RoHS Compliant
HALOGEN-FREE

NEO900

High Voltage AC LED Driver

General Description

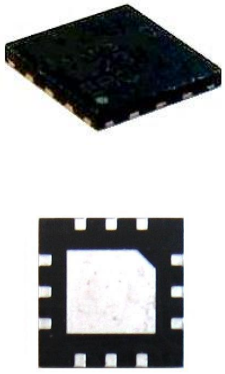
The NEO900 is LED Driver which has high input voltage ranged from 90V to 270V.

The NEO900 can achieve min 90% efficiency, 0.95 or higher power factor and low total harmonic distortion less than 20%.

The NEO900 has higher LED current drive capability up to 240mA and the current can be adjustable with external resistors.

The main function of NEO900 is to convert (transform) input voltage into drive current for power of LEDs.

The NEO900 is available in 6X6mm QFN 12Leads with Halogen-free (fully RoHS compliant).



6X6mm QFN 12

Features

- Triac dimming (110Vac/120Vac only)
- Flicker-free
- EMI improvement
- Power variation: ±15%
- Constant output power control
- Higher power factor : > 0.95
- Lower total harmonic distortion : < 20%
- Higher current drive capability
  Up to 240mA
- 6X6mm QFN 12Leads

Applications

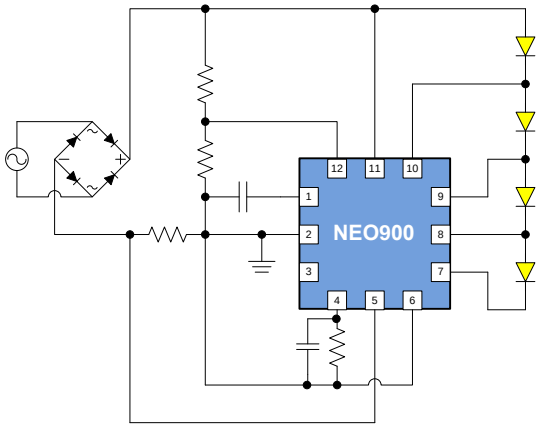
- AC LED Driver
- Lighting equipment
- LED Driver Power Supplies

Ordering Information

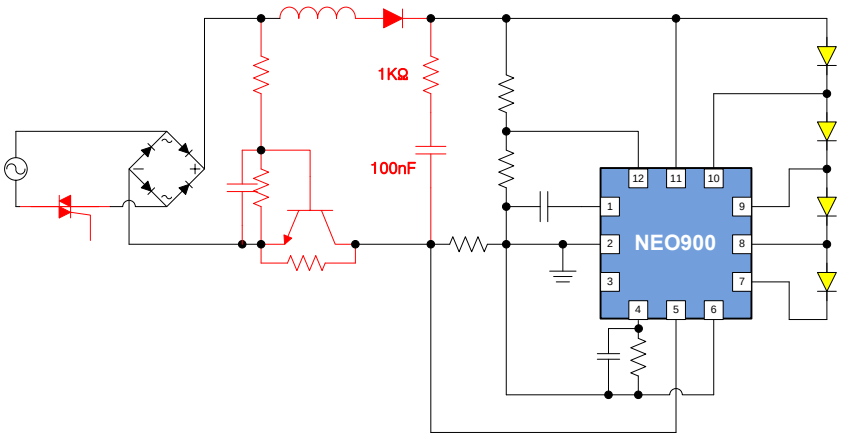
Part Number	Top Marking	Package	RoHS Status
NEO900	NEO900	6X6mm QFN 12Leads	Halogen Free

