

SLE-24 SERIES

Constant Current LED Driver

AvivEnergy^{tech} Ltd.

FEATURES

- EFFICIENCY UP TO 95%
- CONSTANT CURRENT LED DRIVER
- WIDE INPUT AND OUTPUT VOLTAGE RANGE
- INPUT VOLTAGE UP TO 36V
- PWM DIMMING CONTROL
- SHORT CIRCUIT AND OVERTEMPERATURE PROTECTED
- INTERNAL SMD TECHNOLOGY
- FULLY ISOLATED PLASTIC CASE WITH IP67 LEVEL
- UL 94V-0 PACKAGE MATERIAL
- RoHS COMPLIANT
- 3 YEARS WARRANTY

IP67

CE

FC



DESCRIPTION

SLE-24 series is a high efficiency, constant current and step-down DC/DC converter. The LED DRIVER operates from an input voltage 9Vdc to 36Vdc and provides an externally adjustable output current of up to 700mA and output power up to 22 watts. It is able to include the function of Over temperature protection(OTP), Over current protection(OCP), PWM/Digital Dimming and ON/OFF.

The device can extensively be used for Landscape illumination, Special illumination, Back light source, Commercial illumination, Street light illumination, Home use illumination and Automobile illumination etc.

SELECTION GUIDE

| MODEL NUMBER | INPUT NOMINAL VOLTAGE (VDC) | INPUT VOLTAGE RANGE (VDC) | OUTPUT VOLTAGE RANGE (VDC) | OUTPUT CURRENT RANGE (mA) | DIMMING CONTROL | EFF (% ,MAX) |
|-----------------|-----------------------------|---------------------------|----------------------------|---------------------------|-----------------|--------------|
| SLE-24-0.30D(W) | 24 | 9-36 | 2-32 | 0-300 | PWM | 95 |
| SLE-24-0.35D(W) | 24 | 9-36 | 2-32 | 0-350 | PWM | 95 |
| SLE-24-0.50D(W) | 24 | 9-36 | 2-32 | 0-500 | PWM | 95 |
| SLE-24-0.60D(W) | 24 24 | 9-36 9-36 | 2-32 2-32 | 0-600 0-700 | PWM PWM | 95 |
| SLE-24-0.70D(W) | | | | | | 95 |

● PARTNUMBES STRUCTURE

| Series | Coding scheme | |
|---------------|------------------|---|
| SLE-24 Series | SLE-x1-x.x2y1zzz | <p>SLE =Series Name x1 = Input voltage x.x2 =Output current y1 = Package Style(D=PINS,W=WIRED) zzz = 0~9 , A~Z or blank for market purpose.</p> |

● SPECIFICATIONS

(typical at 25°C, nominal input voltage, rated output current unless otherwise specified)

| Project | Working Condition | Min | Typ | Max | Unit |
|--|----------------------------|------------------------|-----|-------|-------|
| Input Voltage(absolute maximum) | | | | 36 | VDC |
| Recommended Input Voltage | | 9 | 24 | 36 | VDC |
| Input Filter | | Capacitor | | | |
| Output Voltage range | Vin=36V | 2 | | 32 | VDC |
| Output Current Accuracy | Vin=24V,6LEDS | | ±4 | ±6 | % |
| Output Current Stability | Vin=24V,1LED to 6LEDS | | ±4 | ±6 | % |
| Maximum Capacitive Load | | | | 2.2 | uF |
| Operating Frequency | | 40 | | 1000 | KHz |
| Short Circuit Protection | | Continuous | | | |
| Temperature Coefficient | -40°C~+71°C ambient | | | ±0.03 | %°C |
| Operating Temperature | 300mA/350mA/500mA | -40 | | 85 | °C |
| | 600mA/700mA | -40 | | 71 | °C |
| Storage Temperature | | -55 | | 125 | °C |
| Overtemperature Shutdown (Auto-restart after cool down) | Internal IC Temperature | | 150 | | °C |
| | Temperature Hysteresis | | 20 | | °C |
| Maximum Case Temperature | | | | 100 | °C |
| MTBF (using MIL-HDBK 217F) | Operating Temperature 25°C | 2000000 | | | Hours |
| Case Material | | Ion Conductive plastic | | | |
| Potting Material | | Epoxy (UL94V-0) | | | |
| Case Size | | 2.6*9.9*8.9 | | | mm |
| Weight(P) | | | 4 | | g |
| Weight (W) | | | 7.3 | | g |

| | |
|------------------------------------|---------|
| EMI Radiated & Conducted Emissions | EN55015 |
| Dust Test & Waterproof Test | IP67 |

