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EV0042

1x, 1.5x, 2x High Efficiency Charge Pump 4 White LED Driver Evaluation Board

GENERAL DESCRIPTION

The EV0042 is an evaluation board for the MP1519, a fully automatic driver for powering four white LEDs, with up to 4V forward voltage, from a single Li-Ion or three NiMH cells. The driver performs all of the sensing and control to run the LEDs at an optimum charge pump ratio for efficiency without an expensive inductor. The driver allows PWM operation to support brightness control.

The tiny 3mm x 3mm QFN16 package and small external capacitors allow for the most compact white LED solution available.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
# of WLEDs		4	
Input Voltage	V_{IN}	2.5 – 5.5	V
LED Current	I_{LED}	20	mA

FEATURES

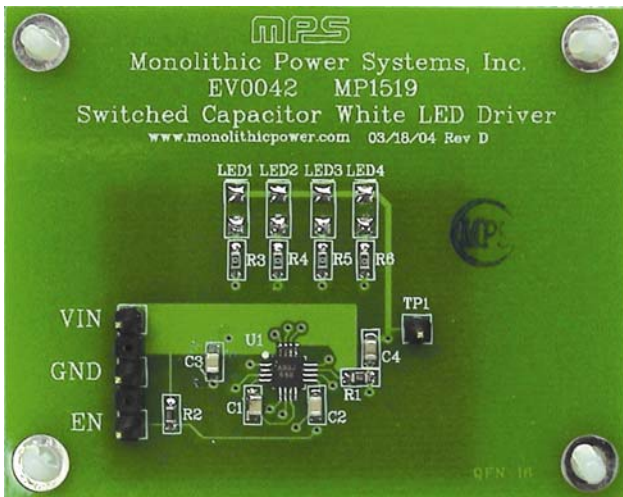
- 2% LED Current Matching
- High Efficiency (>93%)
- Current Source Outputs
- No Ballast Resistors Required
- 1x, 1.5x and 2x Automatic Modes
- Constant Frequency Operation
- Automatic LED Detection
- High and Low Frequency PWM Capability
- 2.5V to 5.5V Operation
- Less than 1µA Leakage during Shutdown
- Detects Changes in Battery Level
- No External Schottky Diode Required
- Soft-Start and Soft Switching Operation

APPLICATIONS

- Cell Phones
- PDA or Hand Held Computers
- White LED Application at 3.6V Supply

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EV0042 EVALUATION BOARD

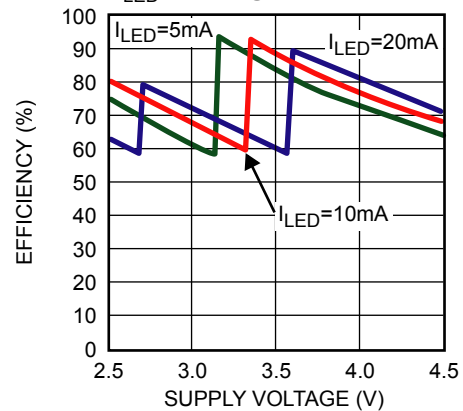


(L x W x H) 2.4" x 1.9" x 0.4"
(6.1cm x 4.8cm x 1.0cm)

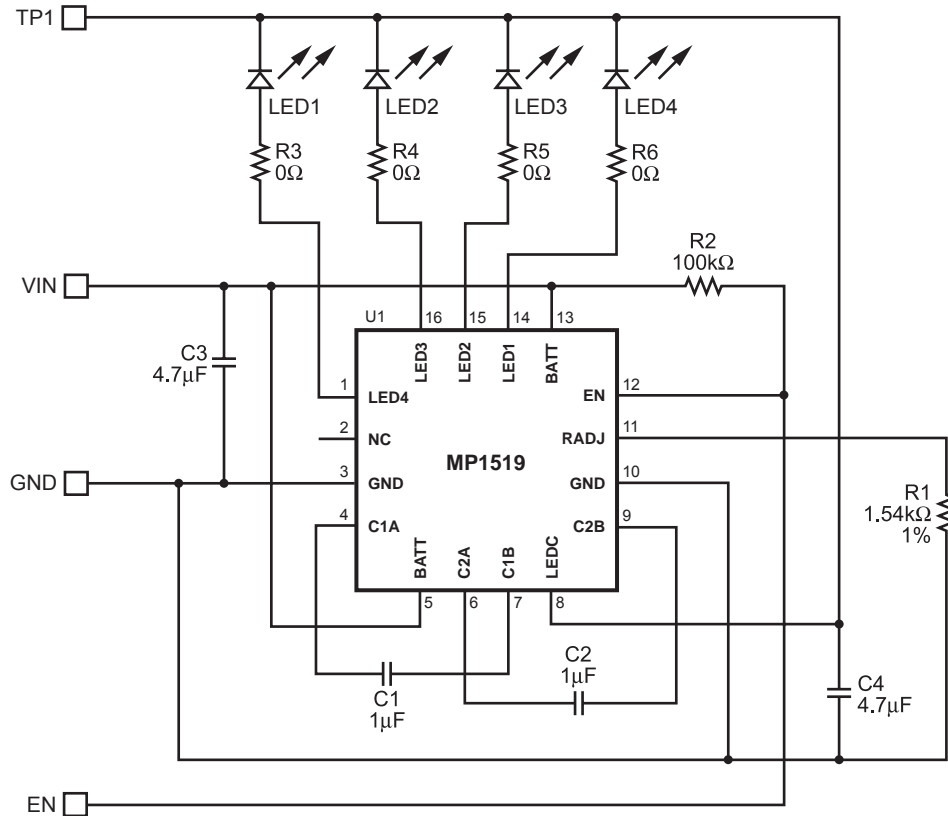
Board Number	MPS IC Number
EV0042	MP1519DQ

