

# EdiPower® II HM Series Datasheet



## Features :

- LED light engine
- High power operation
- Instant on
- Long lifetime

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## General Information

### Introduction

The EdiPower® II HM series is based on the mirror-like MCPCB which features excellent reflectivity and luminous efficacy. The high performance COB products can be applied in many fields such as LEDs light bulb, down lights, track lights, residential lighting and commercial lighting fixtures.

### Ordering Code Format

| <u>2</u>      | <u>P</u>  | <u>HM</u> | <u>xx</u>     | <u>xW</u> | <u>xx</u> | <u>P 1 x</u> | <u>xxx</u> |    |               |
|---------------|-----------|-----------|---------------|-----------|-----------|--------------|------------|----|---------------|
| X1            | X2        | X3        | X4            | X5        | X6        | X7           | X8         |    |               |
| X1            | X2        | X3        | X4            | X5        |           |              |            |    |               |
| Type          | Component |           | Series        | Wattage   |           | Color        |            |    |               |
| 2             | Emitter   | P         | EdiPower®     | HM        | HM Series | 05           | 5W         | CW | Cool White    |
|               |           |           |               |           |           | 09           | 9W         | NW | Neutral White |
|               |           |           |               |           |           | 16           | 16W        | WW | Warm White    |
|               |           |           |               |           |           | 30           | 30W        |    |               |
|               |           |           |               |           |           | 40           | 40W        |    |               |
| X6            | X7        | X8        |               |           |           |              |            |    |               |
| Internal code | PCB Board |           | Serial Number |           |           |              |            |    |               |
| -             | -         | P12       | 13x13         | -         | -         |              |            |    |               |
|               |           | P13       | 19x19         |           |           |              |            |    |               |
|               |           | P16       | 28x28         |           |           |              |            |    |               |



## Average Lumen Maintenance Characteristics

Lumen maintenance for light sources or luminaires is defined in terms of the change in light output of a light source over operational life, relative to initially measured light output. Edison Opto projects that EdiPower® II HM Series products will deliver, on average, greater than 70% lumen maintenance (L70) after 50,000 hours of operation at the rated forward test current. This performance is based on constant current operation with case temperature maintained at or below 85°C.

These projections are based on a combination of package test data, semiconductor chip reliability data, a fundamental understanding of package related degradation mechanisms, and performance observed from products installed in the field using Edison Opto die technology. Observation of design limits in this datasheet is required in order to achieve this projected lumen maintenance.



## Limited Warranty for Edison Opto EdiPower® II HM Series

This limited warranty is provided by Edison Opto to the original purchaser of the LED lighting product that is identified on our invoice reflecting its original purchase (the "Product"). We warrant that the Product, under normal operation ( $T_p < 85^{\circ}\text{C}$   $T_j < 150^{\circ}\text{C}$  and the operation current is lower than maximum forward current which is described in the datasheet), will be free of defects in material and workmanship for a period of **FIVE (5) YEARS** from the date of original purchase.

### Notes:

1. This limited warranty cannot be transferred to subsequent purchasers of the Product; even Product is resold in new condition and in its original packaging.
2. The determination of whether the Product is defective shall be made by Edison Opto in our sole discretion with consideration given to the overall performance of the Product.

## Absolute Maximum Ratings (T<sub>j</sub>=25°C)

| Parameter                                   | Symbol         | Value                                                                                                                              | Units |
|---------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------|-------|
| DC Forward Current <sup>1</sup>             | I <sub>F</sub> | 2PHM05xWxxP12xxx : 120<br>2PHM09xWxxP12xxx : 240<br>2PHM16xWxxP13xxx : 360<br>2PHM30xWxxP13xxx : 720<br>2PHM40xWxxP16xxx : 1,080   | mA    |
| Max Forward Current                         | I <sub>F</sub> | 2PHM05xWxxP12xxx : 240<br>2PHM09xWxxP12xxx : 480<br>2PHM16xWxxP13xxx : 720<br>2PHM30xWxxP13xxx : 1,440<br>2PHM40xWxxP16xxx : 2,160 | mA    |
| Reverse Voltage <sup>2</sup>                | V <sub>R</sub> | Note 2                                                                                                                             | V     |
| LED junction Temperature <sup>3</sup>       | T <sub>J</sub> | 150                                                                                                                                | °C    |
| Operating Temperature                       | -              | -40 ~ +110                                                                                                                         | °C    |
| Storage Temperature                         | -              | -40 ~ +120                                                                                                                         | °C    |
| ESD Sensitivity (HBM)                       | V <sub>B</sub> | 2,000                                                                                                                              | V     |
| Isolation Voltage                           | -              | 1,000                                                                                                                              | V     |
| Thermal Measurement Point (T <sub>p</sub> ) | -              | <85                                                                                                                                | °C    |

Notes:

1. DC forward current should not exceed LED's operating current; the current tolerance should be kept within a range of 5%.
2. LEDs are not designed to be driven in reverse bias.
3. Proper current derating must be observed to maintain junction temperature below the maximum at all time.

## Characteristics

| Parameter                  | Symbol            | Value                                                                                                                                                          | Units  |
|----------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Viewing Angle              | 2θ <sub>1/2</sub> | 105~120                                                                                                                                                        | Degree |
| Forward voltage            | V <sub>F</sub>    | 36~38.4                                                                                                                                                        | V      |
| CCT                        | -                 | CW : 5,000-10,000<br>NW : 3,800-5,000<br>WW : 2,670-3,800                                                                                                      | K      |
| Thermal resistance (Typ.)  | Rθ <sub>J-B</sub> | 2PHM05xWxxP12xxx : 3.7<br>2PHM09xWxxP12xxx : 2.1<br>2PHM16xWxxP13xxx : 1.4<br>2PHM30xWxxP13xxx : 0.8<br>2PHM40xWxxP16xxx : 0.6                                 | °C/W   |
| ΔV <sub>F</sub> /ΔT (Typ.) | -                 | 2PHM05xWxxP12xxx : -12 to -20<br>2PHM09xWxxP12xxx : -10 to -18<br>2PHM16xWxxP13xxx : -8 to -14<br>2PHM30xWxxP13xxx : -6 to -12<br>2PHM40xWxxP16xxx : -4 to -10 | mV/°C  |
| CRI                        | -                 | 80                                                                                                                                                             | -      |

Notes:

1. 2θ<sub>1/2</sub> is the off-axis angle where the luminous intensity is half of the axial luminous intensity.
2. CCT is measured with an accuracy of ± 5%.
3. Wavelength is measured with an accuracy of ± 0.5nm.
4. Color rendering index CRI Tolerance : ± 2.

## Luminous Flux Characteristic

Luminous Flux Characteristics  $T_j=25^{\circ}\text{C}$

| Wattage (W) | Color | Typ. Luminous Flux(lm)<br>$T_j=85^{\circ}\text{C}$ | Typ. Luminous Flux(lm)<br>$T_j=25^{\circ}\text{C}$ | Typ. Forward Voltage $V_f$ (V) | Forward Current (mA) | Order Code       |
|-------------|-------|----------------------------------------------------|----------------------------------------------------|--------------------------------|----------------------|------------------|
| 5-10W       | 2700K | 430                                                | 490                                                | 37.2                           | <b>120</b>           | 2PHM05WW27P12001 |
|             |       | 770                                                | 880                                                | 40.3                           | 240                  |                  |
|             | 3000K | 445                                                | 510                                                | 37.2                           | <b>120</b>           |                  |
|             |       | 805                                                | 925                                                | 40.3                           | 240                  |                  |
|             | 3500K | 445                                                | 510                                                | 37.2                           | <b>120</b>           | 2PHM05NW27P12001 |
|             |       | 805                                                | 925                                                | 40.3                           | 240                  |                  |
|             | 4000K | 455                                                | 520                                                | 37.2                           | <b>120</b>           |                  |
|             |       | 820                                                | 940                                                | 40.3                           | 240                  |                  |
|             | 5000K | 460                                                | 525                                                | 37.2                           | <b>120</b>           | 2PHM05CW27P12001 |
|             |       | 825                                                | 945                                                | 40.3                           | 240                  |                  |
|             | 5700K | 465                                                | 530                                                | 37.2                           | <b>120</b>           |                  |
|             |       | 825                                                | 945                                                | 40.3                           | 240                  |                  |
| 9-20W       | 2700K | 835                                                | 960                                                | 37.2                           | <b>240</b>           | 2PHM09WW27P12001 |
|             |       | 1350                                               | 1550                                               | 40.3                           | 480                  |                  |
|             | 3000K | 865                                                | 990                                                | 37.2                           | <b>240</b>           |                  |
|             |       | 1395                                               | 1600                                               | 40.3                           | 480                  |                  |
|             | 3500K | 880                                                | 1010                                               | 37.2                           | <b>240</b>           | 2PHM09NW27P12001 |
|             |       | 1500                                               | 1720                                               | 40.3                           | 480                  |                  |
|             | 4000K | 900                                                | 1030                                               | 37.2                           | <b>240</b>           |                  |
|             |       | 1550                                               | 1780                                               | 40.3                           | 480                  |                  |
|             | 5000K | 890                                                | 1020                                               | 37.2                           | <b>240</b>           | 2PHM09CW27P12001 |
|             |       | 1525                                               | 1750                                               | 40.3                           | 480                  |                  |
|             | 5700K | 880                                                | 1010                                               | 37.2                           | <b>240</b>           |                  |
|             |       | 1500                                               | 1720                                               | 40.3                           | 480                  |                  |
|             | 6500K | 885                                                | 1015                                               | 37.2                           | <b>240</b>           | 2PHM09CW27P12001 |
|             |       | 1505                                               | 1730                                               | 40.3                           | 480                  |                  |

Notes:

1. Forward Voltage has  $\pm 3.6\text{V}$  tolerance.
2. The emphasised value with bold font showed at forward current means the DC forward current value.

