EV3386DR-00A

6 string White LED Driver Evaluation Board

The Future of Analog IC Technology

DESCRIPTION

The EV3386DR-00A is an evaluation board for the MP3386DR, a step-up converter designed for large liquid-crystal displays that employ an array of LEDs as the light source. It can drive up to 6 strings in parallel and 10 LEDs per string.

The MP3386 uses internal switch current mode, fixed frequency architecture and includes current ballast in each string terminal, which achieves 3% current regulation accuracy between strings. Low feedback voltage at each LED string help reduce power loss and improve efficiency.

The MP3386 has multiple features to protect the converter from fault conditions, including under-voltage lockout, current limiting, over voltage, short LED, open LED and thermal shut-down protection.

The MP3386 is available in small QFN24 (4mmx 4mm) package.

FEATURES

- 4.5V to 25V Input Voltage Range
- Up to 89% Efficiency
- Programmable Over Voltage Protection
- Drives up to 6 Strings Parallel and 10 LEDs in Series.
- 3% Current Regulation Accuracy Between Strings
- Selectable Switching Frequency: 1.25MHz and 625kHz
- Open and Short LED Load Protection
- Thermal Shutdown

APPLICATIONS

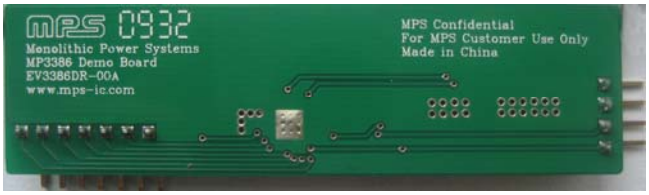
- Notebook PC
- Small LCD TV
- Handy Terminals Display
- Automotive Systems and Tablet Computer

"MPS" and "The Future of Analog IC Technology" are Registered Trademarks of Monolithic Power Systems, Inc.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	4.5 – 25	V
LEDs #		6 string parallel and 10 LEDs each string	
LED Current	I_{LED}	20/string	mA

EV3386DR-00A EVALUATION BOARD

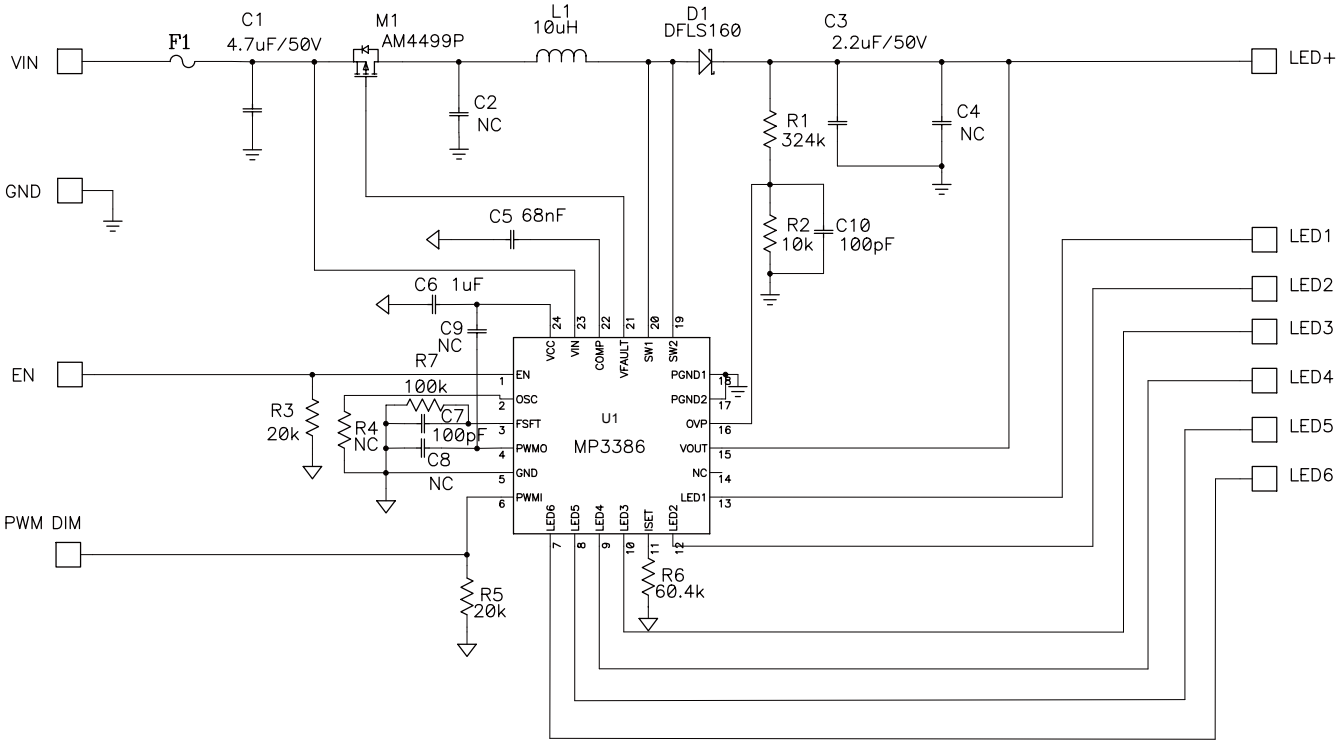


(L x W x H) 7.3cm x 2.0cm x 1.0cm

Board Number	MPS IC Number
EV3386DR-00A	MP3386DR

MPS Proprietary Information. Unauthorized Photocopy and Duplication Prohibited.
© 2009 MPS. All Rights Reserved.

EVALUATION BOARD SCHEMATIC



MPS Proprietary Information. Unauthorized Photocopy and Duplication Prohibited.
© 2009 MPS. All Rights Reserved.