Simplified Application Circuit

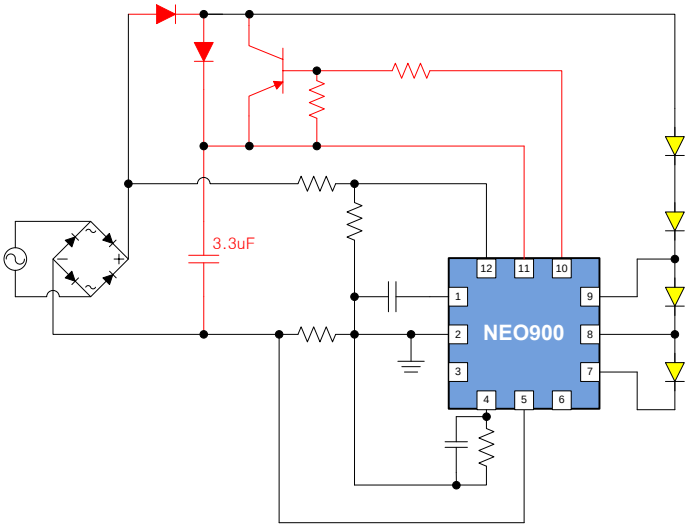
- AC Direct



- Triac Dimming (110Vac/120Vac only)

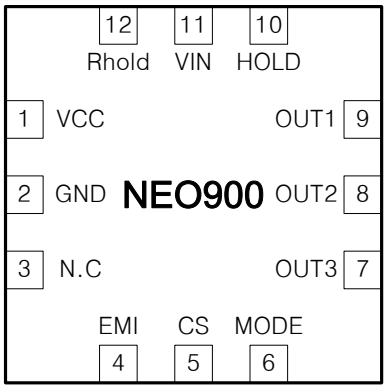


- Flicker-free



Pin Configuration & Description

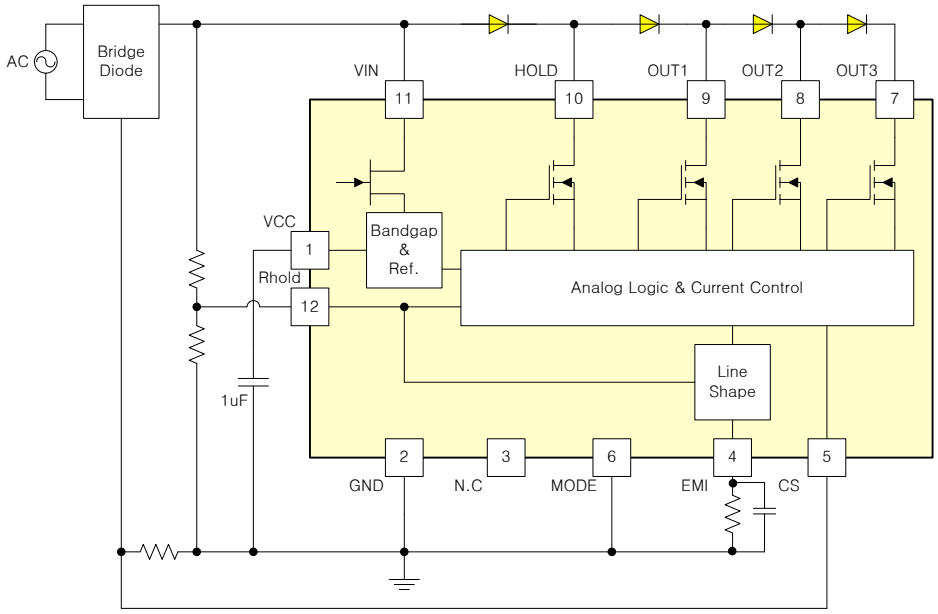
- Pin Configuration



- Pin Description

Pin		Descriptions
1	VCC	VCC
2	GND	Ground
3	N.C	No Connection
4	EMI	EMI improvement
5	CS	Current sensing
6	MODE	Flicker-free mode
7	OUT3	Output – 3
8	OUT2	Output – 2
9	OUT1	Output – 1
10	HOLD	Holding-up current
11	VIN	VCC charging
12	Rhold	HOLD turn-on voltage

