



The Future of Analog IC Technology™

EV6002DN-00A

Monolithic Flyback/Forward DC-DC Converter Evaluation Board

GENERAL DESCRIPTION

The EV6002DN-00A is an evaluation board for the MP6002, a monolithic Flyback/Forward DC-DC converter. The device integrates a 150V power switch and is capable of delivering up to 30W output power. The MP6002 has an internal soft-start, auto-retry, and incorporates over current, short circuit, and over-voltage protection. It can also skip cycles to maintain zero load regulation.

This device is available in an 8-pin SOIC package with an exposed pad.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	36–75	V
Output Voltage	V_{OUT}	12	V
Output Current	I_{OUT}	2.5	A
Frequency	F_{SW}	275	kHz

FEATURES

- Integrated 150V Power Switch
- Integrated 100V Startup Circuit
- Cycle-by-Cycle Current Limiting
- Duty Cycle Limiting with Line Feed Forward
- Input UVLO + Over Voltage Protection
- Thermal Shutdown

APPLICATIONS

- Telecom Equipment
- VoIP Phones, Power over Ethernet (PoE)
- Distributed Power Conversions

All MPS parts are lead-free and adhere to the RoHS directive. For MPS green status, please visit MPS website under Products, Quality Assurance page.

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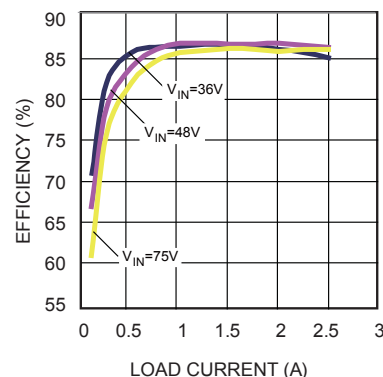
EV6002DN-00A EVALUATION BOARD



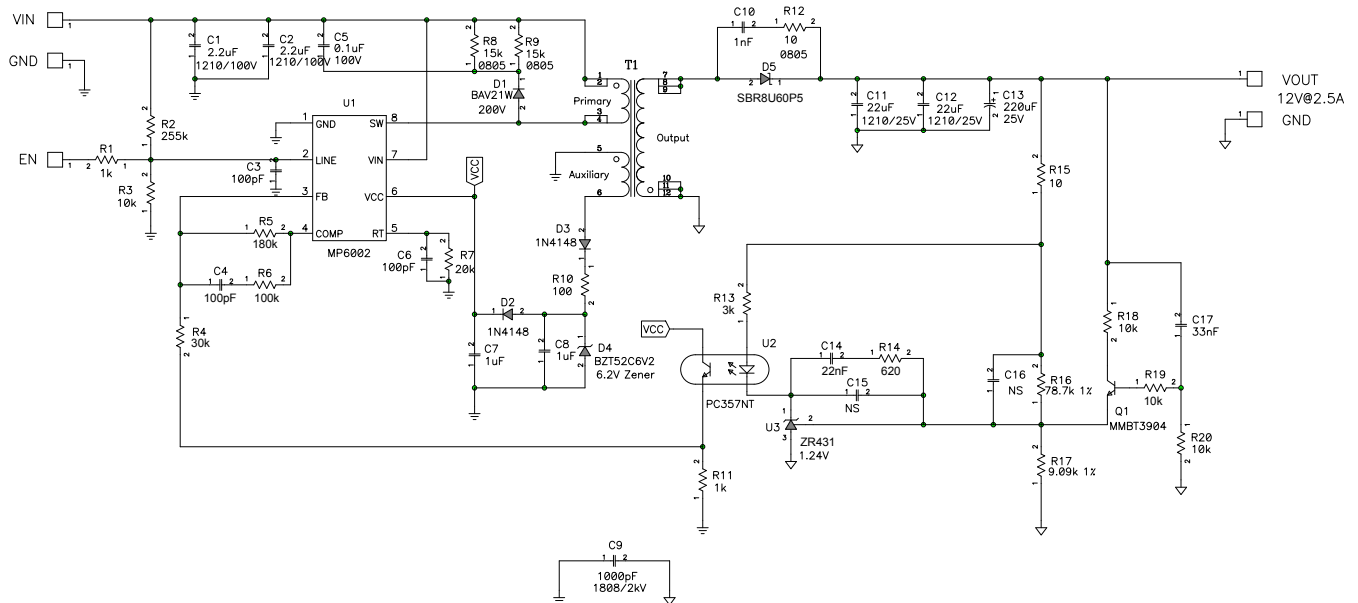
(L x W) 3.8" x 1.2"
(9.8cm x 3.1cm)

