EV3908DK-00A

High Efficiency Isolated Flyback Converter EV Board

The Future of Analog IC Technology

DESCRIPTION

The EV3908DK-00A is an evaluation board for the MP3908DK. It is configured to provide a regulated 5V output at up to 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	5	V
Output Current	I_O	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

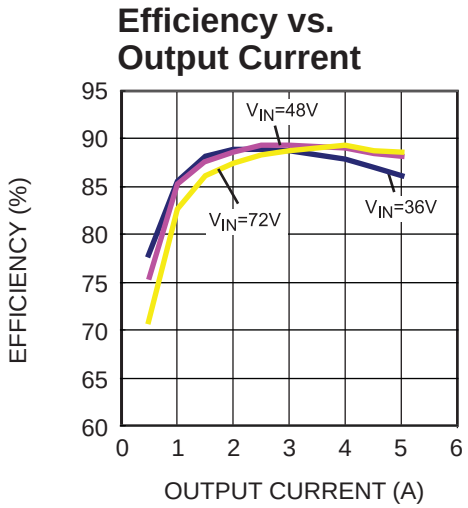
APPLICATIONS

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

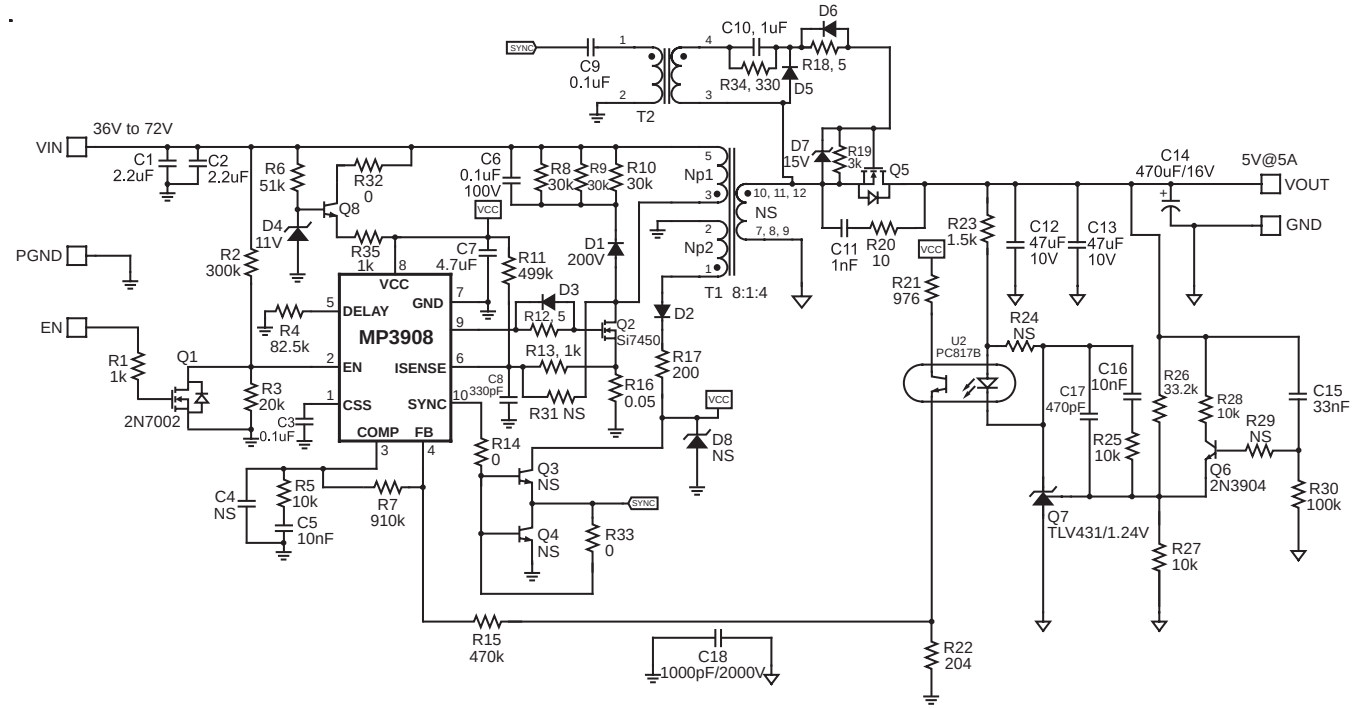
EV3908DK-00A EVALUATION BOARD

(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-00A	MP3908DK



EVALUATION BOARD SCHEMATIC



EV3908DK-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
2	C1, C2	2.2uF	Ceramic Cap. 100V, X7R	CAP1210	TDK	GRM32ER72A225KA352
2	C3, C9	0.1uF	Ceramic Cap. 50V, X7R	CAP0603	TDK	C1608X7R1H104K
1	C4	NS	Not Stuffed			
1	C6	0.1uF	Ceramic Cap. 100V, X7R	CAP0805	TDK	C2012X7R2A104K
1	C7	4.7uF	Ceramic Cap. 25V, X7R	CAP1206	TDK	C3216X7R1E475K
1	C8	330pF	Ceramic Cap. 50V, X7R	CAP0603	TDK	C1608X7R1H331K
1	C10	1uF	Ceramic Cap. 16V, X7R	CAP0603	TDK	C1608X7R1C105K
1	C11	1nF	Ceramic Cap. 50V, X7R	CAP0603	TDK	C2012X7R1H102K
2	C12, C13	47uF	Ceramic Cap. 10V, X5R	CAP1210	TDK	C3225X5R1C475K
1	C14	470uF	16V Electrolytic	DIP		
1	C15	33nF	Ceramic Cap. 50V, X7R	CAP0603	TDK	C1608X7R1H333K
2	C5, C16	10nF	Ceramic Cap. 50V, X7R	CAP0603	TDK	C1608X7R1H103K
1	C17	470pF	Ceramic Cap. 50V, X7R	CAP0603	TDK	C1608X7R1H471K
1	C18	1nF	Ceramic Cap. 2000V, X7R	CAP1812	TDK	C4520X7R3D102K
3	R1, R13, R35	1k	Film Resistor 1%	RES0603	Yageo	RC0603FR-071KL
1	R2	300k	Film Resistor 1%	RES0603	Yageo	RC0603FR-07300KL
1	R3	20k	Film Resistor 1%	RES0603	Yageo	RC0603FR-0720KL
1	R4	82.5k	Film Resistor 1%	RES0603	Yageo	RC0603FR-0782K5L
3	R24, R29, R31	NS	Not Stuffed			
1	R6	51k	Film Resistor 5%	RES0603	Yageo	RC0603JR-0751KL

