EV3908DK-00C

High Efficiency Isolated Flyback Converter EV Board

DESCRIPTION

The EV3908DK-00C is an evaluation board for the MP3908DK. It is configured to provide a regulated 3.3V output at up to 7.5A load current from a 36V-72V input. The output is adjustable by changing feedback resistors on the evaluation board.

MP3908DK features a synchronous gate output which enables high efficiency design by relating the schottky rectifier by a MOSFET.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input voltage	V_{IN}	36–72	V
Input current	I_{IN}	0–1	A
Output voltage	V_O	3.3	V
Output Current	I_O	7.5	A

FEATURES

- Isolated high efficiency 25W design
- Current Mode Control
- Under-Voltage Lockout
- Cycle-by-Cycle Current Limiting
- 10μA Shutdown Current
- 180μA Quiescent Current
- 250KHz Constant Frequency Operation

APPLICATIONS

- Power over Ethernet (PoE)
- TV CCFL Power Generation
- Telecom Isolated Power
- Brick Modules

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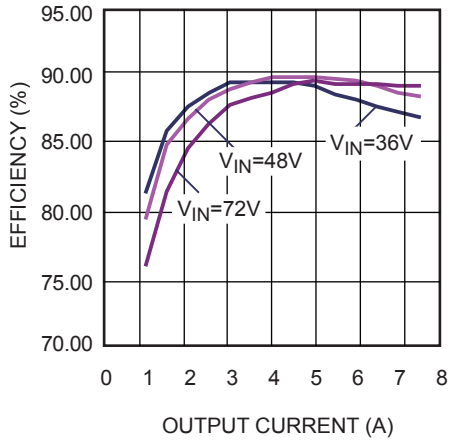
EV3908DK-00C EVALUATION BOARD

(L x W x H) 2.6" x 1.8" x 0.6"
6.7cm x 4.6cm x 1.4cm

Board Number	MPS IC Number
EV3908DK-00C	MP3908DK

Efficiency vs. Output Current



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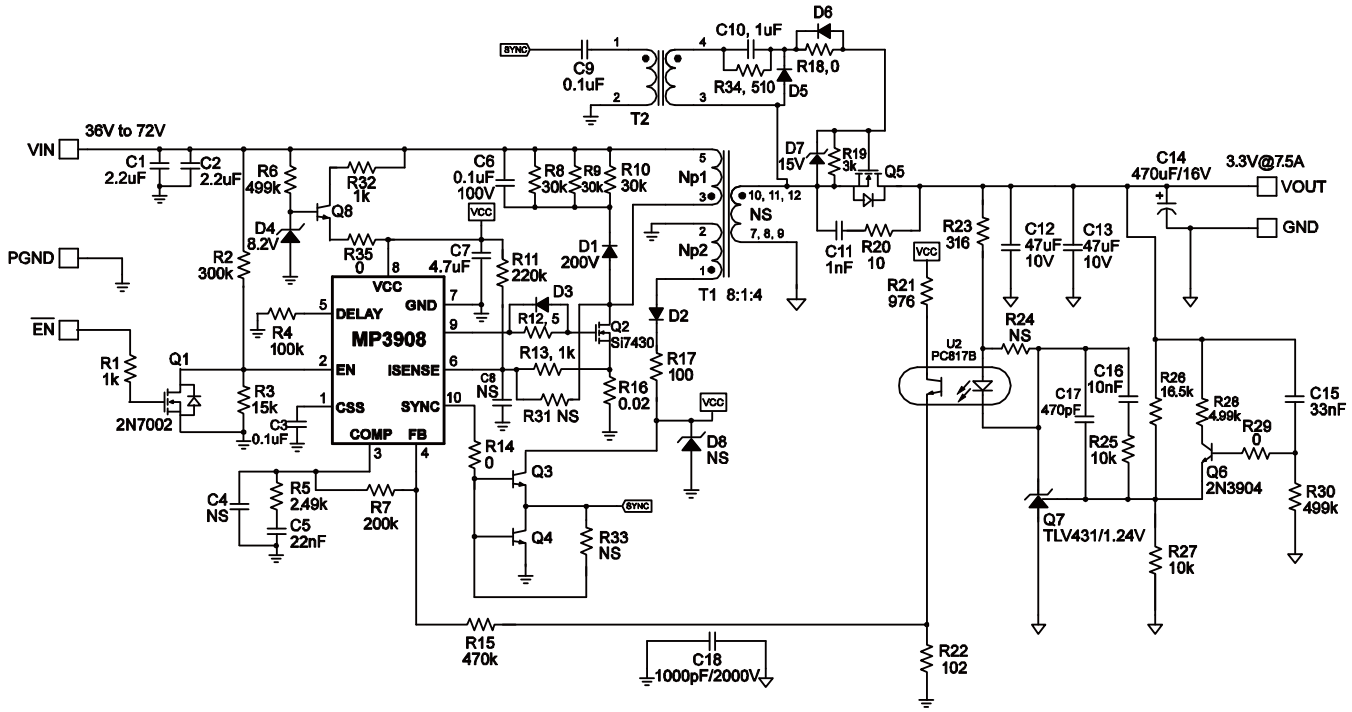
EVALUATION BOARD SCHEMATIC