● **PWM DIMMING AND ON/OFF CONTROL** (Leave open if not use)

| Project | Working Condition | Min | Typ | Max | Unit |
|--|---------------------------|-----|-----------|-----|------|
| ON/OFF Control | ON | 3.5 | FLOA T | 10 | VDC |
| | OFF | 0 | | 0.5 | VDC |
| Quiescent Input Current in Shutdown Mode | Vin=24 | | | 1 | mA |
| PWM Frequency | For Linear Operation | 100 | | 1K | Hz |
| | (measured 1%~99% Dimming) | | | | |

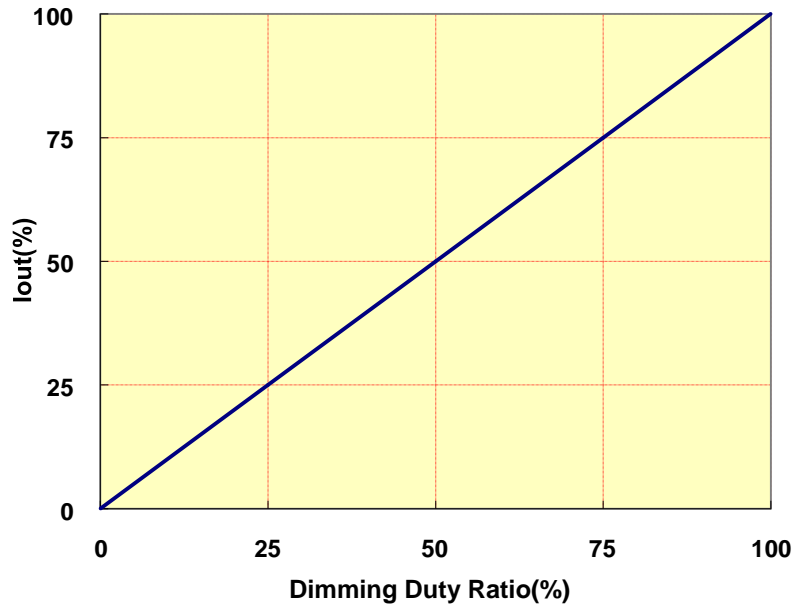
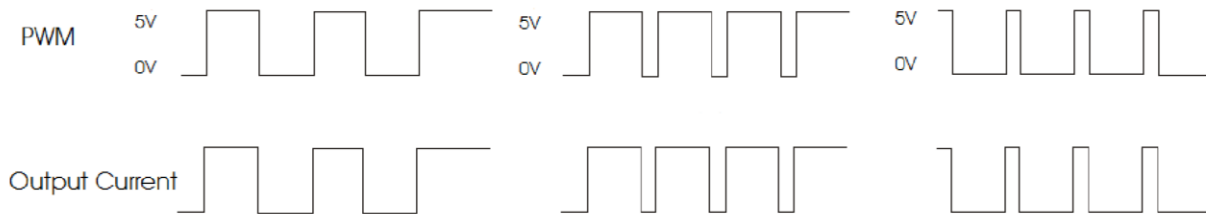
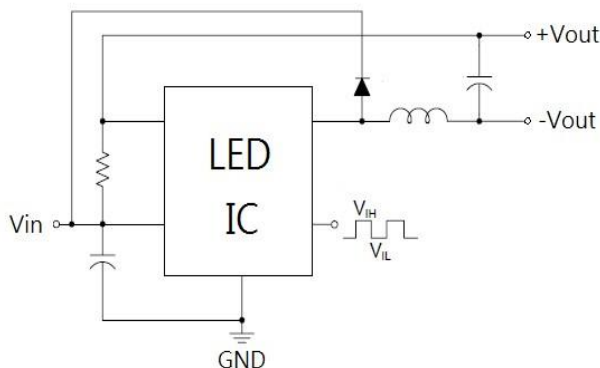


Fig.1 Dimming Duty Cycle:0%-100%

The dimming of LEDs can be performed by applying PWM signals to DIM pin. The following Fig.1 show good linearity in dimming application of **SLE-24**. A logic low (below 0.5V) at DIM PIN will disable the device and shut off the current flow to the LED array.

