



CE IP67



FEATURES

- For 48V LED track light application
- Efficiency up to 95%
- Constant current output up to 1A
- Wide input and output voltage range
- 3 in 1 dimming (dim-to-off)
- Short circuit and over temperature protection
- Internal SMD technology
- UL 94V-0 package material

APPLICATIONS

- Landscape illumination
- Special illumination
- Commercial illumination
- Street light illumination
- Home use illumination

DESCRIPTION

LLE-48 series is a high efficiency, constant current and step-down DC/DC Converter. The LED driver operates an input voltage range of 12Vdc to 56Vdc, and provides a selectable output current up to 1000mA and output power up to 45 watts. It is able to include the function of over temperature protection (OTP), over current protection (OCP), and 3 in 1 dimming (dim-to-off) comprised by PWM generator, 0-10Vdc interface and resistor potentiometer. Especially its outward appearance design is suitable for LED track light application.

MODEL ENCODING

LLE	-	48	-	1.00	W	A
Series Name	Input Voltage	Output Current	Package	Function		
	12~56V	0.25 : 250mA	W : Wired	Blank : 3 in 1 Dimming		
		0.30 : 300mA		A : PWM/DC		
		0.35 : 350mA				
		0.50 : 500mA				
		0.70 : 700mA				
		1.00 : 1000mA				

MODEL SELECTION TABLE

MODEL NUMBER	INPUT				OUTPUT		EFF. (%)	CAPACITOR LOAD (Max.)
	VOLTAGE (VDC)		CURRENT (mA)		VOLTAGE (VDC)	CURRENT (mA)		
	NOMINAL	RANGE	NO LOAD	FULL LOAD	RANGE	RANGE		
LLE-48-0.25W(A)	48	12-56	5	199	2-45	0-250	94	2.2uF
LLE-48-0.30W(A)	48	12-56	5	239	2-45	0-300	94	2.2uF
LLE-48-0.35W(A)	48	12-56	5	276	2-45	0-350	95	2.2uF
LLE-48-0.50W(A)	48	12-56	5	395	2-45	0-500	95	2.2uF
LLE-48-0.70W(A)	48	12-56	5	737	2-45	0-700	95	2.2uF
LLE-48-1.00W(A)	48	12-56	5	789	2-45	0-1000	95	2.2uF

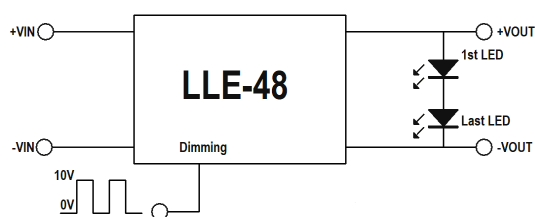
Note: Output voltage will always step down 4 volts from input voltage.

Efficiency and input current are measured at nominal input voltage and full load (10LEDs).

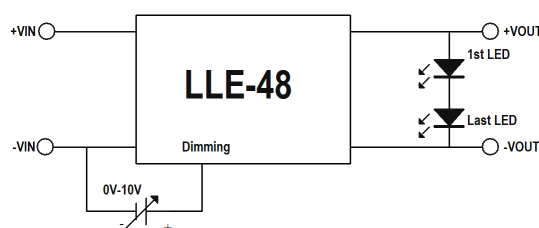
Other input to output voltages may be available. Please contact factory.

