EV1529DR-00A

Fixed Frequency Step-Up Converter LCD Backlight Plus Flash Evaluation Board

The Future of Analog IC Technology™

NOT RECOMMENDED FOR NEW DESIGNS, REFER TO EV1517DR-00B

GENERAL DESCRIPTION

The EV1529DR-00A evaluation board is designed to drive 2 strings of up to 4 backlight LEDs to 30mA and a 4-LED flash string to 150mA from a single Lithium-Ion battery. The board is set up to obtain 20mA backlight current, 40mA preview current and 100mA flash current. All the LED currents can be adjusted by resistors RS1, RS2, and RS3 on the evaluation board.

The MP1529 switches at 1.2MHz and allows the use of tiny, low cost capacitors and small inductors. High frequency PWM dimming is made possible through EN1. The MP1529 includes built-in open-LED over-voltage protection, cycle-by-cycle current limit, over-temperature shutdown, input under-voltage control and integrated soft-start.

FEATURES

- High Efficiency
- 2.7V to 4.2V Input Voltage Range
- Tiny Capacitors and Inductors Due to 1.2MHz Fixed Frequency Operation
- LCD Backlight to 30mA, Flash to 150mA
- Independent Backlight, Preview and Flash Current Adjustment
- High Frequency PWM Dimming
- Surface-Mount Components
- Fully Assembled and Tested

APPLICATIONS

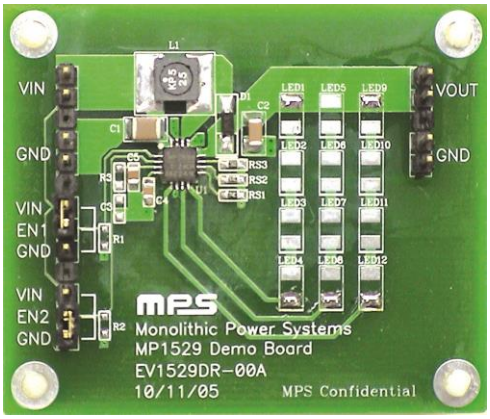
- PDAs
- Cellular Phones
- Digital Still Cameras
- Digital Video Cameras

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ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Supply Voltage	V_{IN}	2.7-4.2	V
LED Current (Backlight)	I_{LED_BL}	20	mA
LED Current (Preview)	I_{LED_PV}	40	mA
LED Current (Flash)	I_{LED_FL}	100	mA

EV1529DR-00A EVALUATION BOARD



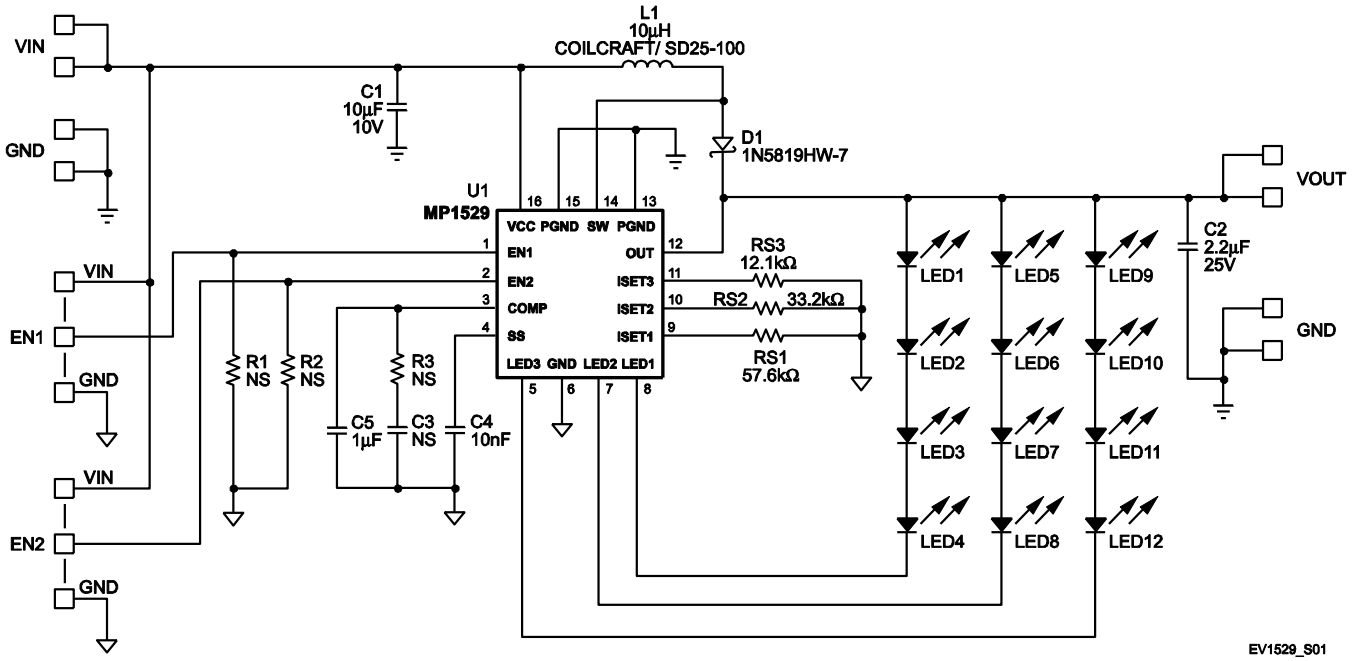
(L x W x H) 2.2" x 1.8" x 0.4"
(5.5cm x 4.8cm x 1.0cm)