Functional Block Diagram



Absolute Maximum Ratings

PARAMETER		VALUE	UNIT
VIN		500	V
HOLD, OUT1, OUT2, OUT3		-0.3 ~ 500	V
EMI		-0.3 ~ 6	V
VCC, Rhold, MODE		20	V
Operating Temperature Range (Note 1)		-40 ~ 125	℃
Junction Temperature Range (Note 1)		-40 ~ 150	℃
Storage Temperature Range		-65 ~ 150	℃
Lead Temperature(soldering, 10sec)		260	℃
ESD Susceptibility	HBM All Pins (Note 2)	±2000	V
	MM All Pins (Note 3)	±200	V
	CDM All Pins (Note 4)	±1000	V

Note 1: NEO900 is being tested under -60℃ now.
Note 2: ESD tested per JESD22A-114
Note 3: ESD tested per JESD22A-115
Note 4: ESD tested per JESD22C-101E

Thermal Resistance

PARAMETER		VALUE	UNIT
Thermal Resistance (θJA) , (Note 5)	6X6mm QFN 12Leads	63	℃/W
Thermal Resistance (θJT) , (Note 6)		8.7	℃/W

Note 5: Multi-layer PCB based on JEDEC standard (JESD51-7)
Note 6: The Metal PCB' diameter is 70mm and height is 1.6t.

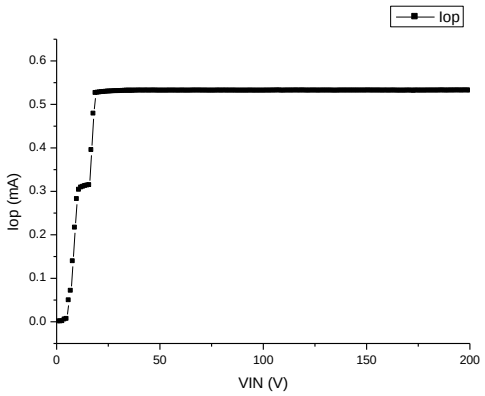
Electrical Characteristics

Ta = 25℃, CS Resistance = 6.8Ω unless otherwise specified

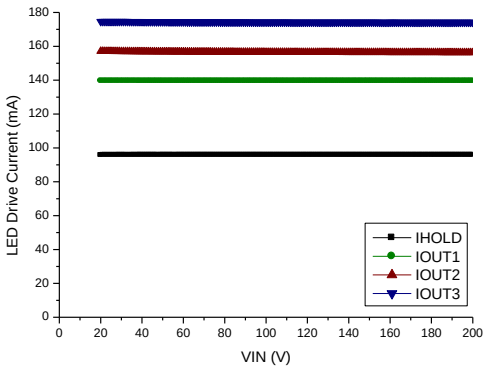
SYMBOL	PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNIT
Supply						
V_{VIN}	Input voltage range	Note 7	50		500	V
V_{VCC}	Operating voltage		-	15	-	V
I_{VCC}	Input current		300	600	900	uA
V_{UVLO}	Under voltage lockout	UVLO_H	-	12	-	V
		UVLO_L	-	10	-	V
Driver Section						
Rhold	Rhold reference voltage	V_{VIN} = 200V, V_{GND} = 0V		5.2		V
$I_{D\ Leak}$	Driver Leakage current	V_{VIN} = 200V, V_{GND} = 0V, HOLD & OUT1 ~ 3 = 400V	-	-	10	uA
I_{HOLD}	HOLD current	V_{VIN} =200V, HOLD = 40V MODE = 0V, Rhold = 0V	78.3	86.3	94.2	mA
I_{OUT1}	Driver 1 current	V_{VIN} =200V, OUT1 = 40V Rhold = 0V	119.3	128.0	136.7	mA
I_{OUT2}	Driver 2 current	V_{VIN} =200V, OUT2 = 40V Rhold = 0V	146.0	155.2	164.3	mA
I_{OUT3}	Driver 3 current	V_{VIN} =200V, OUT3 = 40V Rhold = 0V	178.7	186.2	193.6	mA
I_{OUT_SUM}	-	I_{HOLD} + I_{OUT1} + I_{OUT2} + I_{OUT3}	531.0	556.0	581.0	mA

Note 7: Stress beyond the maximum ratings listed above may incur permanent damage to the device. Operating above the recommended conditions for extended time may stress the device and affect device reliability. Also the device may not operate normally above the recommended operating conditions. These are stress ratings only.

