

Features:

- 8V to 400V Input Voltage Range
- High Efficiency
- Drives from 1 to Hundreds of LEDs in Series/Parallel Combinations
- Regulated LED Drive Current
- Linear or PWM Brightness Control
- Resistor Programmable Oscillator Frequency
- SOIC-8 EP RoHS Compliant Package

Applications:

- Flat Panel Display RGB Backlighting
- Signage and Decorative LED Lighting
- DC/DC or AC/DC LED Driver Applications

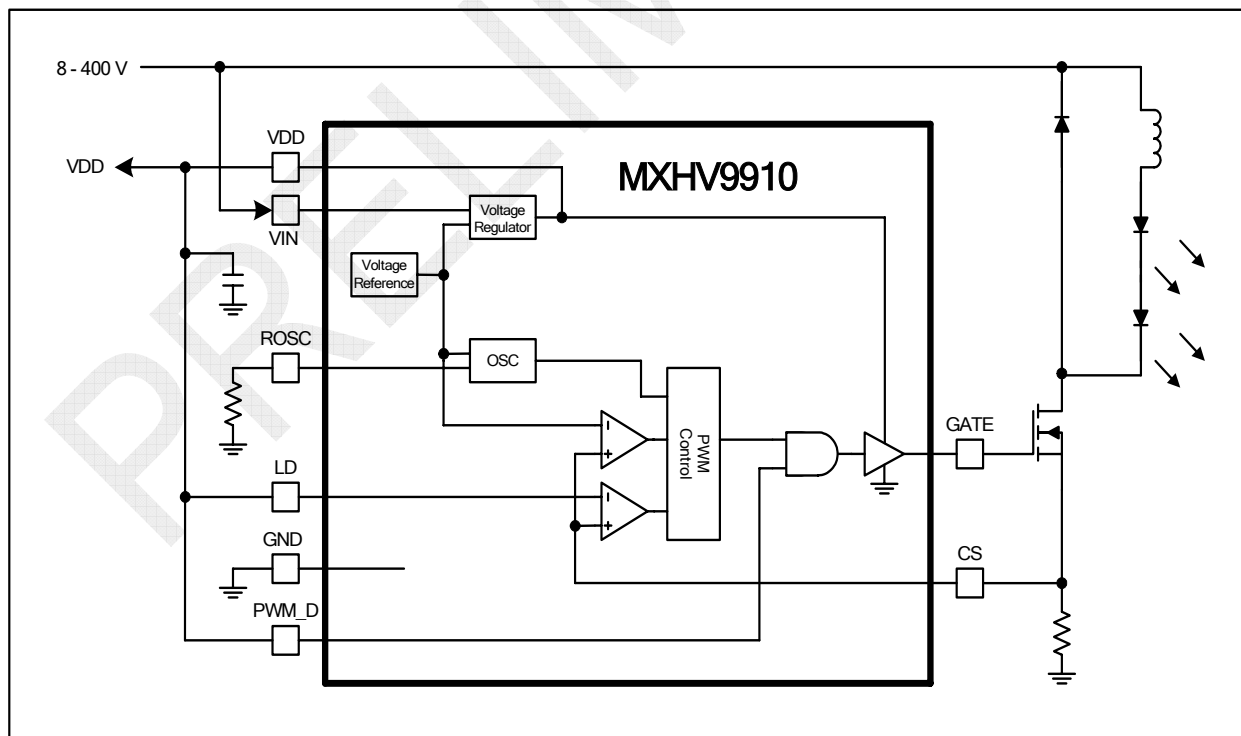
General Description

The MXHV9910 is a high-efficiency off-line LED driver. Manufactured using a dielectrically isolated process the MXHV9910 can operate from 8V to 400V. This highly versatile input operating voltage enables a broad range of High Brightness (HB) LED applications. The MXHV9910 drives an external MOSFET at a fixed oscillator frequency set by an external resistor. Peak constant current to an LED string is maintained by modulating the MOSFET GATE signal on and off through the external current sense resistor connected to the CS input. Dimming of and LED string is controlled by adjusting the duty cycle of the PWM input, or applying a control voltage from 0 to 250mV to the LD input.

Ordering Information

Part No.	Description	Qty
MXHV9910BE	SOIC-8 EP Tube	100
MXHV9910BETR	SOIC-8 EP Tape & Reel	2000

Functional Block Diagram and Typical Application



Absolute Maximum Ratings

Parameter	Symbol	Maximum	Units
VIN to GND		-0.5 to +410	V
CS		-0.3 to VDD+0.3	V
PD, PWM_D to GND		-0.3 to VDD +0.3	V
GATE to GND		-0.3 to VDD+0.3	V
VDDMAX		15	V
Thermal Resistance, Junction to Ambient	θ_{JA}		$^{\circ}\text{C}/\text{W}$
Operating Ambient	TA	-40 to +85	$^{\circ}\text{C}$
Storage Temperature	TSTG	-55 to +150	$^{\circ}\text{C}$

Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to the absolute maximum ratings for an extended period may degrade the device and affect its reliability.

