



## Power Factor Correction LED Driver

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### GENERAL DESCRIPTION

The M1917 is a fixed frequency PWM controller IC designed to control high brightness LED driver using a single-stage PFC boost-buck topology. It can achieve a well power factor and a higher dc-bus voltage. This topology allows reducing the filter capacitors and using non-electrolytic capacitors to improve reliability. The M1917 uses open-loop peak current control technique eliminates a need for loop compensation, limits the input inrush current, and is inherently protected from input under-voltage condition.

M1917 provides a low-frequency PWM dimming input that can accept an external control signal with a duty ratio of 0-100% and a frequency of up to a few KHz. The PWM dimming capability enables M1917 phase control solutions that can work with standard wall dimmers.

### FEATURES

- Constant output current
- Large step-down ratio
- Simple power factor correction
- 6V to 40V input range
- Low Input current harmonic distortion
- Fixed frequency or fixed off-time operation
- Input and output current sensing
- Input current limit
- Enable, PWM and phase dimming

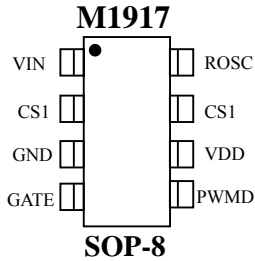
### APPLICATIONS

- Offline LED lamps and fixtures
- Street lamps
- Traffic signals
- Decorative lighting



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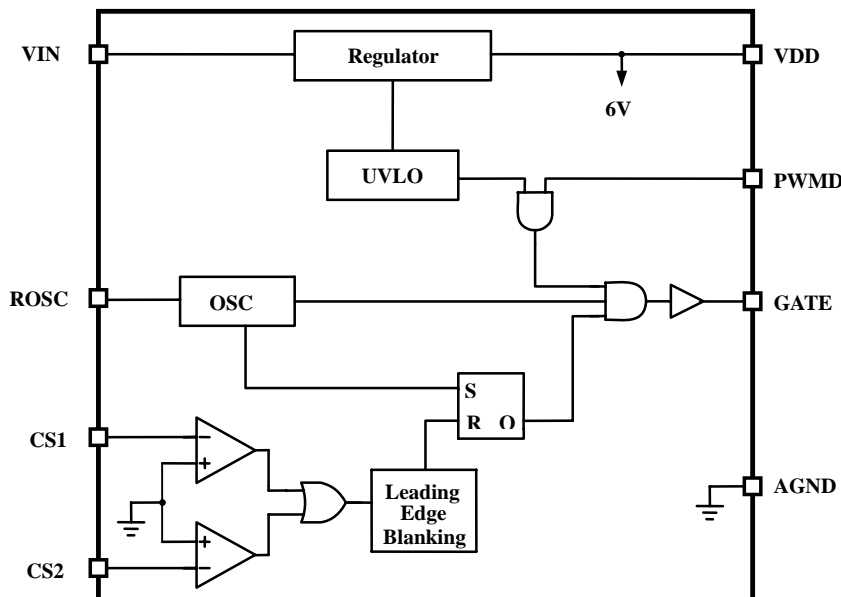
PIN ASSIGNMENT



PIN DESCRIPTION

Pin No	Pin Name	Description
1	VIN	Input voltage 6~40V DC
2, 7	CS1	Input or output current sense
3	GND	Device ground
4	GATE	Drives the gate of the external MOSFET
5	PWMD	Low Frequency PWM Dimming pin, also Enable input; When this pin connected to GND, switching of the M1917 is disabled
6	VDD	Positive power. It must be bypassed with a low ESR capacitor to GND
7	CS2	Input or output current sense
8	ROSC	Oscillator control. A resistor connected between this pin and GND sets the PWM frequency. A resistor connected between this pin and GATE sets the PWM off-time

FUNCTIONAL CIRCUIT DIAGRAM





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ABSOLUTE MAXIMUM RATING

(TA=25°C)

Parameter	Rating	Unit
VIN to GND	-0.5 to +40	V
V <sub>DD</sub> to GND	-0.3 to 6.5	V
CS1, CS2 to GND	-0.3 to (V <sub>DD</sub> + 0.3)	V
PWMD to GND	-0.3 to (V <sub>DD</sub> + 0.3)	V
GATE to GND	-0.3 to (V <sub>DD</sub> + 0.3)	V
Operating temperature range	-40 to +85	°C
Storage temperature range	-65 to +150	°C