Board Number	MPS IC Number
EV1529DR-00A	MP1529DR

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EVALUATION BOARD SCHEMATIC



EV1529DR-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	10µF	Ceramic Capacitor, 10V, X5R	1210	TDK	C3225X5R1A106K
1	C2	2.2µF	Ceramic Capacitor, 25V, X7R	1210	TDK	C3225X7R1E225M
1	C3		Do Not Stuff			
1	C4	10nF	Ceramic Capacitor, 50V, X7R	0805	TDK	C2012X7R1H103K
1	C5	1µF	Ceramic Capacitor, 25V, X5R	0805	TDK	C2012X5R1E105K
1	D1		Diode Schottky, 40V, 1A	SOD123	Diodes Inc.	1N5819HW-7
1	L1	10µH	Inductor, 1.8A	SMD	Coiltronics	SD25-100
12	LED1, LED2, LED3, LED4, LED5, LED6, LED7, LED8, LED9, LED10, LED11, LED12		Not Stuffed			
3	R1, R2, R3		Not Stuffed			
1	RS1	57.6kΩ	Resistor, 1%	0603	Any	
1	RS2	33.2kΩ	Resistor, 1%	0603	Any	
1	RS3	12.1kΩ	Resistor, 1%	0603	Any	
1	U1		Step-Up Converter	QFN16	MPS	MP1529DR

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PRINTED CIRCUIT BOARD LAYOUT