TYPICAL APPLICATIONS

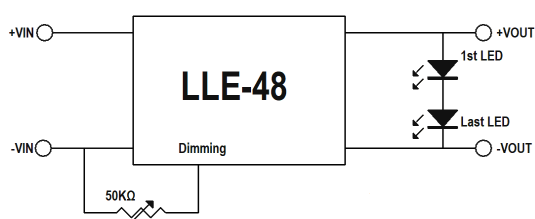
PWM dimming control circuit



0-10Vdc/analogue voltage dimming control circuit



Resistor dimming control circuit



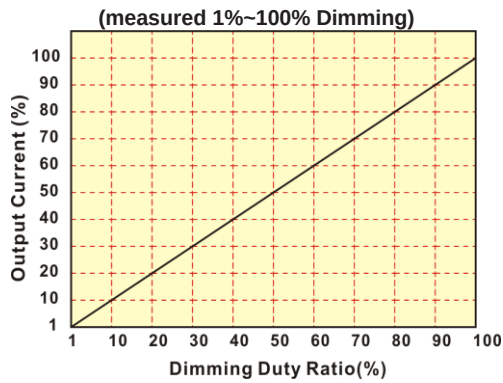
Note: Do not connect -Vin to -Vout

SPECIFICATION

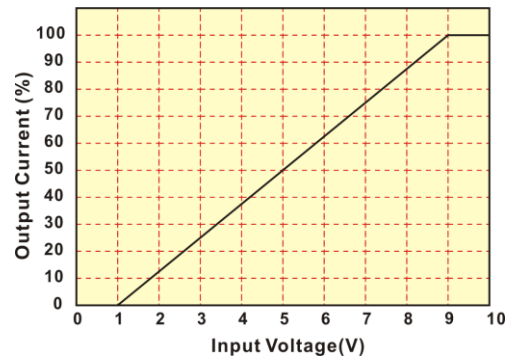
INPUT	Voltage Range	12~56V
	Filter	Capacitor type
OUTPUT	Current Accuracy	±6% max. Vin=48V, 10 LEDs
	Current Stability	±8% max. Vin=48V, 1~10 LEDs
	Ripple & Noise ¹	350mVp-p max.
	Switching Frequency	40KHz~1000KHz
PWM DIMMING ON/OFF CONTROL	Remote on/off (3 in 1 Dimming)	Leave open if not used
		Power on with dimming: DIM ~ -Vin >10 ~ 15Vdc or open circuit
		Power off : DIM~ -Vin < 9.5Vdc or short
	Remote on/off	Leave open if not used
		Power on with dimming : DIM ~ -Vin >2.5 ~ 15Vdc or open circuit
		Power off : DIM ~ -Vin < 0.3Vdc or short
	PWM Frequency	100~1KHz
	Quiescent Input Current in Shutdown Mode	4mA max. , Vin=48V
0-10 VDC DIMMING	Input Voltage Range	0~15V
	Control Voltage	Power on : DIM ~ -Vin >1~9Vdc
		Power off : DIM ~ -Vin < 0.9Vdc or short
ANALOGUE VOLTAGE DIMMING	Input Voltage Range	0~15V
	Control Voltage	Power on : DIM ~ -Vin >0.5~2.5Vdc
		Power off : DIM ~ -Vin < 0.3Vdc or short
PROTECTION	Short Circuit	Protection type : continuous, recovery
	Over Temperature	Tj 150°C typically(IC1) detect on main control IC
		Protection type : Shut down, recovers automatically after temperature goes down
ENVIRONMENT	Cooling	Free-air convection
	Working Temperature	-40~ +85°C (refer to "Derating Curve")
	Case Temperature	+110°C max.
	Working Humidity	5% ~ 95% RH non-condensing
	Storage Temp., Humidity	-55 ~ +125°C, 10 ~ 95% RH non-condensing
	Temperature Coefficient	±0.03% / °C (0~+71°C)
	Soldering Temperature	1.5mm from case of 3~5 sec./265°C(max.)
	Vibration	10~500Hz, 2G 10min./1cycle, period for 60 min. each along X, Y, Z axes
SAFETY & EMC	Isolation Voltage	Non-Isolation
	Safety Standards	EAC TP TC 004 approved
	EMC Emission	Compliance to EN55015
	EMC Immunity	Compliance to EN61000-4-2,3,4,6,8, light industry level, criteria A
OTHERS	MTBF ²	>650,000Hours
	Weight	9.5g typ.
	Dimension(L*W*H)	47mm*12mm*7mm
	Case Material	Non-conductive plastic
NOTE	¹ Measured with 0.1uF ceramic capacitor connect to the output wires (20MHz BW) ² MIL-HDBK-217F @25 °C, Ground Benign *All specifications are measured at Ta=25°C, humidity < 75%, nominal input voltage, and rated output load unless otherwise specified.	

