EV6001DN-01A

Monolithic Flyback/Forward DC-DC Converter Evaluation Board

The Future of Analog IC Technology

GENERAL DESCRIPTION

The EV6001DN-01A is an evaluation board for the MP6001, a monolithic Flyback/Forward DC-DC converter. The device integrates a 150V power switch and is capable of delivering up to 15W output power. The MP6001 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}	5	V
Output Current	I_{OUT}	2.7	A

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, halogen free, and adhere to the RoHS directive. For MPS green status, please visit MPS website under Quality Assurance.
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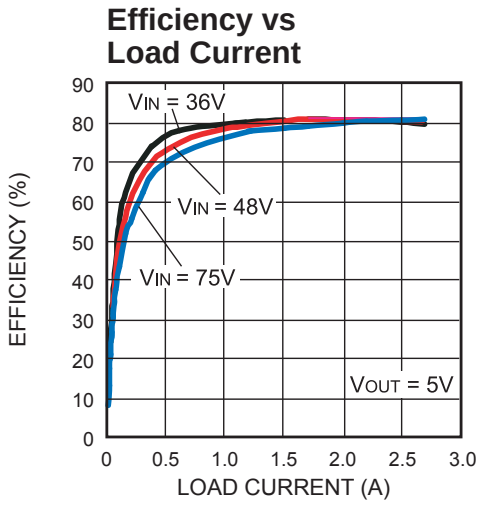
EV6001DN-01A EVALUATION BOARD

(L x W x H) 2.4" x 0.9" x 0.5"
(6.0cm x 2.3cm x 1.2cm)

Board Number	MPS IC Number
EV6001DN-01A	MP6001DN



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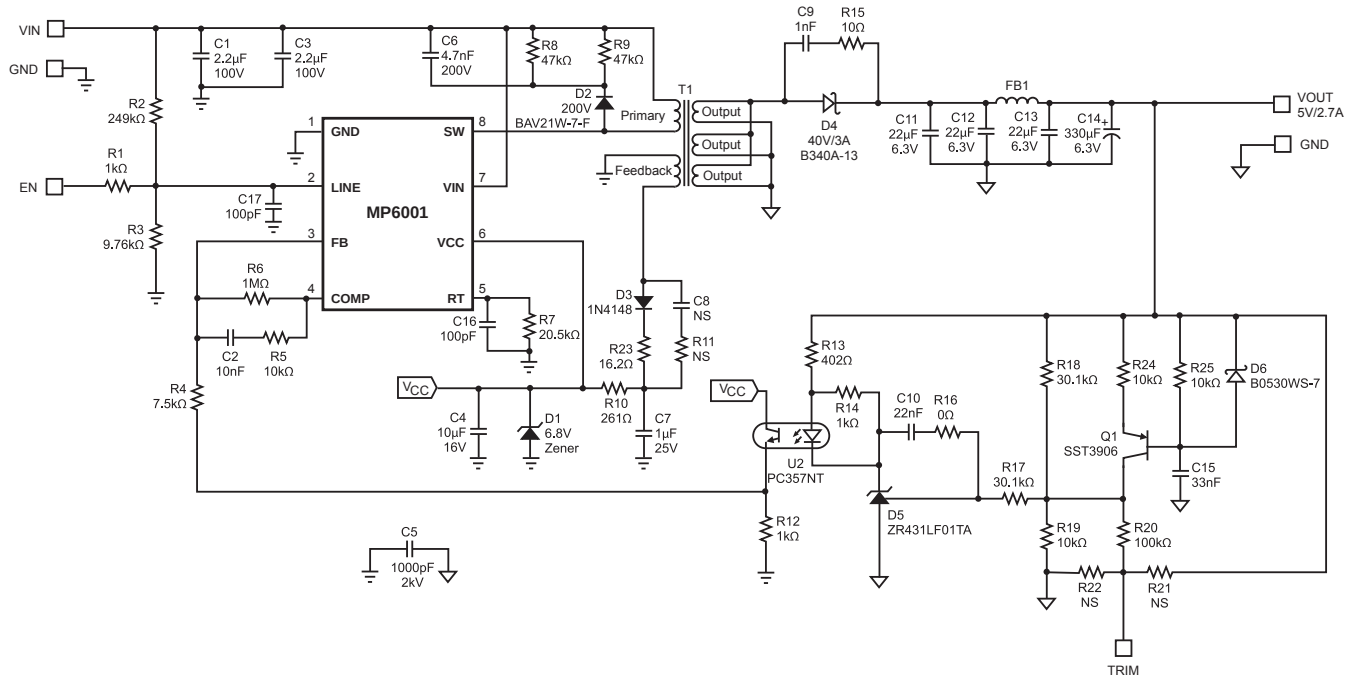
EVALUATION BOARD SCHEMATIC



