

c40V 3A Boost LED Constant Current Driver

General Description

The LN2141 regulator is fixed frequency PWM boost LED constant current driver, capable of driving series 1W/3W LED units with excellent line and load regulation.

The LN2141 regulator includes internal frequency compensation and fixed-frequency oscillator. An over current protection function is built inside. So the regulator requires a minimum number of external components to work. The PWM control circuit is able to adjust the duty ratio linearly from 0 to 90%. The LN2141 is available in SOP8 packages.

Package

- SOP8

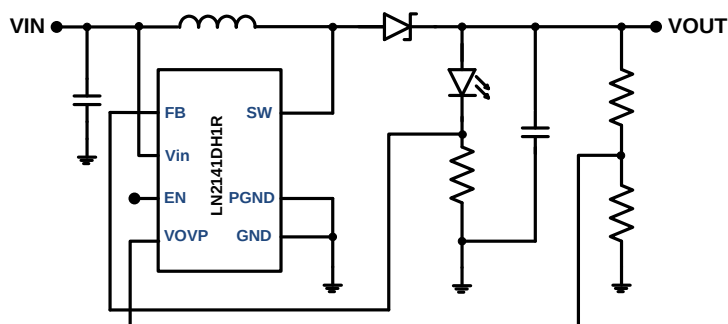
Application Information

Features

- EN shutdown with PWM dimming function
- Internal optimize power mosfet
- Soft-start function
- Thermal shutdown function
- Current limit and short protect function
- Pb-Free Package

Application

- LED Lighting
- Boost constant current driver
- Monitor LED Back lighting

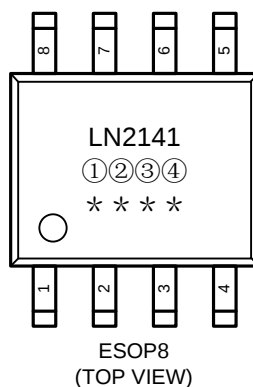


Ordering Information

LN2141 ①②③④

标号	描述	标记	描述
①	Product Type	D	LED Controller
②	Power Voltage	H	High power voltage input
③	CS Type	1	Integrated CS RES
④	Device Orientation:	R	Standard Feed
		L	Reverse Feed

■ Marking Information



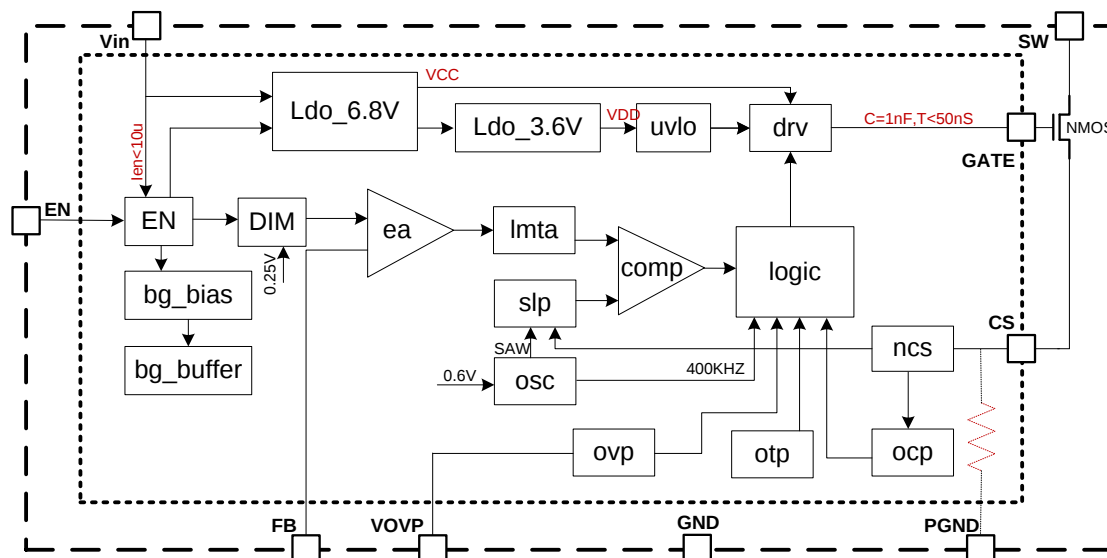
标号	标记	描述
①	D	LED Driver
②	H	High power voltage input
③	1	Integrated CS RES
④	R	

**** Represents the assembly lot No.

■ Functional Pin Description

Pin Name	Pin No.	Pin Function
EN	1	Chip Enable and PWM dimming
VIN	2	Power Input
FB	3	Feedback voltage
VOVP	4	Output over voltage sample
SW	5	Power Switch point
SW	6	Power Switch point
PGND	7	Power GND
GND	8	GND