| Wattage (W) | Color | Typ. Luminous Flux(lm)<br>T <sub>j</sub> =85°C | Typ. Luminous Flux(lm)<br>T <sub>j</sub> =25°C | Typ. Forward Voltage V <sub>F</sub> (V) | Forward Current (mA) | Order Code       |
|-------------|-------|------------------------------------------------|------------------------------------------------|-----------------------------------------|----------------------|------------------|
| 16-24W      | 2700K | 1360                                           | 1560                                           | 37.2                                    | <b>360</b>           | 2PHM16WW27P13001 |
|             |       | 2325                                           | 2670                                           | 40.3                                    | 720                  |                  |
|             | 3000K | 1400                                           | 1605                                           | 37.2                                    | <b>360</b>           |                  |
|             |       | 2395                                           | 2750                                           | 40.3                                    | 720                  |                  |
|             | 3500K | 1430                                           | 1640                                           | 37.2                                    | <b>360</b>           | 2PHM16NW27P13001 |
|             |       | 2460                                           | 2825                                           | 40.3                                    | 720                  |                  |
|             | 4000K | 1455                                           | 1670                                           | 37.2                                    | <b>360</b>           |                  |
|             |       | 2525                                           | 2900                                           | 40.3                                    | 720                  |                  |
|             | 5000K | 1450                                           | 1665                                           | 37.2                                    | <b>360</b>           | 2PHM16CW27P13001 |
|             |       | 2490                                           | 2860                                           | 40.3                                    | 720                  |                  |
|             | 5700K | 1445                                           | 1660                                           | 37.2                                    | <b>360</b>           |                  |
|             |       | 2455                                           | 2820                                           | 40.3                                    | 720                  |                  |
| 30-60W      | 2700K | 2510                                           | 2880                                           | 37.2                                    | <b>720</b>           | 2PHM30WW27P13001 |
|             |       | 4145                                           | 4760                                           | 40.3                                    | 1440                 |                  |
|             | 3000K | 2675                                           | 3070                                           | 37.2                                    | <b>720</b>           |                  |
|             |       | 4265                                           | 4900                                           | 40.3                                    | 1440                 |                  |
|             | 3500K | 2725                                           | 3130                                           | 37.2                                    | <b>720</b>           | 2PHM30NW27P13001 |
|             |       | 4570                                           | 5250                                           | 40.3                                    | 1440                 |                  |
|             | 4000K | 2775                                           | 3190                                           | 37.2                                    | <b>720</b>           |                  |
|             |       | 4875                                           | 5600                                           | 40.3                                    | 1440                 |                  |
|             | 5000K | 2775                                           | 3185                                           | 37.2                                    | <b>720</b>           | 2PHM30CW27P13001 |
|             |       | 4745                                           | 5450                                           | 40.3                                    | 1440                 |                  |
|             | 5700K | 2770                                           | 3180                                           | 37.2                                    | <b>720</b>           |                  |
|             |       | 4615                                           | 5300                                           | 40.3                                    | 1440                 |                  |
|             | 6500K | 2775                                           | 3190                                           | 37.2                                    | <b>720</b>           |                  |
|             |       | 4700                                           | 5400                                           | 40.3                                    | 1440                 |                  |

Notes:

1. Forward Voltage has  $\pm 3.6V$  tolerance.
2. The emphasised value with bold font showed at forward current means the DC forward current value.

| Wattage (W) | Color | Typ. Luminous Flux(lm)<br>T <sub>j</sub> =85°C | Typ. Luminous Flux(lm)<br>T <sub>j</sub> =25°C | Typ. Forward Voltage V <sub>F</sub> (V) | Forward Current (mA) | Order Code       |
|-------------|-------|------------------------------------------------|------------------------------------------------|-----------------------------------------|----------------------|------------------|
| 40-80W      | 2700K | 4350                                           | 5000                                           | 37.2                                    | <b>1080</b>          | 2PHM40WW27P16001 |
|             |       | 7535                                           | 8660                                           | 40.3                                    | 2160                 |                  |
|             | 3000K | 4485                                           | 5150                                           | 37.2                                    | <b>1080</b>          |                  |
|             |       | 7675                                           | 8820                                           | 40.3                                    | 2160                 |                  |
|             | 3500K | 4585                                           | 5270                                           | 37.2                                    | <b>1080</b>          |                  |
|             |       | 7660                                           | 8800                                           | 40.3                                    | 2160                 |                  |
|             | 4000K | 4690                                           | 5390                                           | 37.2                                    | <b>1080</b>          | 2PHM40NW27P16001 |
|             |       | 7660                                           | 8800                                           | 40.3                                    | 2160                 |                  |
|             | 5000K | 4735                                           | 5440                                           | 37.2                                    | <b>1080</b>          | 2PHM40CW27P16001 |
|             |       | 7965                                           | 9150                                           | 40.3                                    | 2160                 |                  |
|             | 5700K | 4780                                           | 5490                                           | 37.2                                    | <b>1080</b>          |                  |
|             |       | 8265                                           | 9495                                           | 40.3                                    | 2160                 |                  |
|             | 6500K | 4785                                           | 5500                                           | 37.2                                    | <b>1080</b>          |                  |
|             |       | 8310                                           | 9550                                           | 40.3                                    | 2160                 |                  |

Notes:

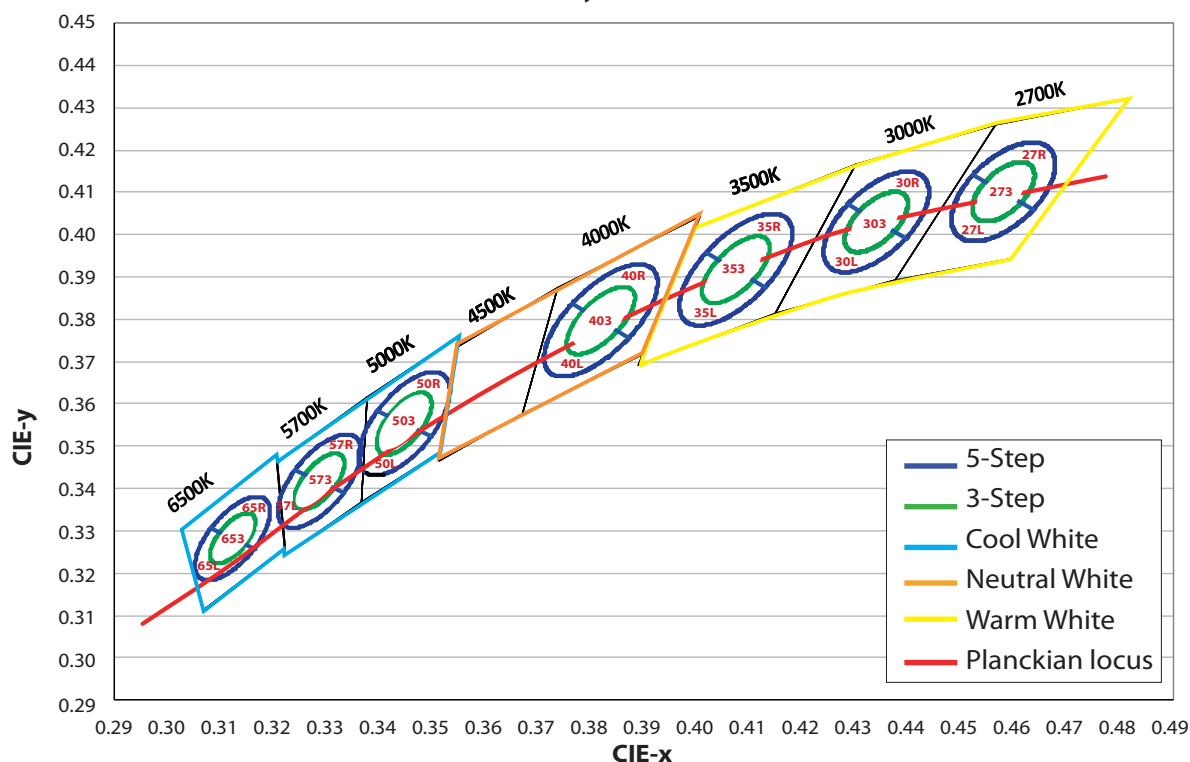
1. Forward Voltage has  $\pm 3.6V$  tolerance.
2. The emphasised value with bold font showed at forward current means the DC forward current value.

## Chromaticity coordinates( $T_c=85^{\circ}\text{C}$ )

Color region stay within Macadam "3-Step/5-step" ellipse from the chromaticity center.

The chromaticity center refers to ANSI C78.377:2008.

Please refer to ANSI C78.377 for the chromaticity center.

