

# ASMT-UWBG / ASMT-UWBH / ASMT-UWBJ

## 0.25W Cool White Power PLCC4

### Surface Mount LED

### Datasheet



CAUTION: Static sensitive device. Please observe appropriate precautions during handling and processing.

#### Description

The 0.25W Cool White Power PLCC4 SMT LED is using InGaN chip technology. The package can be driven at high current due to its superior package design. The product is able to dissipate the heat more efficiently. These LEDs produce higher light output with better flux performance.

The 0.25W Cool White Power PLCC4 SMT LEDs are designed for higher reliability, better performance, and operate under a wide range of environmental conditions.

To facilitate easy pick and place assembly, the LEDs are packed in EIA-compliant tape and reel. Every reel is shipped in single intensity and color bin, to provide close uniformity.

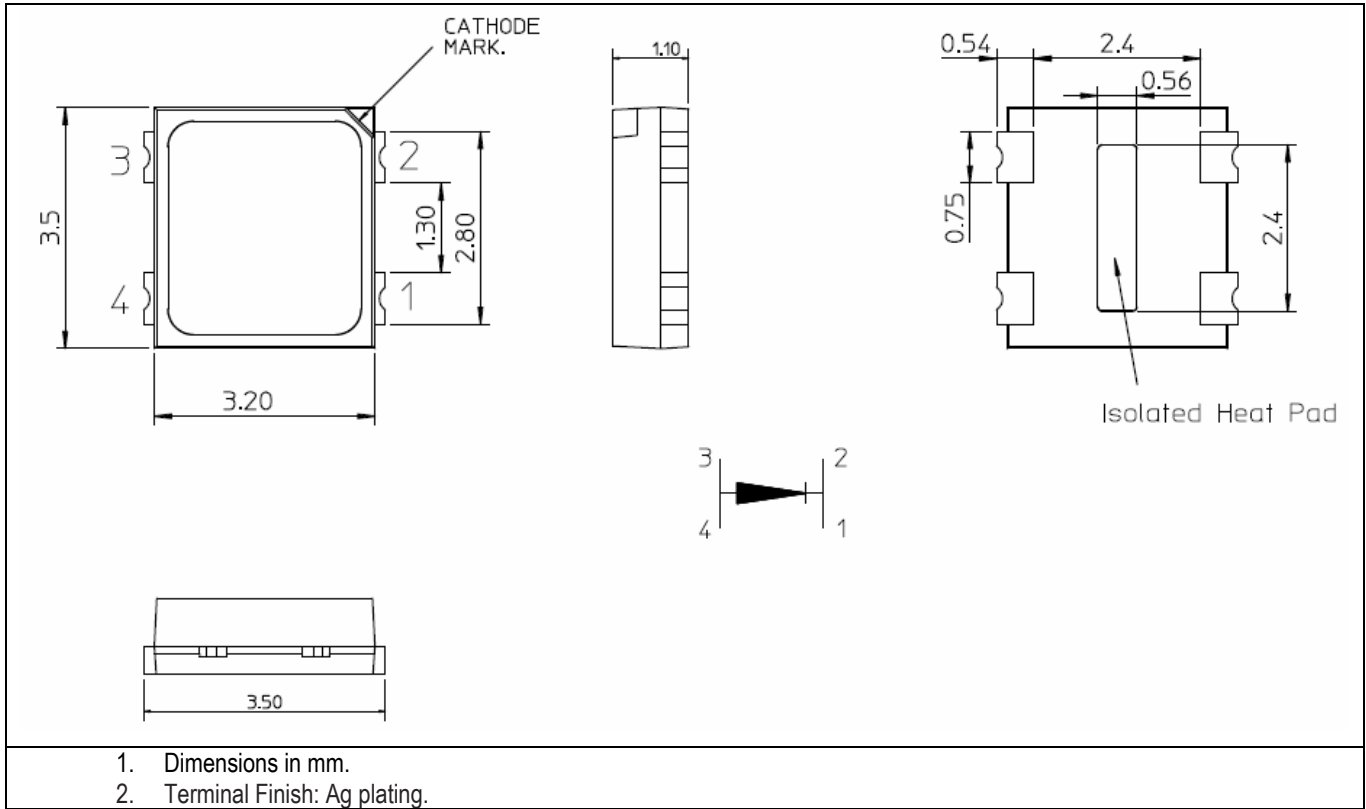
#### Features

- (1) 4000K to 8000K CCT
- (2) ANSI bin
- (3) Wide view angle 120°
- (4) High reliability package with enhanced silicone resin encapsulation

#### Applications

- (1) Fluorescent replacement
- (2) Under cabinet lighting
- (3) Panel lights
- (4) Retails display lighting