● **SIMPLIFIED SCHEMATIC**



● **TYPICAL APPLICATIONS**

PWM Dimming control circuit

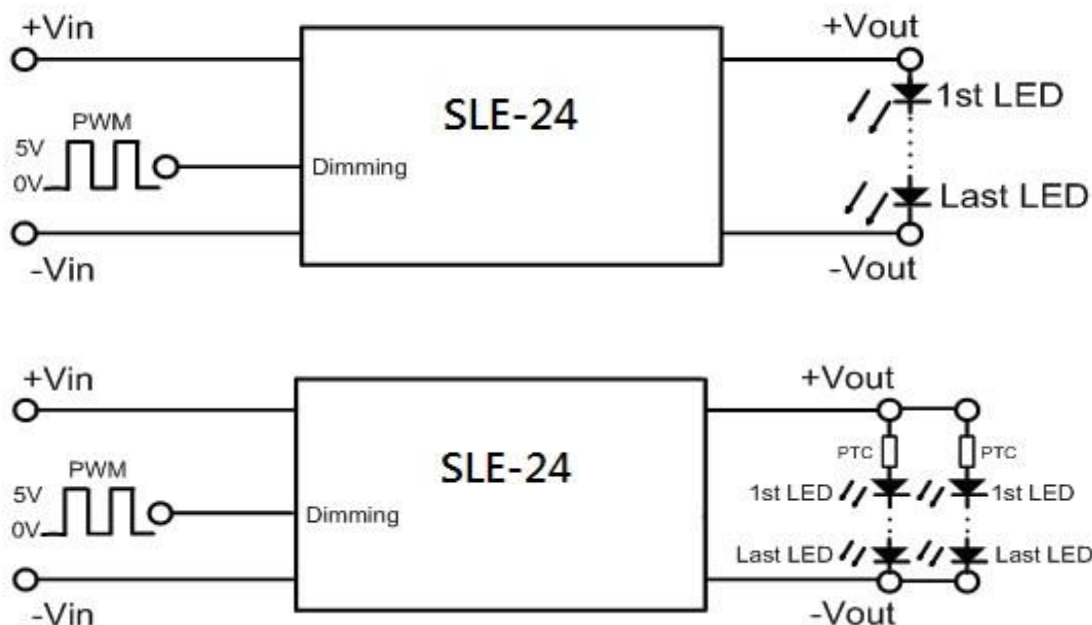


Fig.2

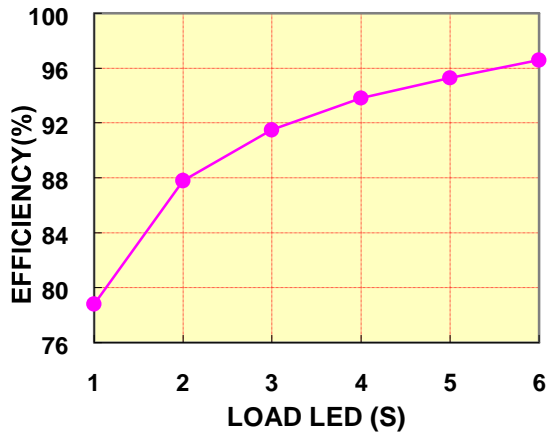
In actual use, if necessary to protect LED, a PTC of positive temperature coefficient may be connect to the input end of every channel or all channels, as shown in Fig.2.

