



**Absolute Maximum Ratings**

Input Supply Voltage $V_{IN}$	-0.3V to 28V
SW Pin Voltage $V_{SW}$	-0.3V to 28V
Voltage at All Other Pins except OLS	-0.3V to 6V
Storage Temperature	-55°C to +150°C

**Recommended Operating Conditions**

IN Input Supply Voltage $V_{IN}$	2.6V to 25V
Operating Temperature	-40°C to +85°C

**Package Thermal Characteristics**

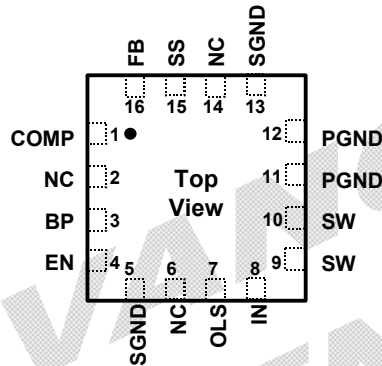
Thermal Resistance $\Theta_{JA}$	100°C/W
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**Electrical Characteristics** ( $V_{IN} = 5.0V$ ,  $T_A = 25^\circ C$  Unless specified otherwise)

Parameters	Conditions	Min	Typ	Max	Units
IN Input Voltage Range		2.6		25	V
IN Shutdown Supply Current	$V_{EN} < 0.3V$		0.5	5	$\mu A$
IN Operating Supply Current	$V_{EN} > 2V$ , $V_{FB} = 0.8V$		900		$\mu A$
BP Output Voltage	$V_{IN} = 2.6V$ to 25V		2.4		V
IN Undervoltage Lockout Threshold	$V_{IN}$ Rising	2.15		2.35	V
IN Undervoltage Lockout Hysteresis			100		mV
Output Voltage Range		3.3		25	V
EN Input Low Voltage				0.3	V
EN Input High Voltage		2			V
EN Input Hysteresis			100		mV
EN Input Bias Current				100	nA
SW Switching Frequency		1.08	1.2	1.32	MHz
SW Maximum Duty Cycle	$V_{FB} = 0.6V$	85	90		%
Error Amplifier Voltage Gain			400		V/V
Error Amplifier Transconductance			400		$\mu S$
COMP Maximum Output Current	Sourcing and Sinking		40		$\mu A$
FB Regulation Threshold		679	700	721	mV
FB Input Bias Current	$FB = 0.7V$		-100		nA
SS Charging Current	During Soft-Start		2		$\mu A$
SW On Resistance	$V_{IN} = 5V$		150		$m\Omega$
	$V_{IN} = 3V$		225		$m\Omega$
SW Current Limit	Note 1		4.0		A
SW Leakage Current	$V_{SW} = 25V$		0.5		$\mu A$
Thermal Shutdown			160		$^\circ C$
Open Load Shutdown Threshold	Measured at OLS pin		28		V

Note 1: Guaranteed by design. Not tested.

## Pin Descriptions



**Table 1: Pin Description**

QFN Pin	Name	Function
1	COMP	Compensation: Error Amplifier output. Connect to a series RC network to compensate the regulator control loop.
2, 6, 14	NC	No Connect
3	BP	Output of the internal 2.4V low dropout regulator. Connect a 10nF bypass capacitor between BP and SGND. Do not apply an external load to BP.
4	EN	Regulator On/Off Control Input. A logic high input ( $V_{EN} > 2V$ ) turns on the regulator, a logic low puts it into low current shutdown mode.
5, 13	SGND	Signal Ground
7	OLS	Open Load Shutdown pin senses regulator output voltage to protect IC during open load operation. When this pin's voltage exceeds 28V, the output switch is shut off. The device then restarts in soft start mode ( <i>see Soft Start Input</i> ).
8	IN	Input Supply Pin. This pin can be connected to the regulator's input supply or to the output for boot-strapped operation.
9, 10	SW	Output Switching Node. SW is the drain of the internal n-channel MOSFET. Connect the inductor and rectifier to SW to complete the step-up converter.
11, 12	PGND	Power Ground
15	SS	Soft-Start Input. Connect a 10nF to 22nF capacitor from SS to SGND to set the soft-start. SS sources 2 $\mu$ A to an external soft-start capacitor during start-up. As the voltage at SS increases to 1.2V, the voltage at COMP is clamped to 0.7V above the voltage at SS limiting the startup current. The external capacitor at SS is discharged to ground when under voltage lockout, thermal shutdown occurs or open load shutdown occurs.
16	FB	Regulation Feedback Input. The MP1517 regulates the voltage across the current sense resistor between FB and GND. Connect a current sense resistor from the bottom of the LED string to GND. Connect the bottom of the LED string to FB. The regulation threshold is 0.7V.