Board Number	MPS IC Number
EV6002DN-00A	MP6002DN

Efficiency VS Load Current



EVALUATION BOARD SCHEMATIC



EV6002DN-00A BILL OF MATERIALS

Qty	RefDes	Value	Description	Package	Manufacturer	Manufacturer P/N
2	C1, C2	2.2μF	Ceramic Cap, 100V, X7R	1210	TDK	C3225X7R2A225K
3	C3,C4,C6	100pF	Ceramic Cap. 50V C0G	0603	TDK	C1608C0G1H101J
2	C15, C16	NS				
1	C5	0.1μF	Ceramic Cap. 100V X7R	0805	TDK	C2012X7R2A104K
2	C7, C8	1μF	Ceramic Cap. 25V X5R	0603	TDK	C1608X5R1E105K
1	C9	1000pF	Ceramic Cap. 2000V X7R	1808	TDK	C4520X7R3D102K
1	C10	1nF	Ceramic Cap. 50V X7R	0603	TDK	C1608X7R1H102K
2	C11, C12	22μF	Ceramic Cap, 25V, X5R	1210	Murata	GRM32ER61E226KE15L
1	C13	220μF	25V Electrolytic	DIP	Jiang Hai	
1	C14	22nF	Ceramic Cap. 50V X7R	0603	TDK	C1608X7R1H223K
1	C17	33nF	Ceramic Cap. 50V X7R	0603	TDK	C1608X7R1H333K
1	D1	BAV21	Diode Switch, 200V, 250mW	SOD-123	Diodes Inc	BAV21W-7-F
2	D2, D3	1N4148	Diode Switch, 75V, 200mW	SOD-323	Diodes Inc	1N4148WS-7-F
1	D4	6.2V	Diode Zener, 6.2V, 500mW	SOD-123	Diodes Inc	BZT52C6V2-7
1	D5	SBR8U60P5	Diode, 60V, 8A	SMA	Diodes Inc	SBR8U60P5
1	R1	1k	Film Res, 5%	0603	YAGEO	RC0603JR-071KL

EV6002DN-00A BILL OF MATERIALS *(continued)*

Qty	RefDes	Value	Description	Package	Manufacturer	Manufacturer P/N
1	R2	255k	Film Res, 5%	0603	YAGEO	RC0603JR-07255KL
4	R3, R18, R19,R20	10k	Film Res, 5%	0603	YAGEO	RC0603JR-0710KL
1	R4	30k	Film Res, 5%	0603	YAGEO	RC0603JR-0730KL
1	R5	180k	Film Res, 5%	0603	YAGEO	RC0603JR-07180KL
1	R6	100k	Film Res, 5%	0603	YAGEO	RC0603JR-07100KL
1	R7	20k	Film Res, 1%	0603	YAGEO	RC0603FR-0720KL
2	R8, R9	15k	Film Res, 5%	0805	YAGEO	RC0805JR-0715KL
1	R10	100	Film Res, 5%	0603	YAGEO	RC0603JR-07100RL
1	R11	1k	Film Res, 1%	0603	YAGEO	RC0603FR-071KL
1	R12	10	Film Res, 5%	0805	YAGEO	RC0603JR-0710RL
1	R13	3k	Film Res, 5%	0805	YAGEO	RC0603JR-073KL
1	R14	620	Film Res, 5%	0603	YAGEO	RC0603JR-07620RL
1	R15	10	Film Res, 5%	0603	YAGEO	RC0603JR-0710RL
1	R16	78.7k	Film Res, 1%	0603	YAGEO	RC0603FR-0778K7L
1	R17	9.09k	Film Res, 1%	0603	YAGEO	RC0603FR-079K09L
1	Q1	MMBT3904	Transistor NPN 40V 350mA	SOT-23	ON Semiconductor	MMBT3904LT1
1	U1	MP6002	DC-DC Converter	SOIC8E	MPS	MP6002DN
1	U2	PC357	Photo coupler, 1-Ch	4-SMD	Sharp	PC357NT
1	U3	ZR431	REG VLT ADJ 1.24V	SOT-23	ZETEX	ZR431LF01
1	T1	750340543	Flyback Transformer, Primary inductance:40uH, Primary: Output: Auxiliary= 1:0.368:0.235	SMD	Würth	750340543