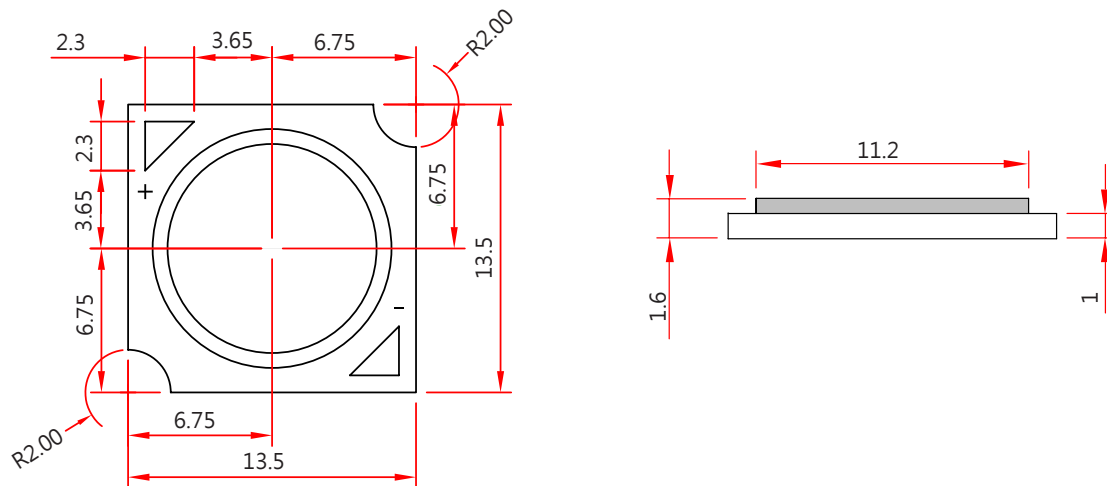


| CCT   | Steps | Cx     | Cy     | a       | b       | theta |
|-------|-------|--------|--------|---------|---------|-------|
| 2700K | 5     | 0.4578 | 0.4101 | 0.01350 | 0.00700 | 53.7  |
| 3000K | 5     | 0.4338 | 0.4030 | 0.01390 | 0.00680 | 53.22 |
| 3500K | 5     | 0.4073 | 0.3917 | 0.01545 | 0.00690 | 54    |
| 4000K | 5     | 0.3818 | 0.3797 | 0.01565 | 0.00670 | 53.72 |
| 5000K | 5     | 0.3447 | 0.3553 | 0.01370 | 0.00590 | 59.62 |
| 5700K | 5     | 0.3287 | 0.3417 | 0.01243 | 0.00533 | 59.09 |
| 6500K | 5     | 0.3123 | 0.3282 | 0.01115 | 0.00475 | 58.57 |

| CCT   | Steps | Cx     | Cy     | a       | b       | theta |
|-------|-------|--------|--------|---------|---------|-------|
| 2700K | 3     | 0.4578 | 0.4101 | 0.00810 | 0.00420 | 53.7  |
| 3000K | 3     | 0.4338 | 0.4030 | 0.00834 | 0.00408 | 53.22 |
| 3500K | 3     | 0.4073 | 0.3917 | 0.00927 | 0.00414 | 54    |
| 4000K | 3     | 0.3818 | 0.3797 | 0.00939 | 0.00402 | 53.72 |
| 5000K | 3     | 0.3447 | 0.3553 | 0.00822 | 0.00354 | 59.62 |
| 5700K | 3     | 0.3287 | 0.3417 | 0.00746 | 0.00320 | 59.09 |
| 6500K | 3     | 0.3123 | 0.3282 | 0.00669 | 0.00285 | 58.57 |

## Mechanical Dimensions

### 5W/ 9W Emitter Dimensions



#### Notes :

1. Unit : mm
2. Tolerance :  $\pm 0.2$  mm
3. Drawings are not to scale
4.  $T_p$  : Thermal measurement point

### 5W/ 9W Emitter Circuit Layout

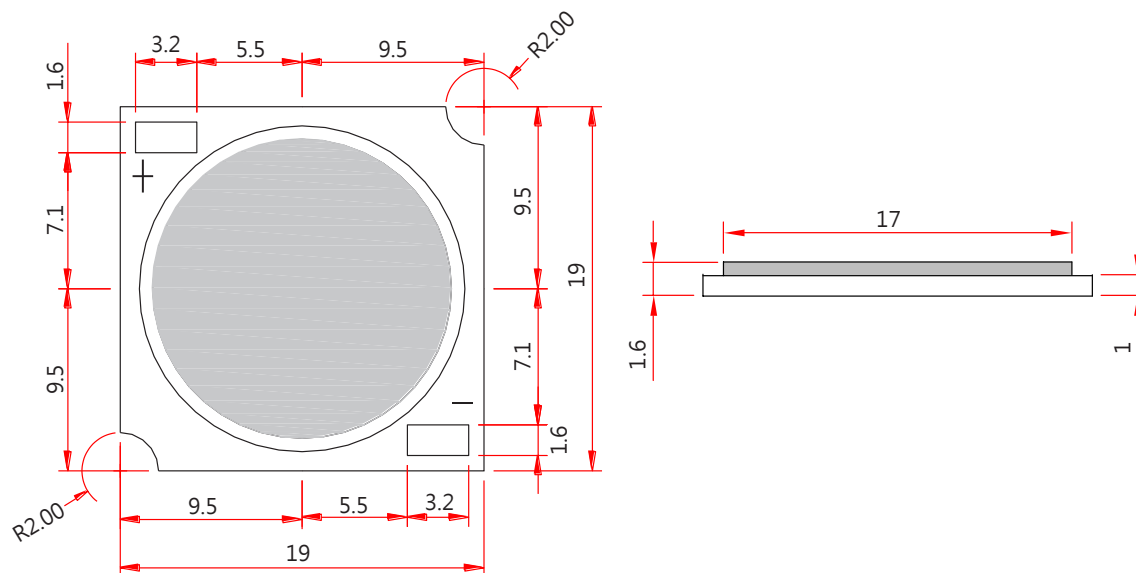


5W EdiPower® II HM Series Circuit Layout



9W EdiPower® II HM Series Circuit Layout

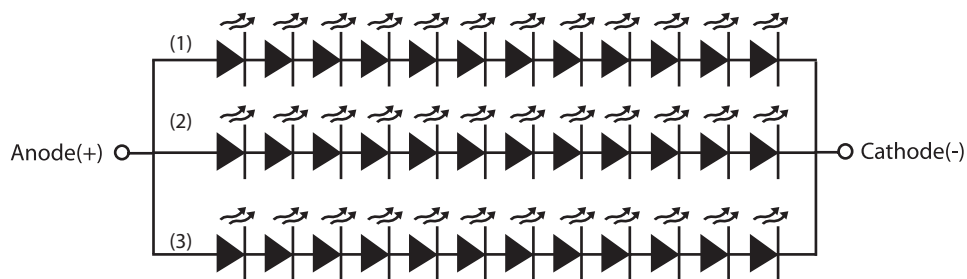
## 16W/ 30W Emitter Dimensions



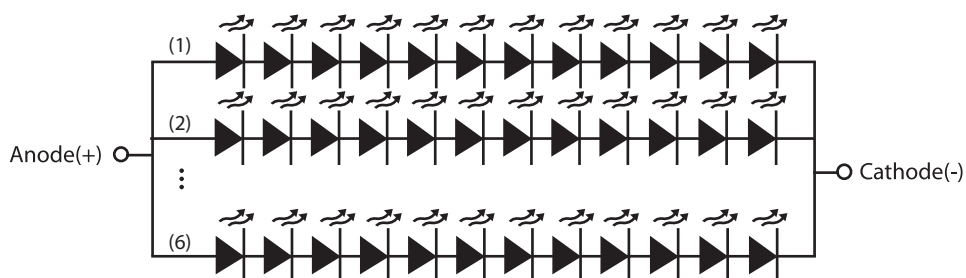
Notes :

1. Unit : mm
2. Tolerance :  $\pm 0.2$  mm
3. Drawings are not to scale
4.  $T_p$  : Thermal measurement point

## 16W/ 30W Emitter Circuit Layout

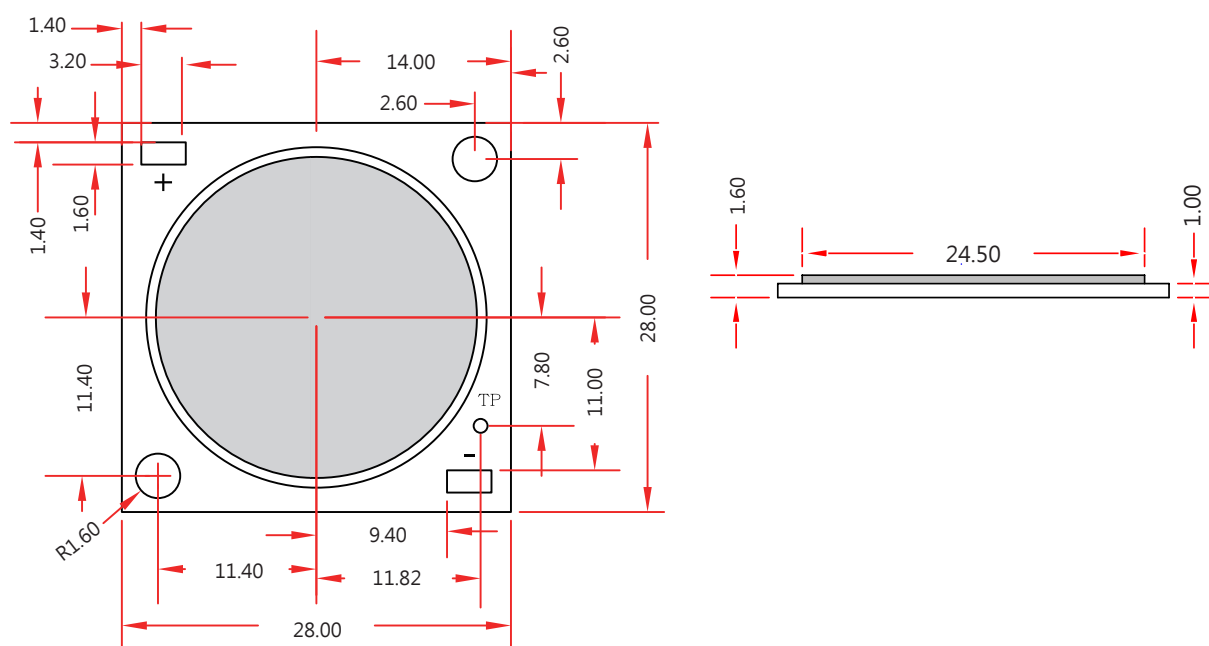


16W EdiPower® II HM Series Circuit Layout



30W EdiPower® II HM Series Circuit Layout

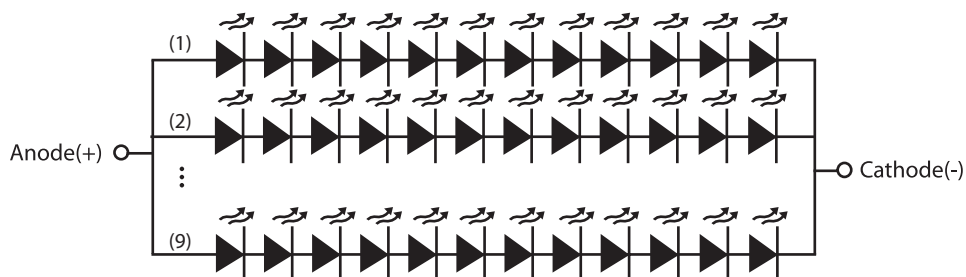
### 40W Emitter Dimensions



Notes :