Figure 2: Flash Circuit driving 4 white LEDs (150mA peak LED current)

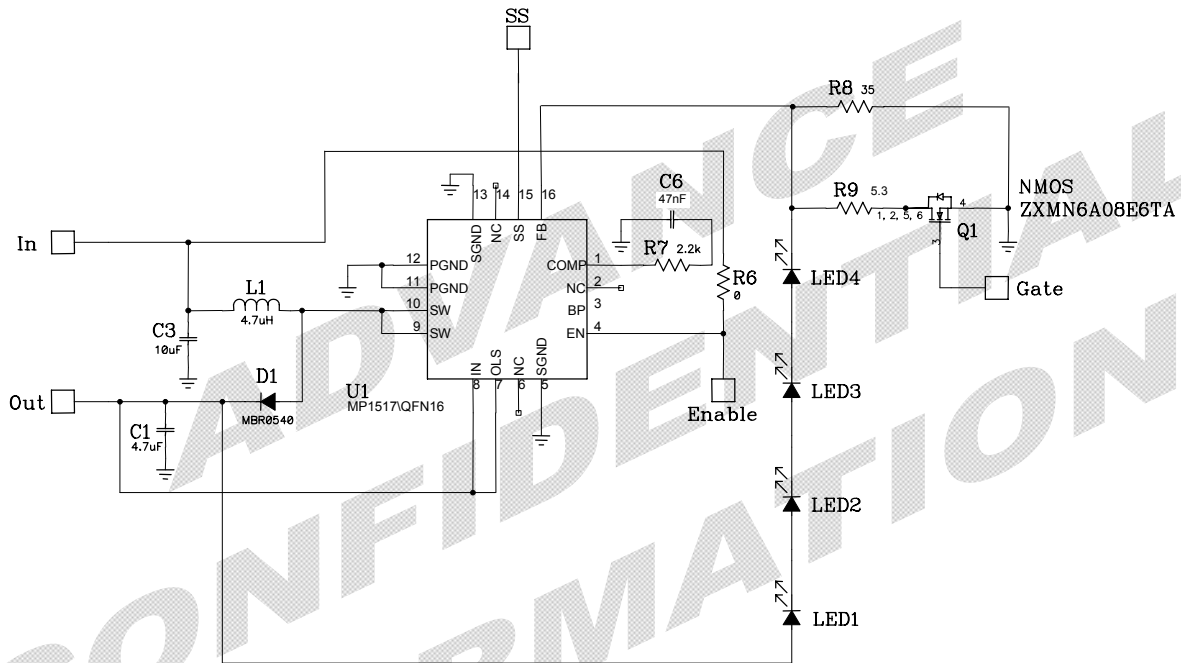
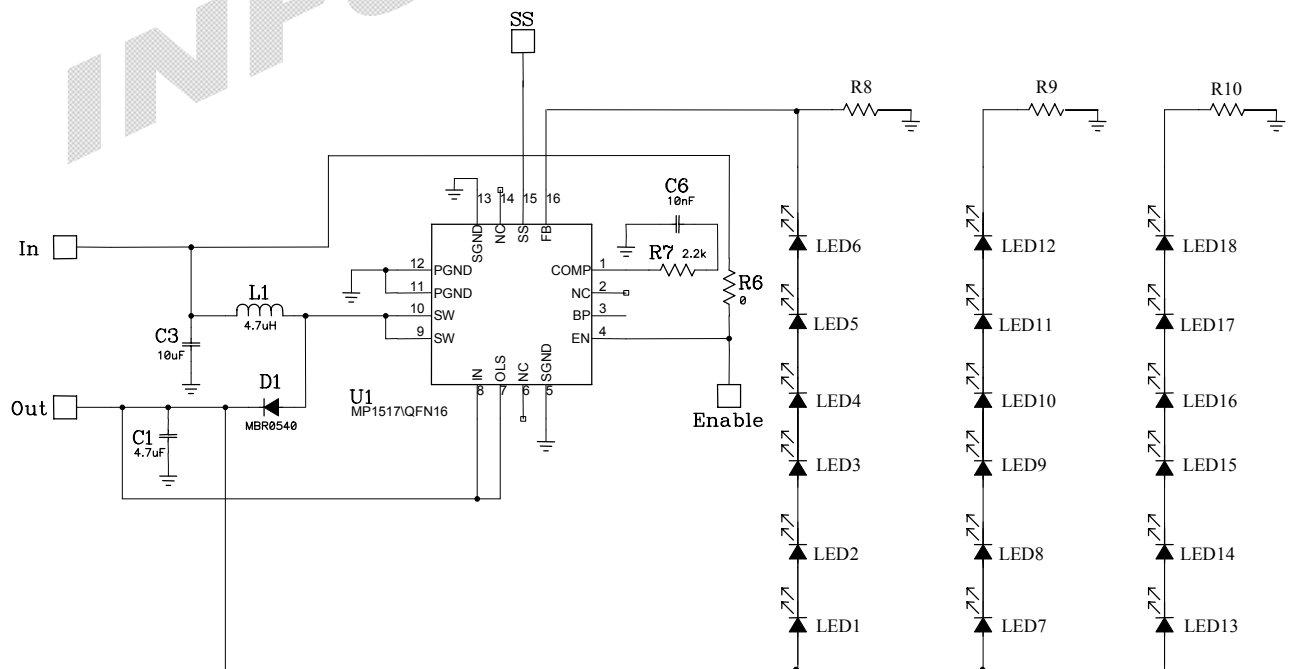