EV3386DR-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	C1	4.7μF	Ceramic Capacitor, 50V, X7R	1210	Murata	GRM32ER71H475KA88L
2	C2, C4	NC		1210		
1	C3	2.2μF	Ceramic Capacitor, 50V, X7R	1210	TDK	C3225X7R1H225
1	C5	68nF	Ceramic Capacitor, 50V, X7R	0603	Murata	GRM188R71H683KA93D
1	C6	1μF	Ceramic Capacitor, 16V, X5R	0603	Murata	GRM188R71C105KA12D
2	C7, C10	100pF	Ceramic Capacitor, 50V, COG	0603	Murata	GRM1885C1H101JA01D
2	C8, C9	NC		0603		
1	D1		Diode Schottky, 60V, 1A	SMA	Diodes Inc	DFLS160-F
1	F1		Fuse, 2A, 63V	1206	Cooper Bussman	3216FF2-R
1	L1	10μH	Inductor,2.5A	SMD	SUMIDA	CDRH8D28NP-100NC
		10μH	Inductor,2.47A	SMD	Cooper	DR73-100
1	M1		P- channel MOSFET	SO8		AM4499P
1	R1	324kΩ	Resistor, 1%	0603	Yageo	RC0603FR-07324KL
1	R2	10kΩ	Resistor, 1%	0603	Yageo	RC0603FR-0710KL
2	R3, R5	20kΩ	Resistor, 5%	0603	Yageo	RC0603JR-0720KL
1	R4	NC		0603		
1	R6	60.4kΩ	Resistor, 1%	0603	Yageo	RC0603FR-0760K4L
1	R7	100kΩ	Resistor, 1%	0603	Yageo	RC0603FR-07100KL
1	U1		LED Driver IC	QFN24	MPS	MP3386DR

MPS Proprietary Information. Unauthorized Photocopy and Duplication Prohibited.
© 2009 MPS. All Rights Reserved.

PRINTED CIRCUIT BOARD LAYOUT

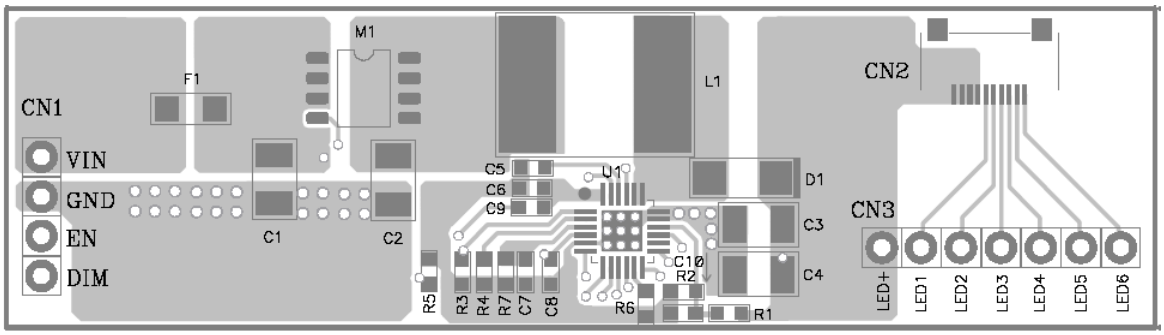


Figure 1—Top Layer

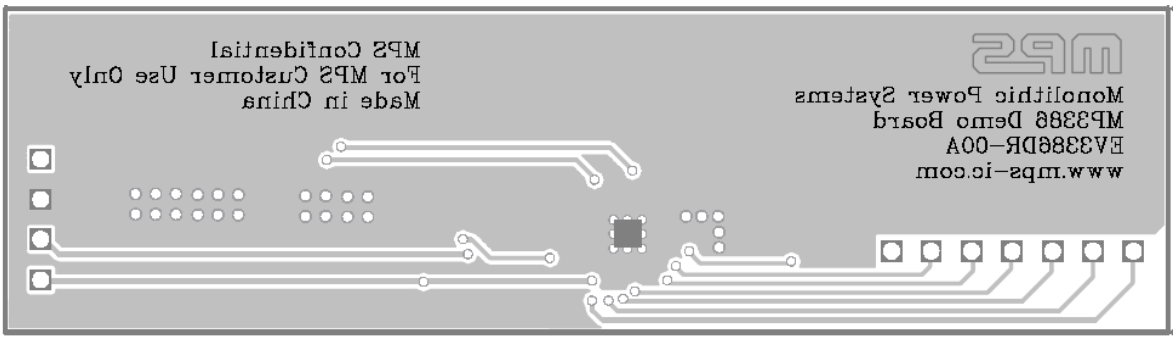


Figure 2—Bottom Layer

QUICK START GUIDE

1. Connect the positive and negative terminals of the load panel (10 white LEDs in series, 6 stings paralleled) to the LED+ and LED1~6 pins on the EV board, respectively.
2. Connect the positive and negative terminals of the power supply (4.5V ~ 25V) to the VIN and GND pins on the EV board, respectively.
3. Drive EN pin high (2.5V < V_{EN} < 5V) to enable the MP3386.
4. For PWM dimming, apply a PWM rectangular waveform with a minimum voltage less than 0.8V and a maximum greater than 1.5V on PWM DIM pin. The frequency of the PWM signal is recommended between 200Hz to 2kHz.

NOTICE: The information in this document is subject to change without notice. Users should warrant and guarantee that third party Intellectual Property rights are not infringed upon when integrating MPS products into any application. MPS will not assume any legal responsibility for any said applications.

MPS Proprietary Information. Unauthorized Photocopy and Duplication Prohibited.
© 2009 MPS. All Rights Reserved.