



The Future of Analog IC Technology®

# EV6001DN-00B

## Monolithic Flyback/Forward DC-DC Converter EV Board

### DESCRIPTION

The EV6001DN-00B is an evaluation board for the MP6001, a monolithic Flyback DCDC converter. This evaluation board is capable of delivering up to 2W 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	Unit
Input Voltage	VIN	36–75	V
Output Voltage	VOUT	200	V
Output Current	IOUT	10	mA

### FEATURES

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

### APPLICATIONS

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

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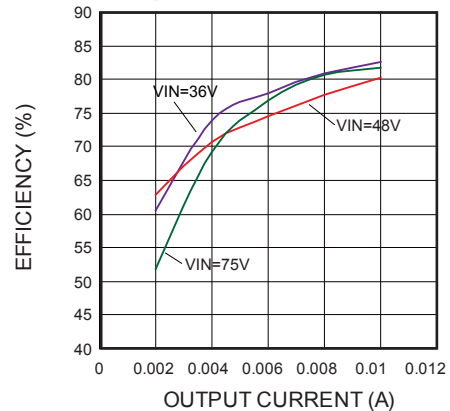
## EV6001DN-00B EVALUATION BOARD



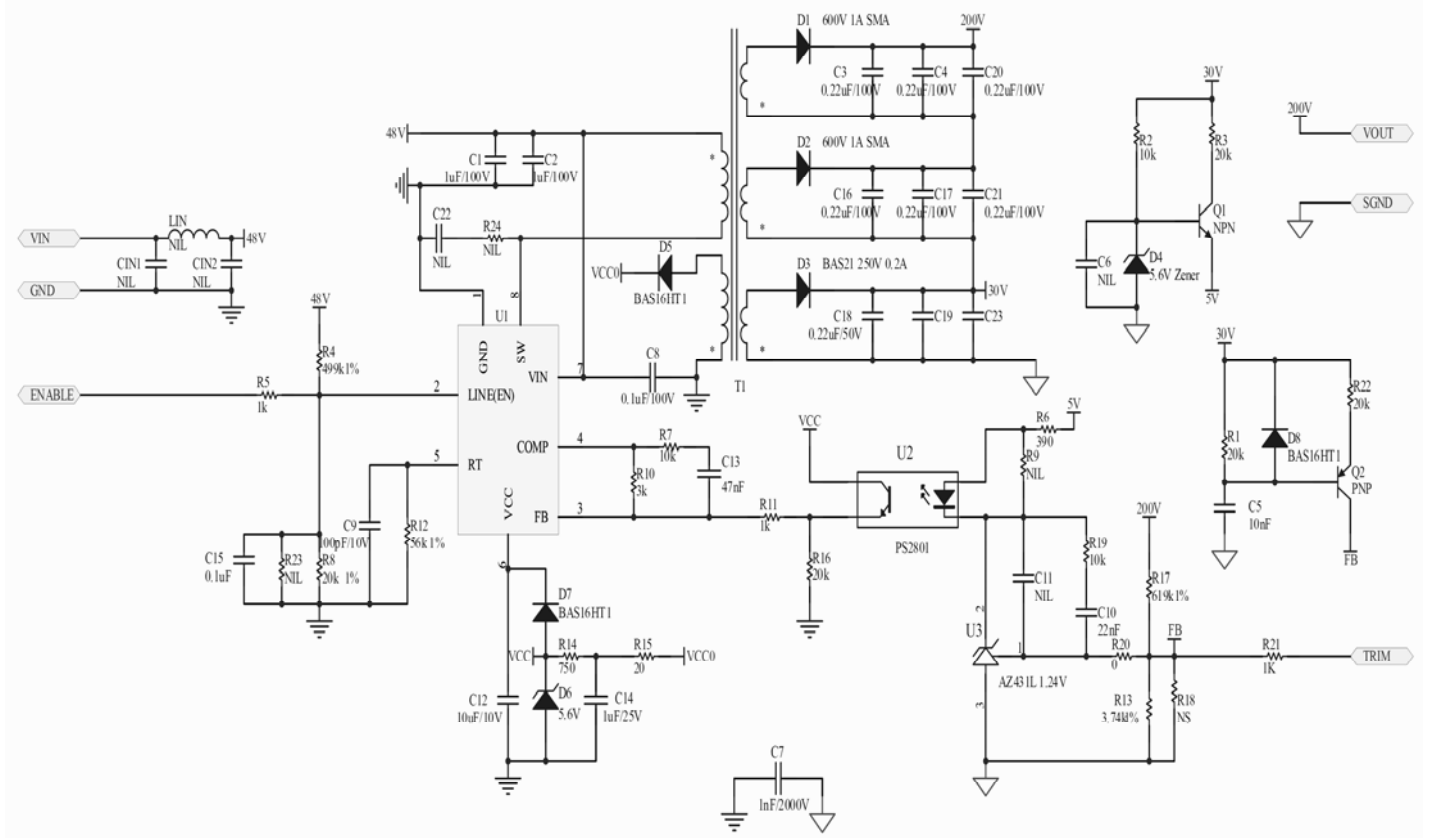
LxWxH: 98.0x24.5x8.7(mm)