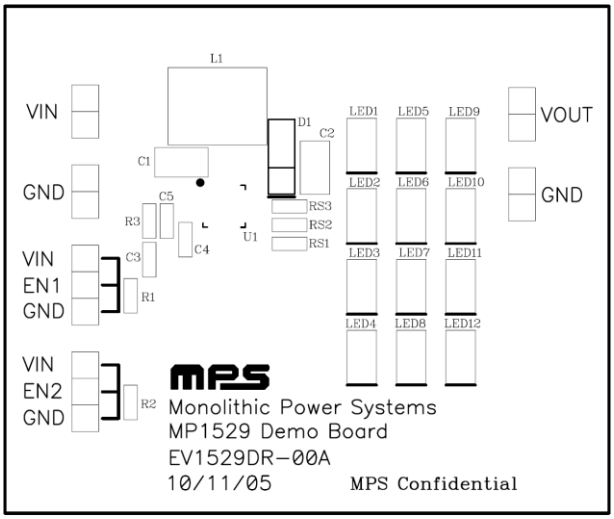


Figure 1—Top Silk Layer

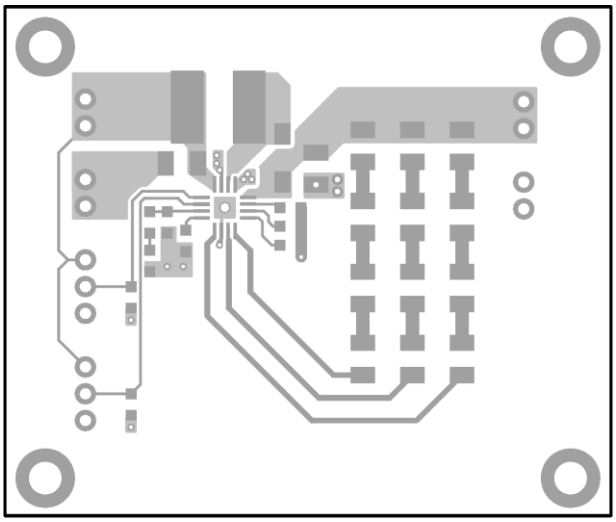


Figure 2—Top Layer

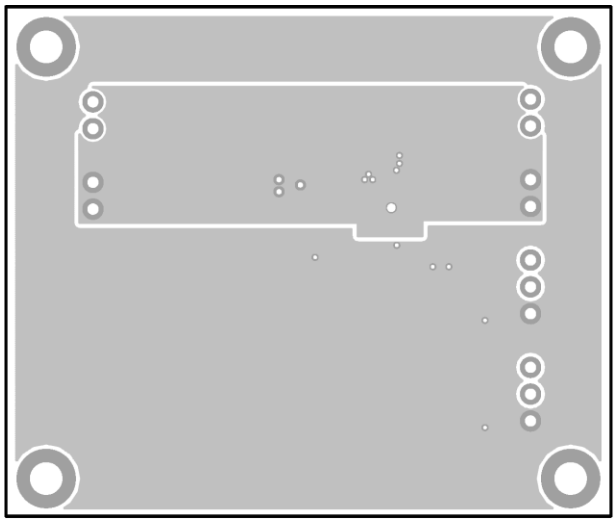


Figure 3—Bottom Layer

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QUICK START GUIDE

The LED currents at backlight mode, backlight plus review mode and flash mode are set to 20mA, 40mA, and 100mA, respectively on this board. The board layout accommodates mostly common used inductors and output capacitors.

1. Preset Power Supply to $2.7V \le V_{IN} \le 4.2V$.
2. Turn Power Supply off.
3. Connect Power Supply terminals to:
   a. Positive (+): VIN
   b. Negative (–): GND
4. Solder the first backlight LED string to LED1 - LED4.

   Solder the second backlight LED string to LED5 – LED8.

   Solder the flash LED string to LED9 – LED12.

   Set EN1 and EN2 based on the Enable Operation Table below. Connect EN1, EN2 to VIN to set them “H” and to GND to set them “L”.

Mode	EN1	EN2	Strings 1+2: LCD Backlight LEDs	String 3: Flash LEDs
Off	L	L	Off	Off
Backlight	H (PWM)	L	On (PWM)	Off
Backlight plus Preview	H (PWM)	H	On (PWM)	Preview current
Flash	L	H	Off	Flash current

5. Turn Power Supply on after making connections.

The LED currents can be adjusted by changing the values of resistors RS1, RS2, and RS3. V_{SET} = 1.216V.

$$RS1 = \frac{950 \times V_{SET}}{I_{LED_BL}}$$

$$RS2 = \frac{1100 \times V_{SET}}{I_{LED_PV}}$$

$$RS3 = \frac{1000 \times V_{SET}}{I_{LED_FL}}$$

For examples, If I_{LED_BL} = 10mA, then

$$RS1 = \frac{950 \times 1.216}{10} = 115.52k\Omega$$ (Use a 115kΩ 1% resistor)

If I_{LED_PL} = 20mA, then

$$RS2 = \frac{1100 \times 1.216}{20} = 66.88k\Omega$$ (Use a 66.5kΩ 1% resistor)

If I_{LED_FL} = 150mA, then

$$RS3 = \frac{1000 \times 1.216}{150} = 8.11k\Omega$$ (Use a 8.06kΩ 1% resistor)

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