PRINTED CIRCUIT BOARD LAYOUT

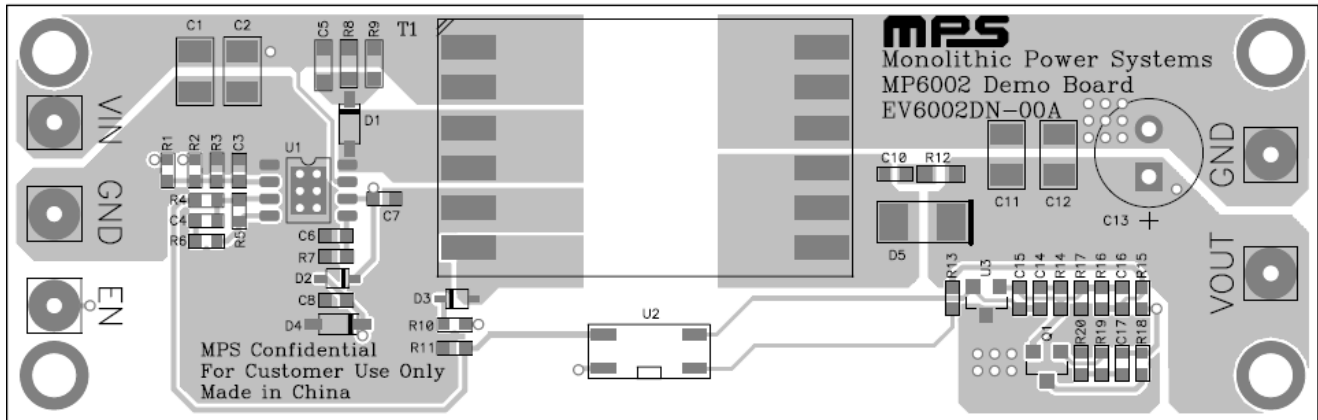


Figure 1—Top Layer

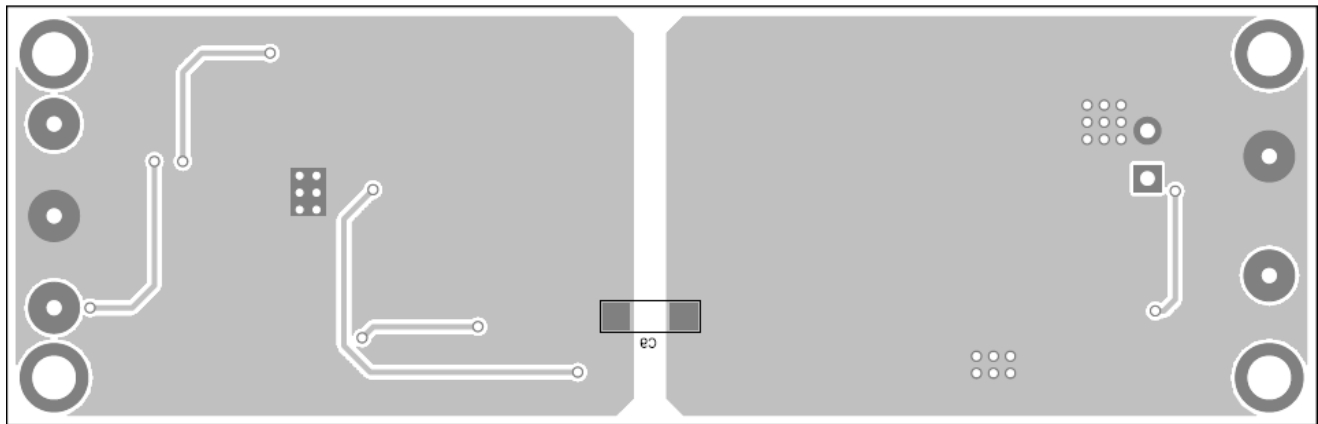


Figure 2—Bottom Layer

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 power supply output to 36V to 75V and turn off the power supply.
3. Connect the positive terminal of the power supply output to VIN pin, and the negative terminal of the power supply output to GND pin.
4. Turn power supply on and the board will automatically startup.
5. To use Enable function, apply a digital input to EN pin. Drive EN with 1.2V-2.7V to turn on the regulator, and drive EN less than 0.7V to turn it off.

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