1. Unit : mm
2. Tolerance :  $\pm 0.2$  mm
3. Drawings are not to scale
4.  $T_p$  : Thermal measurement point

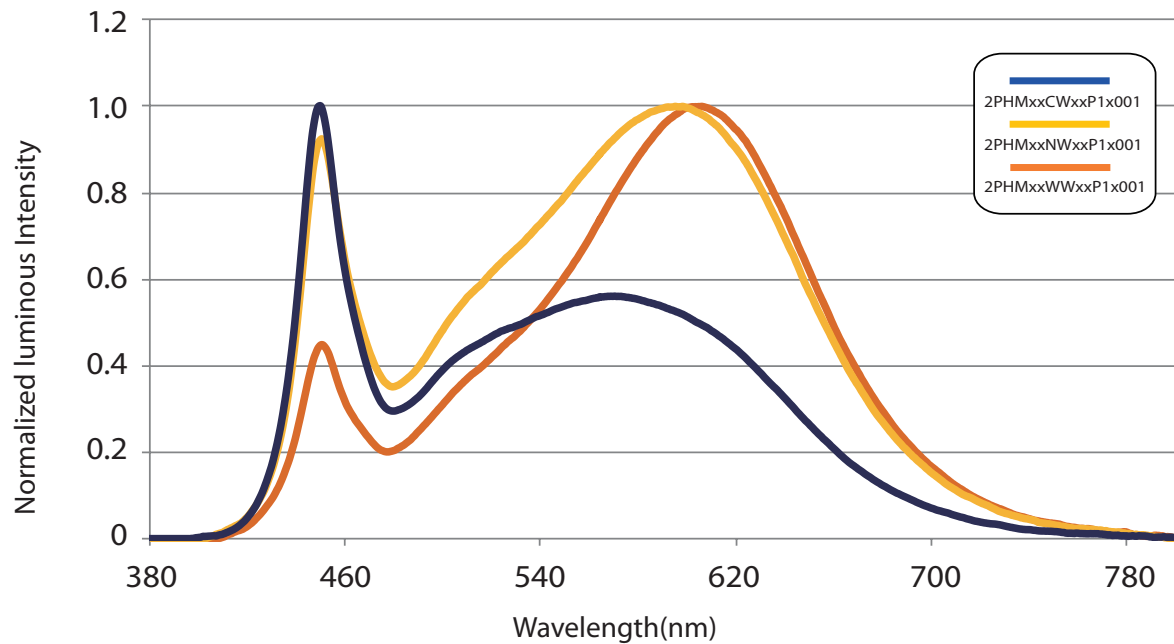
## 40W Emitter Circuit Layout



## 40W EdiPower® II HM Series Circuit Layout

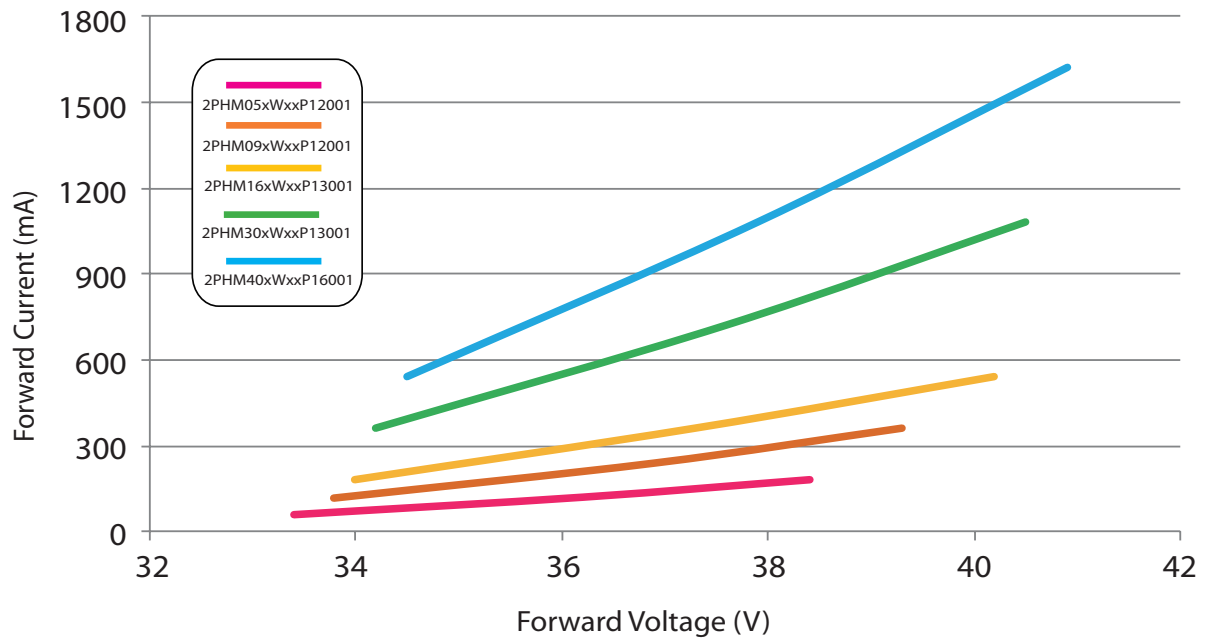
## Characteristic curve

### Color Spectrum



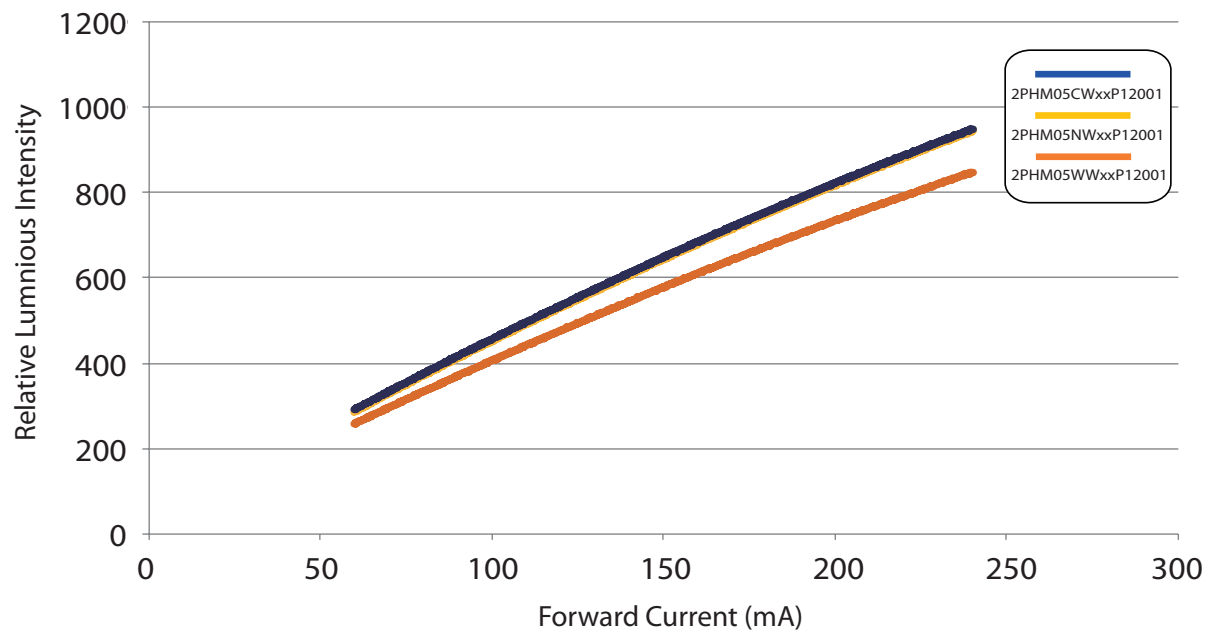
Color Spectrum at a typical CCT for EdiPower® II HM series

### Forward Current vs. Forward Voltage



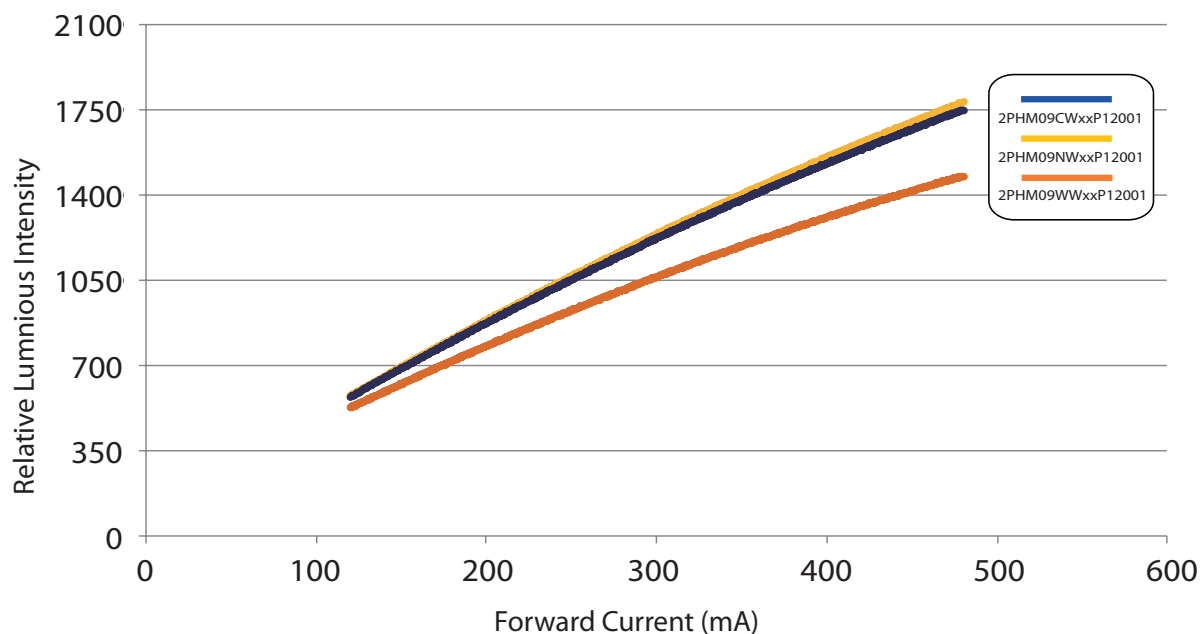
Forward Current vs. Forward Voltage for EdiPower® II HM series