EV6001DN-01A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
2	C1, C3	2.2µF	Ceramic Cap., 100V, X7R	1210	Murata	GRM32ER72A225KA35L
1	C2	10nF	Ceramic Cap., 50V, X7R	603	TDK	C1608X7R1H103K
1	C4	10µF	Ceramic Cap., 16V, X7R	1206	TDK	C3216X7R1C106M
1	C5	1000pF	Ceramic Cap., 2kV, NPO	1810	Any	
1	C6	4.7nF	Ceramic Cap., 200V, X7R	805	Panasonic	ECJ-2VB2D472K
1	C7	1µF	Ceramic Cap., 25V, X7R	805	TDK	C2012X7R1E105K
1	C8		No Stuff			
1	C9	1nF	Ceramic Cap., 50V, X7R	805	TDK	C2012X7R1H102K
1	C10	22nF	Ceramic Cap., 50V, X7R	603	TDK	C1608X7R1H223K
3	C11, C12, C13	22µF	Ceramic Cap., 6.3V, X7R	1210	TDK	C3225X5R0J226M
1	C14	330µF	PosCap., 6.3V	SMD	Sanyo	6TPE330MIL
1	C15	33nF	Ceramic Cap., 50V, X7R	603	Panasonic	ECJ-1VB1H333K
2	C16, C17	100pF	Ceramic Cap., 50V, NPO	603	TDK	C1608C0G1H101J
1	D1		Diode Zener, 6.8V, 500mW	SOD-123	Diodes Inc	BZT52C6V8-7
1	D2		Diode Switch, 200V, 250mW	SOD-123	Diodes Inc	BAV21W-7-F
1	D3		Diode Switch, 75V, 200mW	SOD-123	Diodes Inc	1N4148WS-7-F
1	D4		Diode Schottky, 40V, 3A	SMA	Diodes Inc	B340A-13-F

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EV6001DN-01A BILL OF MATERIALS *(continued)*

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	D5		Voltage Regulator Shunt, 1.24V	SOT-23	Zetex Inc	ZR431LF01TA
1	D6		Diode Schottky, 30V, 200mW	SOD-323	Diodes Inc	B0530WS-7-F
1	FB1		Ferrite Bead, 6A, 50Ω	1206	Steward	HI1206T500R-00
1	Q1		Transistor, PNP, 40V, 300mW	SOT-23	Rohm	SST3906
3	R1, R12, R14	1kΩ	Film Res., 5%	603	Panasonic	ERJ-3GEYJ102V
1	R2	249kΩ	Film Res., 1%	603	Panasonic	ERJ-3EKF2493V
1	R3	9.76kΩ	Film Res., 1%	603	Panasonic	ERJ-3EKF9761V
1	R4	7.5kΩ	Film Res., 5%	603	Panasonic	ERJ-3GEYJ752V
4	R5, R19, R24, R25	10kΩ	Film Res., 1%	603	Panasonic	ERJ-3EKF1002V
1	R6	1MΩ	Film Res., 5%	603	Panasonic	ERJ-3GEYJ105V
1	R7	20.5kΩ	Film Res., 1%	603	Panasonic	ERJ-3EKF2052V
2	R8, R9	47kΩ	Film Res., 5%	805	Panasonic	ERJ-6GEYJ473V
1	R10	261Ω	Film Res., 1%	603	Panasonic	ERJ-3EKF2610V
3	R11, R21, R22		No Stuff		Panasonic	
1	R13	402Ω	Film Res., 1%	603	Panasonic	ERJ-3EKF4020V
1	R15	10Ω	Film Res., 5%	805	Panasonic	ERJ-6GEYJ100V
1	R16	0Ω	Film Res., 5%	603	Panasonic	ERJ-3GEY0R00V
2	R17, R18	30.1kΩ	Film Res., 1%	603	Panasonic	ERJ-3EKF3012V
1	R20	100kΩ	Film Res., 1%	603	Panasonic	ERJ-3EKF1003V
1	R23	16.2Ω	Film Res., 1%	603	Panasonic	ERJ-3EKF16R2V
1	T1		Flyback Transformer	SMD	Delta	86H-17005
1	U1		DC-DC Converter	SO-8	MPS	MP6001DN
1	U2		Photocoupler, 1-Ch	4-SMD	Sharp	PC357NT