Board Number	MPS IC Number
EV6001DN-00B	MP6001DN

### Efficiency vs. Output Current



## EVALUATION BOARD SCHEMATIC



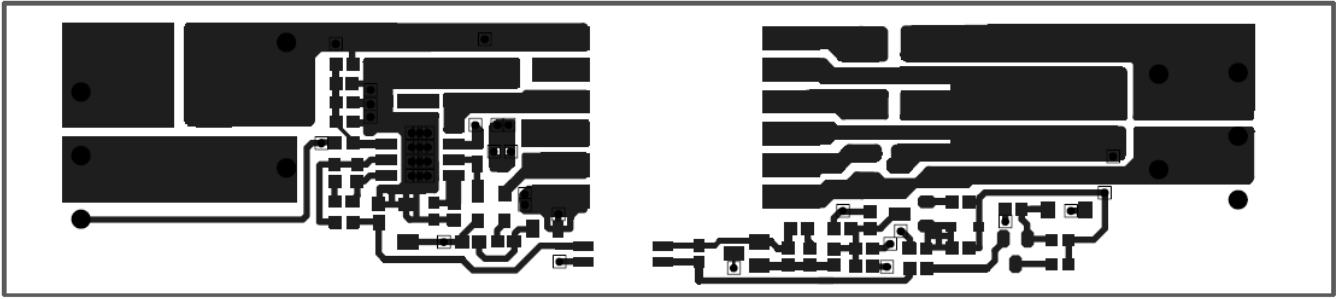
**EV6001DN-00B BILL OF MATERIALS**

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	R1	20k	Film Res., 5%	0603	Yageo	RC0603JR-0720KL
1	R2	10k	Film Res., 5%	0603	Yageo	RC0603JR-0710KL
1	R3	20k	Film Res., 5%	0603	Yageo	RC0603JR-0720KL
1	R4	499k	Film Res., 1%	0603	Yageo	RC0603FR-07499KL
1	R5	1k	Film Res., 5%	0603	Yageo	RC0603JR-071KL
1	R6	390	Film Res., 5%	0603	Yageo	RC0603JR-07390RL
1	R7	10k	Film Res., 5%	0603	Yageo	RC0603JR-0710KL
1	R8	20k	Film Res., 1%	0603	Yageo	RC0603FR-0720KL
1	R9	NS				
1	R10	3k	Film Res., 5%	0603	Yageo	RC0603JR-073KL
1	R11	1k	Film Res., 5%	0603	Yageo	RC0603JR-071KL
1	R12	56k	Film Res., 1%	0603	Yageo	RC0603FR-0756KL
1	R13	3.74k	Film Res., 1%	0603	Yageo	RC0603FR-073K74L
1	R14	750	Film Res., 5%	0603	Yageo	RC0603JR-07750RL
1	R15	20	Film Res., 5%	0603	Yageo	RC0603JR-0720RL
1	R16	20k	Film Res., 5%	0603	Yageo	RC0603JR-0720KL
1	R17	619k	Film Res., 1%	0603	Yageo	RC0603FR-07619KL
1	R18	NS				
1	R19	10k	Film Res., 5%	0603	Yageo	RC0603JR-0710KL
1	R20	0	Film Res., 5%	0603	Yageo	RC0603JR-070RL
1	R21	1k	Film Res., 5%	0603	Yageo	RC0603JR-071KL
1	R22	20k	Film Res., 5%	0603	Yageo	RC0603JR-0720KL
1	R23	NS				
1	R24	NS				
2	C1,C2	1uF	Ceramic Cap 100V X7R	1210	Murata	GRM32ER72A105KA35L