### Relative Intensity vs. Forward Current (5W)



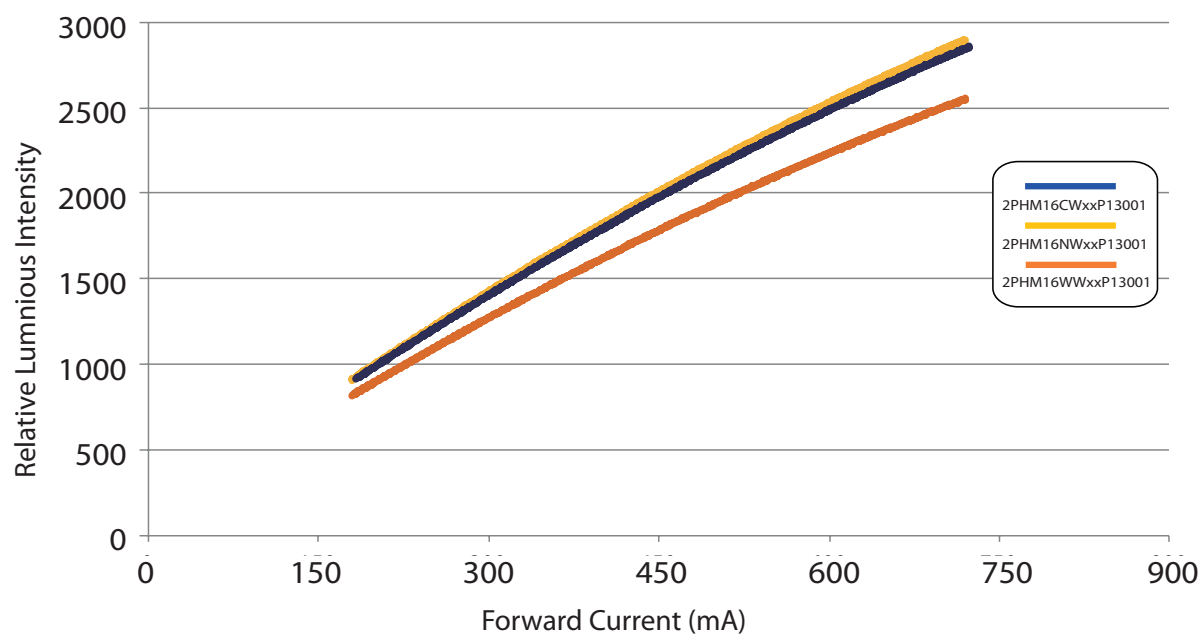
Forward Current vs. Luminous Intensity for EdiPower® II HM 5W series

### Relative Intensity vs. Forward Current (9W)



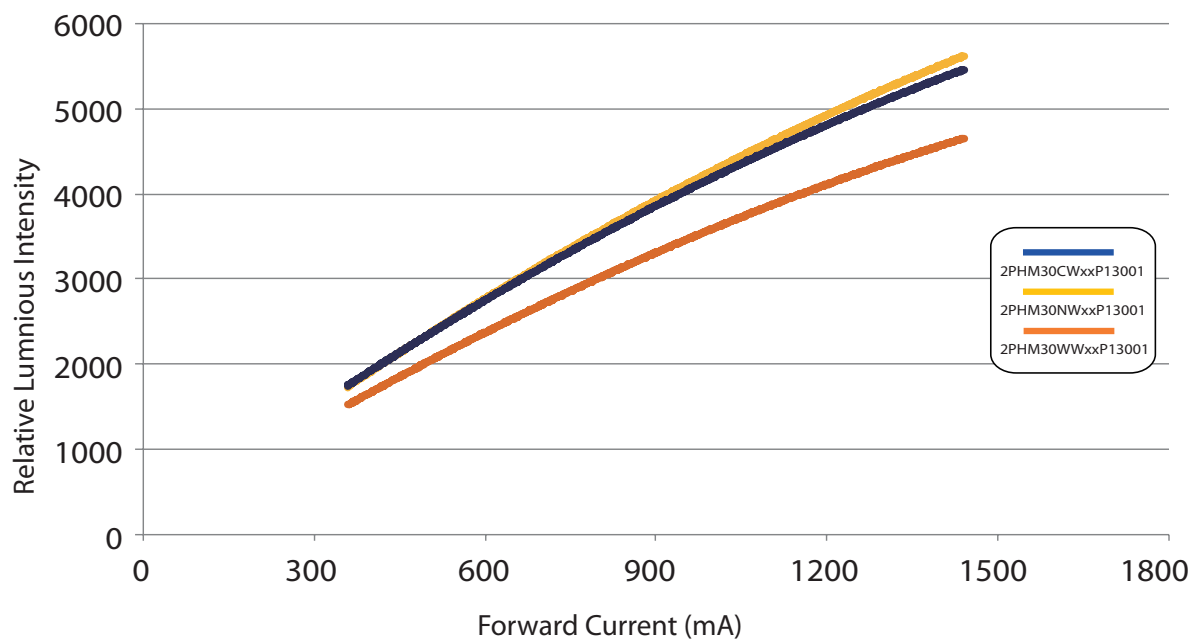
Forward Current vs. Luminous Intensity for EdiPower® II HM 9W series

### Relative Intensity vs. Forward Current (16W)



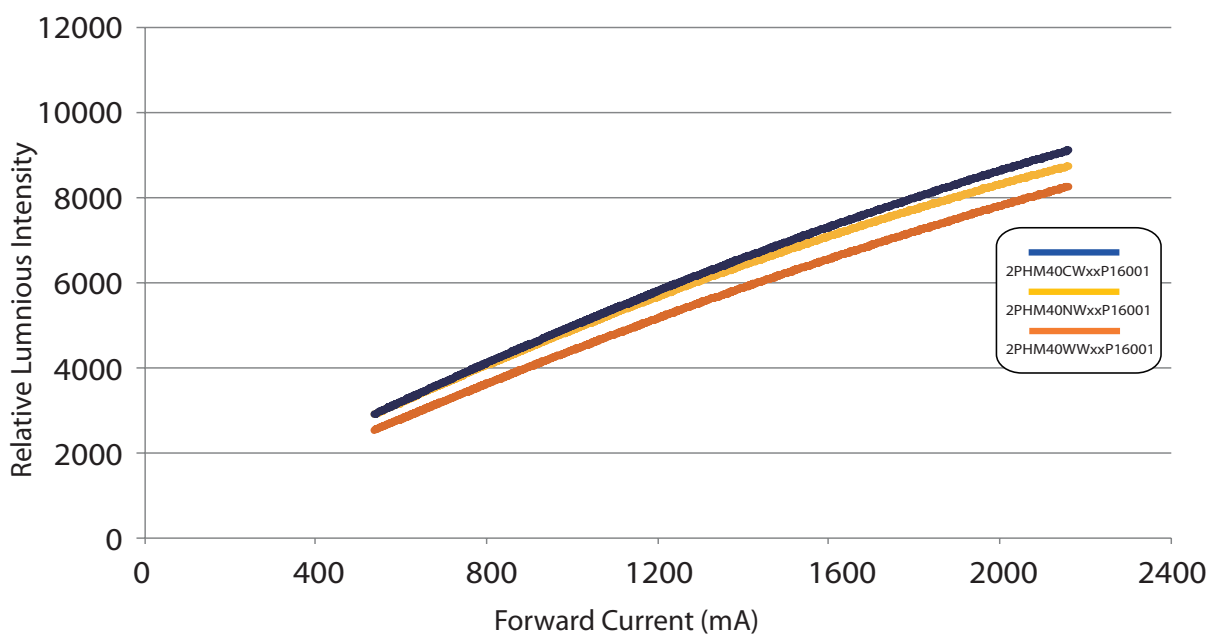
Forward Current vs. Luminous Intensity for EdiPower® II HM 16W series