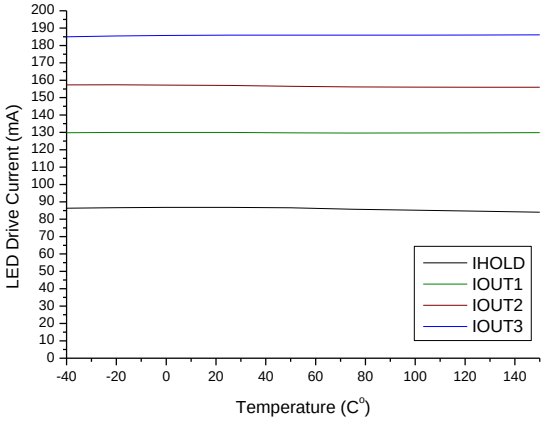
Typical Operating Characteristics



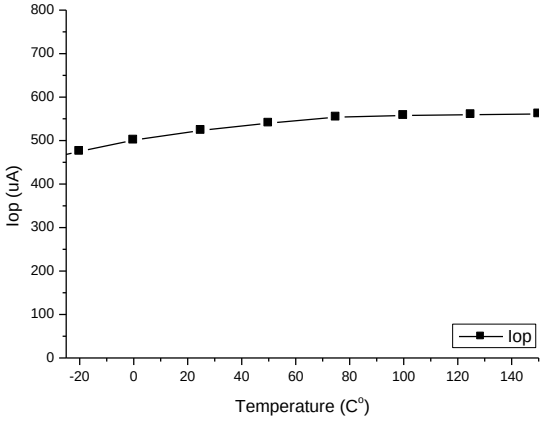
Operate Current Vs. Input Voltage



LED Drive current Vs. Input Voltage



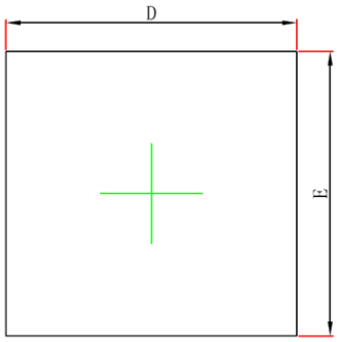
LED Drive current Vs. temperature



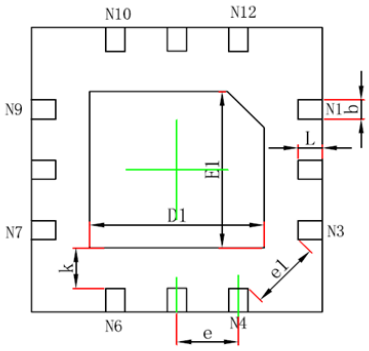
Operate Current Vs. temperature

Physical Dimensions

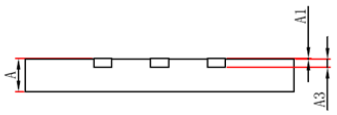
1) QFN 6x6 12LD



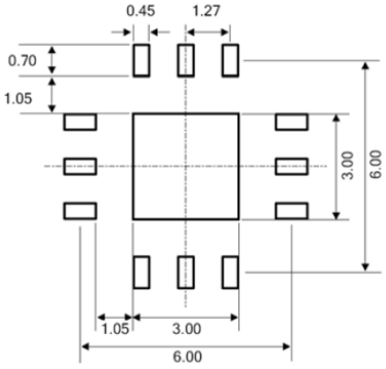
TOP VIEW



BOTTOM VIEW



SIDE VIEW



LAND PATTERN
RECOMMENDATION

Symbol	Dimension [mm]	
	min	max
A	0.70	0.90
A1	0.00	0.05
A3	0.203REF.	
D	5.90	6.10
E	5.90	6.10
D1	3.50	3.70
E1	3.20	3.40
k	0.20MIN.	
b	0.35	0.45
e	1.27TYP	
e1	1.45TYP	
L	0.42	0.58