

## 45/60 Watts

- AC Input LED Driver
- Constant Voltage/Constant Current Operation
- Constant Current Dimming Versions
- High Efficiency
- Water Proof to IP67
- Class 2
- 3 Year Warranty



**Dimensions:**

**DLE45/60:**

6.73 x 1.78 x 1.27" (164.1 x 45.3 x 32.5 mm)

The DLE series of AC input LED drivers incorporate universal input with active power factor correction in a two power stage design, eliminating flicker while providing a high efficiency solution. Designed as a class II isolation product, without the need for a safety earth, DLE series LED drivers are also approved as a class 2 limited power source, making them suitable for a wide range of applications. Dimmable constant current versions are available with the facility for PWM, voltage and resistance programming.

### Models & Ratings - Constant Voltage / Constant Current Models

| Output Power | Output Voltage | Output Current | Output Voltage Range in Constant Current Mode | OVP Range   | Efficiency <sup>(1)</sup> | Model Number |
|--------------|----------------|----------------|---|-------------|---------------------------|--------------|
| 45 W         | 24 V           | 1850 mA        | 16 - 24 V                                     | 26.4-31.2 V | 85.0%                     | DLE45PS24    |
| 45 W         | 36 V           | 1250 mA        | 24 - 36 V                                     | 39.6-46.8 V | 86.0%                     | DLE45PS36    |
| 48 W         | 48 V           | 1000 mA        | 34 - 48 V                                     | 52.8-62.4 V | 87.0%                     | DLE45PS48    |
| 40 W         | 57 V           | 700 mA         | 40 - 57 V                                     | 62.9-70.0 V | 87.0%                     | DLE45PS57    |
| 50 W         | 12 V           | 4200 mA        | 9 - 12 V                                      | 13.2-15.6 V | 86.0%                     | DLE60PS12    |
| 60 W         | 24 V           | 2500 mA        | 16 - 24 V                                     | 26.4-31.2 V | 86.0%                     | DLE60PS24    |
| 60 W         | 36 V           | 1650 mA        | 24 - 36 V                                     | 39.6-46.8 V | 87.0%                     | DLE60PS36    |
| 60 W         | 48 V           | 1250 mA        | 34 - 48 V                                     | 52.8-62.4 V | 88.0%                     | DLE60PS48    |
| 60 W         | 57 V           | 1050 mA        | 40 - 57 V                                     | 62.9-70.0 V | 88.0%                     | DLE60PS57    |

### Models & Ratings - Dimmable Models

| Output Power | Output Voltage | Output Current | Output Voltage Range in Constant Current Mode | OVP Range   | Efficiency <sup>(1)</sup> | Model Number   |
|--------------|----------------|----------------|---|-------------|---------------------------|----------------|
| 45 W         | 24 V           | 1850 mA        | 16 - 24 V                                     | 26.4-31.2 V | 85.0%                     | DLE45PS1850-AD |
| 45 W         | 36 V           | 1250 mA        | 24 - 36 V                                     | 39.6-46.8 V | 86.0%                     | DLE45PS1250-AD |
| 48 W         | 48 V           | 1000 mA        | 34 - 48 V                                     | 52.8-62.4 V | 87.0%                     | DLE45PS1000-AD |
| 40 W         | 57 V           | 700 mA         | 40 - 57 V                                     | 62.9-70.0 V | 87.0%                     | DLE45PS700-AD  |
| 50 W         | 12 V           | 4200 mA        | 9 - 12 V                                      | 13.2-15.6 V | 86.0%                     | DLE60PS4200-AD |
| 60 W         | 24 V           | 2500 mA        | 16 - 24 V                                     | 26.4-31.2 V | 86.0%                     | DLE60PS2500-AD |
| 60 W         | 36 V           | 1650 mA        | 24 - 36 V                                     | 39.6-46.8 V | 87.0%                     | DLE60PS1650-AD |
| 60 W         | 48 V           | 1250 mA        | 34 - 48 V                                     | 52.8-62.4 V | 88.0%                     | DLE60PS1250-AD |
| 60 W         | 57 V           | 1050 mA        | 40 - 57 V                                     | 62.9-70.0 V | 88.0%                     | DLE60PS1050-AD |

**Notes**

1. Typical efficiency at full load and 230 VAC input.

### Input

| Characteristic            | Minimum                                   | Typical | Maximum | Units | Notes & Conditions             |
|---------------------------|---|---------|---------|-------|--------------------------------|
| Input Voltage - Operating | 90  |         | 305     | VAC   | See derating curve             |
| Input Frequency           | 47  |         | 63      | Hz    |                                |
| Power Factor              |   | >0.9    |         |       | Measured at 230 VAC, full load |
| Input Current             |   | 0.6     |         | A     | 115 VAC                        |
|                           |   | 0.3     |         |       | 230 VAC                        |
| Inrush Current            |   |         | 45      | A     | 230 VAC cold start, +25 °C     |
| Input Protection          | Internal T1.0 A/250 V fuse fitted in line |         |         |       |                                |

### Output

| Characteristic           | Minimum | Typical | Maximum | Units    | Notes & Conditions  |
|--------------------------|---------|---------|---------|----------|---|
| Output Voltage           | 12      |         | 57      | VDC      | See models and ratings table  |
| Minimum Load             |         |         |         |          | No minimum load required  |
| Start Up Delay           |         |         | 1.5     | s        | Measured at 115 VAC   |
| Hold Up Time             | 20      |         |         | ms       |   |
| Line Regulation          |         |         | ±0.5    | %        |   |
| Load Regulation          |         | ±1      |         | %        | Constant voltage mode   |
|                          |         | ±5      |         |          | Constant current mode   |
| Turn On Overshoot        |         |         | 7       | %        | Constant voltage mode   |
| Transient Response       |         |         | 4       | %        | Deviation, recovery to within 1% in 10 ms for a 50% load change   |
| Ripple & Noise           |         |         | 200/250 | mV pk-pk | ≤24 V/>24 V. Measured using 12" twisted pair with 0.1 μF and 47 μF capacitors in parallel at 20 MHz bandwidth, at 25 °C |
| Oversvoltage Protection  |         |         |         |          | See models and ratings table, recycle AC to Reset   |
| Overload Protection      | 95      |         | 105     | %        | Auto Recovery   |
| Short Circuit Protection |         |         |         |          | Trip & restart (hiccup mode)  |
| Temperature Coefficient  |         | 0.04    |         | %/°C     |   |