Efficiency vs Supply Voltage

$V_{LED} = 3.35V @ 20mA$



MP1519-EC01

EVALUATION BOARD SCHEMATIC


Note: Attach the exposed pad to the LEDC pin.

EV0042_S01

EV0042 BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer: Part No.	Distributor: Part No.
2	C1, C2	1μF	Ceramic Capacitor, 10V, X5R	0805	TDK: C2012X5R1A105K	Digikey: 445-1360-1-ND
2	C3, C4	4.7μF	Ceramic Capacitor, 6.3V, X5R	0805	TDK: C2012X5R0J475K	Digikey: 445-1421-1-ND
4	LED1, LED2, LED3, LED4		Not Stuffed			
1	R1	1.54kΩ	Resistor, 1%	0805	Panasonic: ERJ-6ENF1541V	Digikey: P1.54KCCT-ND
1	R2	100kΩ	Resistor, 5%	0805	Panasonic: ERJ-6GEYJ104V	Digikey: P100KACT-ND
4	R3, R4, R5, R6	0Ω	Resistor, 5%	0805	Yageo: 9C08052A0R00JLHFT	Digikey: 311-0.0ACT-ND
1	U1		White LED Driver		MPS: MP1519DQ	

PRINTED CIRCUIT BOARD LAYOUT

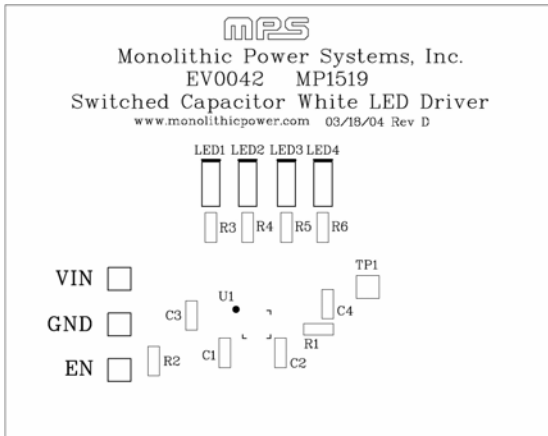


Figure 1—Top Silk Layer

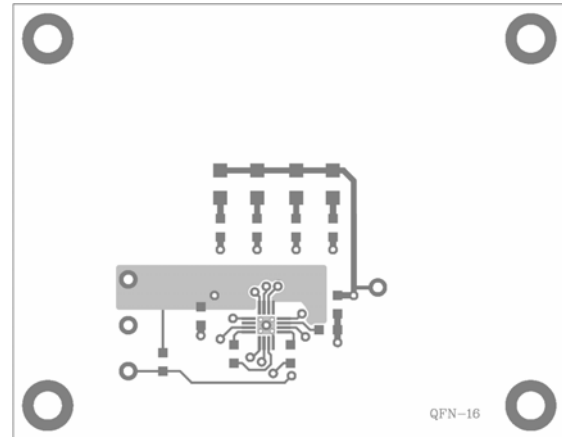


Figure 2—Top Layer

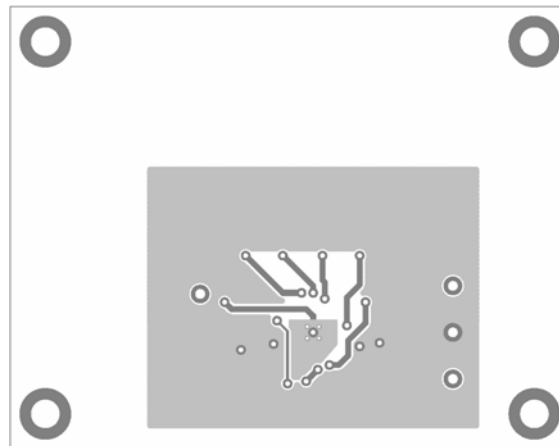


Figure 4—Bottom Layer

QUICK START GUIDE

1. Solder LED1 - LED4 to the board.
2. Attach the positive and negative terminals of the power supply (2.5V – 5.5V) to the VIN and GND pins, respectively.
3. The board is set up for automatic startup. Drive EN low to shut down the MP1519.
4. To use burst mode brightness control, drive EN with a PWM signal.

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