● **EFFICIENCY VS. LOAD LED** $T_A=25^{\circ}C$

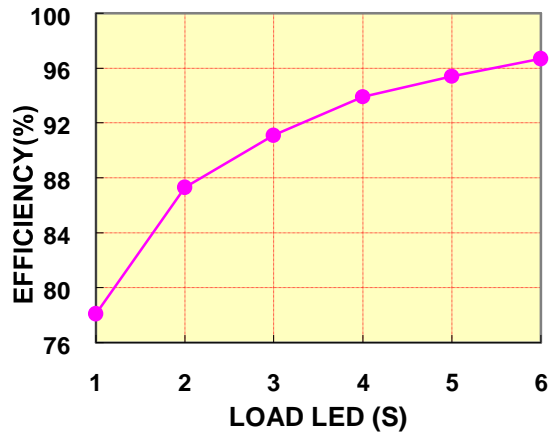
1-LED $V_F=3.6V$; 2-LED $V_F=7.2V$; 3-LED $V_F=10.8V$

OUTPUT CURRENT 0.30A

EFFICIENCY VS. LOAD LED 0.35A

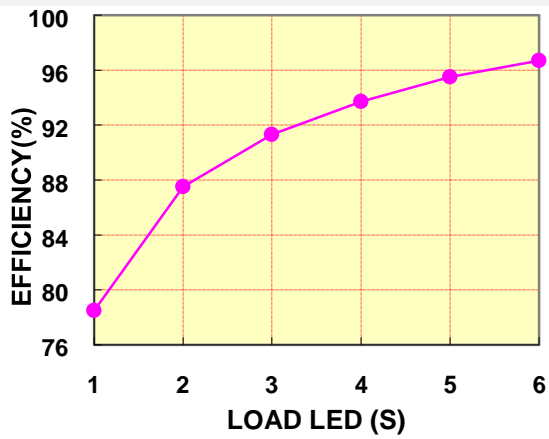


Vin=24V



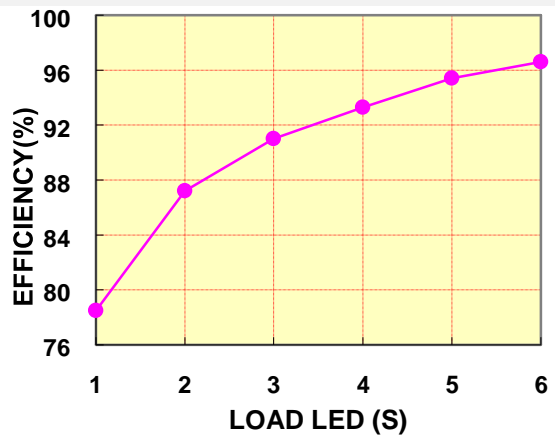
Vin=24V

OUTPUT CURRENT 0.50A



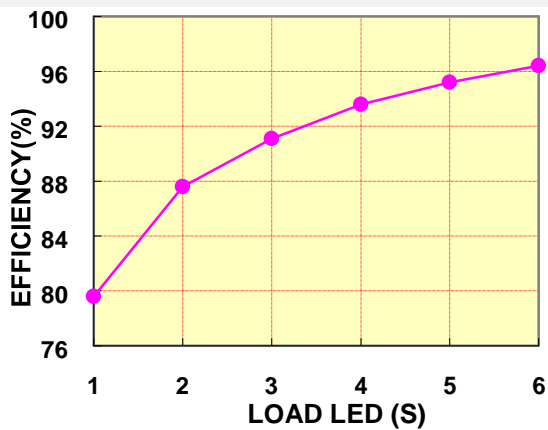
Vin=24V

OUTPUT CURRENT 0.60A



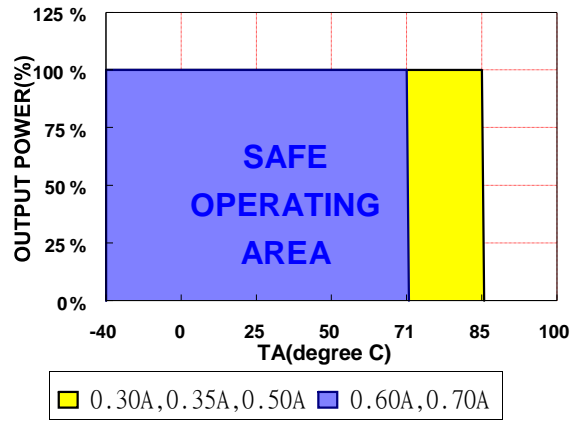
Vin=24V

OUTPUT CURRENT 0.70A



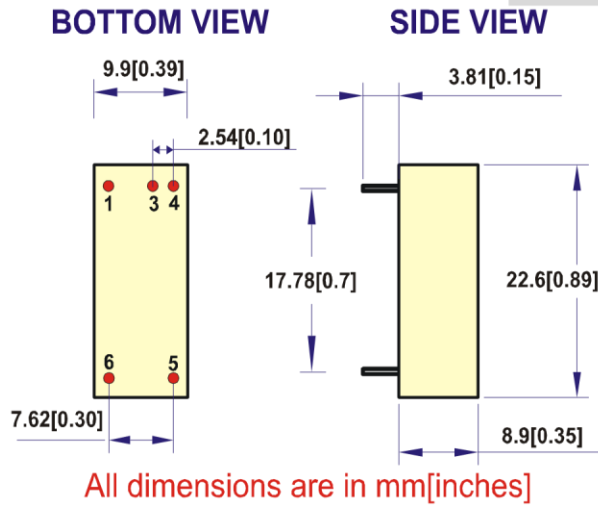
Vin=24V

● DERATING CURVE



● MECHANICAL DIMENSIONS RECOMMENDED FOOTPRINT DETAILS

PACKAGE

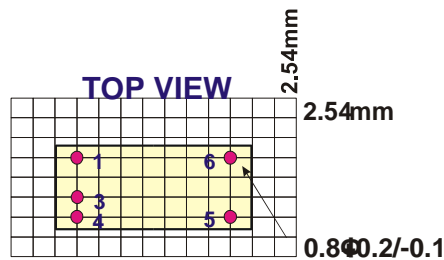


| PIN | OUT | COMMENT |
|-----|---------|--|
| 1 | +Vin | DC Supply |
| 3 | PWM DIM | ON/OFF/PWM Dimming Leave open if not used |