■ Function Block Diagram



■ Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Supply Voltage	VDD	VSS-0.3~VSS+40	V
Enable Voltage	SD	VSS-0.3~VSS+6.	
Power Dissipation	PD@TA=25℃ SOP8	-	W
Package Thermal Resistance	SOP8	-	℃/W
Lead Temperature	-	260	℃
Ambient Temperature	Topa	-40~+85	
Storage Temperature	Tstr	-65~+125	
ESD Susceptibility	HBM	4000	V

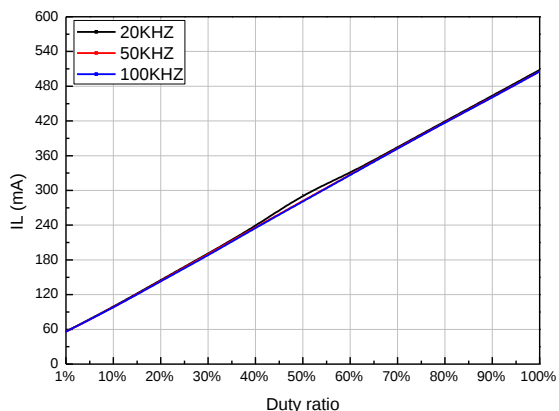
■ Electrical Characteristics

($V_{EN} = V_{DD} = 3.6V$, Gain=24dB, $R_L = 8\Omega$, $T_A = 25^\circ C$, unless otherwise specification)

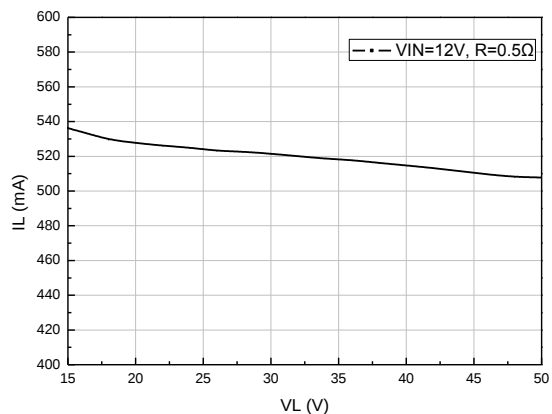
Boost LED Constant Current Driver					
Parameters	Test Condition	Min	Typ	Max	Unit
Input operation voltage	-	6.5	-	32	V
Under Voltage Lockout	-	-	5.5	-	V
UVLO Hysteresis	-	-	0.2	-	V
Shutdown supply current	-	-	20	-	μA
Oscillator frequency	-	-	400	-	KHz
PFM switching duty ratio	-	-	15	-	%
Switch current limit	$V_{FB} = 0V$	-	4	-	A
EA reference	-	-	0.26	-	V
CS resistance	-	-	50	-	$m\Omega$
EN pin threshold	High (Regulator ON)	-	-	1.4	V
	LOW (Regulator OFF)	0.8	-	-	V
Max. duty cycle	$V_{FB} = 0V$	-	80	-	%
Gate Ton	1nF	-	40	-	nS
Gate Toff	1nF	-	40	-	nS
Thermal shutdown	-	-	160	-	$^\circ C$
OTP hysteresis	-	-	25	-	$^\circ C$
PWM dimming frequency	Small duty cycle is recommended to use more than 30 KHZ frequency	20	-	100	KHZ