### Relative Intensity vs. Forward Current (30W)



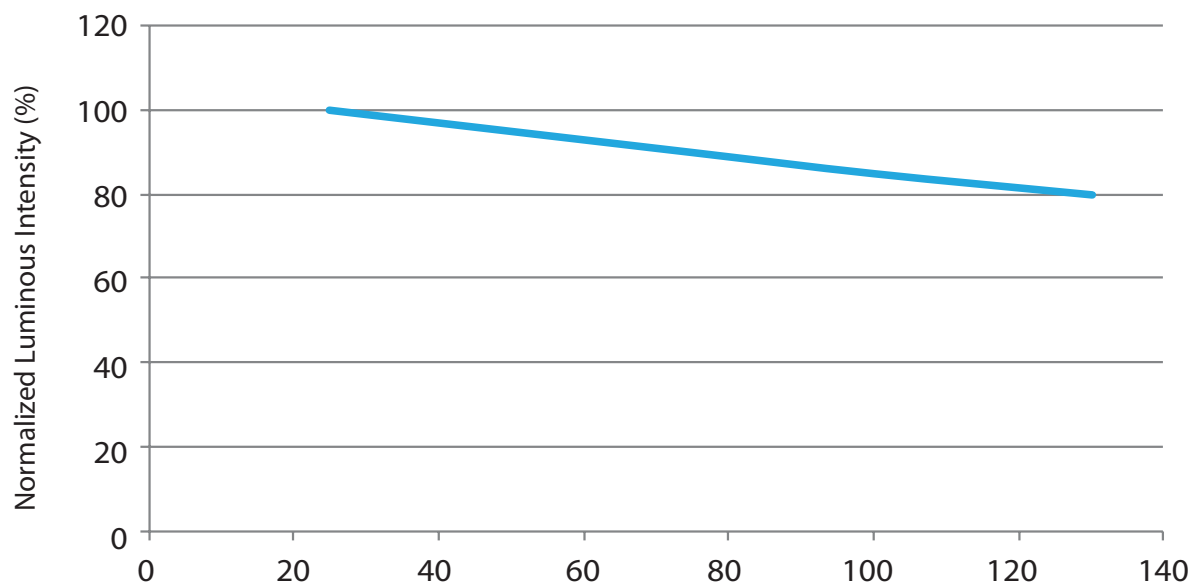
Forward Current vs. Luminous Intensity for EdiPower® II HM 30W series

### Relative Intensity vs. Forward Current (40W)



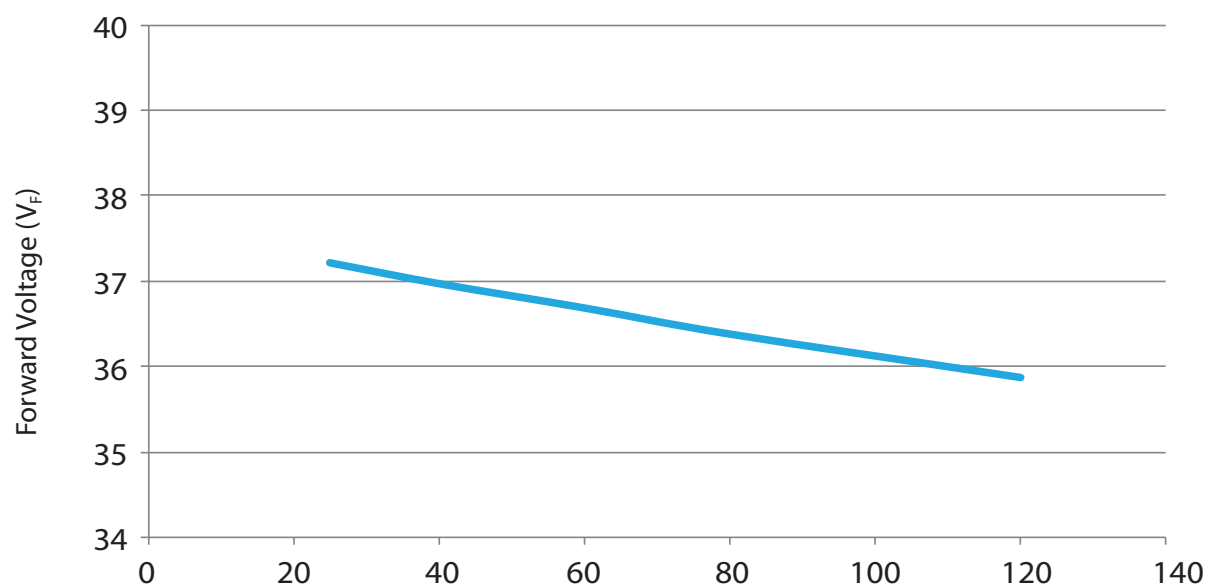
Forward Current vs. Luminous Intensity for EdiPower® II HM 40W series

### Luminous Flux vs. Junction Temperature



Junction Temperature (°C)  
Luminous flux vs. junction temperature for HM series

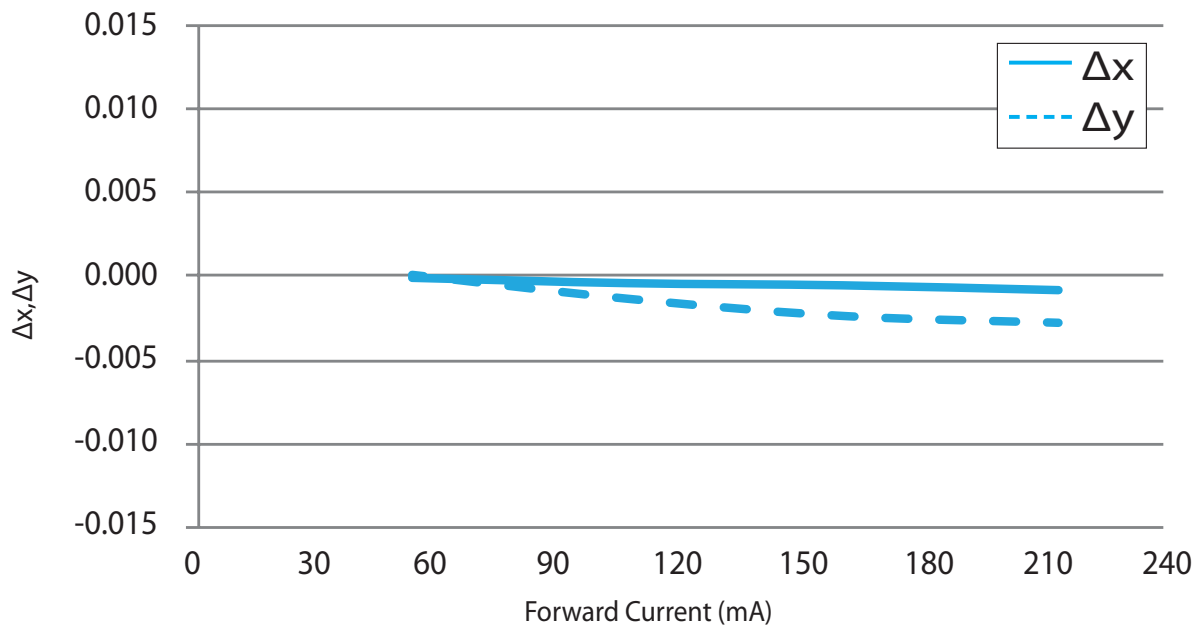
### Forward Voltage vs. Junction Temperature



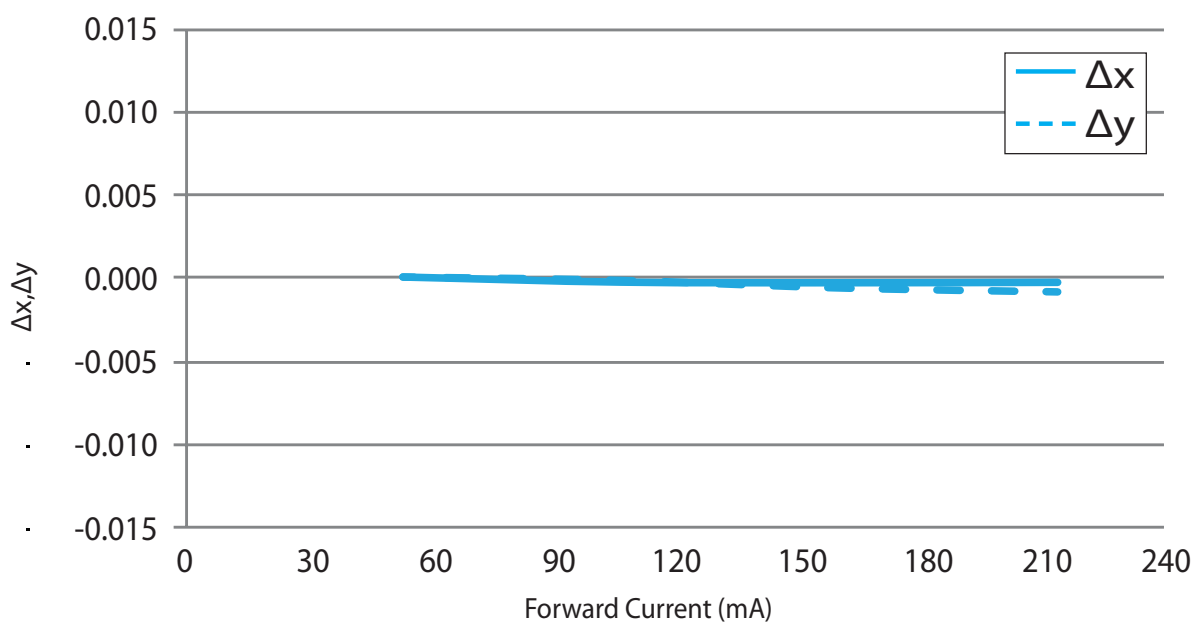
Junction Temperature (°C)  
Forward voltage vs. junction temperature for HM series

The trend of  $\Delta x, \Delta y$  vs. Forward Current characteristic curve 2PHM09xW27P12001, 2PHM16xW27P13001, 2PHM30xW27P13001, 2PHM40xW27P16001 resemble curve 2PHM05xW27P12001