| 4 | -Vin | Don't connect to -Vout |
| 5 | -Vout | LED - Connection |
| 6 | +Vout | LED + Connection |

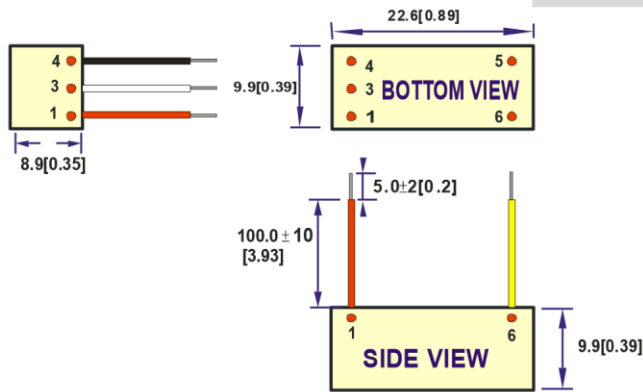
NOTE: Pin Size is Tolerance $0.60\Phi \pm 0.05\text{mm}$

All Dimensions In mm(Inches)

Tolerance .X or .XX= $\pm 0.5\text{mm}$



PACKAGE



All dimensions are in mm[inches]

| PIN | OUT | COMMENT |
|---------------|---------|--|
| 1 (Red) | +Vin | DC Supply |
| 3 (White) | PWM DIM | ON/OFF/PWM Dimming Leave open if not used |
| 4 (Black) | -Vin | Don't connect to -Vout |
| 5 (Blue) | -Vout | LED – Connection |
| 6 (Yellow) | +Vout | LED + Connection |

NOTE:

All dimensions in mm(Inches)

1. Case Tolerance .X or .XX=±0.5mm

2. Wire outside diameter=1.6mm ±0.1

3. Wire core diameter= 0.75mm ±0.1

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