35cm x 1.0cm)

Board Number	MPS IC Number
EV1584EN-00A	MP1584EN



EVALUATION BOARD SCHEMATIC

EV1584EN-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
2	C1, C2	4.7μF	Ceramic Cap., 50V, X7R	1210	Murata	GRM32ER71H475KA88L
2	C3, C9	0.1μF	Ceramic Cap., 50V, X7R	0805	TDK	C2012X7R1H104K
4	C4, C7, C10, C11	NS	Not Stuffed			
1	C5	100nF	Ceramic Cap., 50V, X7R	0603	TDK	C1608X7R1H104K
1	C6	220pF	Ceramic Cap., 50V, NPO	0603	TDK	C1608C0G1H221J
1	C8	22μF	Ceramic Cap., 6.3V, X5R	1210	TDK	C3225X5R0J226M
1	R1	24.9kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0724K9L
1	R2	100kΩ	Film Res., 1%	0603	Yageo	RC0603FR-07100KL
1	R3	200kΩ	Film Res., 1%	0603	Yageo	RC0603FR-07200KL
1	R4	40.2kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0740K2L
1	R5	51kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0751KL
1	R6	124kΩ	Film Res., 1%	0603	Yageo	RC0603FR-07124KL
1	R7	NS	Not Stuffed			
2	D1, D3	NS	Not Stuffed			
1	D2		Diode Schottky, 60V, 5A	PowerDI	Diodes Inc	PDS560
1	L1	10μH	Inductor, 4.58A	SMD	Cooper	DR1050-100-R
			Inductor, 4.3A	SMD	TOKO	D104-#919AS-100M
1	U1		Step-Down Regulator	SO8	MPS	MP1584EN

PRINTED CIRCUIT BOARD LAYOUT

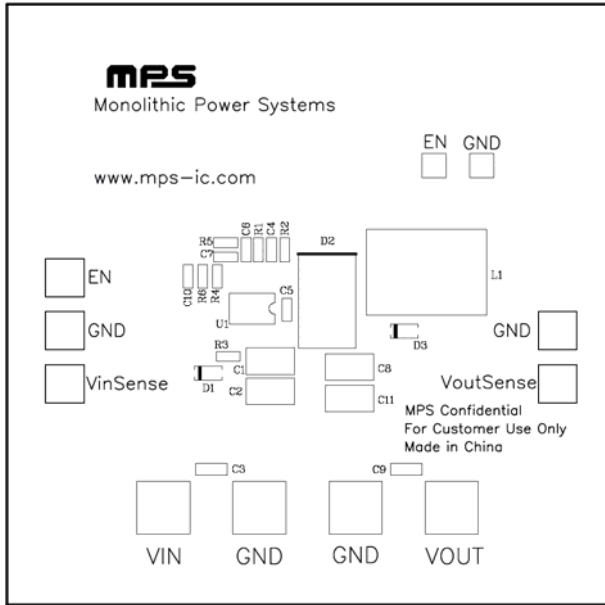


Figure 1—Top Silk Layer

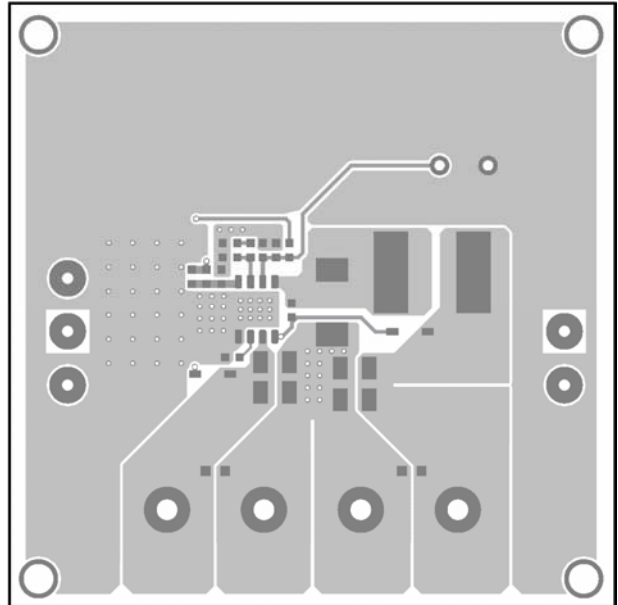


Figure 2—Top Layer

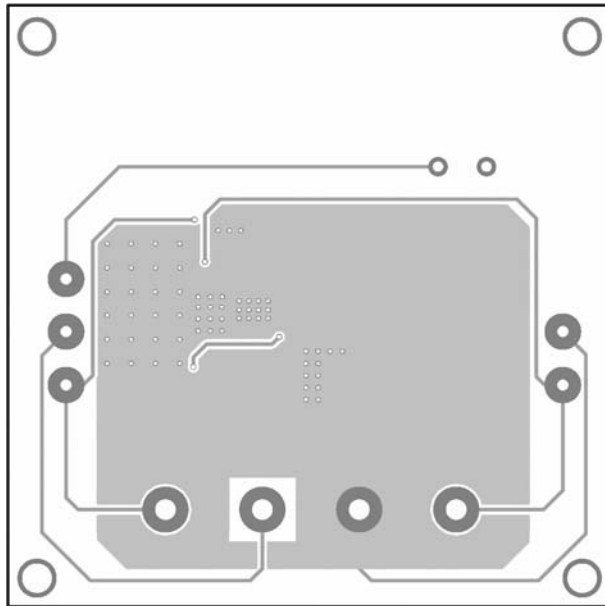


Figure 3—Bottom Layer

QUICK START GUIDE

1. Connect the positive and negative terminals of the load to the VOUT and GND pins, respectively.
2. Preset the power supply output to between 8V and 28V, then turn it off.
3. Connect the positive and negative terminals of the power supply output to the VIN and GND pins, respectively.
4. Turn the power supply on. The EV1584EN will automatically startup.
5. To use the Enable function, apply a digital input to the EN pin. Drive EN higher than 1.6V to turn on the regulator, drive EN less than 1.2V to turn it off.
6. An input under voltage lockout (UVLO) function is implemented by the addition of a resistor divider R1 and R2. The EN threshold is 1.2V (falling edge), so V_{IN} UVLO falling threshold is $1.2V \times \left(1 + \frac{R2}{R1}\right)$. It is preset to 6V on this board.
7. Use R4 and R6 to set the output voltage with $V_{FB} = 0.8V$. For $R4 = 40.2k\Omega$, R6 can be determined by: $R6 = 50.25 \times (V_{OUT} - 0.8)(k\Omega)$. Follow the Application Information section in the device datasheet to recalculate the compensation, inductor and output capacitor values when output voltage is changed.

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