### Constant Current Curve



### General

| Characteristic             | Minimum | Typical   | Maximum | Units   | Notes & Conditions        |
|----------------------------|---------|-----------|---------|---------|---------------------------|
| Efficiency                 |         | 87        |         | %       | See models and tables     |
| Isolation: Input to Output | 3750    |           |         | VAC     |                           |
| Switching Frequency        |         | 100       |         | kHz     |                           |
| Mean Time Between Failure  |         | >200      |         | kHrs    | MIL-HDBK-217F at 25 °C GB |
| Weight                     |         | 0.9 (410) |         | lb (kg) |                           |

### Environmental

| Characteristic        | Minimum | Typical | Maximum | Units | Notes & Conditions  |
|-----------------------|---------|---------|---------|-------|---|
| Operating Temperature | -20     |         | +50     | °C    | See derating curve  |
| Operating Humidity    | 20      |         | 90      | %     | RH, non-condensing  |
| Storage Temperature   | -40     |         | +80     | °C    | Some specification parameters maybe exceeded until after 20 minutes warm up period. |
| Operating Altitude    |         |         | 3000    | m     |   |
| Shock                 |         |         |         |       | 30 g pk, half sine, 6 axes EN60068-2-27, -2-47 & MIL-STD-810F 514.5 cat 4           |
| Vibration             |         |         |         |       | 10-500 Hz, 2 g, 10 mins/cycle, 6 cycles in each of axes                             |

### Derating Curves



### EMC: Emissions

| Phenomenon           | Standard    | Test Level | Criteria | Notes & Conditions |
|----------------------|-------------|------------|----------|--------------------|
| Conducted            | EN55015     | Class B    |          |                    |
| Radiated             | EN55015     | Class B    |          |                    |
| Harmonic Current     | EN61000-3-2 | Class C    |          |                    |
| Voltage Fluctuations | EN61000-3-3 |            |          |                    |

### EMC: Immunity

| Phenomenon                              | Standard     | Test Level           | Criteria | Notes & Conditions        |
|---|--------------|----------------------|----------|---------------------------|
| Equipment for General Lighting Purposes | EN61547      | as below             | as below |                           |
| ESD Immunity                            | EN61000-4-2  |                      | A        | 8 kV air and 4 kV contact |
| Radiated Immunity                       | EN61000-4-3  | 2                    | A        |                           |
| EFT/Burst                               | EN61000-4-4  | 2                    | A        |                           |
| Surges                                  | EN61000-4-5  | Installation class 3 | A        |                           |
| Conducted                               | EN61000-4-6  | 2                    | A        |                           |
| Magnetic Field                          | EN61000-4-8  | 2                    | A        |                           |
| Dips and Interruptions                  | EN61000-4-11 | Dip: 30%, 10 ms      | A        |                           |
|   |              | Dip: 30%, 200 ms     | A/B      | At 230 VAC/100 VAC        |
|   |              | Int: 100%, 8.3 ms    | A/B      | At 230 VAC/100 VAC        |

### Safety Approvals

| Safety Agency | Safety Standard                                   | Notes & Conditions |
|---------------|---|--------------------|
| UL            | UL8750  |                    |
| TUV           | EN61347   |                    |
| CE            | CE Mark   |                    |
| IEC           | IEC61347-2-13 used in conjunction with IEC61347-1 |                    |
| IP            | IEC60529  |                    |

### Mechanical Details - Constant Voltage / Constant Current



### Mechanical Details - Dimmable Version



#### Notes

1. Dimensions shown in inches (mm).
2. Weight: 2.8 lb (1.27 kg).

3. Tolerance: 0.X =  $\pm 0.008$  ( $\pm 0.2$ )  
0.XX =  $\pm 0.002$  ( $\pm 0.05$ )

## Output Current Adjustment by Variable Resistor

Connect a variable resistor between Dim+ and Dim-.



The Dimmed output current can be determined using the equation:

$$\text{Dimmed Current} = \frac{\text{Maximum Current} \times R}{100 \text{ k}}$$

Where the value of R is between 10 kΩ and 100 kΩ. The corresponding range of output current is 10% to 100%

## Output Current Adjustment by DC Voltage

Connect a variable voltage between Dim+ and Dim-.



The dimmed output current is given by:

$$\text{Dimmed Current} = \frac{\text{Maximum Current} \times V}{10 \text{ k}}$$

Where V is the value of control voltage in the range of 1.0 V to 10.0 VDC. The corresponding range of output current is 10% to 100%.

## Output Current Adjustment by PWM

A Pulse Width Modulated (PWM) signal with duty cycle DPWM can be applied between Dim+ and Dim-.



The dimmed output current is given by:

$$\text{Dimmed Current} = \text{Maximum Current} \times \text{DP}_{\text{PWM}} \%$$

(DP<sub>PWM</sub> = PWM duty cycle)

Where DP<sub>PWM</sub> is the % of duty cycle between 10% and 100%. The corresponding range of output current is 10% to 100%. PWM frequency should be in the range 0.5 kHz to 5 kHz

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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