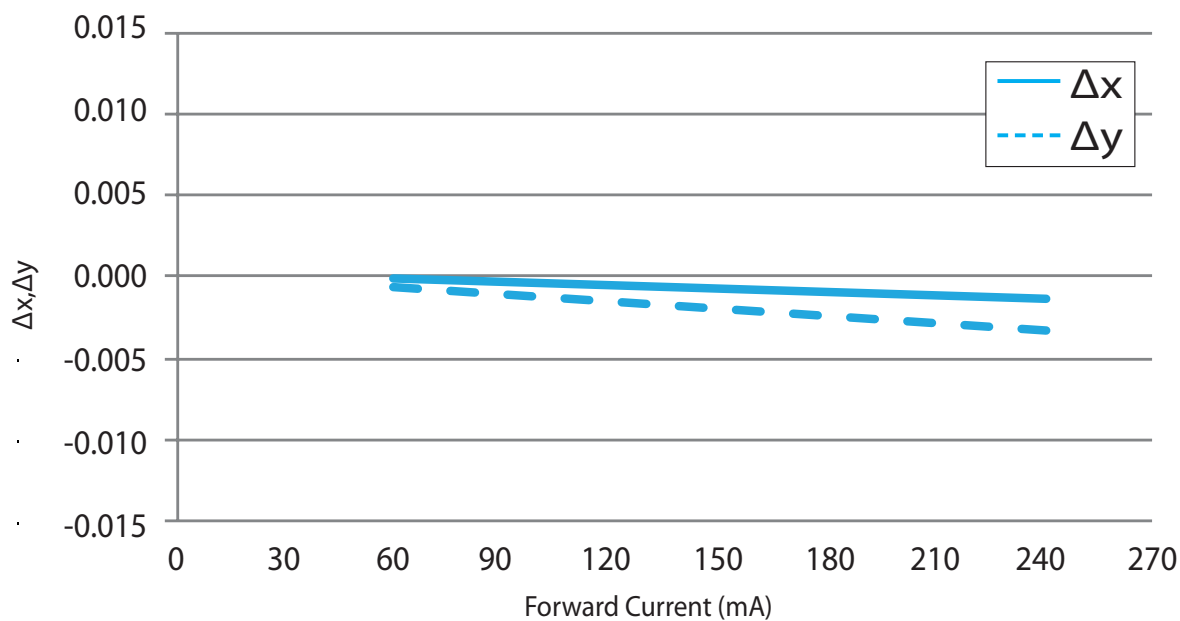
#### $\Delta x, \Delta y$ vs. Forward Current