■ 3 IN 1 DIMMING AND ON/OFF CONTROL

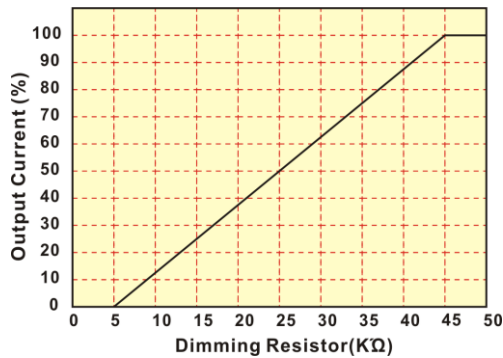
PWM



0-10Vdc



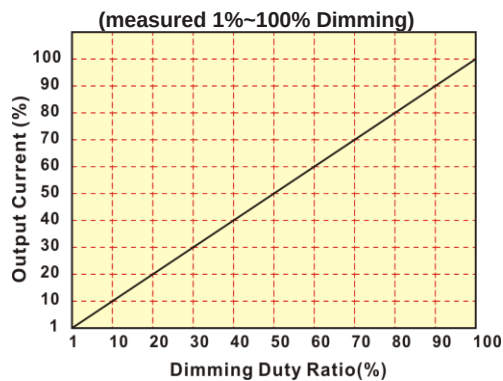
Resistor



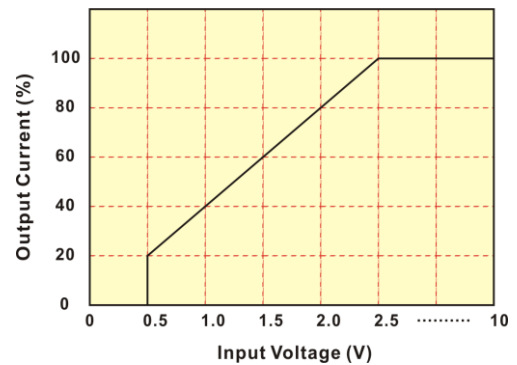
Dimming source current from power supply: 200μA (typ.)

■ PWM/DC DIMMING AND ON/OFF CONTROL Suffix "A"

PWM

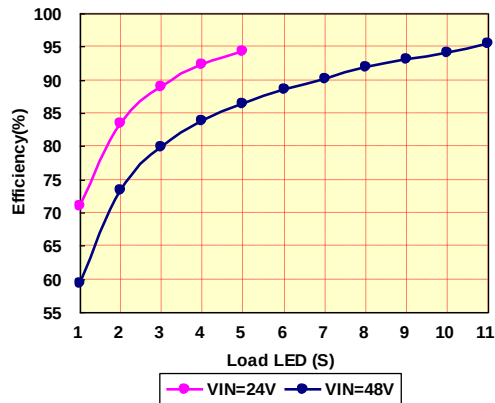


Analogue voltage

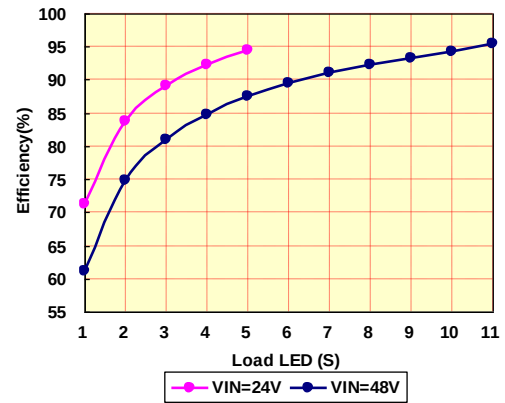


■ EFFICIENCY VS OUTPUT VOLTAGE(NUMBER OF LEDS)