Pin Description

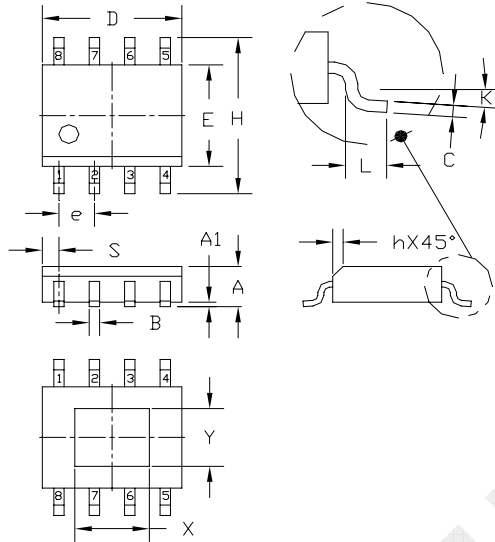
Pin No.	Pin Name	Description
1	VIN	Input Voltage 8V to 400V DC
2	CS	LED Current Sense input. Internal current sense threshold is set at 250mV. The external sense resistor sets the maximum LED current.
3	GND	Device Ground
4	GATE	External MOSFET Gate Driver Output
5	PWM_D	Low frequency PWM Dimming Control input with internal pull-down resistor.
6	VDD	7.8V regulated supply voltage output. Requires a storage capacitor to ground.
7	LD	Linear Dimming. Sets the current limit lower than the internal 250mV threshold at the current sense comparator.
8	ROSC	Resistor to ground sets the oscillator / primary PWM frequency.

Electrical Characteristics

TA=25 °C unless otherwise specified.

Parameter	Symbol	Condition	Min	Typ	Max	Units
Input DC Voltage Range	VINDC	DC input voltage	8		400	V
Shut-Down mode supply current	IINSD	PWM_D to GND VIN = 15-400V			1	mA
Internal DC Voltage Regulator	VDD	VIN = 15-400V, IDD(ext) = 0 Gate output open.		7.8		V
Maximum voltage to VDD pin	VDDmax	External voltage applied to the VDD pin			12	
VDD current available for external circuitry	IDD(ext)	VIN = Limited by package power dissipation.		1.0		mA
PWM_D input low voltage		VIN = 8-400V			0.5	V
PWM_D input high voltage		VIN = 8-400V	2.4			V
PWM_D pull-down resistance	REN			135		kΩ
Current sense threshold voltage	VCS(hi)			250		mV
GATE high output voltage	VGATE(hi)	IOUT = 10mA		VDD -0.3		V
GATE low output voltage	VGATE(lo)	IOUT = -10mA		0.3		V
Oscillator frequency	fOSC	ROSC = 400kΩ		64		kHz
Maximum Oscillator PWM Duty Cycle	DMAXhf		85			%
Linear Dimming Voltage Range	VLD	VIN = 15V	0		250	mV
Current Sense Blanking Interval	TBLANK			400		nS
Delay from CS trip to GATE lo	tDELAY			300		nS
GATE output rise time	tRISE	CGATE = 500pF		30		nS
GATE output fall time	tFALL	CGATE = 500pF		30		nS

8 LEAD SOIC WITH EXPOSED PAD



DIM.	INCH		MM.		NOTE
	MIN.	MAX.	MIN.	MAX.	
A	.053	.069	1.35	1.75	----
A1	.004	.010	.10	.25	----
B	.013	.020	.33	.51	----
C	.008	.010	.19	.25	----
D	.1890	.1968	4.80	5.00	②
E	.150	.157	3.80	4.00	③
F	.050	BSC	1.27	BSC	----
H	.228	.244	5.80	6.20	----
h	.010	.020	.25	.50	----
S	.0155	.0255	.394	.648	----
K	0°	8°	0°	8°	----
L	.016	.050	.40	1.27	----
X	.080	.130	2.032	3.302	----
Y	.080	.095	2.032	2.413	----

- 5. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
- 4. "L" IS THE LENGTH OF TERMINAL FOR SOLDERING TO A SUBSTRATE.
- ③ DIMENSION "E" DOES NOT INCLUDE INTER-LEAD FLASH OR PROTRUSIONS. INTER-LEAD FLASH AND PROTRUSION SHALL NOT EXCEED .010" (0.25mm) PER SIDE.
- ② DIMENSION "D" DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS AND GATE BURRS SHALL NOT EXCEED .006" (0.15mm) PER SIDE.
- 1. REFERENCE DRAWING JEDEC MS012, VARIATION AA.

NOTES: (UNLESS OTHERWISE SPECIFIED)

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