$\Delta x, \Delta y$  vs. Forward Current for 2PHM05CW27P12001

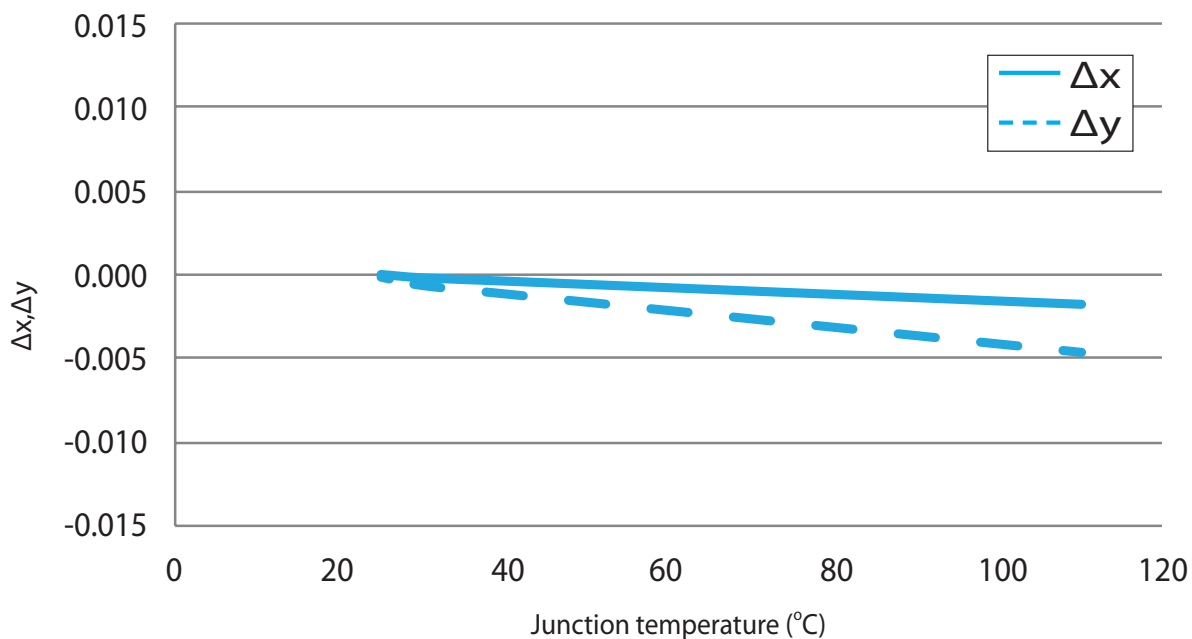


$\Delta x, \Delta y$  vs. Forward Current for 2PHM05NW27P12001

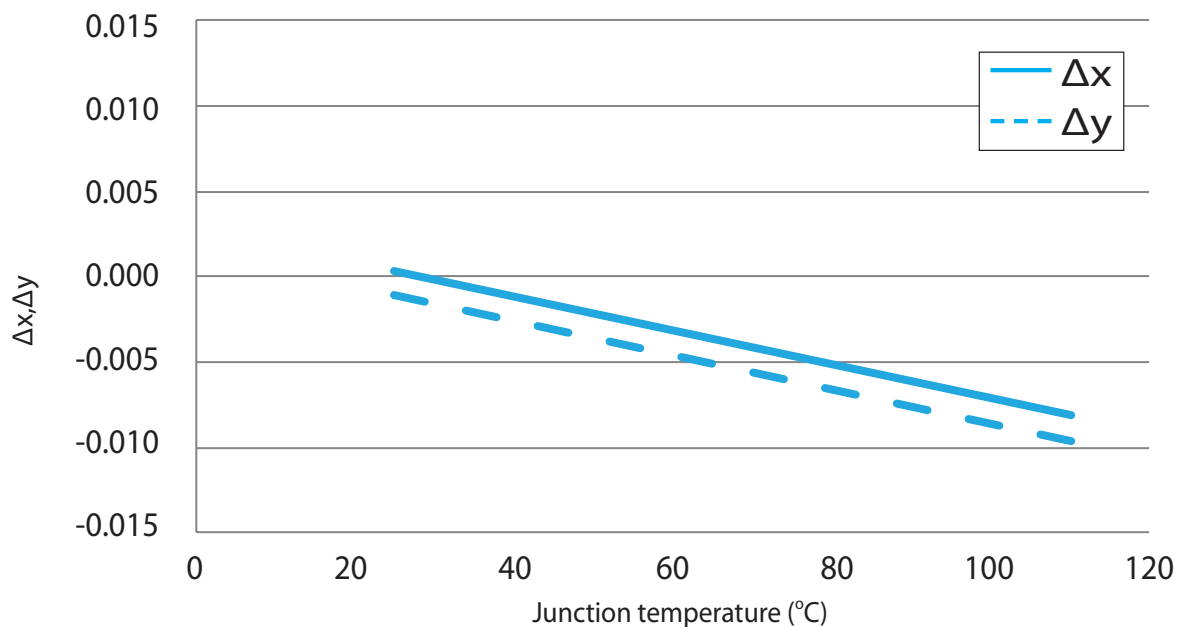


Δx,Δy vs. Forward Current for 2PHM05WW27P12001

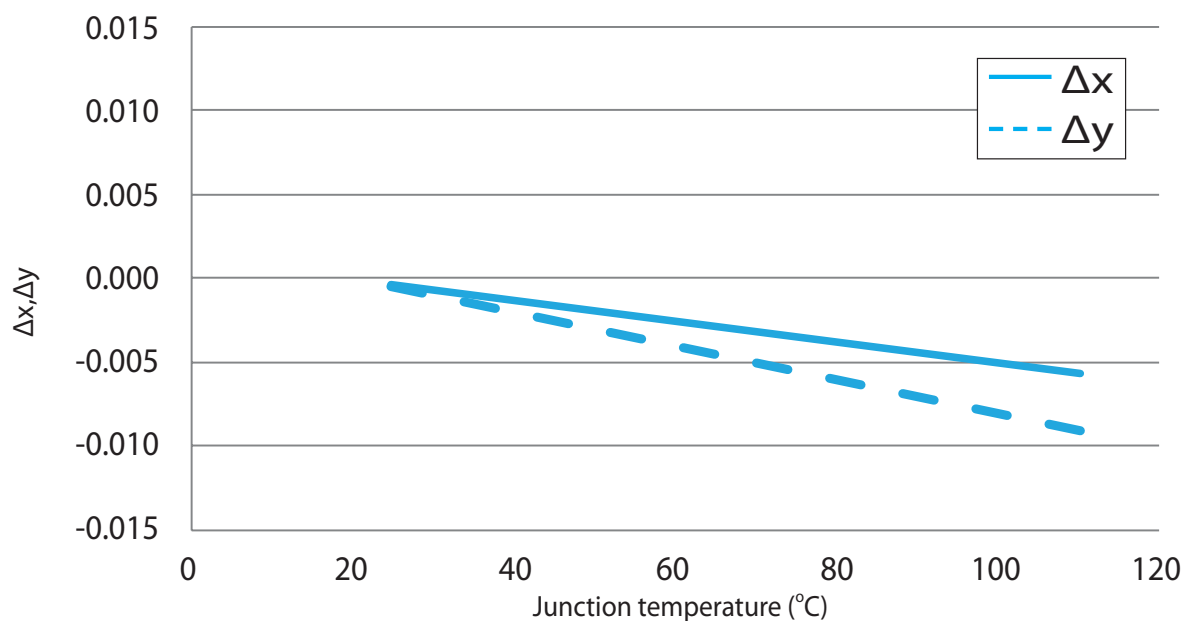
#### Δx,Δy vs. Junction Temperature



Δx,Δy vs. Junction temperature for 2PHMxxCW27P1x001



Δx,Δy vs. Junction temperature for 2PHMxxNW27P1x001



Δx,Δy vs. Junction temperature for 2PHMxxWW27P1x001

## Reliability

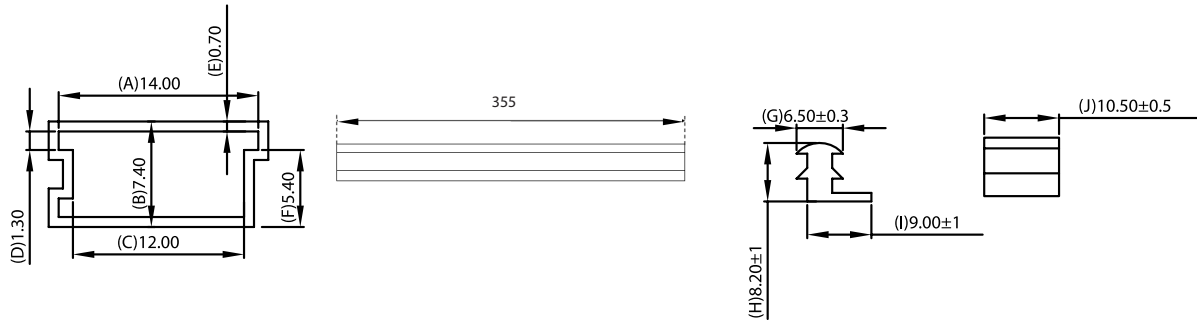
| NO . | Test Item                               | Test Condition                       | Remark     |
|------|-----------------------------------------|--------------------------------------|------------|
| 1    | Temperature Cycle                       | -40°C~100°C<br>30, 30, mins          | 100 Cycle  |
| 2    | Thermal Shock                           | -40°C~100°C<br>15, 15 mins ≤ 10 sec  | 100 Cycle  |
| 3    | Moisture Resistance                     | 25°C~65°C 90% RH<br>24 hrs / 1 cycle | 10 Cycle   |
| 4    | High-Temperature Storage                | T <sub>A</sub> =100°C                | 1,000 hrs  |
| 5    | Humidity Heat Storage                   | T <sub>A</sub> =85°C<br>RH=85%       | 1,000 hrs  |
| 6    | Low-Temperature Storage                 | T <sub>A</sub> =-40°C                | 1,000 hrs  |
| 7    | Operation Life test                     | 25°C                                 | 6,000 hrs  |
| 8    | High Temperature<br>Operation Life test | 85°C                                 | 1,000 hrs  |
| 9    | High Humidity Heat Life Test            | 85°C, 85%RH                          | 1,000 hrs  |
| 10   | ON/OFF Test                             | 30 sec ON, 30 sec OFF                | 1.5W times |

## Failure Criteria

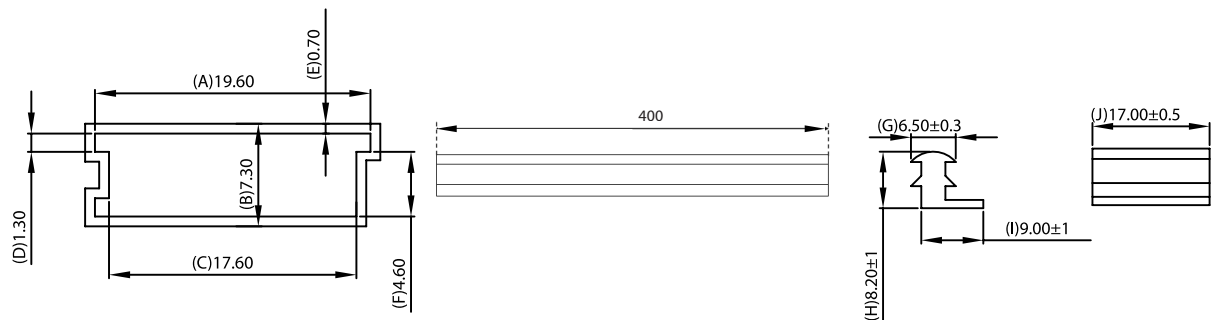
| Item                            | Criteria for Judgment          |                    |
|---------------------------------|--------------------------------|--------------------|
|                                 | Min.                           | Max.               |
| Lumen Maintenance               | 85%                            | -                  |
| $\Delta u'v'$                   | -                              | 0.006              |
| Forward Voltage                 | -                              | Initial Data x 1.1 |
| Reverse Current                 | -                              | 10 $\mu$ A         |
| Resistance to<br>Soldering Heat | No dead lamps or visual damage |                    |

## Product Packaging Information

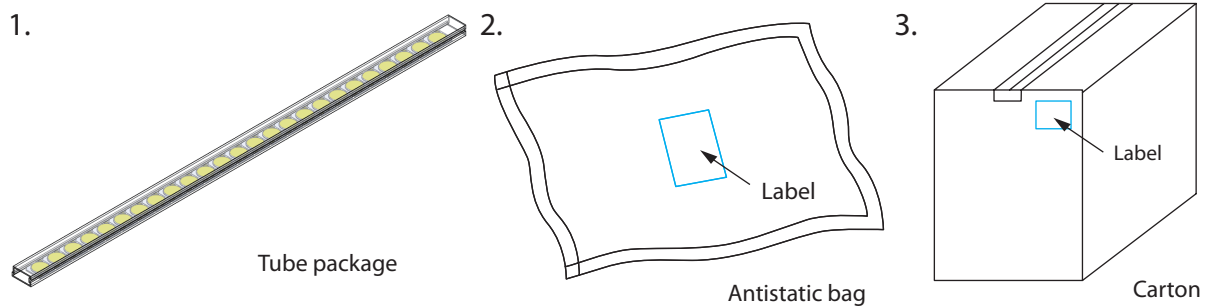
### Tube Packing for 5/ 9 W



### Tube Packing for 16/ 30W



Tube package dimension.

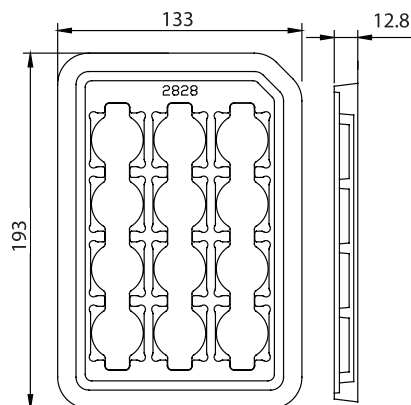


Packaging items for HM Series

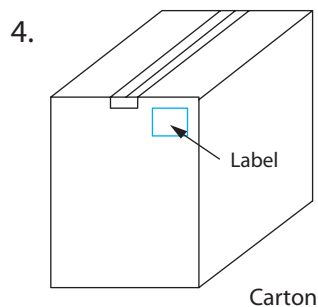
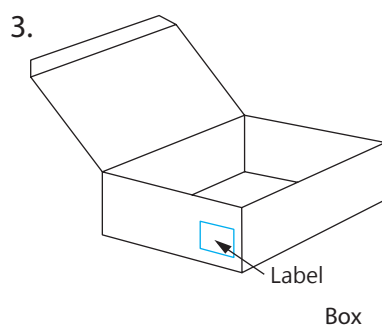
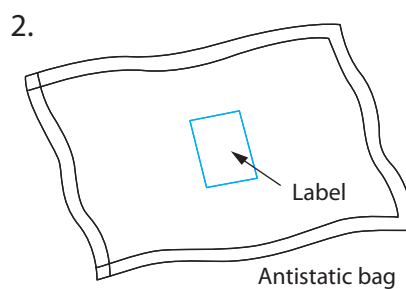
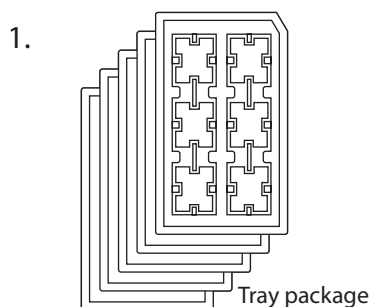
Notes:

1. All dimensions are in mm.
2. 5W/9W: 25pcs emitters in a full tube  
16W/30W: 20pcs emitters in a full tube.
3. There are 20 tubes in a bag.
4. 5W/9W: 6 bags in a carton  
16W/30W: 4 bags in a carton.
5. A bag contains one humidity indicator card and drying agent.

### Tray Packing for 40W



Tray package dimension.



### Packaging items for HM Series

#### Notes:

1. All dimensions are in mm.
2. There are 40W 12pcs emitters in a full tray.
3. There are 5 trays in a bag.
4. There are 10 bags in a box.
5. There are 10 boxes in a carton.
6. A bag contains one humidity indicator card and drying agent.

## Revision History

| Versions | Description                                                                                                                                                                                                                | Release Date |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1        | Establish order code information                                                                                                                                                                                           | 2013/12/17   |
| 2        | 1. Add 5W and 16W information<br>2. Add characteristic curve                                                                                                                                                               | 2013/05/20   |
| 3        | Update the Characteristic Curve                                                                                                                                                                                            | 2013/06/24   |
| 4        | 1. Add the Characteristic curve & Tray Packing<br>2. Update the luminous flux characteristic<br>3. Add Average Lumen Maintenance Characteristics<br>4. Update Mechanical Dimensions<br>5. Add the Chromaticity coordinates | 2013/10/02   |
| 5        | 1. Delete Bin Range of Chromaticity Coordinates<br>2. Update Luminous Flux Characteristic<br>3. Add the Limited Warranty                                                                                                   | 2013/10/08   |
| 6        | 1. Add and enlarge all Characteristic Curve<br>2. Revise Luminous Flux Characteristic&package information                                                                                                                  | 2013/12/23   |
| 7        | 1. Revise Reliability<br>2. Update Luminous Flux Characteristic<br>3. Update 5W/9W, 40W Emitter Dimension                                                                                                                  | 2014/02/10   |
| 8        | 1. Update product packaging information<br>2. Update Characteristic Curve                                                                                                                                                  | 2014/03/07   |
| 9        | 1. Update Junction temperature<br>2. Revise Luminous flux characteristic                                                                                                                                                   | 2014/04/08   |
| 10       | 1. Update Reliability<br>2. Revise Chromaticity coordinates                                                                                                                                                                | 2014/09/04   |

## About Edison Opto

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at [www.edison-opto.com](http://www.edison-opto.com)

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