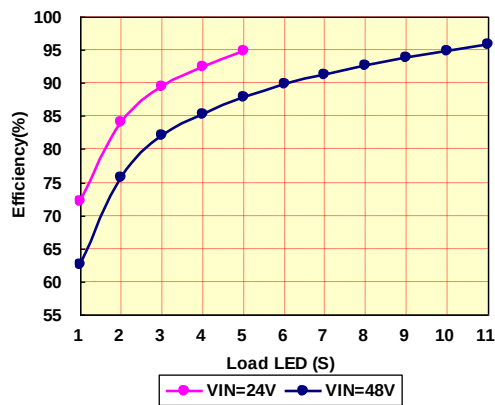
Output current 0.25A



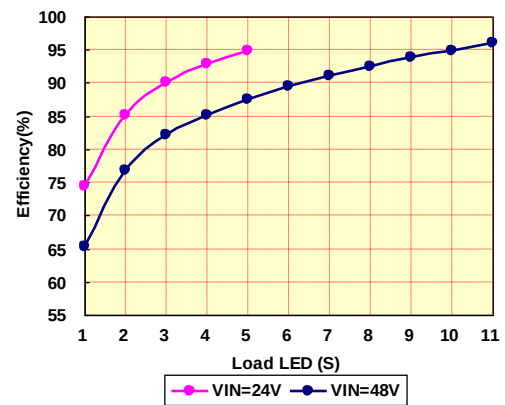
Output current 0.30A



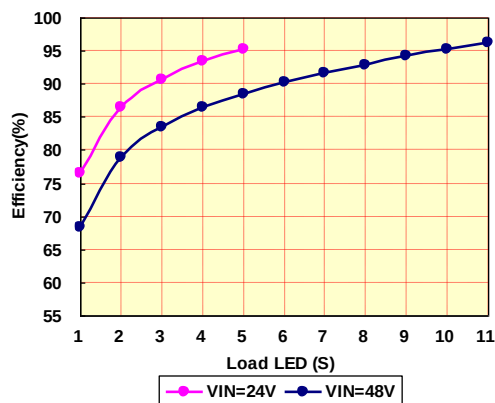
Output current 0.35A



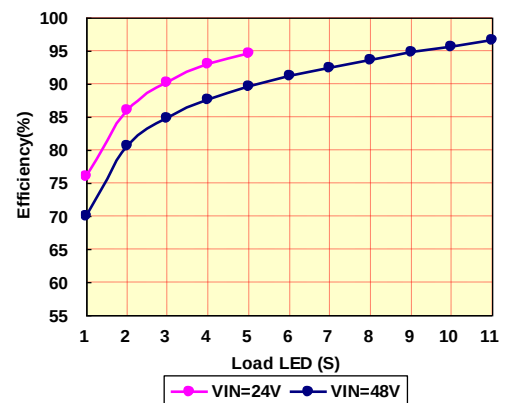
Output current 0.50A



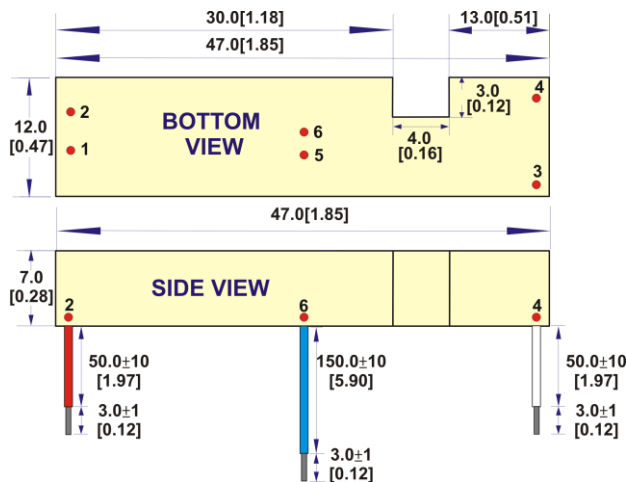
Output current 0.70A



Output current 1.00A



MECHANICAL SPECIFICATION



CONNECTION		
PINOUT		COMMENT
1 (Black)	-Vin	Don't connect to -Vout
2 (Red)	+Vin	DC Supply
3 (Black)	DIM(-)	Connect to -Vin
4 (White)	DIM(+)	ON/OFF control Leave open if not used
5 (Yellow)	+Vout	LED + Connection
6 (Blue)	-Vout	LED - Connection