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PRINTED CIRCUIT BOARD LAYOUT

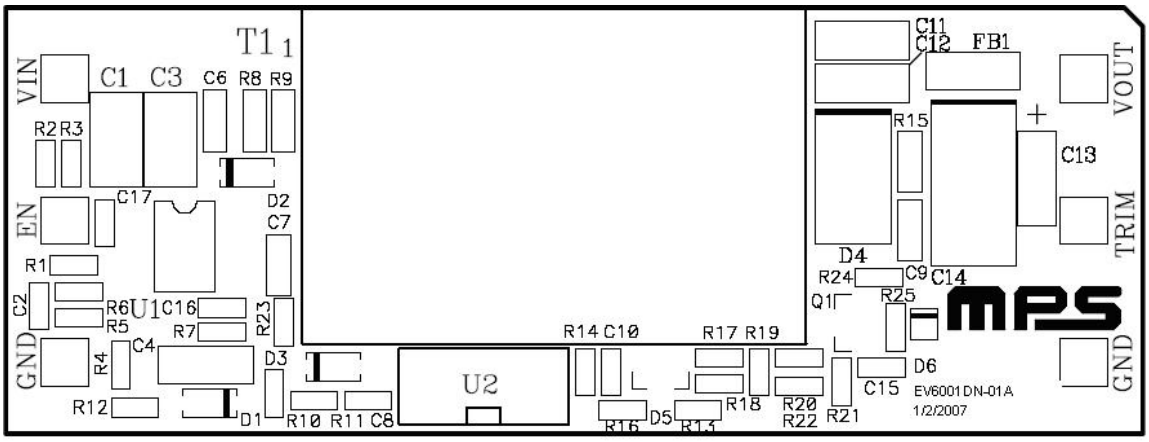

Figure 1—Top Silk Layer

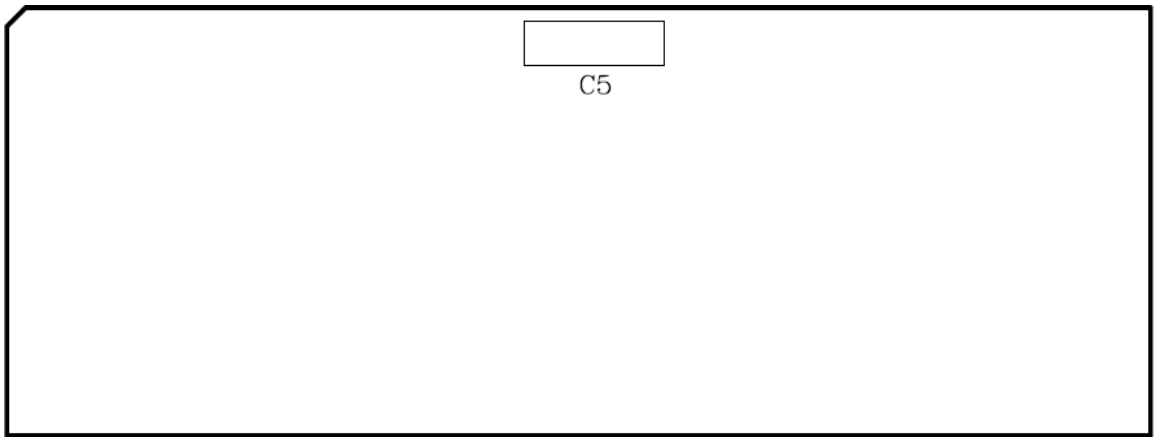

Figure 1—Bottom Silk Layer

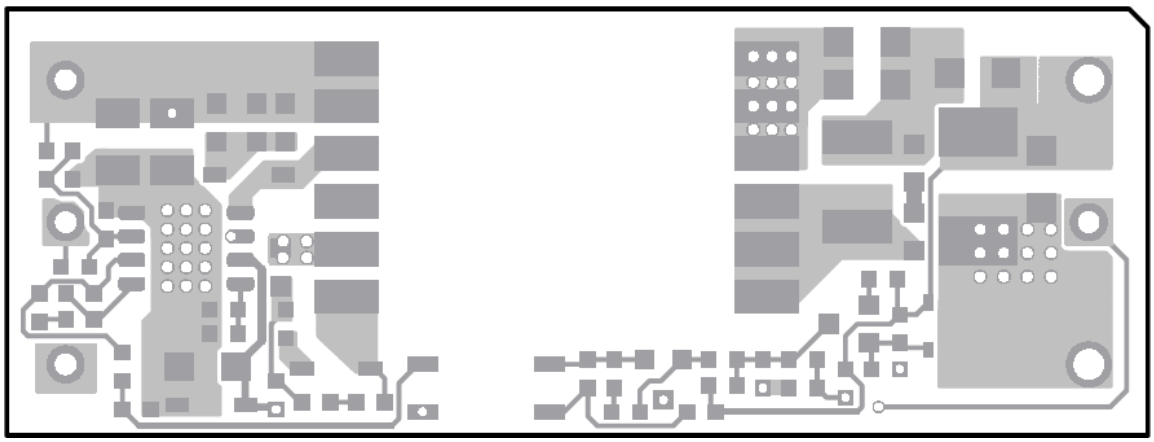