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

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	R7	910k	Film Resistor 5%	RES0603	Yageo	RC0603JR-07910KL
3	R8, R9, R10	30k	Film Resistor 5%	RES0805	Yageo	RC0805JR-0730KL
1	R11	499k	Film Resistor 1%	RES0603	Yageo	RC0603FR-07499KL
2	R12, R18	4.99	Film Resistor 1%	RES0603	Yageo	RC0603FR-074R99L
3	R14, R32, R33	0	Film Resistor 5%	RES0603	Yageo	RC0603JR-070RL
1	R15	470k	Film Resistor 5%	RES0603	Yageo	RC0603JR-07470KL
1	R16	50mΩ	Strip Resistor 1%	RES1206	CYNTEC	RL1632H-R050-FN
1	R17	200	Film Resistor 5%	RES0603	Yageo	RC0603JR-07200RL
1	R19	3.01k	Film Resistor 1%	RES0603	Yageo	RC0603FR-073K01L
1	R20	10	Film Resistor 5%	RES0805	Yageo	RC0805JR-0710RL
1	R21	976	Film Resistor 1%	RES0603		RC0603FR-07976RL
1	R22	204	Film Resistor 1%	RES0603	Yageo	RC0603FR-07204RL
1	R23	1.5k	Film Resistor 1%	RES0603	Yageo	RC0603FR-071K5L
4	R5, R25, R27, R28	10k	Film Resistor 1%	RES0603	Yageo	RC0603FR-0710KL
1	R26	33.2k	Film Resistor 1%	RES0603	Yageo	RC0603FR-0733K2L
1	R30	100k	Film Resistor 1%	RES0603	Yageo	RC0603FR-07100KL
1	R34	330	Film Resistor 5%	RES0603	Yageo	RC0603JR-07330RL
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	11V	DIODE ZENER 11V	SOD-123	Diodes Inc	BZT52C11
1	D7	15V	DIODE ZENER 15V	SOD-123	Diodes Inc	BZT52C15
1	D8	NS	Not Stuffed			
1	Q1	2N7002	N-CH MOSFET	SOT-23		
1	Q2	Si7450	N-CH MOSFET 200V 5.3A	PowerPAK SO-8	Vishay Siliconix	Si7450
2	Q3, Q4	NS	Not Stuffed			
1	Q5	Si4840	N-CH MOSFET 40V 14A	SO-8	Vishay Siliconix	Si4840
2	Q6, Q8	NPN	Transistor NPN 40V 350mA	SOT-23	Fairchild	MMBT3904FSCT
1	Q7	TLV431A	REG VLT ADJ 1.24V	SOT-23-5	Zetex Inc	TLV431A
1	U1	MP3908DK	BOOST	MSOP10	MPS	MP3908DK
1	U2	PC817B	PHOTOCOUP	SMD	SHARP	PC817B
1	T1		POWER STAGE TRANSFORMER	SMD	Cooper	CTX01-18290-R
1	T2		DRIVER TRANSFORMER	SMD	WURTH	750340060

