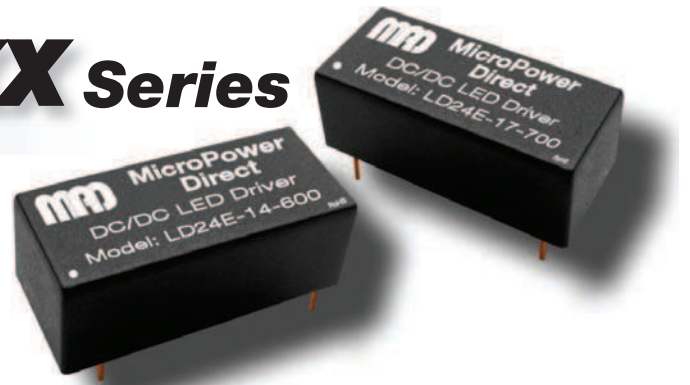


# LD24E-XX-XXX Series

## Low Cost, PWM Control Constant Current Output DC/DC LED Drivers



### Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

### Key Features:

- 300 - 700 mA Output Current
- Constant Current Output
- PWM Dimming
- Wide 5.5V to 36V Input Range
- Efficiency to 95%
- Miniature Case
- 4.7 Mhrs MTBF
- **Low, Low Cost!**



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### Input

| Parameter           | Conditions         | Min. | Typ. | Max. | Units |
|---------------------|--------------------|------|------|------|-------|
| Input Voltage Range |                    | 5.5  | 24.0 | 36.0 | VDC   |
| Max Input Voltage   | See Note 1         |      |      | 40.0 | VDC   |
| Input Filter        | Internal Capacitor |      |      |      |       |

### Output

| Parameter                | Conditions                        | Min. | Typ. | Max.  | Units |
|--------------------------|-----------------------------------|------|------|-------|-------|
| Output Voltage Range     | Vin = 36V                         | 2    |      | 32    | VDC   |
| Output Current           | See Model Selection Guide         |      |      |       |       |
| Output Current Accuracy  | Vin = 24V                         |      | ±5.0 | ±8.0  | %     |
| Output Current Stability | Vin = 24V                         |      | ±5.0 | ±10.0 | %     |
| Output Capacitive Load   |                                   |      |      | 470   | µF    |
| Efficiency               | Iout = 100%                       |      |      | 95    | %     |
| Temperature Coefficient  |                                   |      |      | ±0.03 | %/°C  |
| Output Short Circuit     | Regulated At Rated Output Current |      |      |       |       |

### Environmental

| Parameter                            | Conditions                   | Min. | Typ. | Max. | Units |
|--------------------------------------|------------------------------|------|------|------|-------|
| Operating Temperature Range, Ambient | 300 mA, 350 mA Output Models | -40  | +25  | +85  | °C    |
|                                      | All Other Models             | -40  | +25  | +71  |       |
| Operating Temperature Range, Case    | Case                         |      |      | +100 | °C    |
| Storage Temperature Range            |                              | -55  |      | +125 | °C    |
| Cooling                              | Free Air Convection          |      |      |      |       |
| Humidity                             | RH, Non-condensing           |      |      | 95   | %     |
| Lead Temperature                     | 1.5 mm From Case For 10 Sec  |      |      | 260  | °C    |

### Physical

|               |  |
|---------------|--|
| Case Size     | 0.90 x 0.40 x 0.374 Inches (22.80 x 10.20 x 9.50 mm) |
| Case Material | Non-Conductive Black Plastic (UL94-V0)               |
| Weight        | 0.123 Oz (3.5g)                                      |

### Remote On/Off Control

| Parameter                               | Conditions               | Min.                        | Typ. | Max. | Units |
|---|--------------------------|-----------------------------|------|------|-------|
| DC/DC On                                |                          | Open Or 2.8V < Vcont < 6.0V |      |      |       |
| DC/DC Off                               |                          | Vcont < 0.6V                |      |      |       |
| Remote Pin Drive Current                | Vcont = 5.0V             |                             |      | 1    | mA    |
| Quiescent Input Current (Shutdown Mode) | Vin = 24V, Vcont = <0.6V |                             |      | 400  | µA    |

### PWM Dimming

| Parameter           | Conditions | Min. | Typ. | Max. | Units |
|---------------------|------------|------|------|------|-------|
| Operation Frequency |            | 0.2  |      | 10   | kHz   |

### Reliability Specifications

| Parameter        | Conditions                      | Min. | Typ. | Max. | Units  |
|------------------|---------------------------------|------|------|------|--------|
| MTBF             | MIL HDBK 217F, 25°C, Gnd Benign | 2.0  |      |      | MHours |
| Safety Standards | Meets EN 60950, IEC 60950       |      |      |      |        |

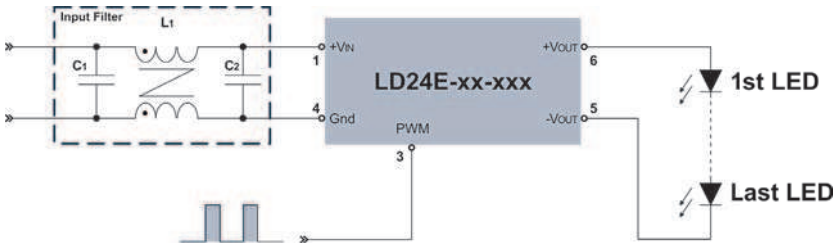
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| Model Number | Input         |            | Output        |              | Dimming Control | Efficiency (% , Max) |
|--------------|---------------|------------|---------------|--------------|-----------------|----------------------|
|              | Voltage (VDC) |            | Voltage (VDC) | Current (mA) |                 |                      |
|              | Nominal       | Range      |               |              |                 |                      |
| LD24E-07-300 | 24            | 5.5 - 36.0 | 2.0 - 32.0    | 0.0 - 300    | PWM             | 95                   |
| LD24E-08-350 | 24            | 5.5 - 36.0 | 2.0 - 32.0    | 0.0 - 350    | PWM             | 95                   |
| LD24E-12-500 | 24            | 5.5 - 36.0 | 2.0 - 32.0    | 0.0 - 500    | PWM             | 95                   |
| LD24E-14-600 | 24            | 5.5 - 36.0 | 2.0 - 32.0    | 0.0 - 600    | PWM             | 95                   |
| LD24E-17-700 | 24            | 5.5 - 36.0 | 2.0 - 32.0    | 0.0 - 700    | PWM             | 95                   |