6	C3,C4,C16,C17,C20,C21	0.22uF	Ceramic Cap 100V X7R	1206	TDK	C3216X7R2A224K
1	C5	10nF	Ceramic Cap 50V X7R	0603	TDK	C1608X7R1H103K
1	C6	NS				

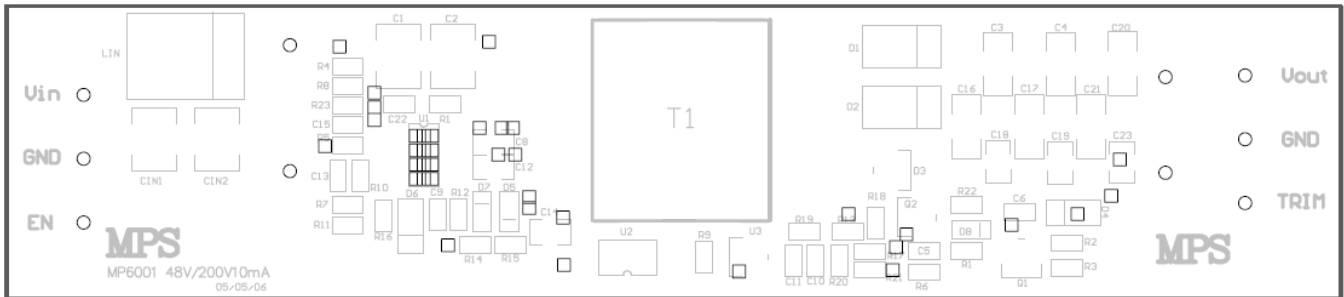
**EV6001DN-00B BILL OF MATERIALS (continued)**

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	C7	1nF	Ceramic Cap 2kV X7R	1812	Murata	GR443QR73D102KW01L
1	C8	0.1uF	Ceramic Cap 100V X7R	0805	TDK	C2012X7R2A104K
1	C9	100pF	Ceramic Cap 50V X7R	0603	TDK	C1608X7R1H101K
1	C10	22nF	Ceramic Cap 50V, X7R	0603	TDK	C1608X7R1H223K
1	C11	NS				
1	C12	10uF	Ceramic Cap 10V X5R	0805	Murata	GRM21BR61A106KE19
1	C13	47nF	Ceramic Cap 50V X7R	0603	TDK	C1608X7R1H473K
1	C14	1uF	Ceramic Cap 25V X5R	0805	Murata	GRM216R61E105KA12D
1	C15	100nF	Ceramic Cap 50V X7R	0603	TDK	C1608X7R1H104K
3	C18,C19,C23	0.22uF	Ceramic Cap 50V X7R	0805	TDK	C2012X7R1H224K
1	C22	NS				
2	CIN1,CIN2	NS				
1	U1		MPS regulator	SO8	MPS	MP6001DN
1	U2		Opto-coupler	SSOP4	NEC	PS2801-1
1	U3		1.24V Shunt Regulator	SOT-23	BCD	AZ431L
1	Q1		40V NPN Transistor	SOT-23	ON Semi	MMBT3904LT1
1	Q2		40V PNP Transistor	SOT-23	ON Semi	MMBT3906LT1
2	D1,D2		Diode Switch 1A 600V	SMA	ON Semi	MURA160T3/MRA4005T3
1	D3		Diode Switch 200mA 250V	SOT-23	Diodes Inc	BAS21
2	D4,D6		Diode Zener 5.6V 500mW	SOD-123	ON Semi	MMSZ5V6T1
3	D5,D7,D8		Diode Switch 0.2A 75V	SOD-323	Diodes Inc	BAS16HT1
1	T1		Flyback Transformer 0.2mH	SMD	Cooper	JX01-17673-R
1	LIN	NS				