■ Typical Operating Characteristics

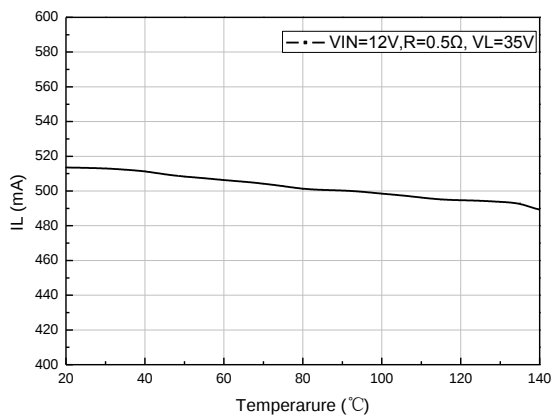
1. CE the Dimming



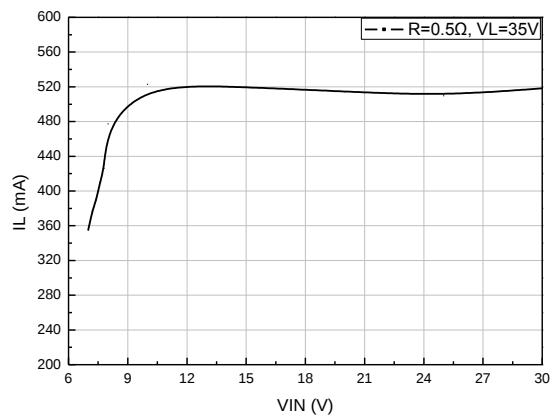
2. Load Regulation



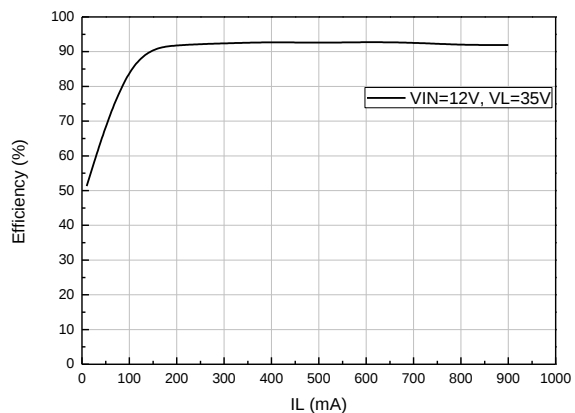
3. Current Temperature Curve



4. The linear stability



5. Efficiency



6. Working Frequency

($V_{in}=12V, R_{FB}=0.5\Omega, V_L=35V$)

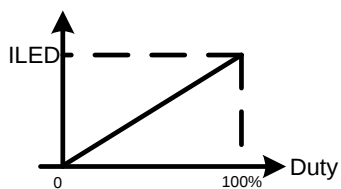


7. Minimum Conduction Time

($V_{in}=12V, R_{FB}=0.5\Omega, I_L=5mA$)



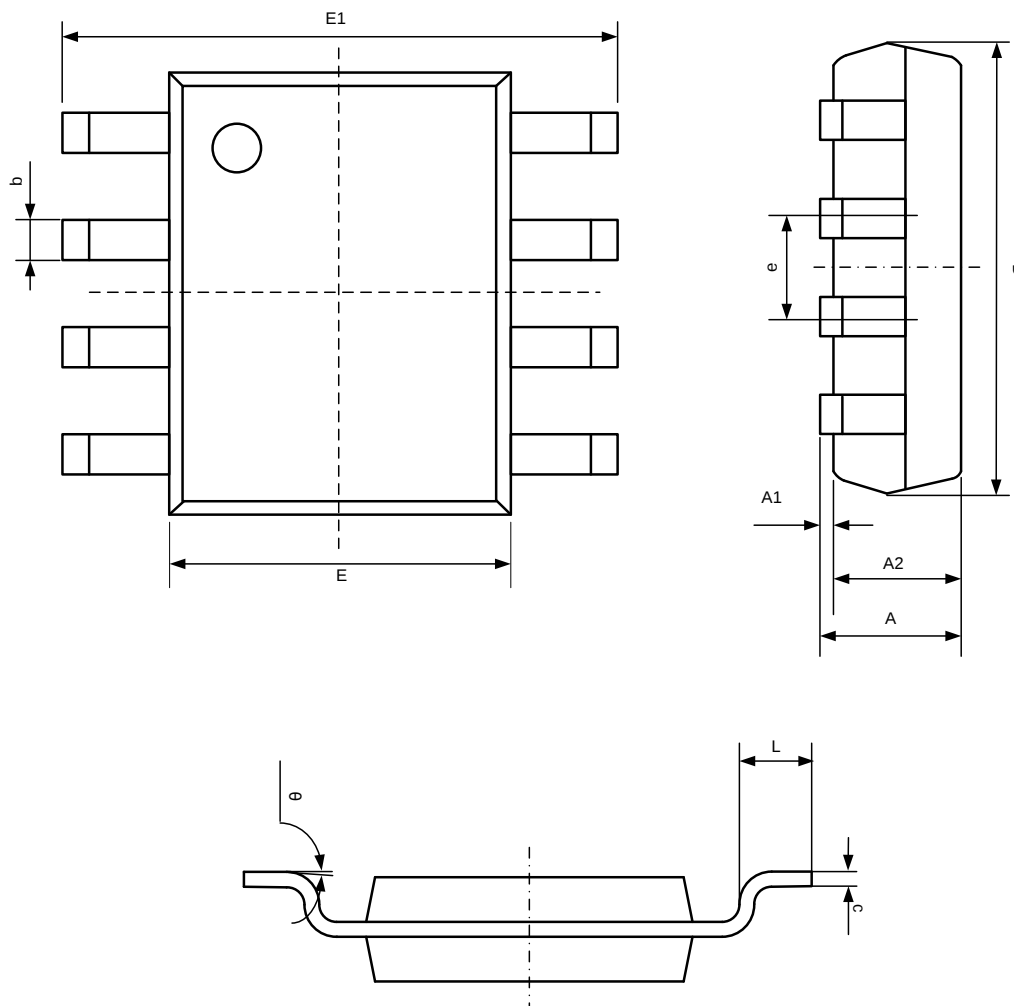
100kHz, and if use small duty(<5%) of input PWM signal to dim LED current, please make sure the frequency of PWM signal larger than 30kHz.



Picture 4

■ Package Information

● SOP8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°