Figure 1—Top Layer

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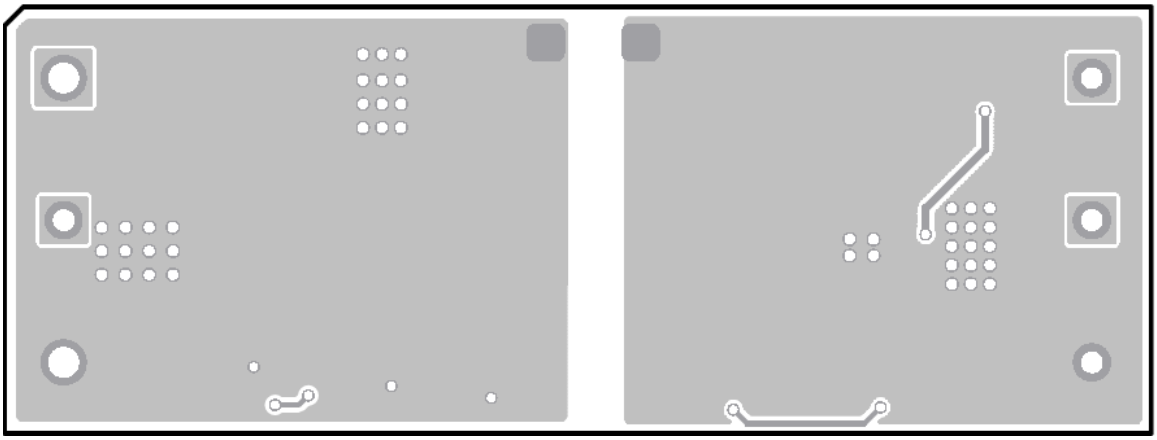

Figure 2—Bottom Layer

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.

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