All dimensions are in mm[Inches]

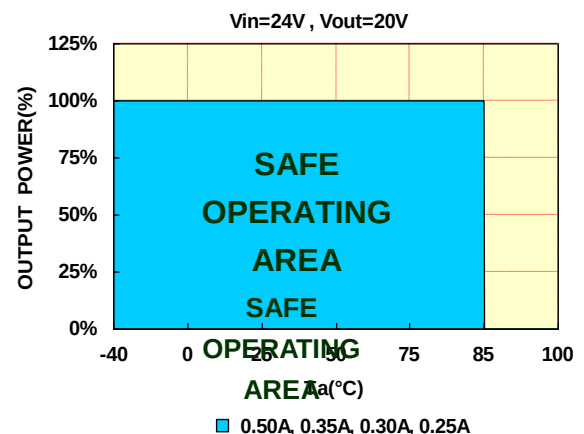
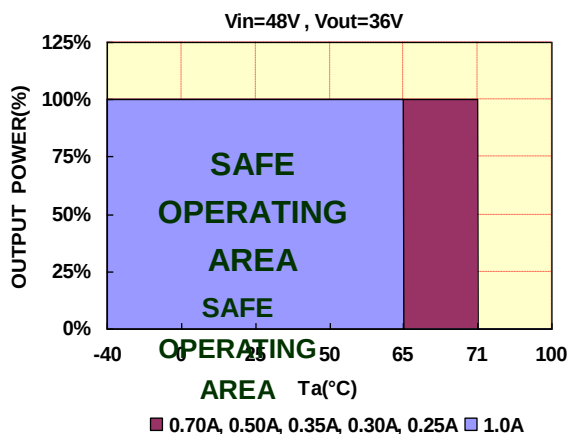
Case tolerance .X or .XX= ±0.5mm

Wire outside diameter= 1.6mm±0.1

Wire core diameter= 0.75mm±0.1

Wire is UL 3385/CAS tem listed #22AWG /300V /105°C Rated

DERATING CURVE

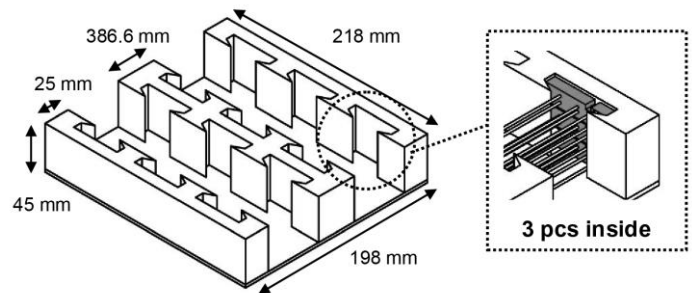
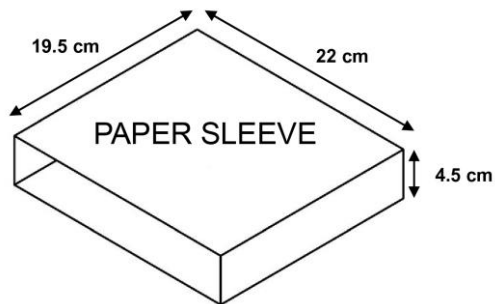




LLE-48 SERIES

Constant Current LED Driver

■ PACKAGING INFORMATION



Packaging Quantity: 36 pcs one paper sleeve



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