EV3908DK-00C BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
2	C1,C2	2.2uF	Ceramic Cap. 100V X7R	1210	TDK	C3225X7R2A225K
2	C3,C9	0.1uF	Ceramic Cap. 50V X7R	0603	TDK	C1608X7R1H104K
2	C4,C8	NS				
1	C5	22nF	Ceramic Cap. 50V X7R	0603	TDK	C1608X7R1H223K
1	C6	0.1uF	Ceramic Cap. 100V X7R	0805	TDK	C2012X7R2A104K
1	C7	4.7uF	Ceramic Cap. 25V X7R	1206	TDK	C3216X7R1E475K
1	C10	1uF	Ceramic Cap. 16V X7R	0603	TDK	C1608X7R1C105K
1	C11	1nF	Ceramic Cap. 50V X7R	0603	TDK	C1608X7R1H102K
2	C12,C13	47uF	Ceramic Cap. 10V X5R	1210	TDK	C3225X5R1A476M
1	C14	470uF	16V Electrolytic	DIP		
1	C15	33nF	Ceramic Cap. 50V X7R	0603	TDK	C1608X7R1H333K
1	C16	10nF	Ceramic Cap. 50V X7R	0603	TDK	C1608X7R1H103K
1	C17	470pF	Ceramic Cap. 50V X7R	0603	TDK	C1608X7R1H471K
1	C18	1nF	Ceramic Cap. 2000V X7R	1812	TDK	C4520X7R3D102K
3	R1,R13, R32	1k	Film Resistor 1%	0603	Yageo	RC0603FR-071KL
1	R2	300k	Film Resistor 1%	0603	Yageo	RC0603FR-07300KL
1	R3	15k	Film Resistor 1%	0603	Yageo	RC0603FR-0715KL

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EV3908DK-00C BILL OF MATERIALS *(continued)*

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	R4	100k	Film Resistor 1%	0603	Yageo	RC0603FR-07100KL
1	R5	2.49k	Film Resistor 1%	0603	Yageo	RC0603FR-072K49L
3	R24,R31,R33	NS				
2	R6,R30	499k	Film Resistor 1%	0603	Yageo	RC0603FR-07499KL
1	R7	200k	Film Resistor 5%	0603	Yageo	RC0603JR-07200KL
3	R8,R9,R10	30k	Film Resistor 5%	0805	Yageo	RC0805JR-0730KL
1	R11	220k	Film Resistor 1%	0603	Yageo	RC0603FR-07220KL
1	R12	5.1	Film Resistor 5%	0603	Yageo	RC0603JR-075R1L
4	R14,R18,R29, R35	0	Film Resistor 5%	0603	Yageo	RC0603JR-070RL
1	R15	470k	Film Resistor 5%	0603	Yageo	RC0603JR-07470KL
1	R16	20mΩ	Strip Resistor 1%	1206	Vishay	WSL1206-18
1	R17	100	Film Resistor 5%	0603	Yageo	RC0603JR-07100RL
1	R19	3.01k	Film Resistor 1%	0603	Yageo	RC0603FR-073K01L
1	R20	10	Film Resistor 5%	0805	Yageo	RC0805JR-0710RL
1	R21	976	Film Resistor 1%	0603		RC0603FR-07976RL
1	R22	102	Film Resistor 1%	0603	Yageo	RC0603FR-07102RL
1	R23	316	Film Resistor 1%	0603	Yageo	RC0603FR-07316RL
2	R25,R27	10k	Film Resistor 1%	0603	Yageo	RC0603FR-0710KL
1	R26	16.5k	Film Resistor 1%	0603	Yageo	RC0603FR-0716K5L
1	R28	4.99k	Film Resistor 1%	0603	Yageo	RC0603FR-074K99L
1	R34	510	Film Resistor 5%	0603	Yageo	RC0603JR-07510RL
1	D1	BAV21	Switching Diode 200V 200mW	SOD-123	Diodes Inc	BAV21W-7-F
4	D2,D3,D5,D6	1N4148	Switching Diode 75V 250mW	SOD323	Diodes Inc	1N4148WS-7
1	D4	8.2V	DIODE ZENER 8.2V	SOD-123	Diodes Inc	BZT52C8V2
1	D7	15V	DIODE ZENER 15V	SOD-123	Diodes Inc	BZT52C15
1	D8	NS				
1	Q1	2N7002	N-CH MOSFET	SOT-23		
1	Q2	Si7430	N-CH MOSFET 150V 45mΩ	PowerPAK SO-8	Vishay Siliconix	Si7430DP
1	Q4	PNP	Transistor PNP 40V 350mA	SOT-23	Fairchild	MMBT3906FSCT
1	Q5	Si4166	N-CH MOSFET 30V 3.2mΩ	SO-8	Vishay Siliconix	Si4166DY
2	Q3,Q6	NPN	Transistor NPN 40V 350mA	SOT-23	Fairchild	MMBT3904FSCT
1	Q7	TLV431A	REG VLT ADJ 1.24V	SOT-23-5	Zetex Inc	TLV431A
1	Q8	NPN	Transistor PNP 80V 500mA	SOT-23	Diodes Inc	MMBTA06LT1G
1	U1	MP3908DK	BOOST	MSOP10	MPS	MP3908DK