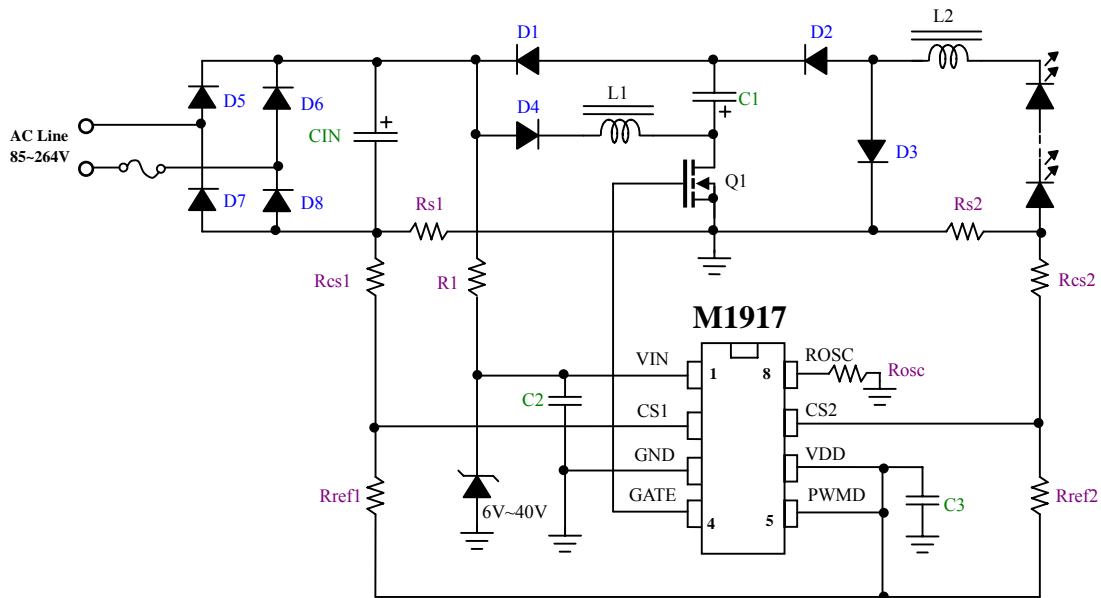
ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Input DC supply voltage range	VINDC	6		40	V	DC input voltage
Shut-Down mode supply current	IINSD	—	0.5	1.0	mA	Pin PWMD to GND, VIN = 12V
Internally regulated voltage	VDD	5.7	6	6.3	V	VIN = 8, IDD(ext) = 0, PWMD = VDD, CGATE = 500pF
Line regulation of VDD	VDD, line	0	—	1	V	VIN = 6 - 40V, IDD(ext) = 0, 500pF at GATE, Rosc = 226KΩ, PWMD = VDD
Load regulation of VDD	VDD, load	0	—	100	mV	IDD(ext) = 0 - 1mA, 500pF at GATE Rosc = 226KΩ, PWMD = VDD
VDD under voltage lockout threshold	UVLO	4.65	4.9	5.15	V	VIN rising
VDD under voltage lockout hysteresis	ΔUVLO		500		mV	
PWMD input low voltage	VPWMD(lo)	—	—	1.0	V	VIN = 6 - 40V
PWMD input high voltage	VPWMD(hi)	2.4	—	—	V	VIN = 6 - 40V
GATE high output voltage	VGATE(hi)	VDD-0.3	—	VDD	V	IGATE = 10mA
GATE low output voltage	VGATE(lo)	0	—	0.3	V	IGATE = -10mA
GATE output rise time	TRISE	—	30	50	ns	CGATE = 500pF
GATE output fall time	TFALL	—	30	50	ns	CGATE = 500pF
Delay from CS trip to GATE	TDELAY	—	200	400	ns	VIN = 12V, VCS1, VCS2 = -100mV
Blanking delay	TBLANK	190	270	350	ns	VCS1, VCS2 = -100mV
Initial accuracy	FOSC	88	110	132	KHz	Rosc = 226KΩ
Comparator Input offset voltage	V <sub>OFFSET</sub>	-15	—	15	mV	



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TYPICAL APPLICATION CIRCUIT



\* All specs and applications shown above subject to change without prior notice.  
(以上電路及規格僅供參考,本公司得逕行修正)



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PACKAGE OUTLINE