## Package Drawing



## Device Selection Guide ( $T_J = 25\text{ }^{\circ}\text{C}$ )

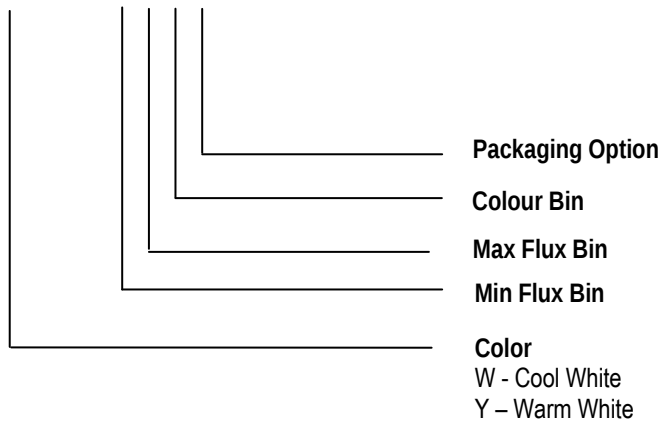
| Color      | Part Number     | CCT (K)     | CRI | Luminous Flux (lm) <sup>1,2</sup> |      |      | Test Current (mA) | Chip  |
|------------|-----------------|-------------|-----|-----------------------------------|------|------|-------------------|-------|
|            |                 |             | Typ | Min                               | Typ  | Max  |                   |       |
| Cool White | ASMT-UWBG-NAC08 | 4000 ~ 8000 | 85  | 18.1                              | 19.0 | 35.2 | 80                | InGaN |
| Cool White | ASMT-UWBG-NACA8 | 8000        | 85  | 18.1                              | 19.0 | 35.2 | 80                | InGaN |
| Cool White | ASMT-UWBG-NACB8 | 6500        | 85  | 18.1                              | 19.0 | 35.2 | 80                | InGaN |
| Cool White | ASMT-UWBG-NACC8 | 5700        | 85  | 18.1                              | 19.0 | 35.2 | 80                | InGaN |
| Cool White | ASMT-UWBG-NACD8 | 5000        | 85  | 18.1                              | 19.0 | 35.2 | 80                | InGaN |
| Cool White | ASMT-UWBG-NACE8 | 4500        | 85  | 18.1                              | 19.0 | 35.2 | 80                | InGaN |
| Cool White | ASMT-UWBG-NACF8 | 4000        | 85  | 18.1                              | 19.0 | 35.2 | 80                | InGaN |
| Cool White | ASMT-UWBH-NBD08 | 4000 ~ 8000 | 75  | 23.5                              | 24.7 | 39.8 | 80                | InGaN |
| Cool White | ASMT-UWBH-NBDA8 | 8000        | 75  | 23.5                              | 24.7 | 39.8 | 80                | InGaN |
| Cool White | ASMT-UWBH-NBDB8 | 6500        | 75  | 23.5                              | 24.7 | 39.8 | 80                | InGaN |
| Cool White | ASMT-UWBH-NBDC8 | 5700        | 75  | 23.5                              | 24.7 | 39.8 | 80                | InGaN |
| Cool White | ASMT-UWBH-NBDD8 | 5000        | 75  | 23.5                              | 24.7 | 39.8 | 80                | InGaN |
| Cool White | ASMT-UWBH-NBDE8 | 4500        | 75  | 23.5                              | 24.7 | 39.8 | 80                | InGaN |
| Cool White | ASMT-UWBH-NBDF8 | 4000        | 75  | 23.5                              | 24.7 | 39.8 | 80                | InGaN |
| Cool White | ASMT-UWBJ-NBD08 | 4000 ~ 8000 | 60  | 23.5                              | 24.7 | 39.8 | 80                | InGaN |

|            |                 |      |    |      |      |      |    |       |
|------------|-----------------|------|----|------|------|------|----|-------|
| Cool White | ASMT-UWBJ-NBDA8 | 8000 | 60 | 23.5 | 24.7 | 39.8 | 80 | InGaN |
| Cool White | ASMT-UWBJ-NBDB8 | 6500 | 60 | 23.5 | 24.7 | 39.8 | 80 | InGaN |
| Cool White | ASMT-UWBJ-NBDC8 | 5700 | 60 | 23.5 | 24.7 | 39.8 | 80 | InGaN |
| Cool White | ASMT-UWBJ-NBDD8 | 5000 | 60 | 23.5 | 24.7 | 39.8 | 80 | InGaN |
| Cool White | ASMT-UWBJ-NBDE8 | 4500 | 60 | 23.5 | 24.7 | 39.8 | 80 | InGaN |
| Cool White | ASMT-UWBJ-NBDF8 | 4000 | 60 | 23.5 | 24.7 | 39.8 | 80 | InGaN |

1. Luminous flux is the total luminous flux output as measured with an integrating sphere at mono pulse conditions.
2. Tolerance  $\pm 12\%$ .