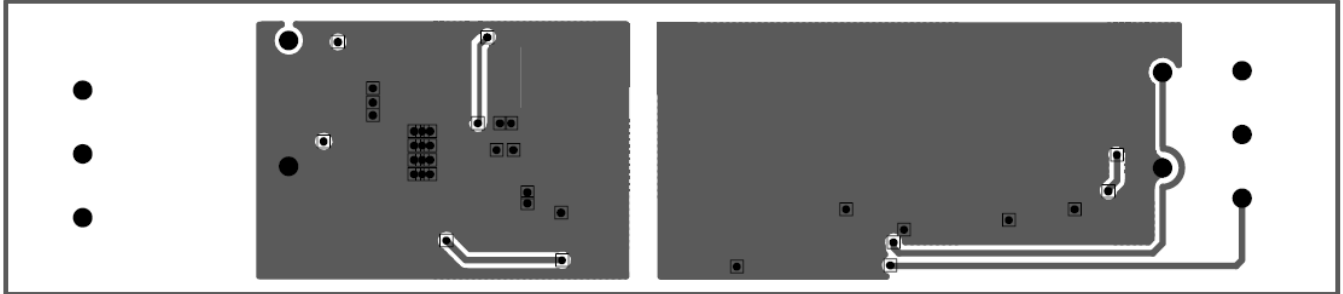
### PRINTED CIRCUIT BOARD LAYOUT



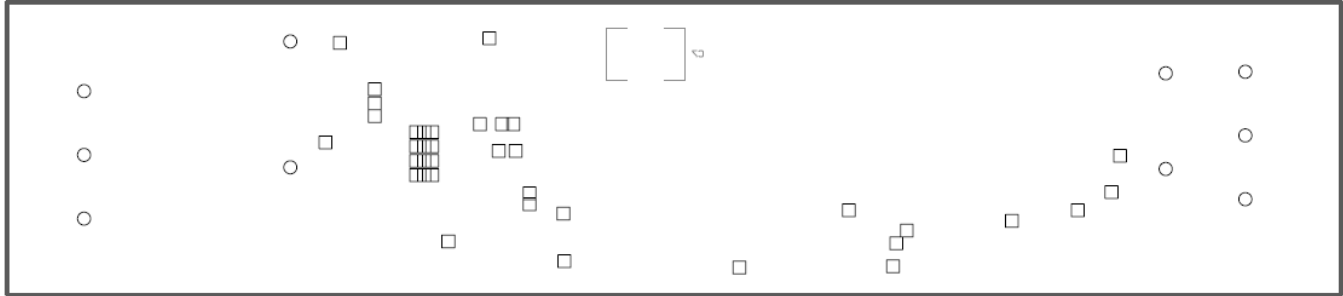
Top Layer



Top Silkscreen



Bottom Layer



Bottom Silkscreen

## QUICK START GUIDE

1. Attach input voltage  $36 \leq V_{IN} \leq 75V$  and input ground to VIN and GND pins respectively.
2. During startup EN should be left HIGH or unconnected.
3. Connect Power Supply terminals to:
  - a. Positive (+): VOUT
  - b. Negative (-): GND
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 2.5V-5V to turn on the regulator, and drive EN less than 0.7V to turn it off.

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