**Specification Notes:**

1. Exceeding 40V on the unit input could damage the unit.
2. No connection should be made between input ground and the output.
3. These are step-down devices, the maximum output open voltage is equal to the input voltage.
4. The PWM/Cont input (Pin 3) should be left open if not used.
5. Exceeding the specified maximum output power could cause damage to the unit.

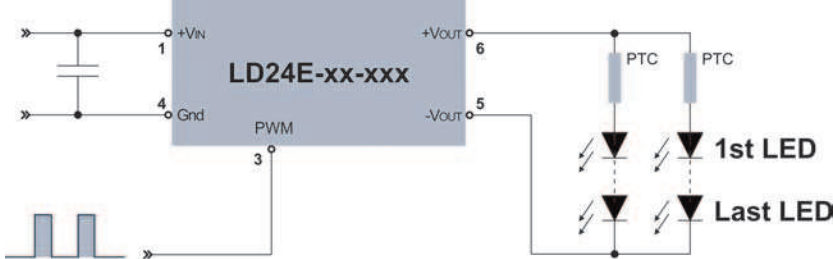
**Typical Connection:**



**Connection Notes:**

1. In some noise sensitive applications, the addition of the input filter components (C1, L1 & C2) will help to reduce conducted emissions.
2. Input gnd (Pin 4) cannot be connected to the output.
3. If not being used, the PWM/Control input (Pin 3) should be left open.

**Typical Connection: Parallel Output**



**Connection Notes:**

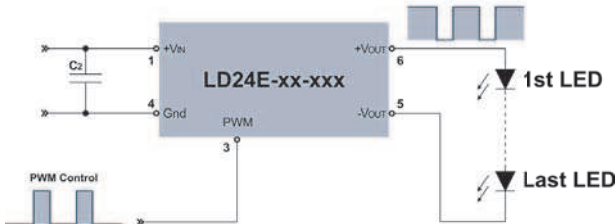
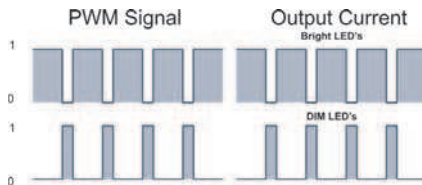
1. A positive temperature coefficient PTC is connected to each parallel channel for protection.

**Pin Connections**

| Pin | Function |                   |
|-----|----------|-------------------|
| 1   | +VIN     | +DC Supply        |
| 3   | PWM      | PWM, On/Off       |
| 4   | Gnd      | -DC Supply        |
| 5   | -Vout    | LED Cathode Conn. |
| 6   | +Vout    | LED Anode Conn.   |

**PWM Output Current Control**

Output current may be adjusted by using a pulse width modulated (PWM) signal. By varying the signal duty cycle (as shown at right) the output current is adjusted up or down.

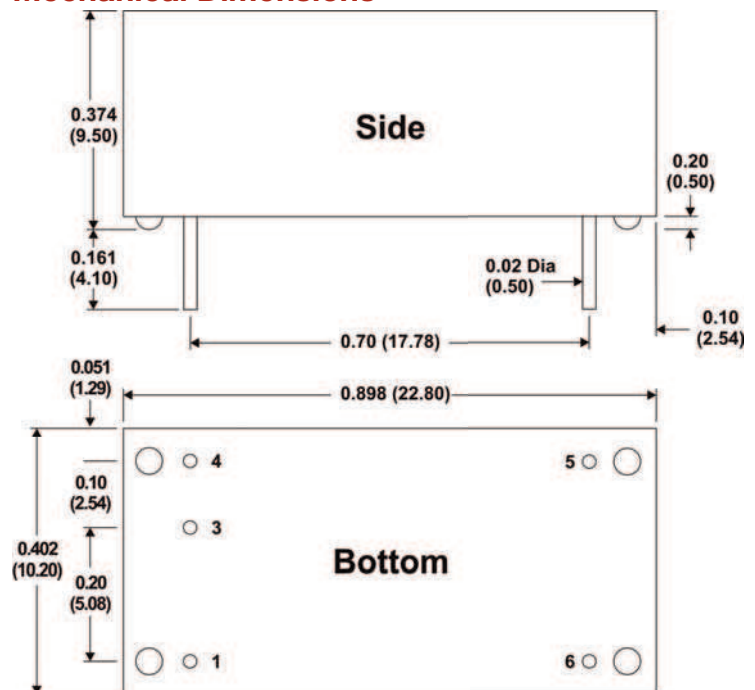


Output current may be calculated by the formula:

$$I_{OUT} = I_{RATED} \times D_{PWM}$$

Where  $I_{out}$  = Required output current  
 $I_{rated}$  = Full rated output current for the unit  
 $D_{pwm}$  = Duty cycle of the control signal

**Mechanical Dimensions**



**Notes:**

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.01 (±0.25)
- Pin 1 is marked by a "dot" or indentation on the top of the unit



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