Figure 3: Driving 3 strings of 6 white LEDs





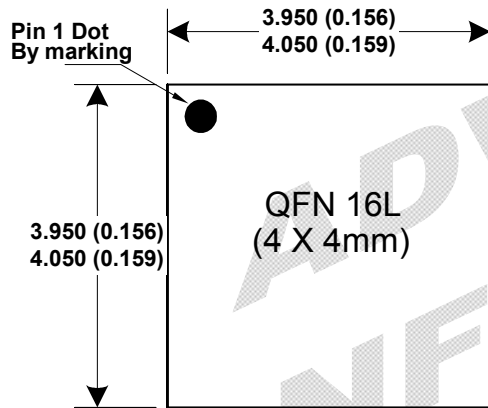
Monolithic Power Systems

# MP1517 3A White LED Camera Flash Driver

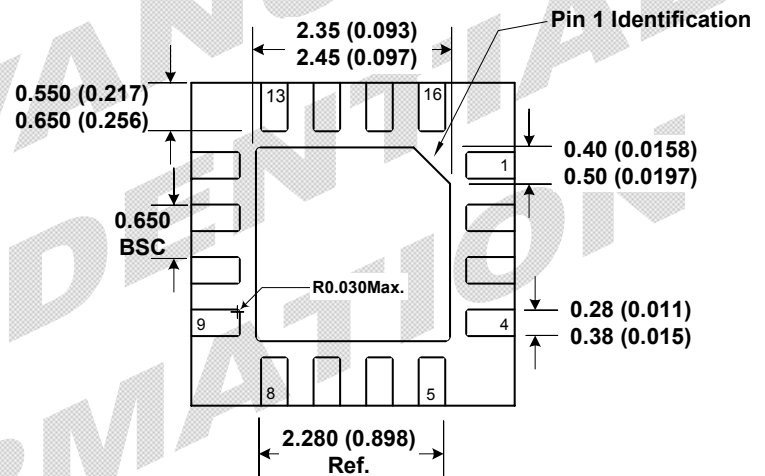
PRELIMINARY

## Packaging

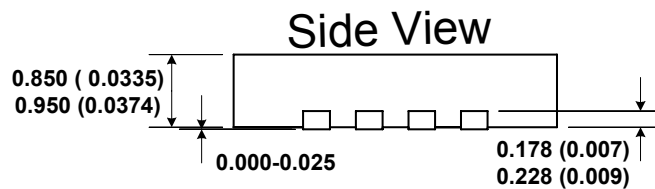
QFN16 (4x4)



Top View



Btm View



Side View

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