PRINTED CIRCUIT BOARD LAYOUT

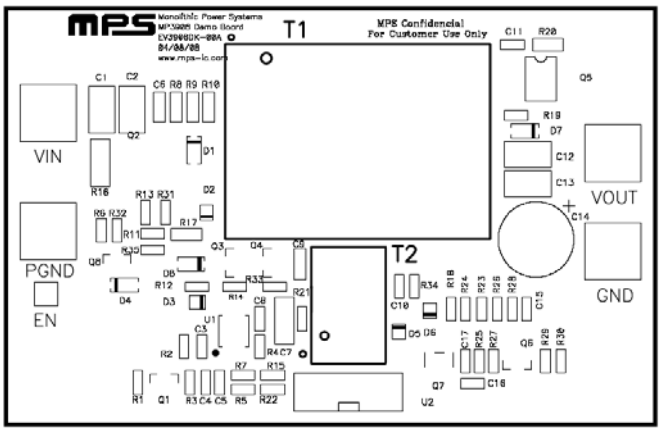


Figure 1—Top Silk Layer

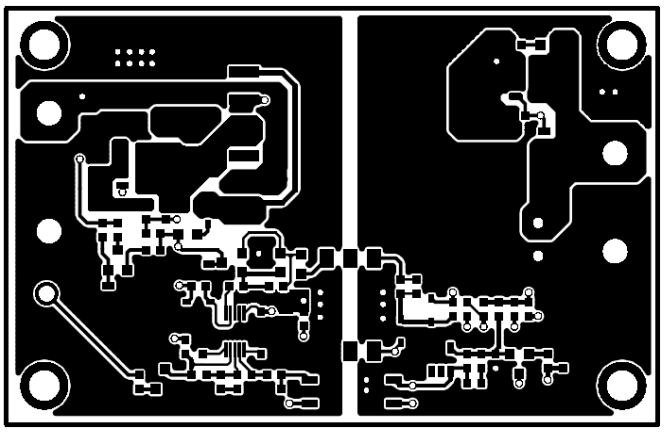


Figure 2—Top Layer

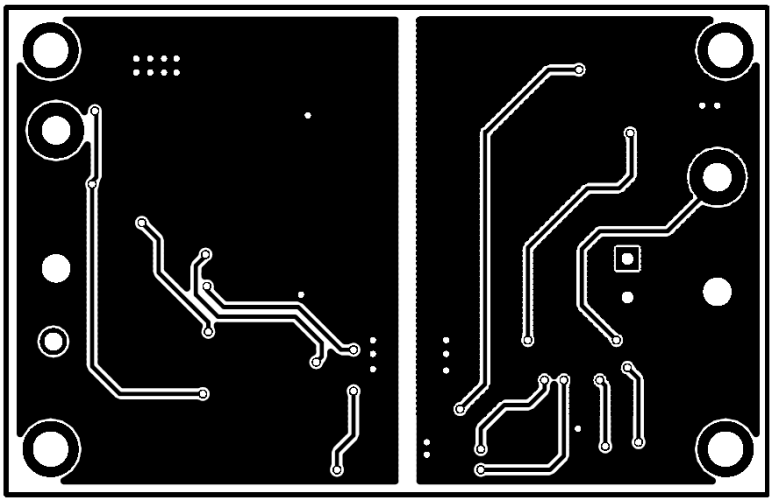


Figure 3—Bottom Layer

QUICK START GUIDE

1. Connect the positive and negative terminals of the load to 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.