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EV3908DK-00C BILL OF MATERIALS *(continued)*

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	U2	PC817B	PHOTOCOUP	SMD	SHARP	PC817B
1	T1		Power Transformer Lm=120uH Pri:Sec:Aux=8:1:4	SMD	Cooper	CTX01-18290-R
1	T2		DRIVER TRANSFORMER	SMD	WURTH	750340060

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PRINTED CIRCUIT BOARD LAYOUT

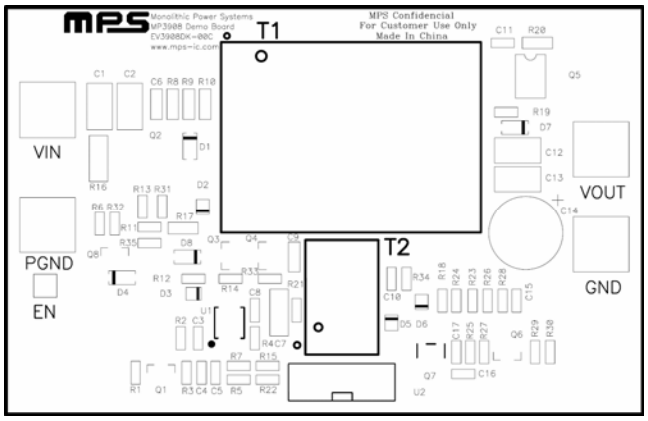

Figure 1—Top Silk Layer

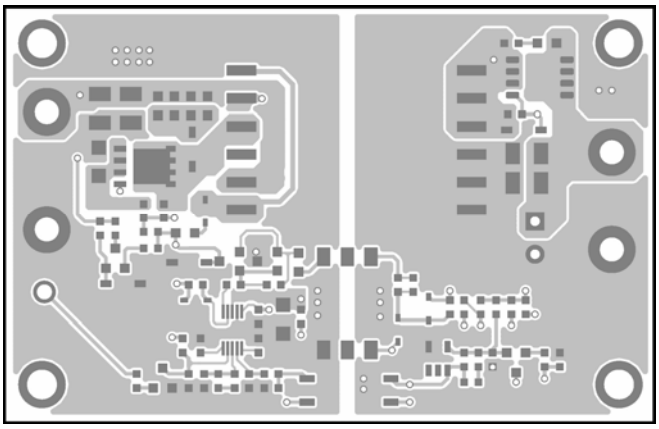

Figure 2—Top Layer

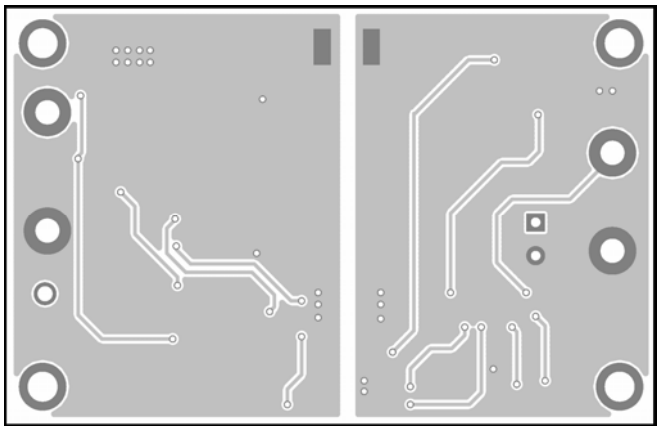

Figure 3—Bottom Layer

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QUICK START GUIDE

1. Connect the positive and negative terminals of the load to VOUT and GND pins, respectively.
2. Preset the power supply output to 36V – 72V and turn off the power supply.
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 board will automatically startup.
5. To use the Enable function, apply a digital input to EN pin. Drive EN higher than2V to turn off the regulator, drive EN less than 2V to turn it on.

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