### Part Numbering System

A S M T – U X<sub>1</sub> B X – N X<sub>2</sub> X<sub>3</sub> X<sub>4</sub> X<sub>5</sub>



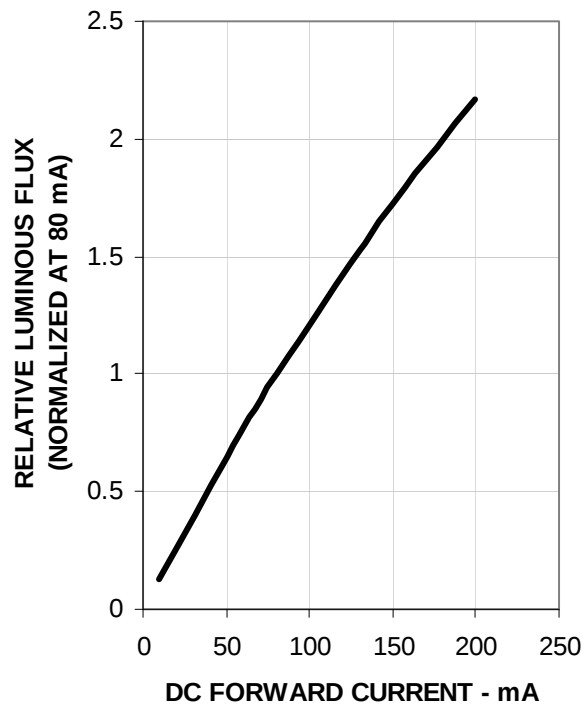
### Absolute Maximum Ratings (T<sub>A</sub> = 25 °C)

| Parameter                                | Rating          | Unit |
|------------------------------------------|-----------------|------|
| DC Forward Current                       | 100             | mA   |
| Peak Forward Current (D = 10%, f = 1kHz) | 200             | mA   |
| Power Dissipation                        | 360             | mW   |
| Reverse Voltage                          | Not recommended | V    |
| Junction Temperature                     | 125             | °C   |
| Operating Temperature                    | -40 to 100      | °C   |
| Storage Temperature                      | -40 to 100      | °C   |

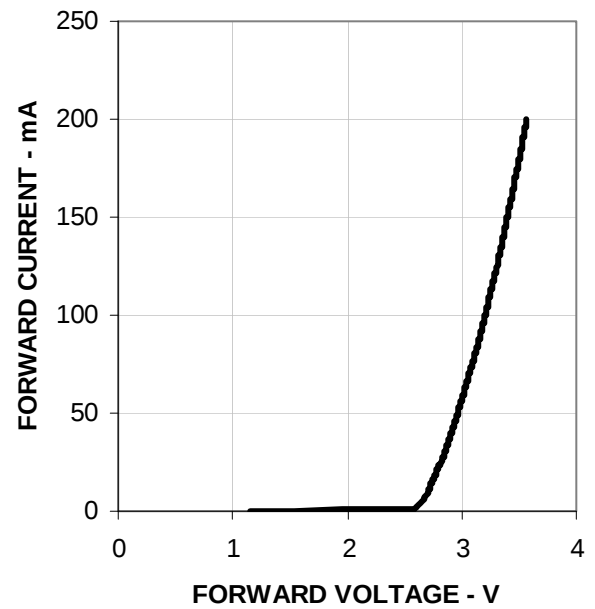
### Optical / Electrical Characteristics (T<sub>J</sub> = 25 °C)

| Parameter                                    | Test Condition        | Min | Typ | Max | Unit   |
|----------------------------------------------|-----------------------|-----|-----|-----|--------|
| Viewing Angle 2θ <sub>1/2</sub> <sup>1</sup> |                       |     | 120 |     | degree |
| Forward Voltage V <sub>F</sub> <sup>2</sup>  | I <sub>F</sub> = 80mA |     | 3.4 | 3.6 | V      |
| Thermal Resistance R <sub>TH</sub>           | junction to pin       |     | 50  |     | °C/W   |

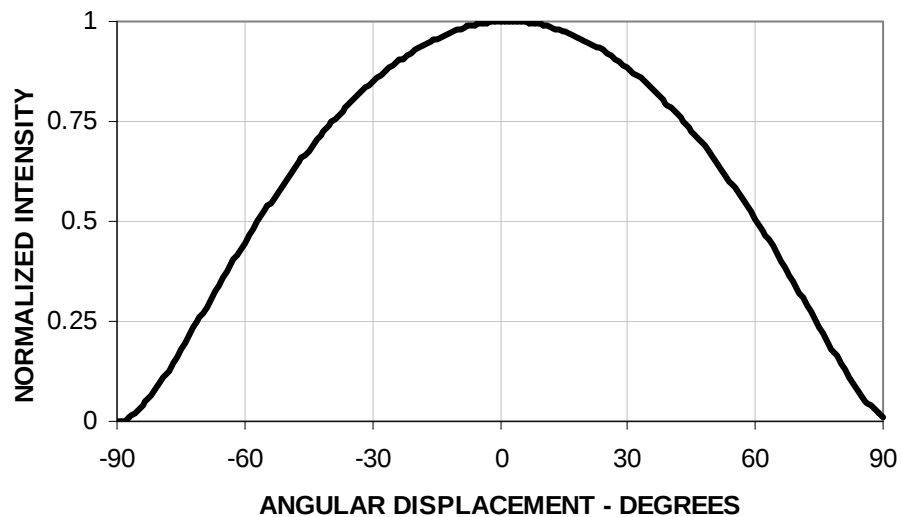
1. θ<sub>1/2</sub> is the off-axis angle where the luminous intensity is 1/2 the peak intensity.
2. Tolerance  $\pm 0.1V$ .



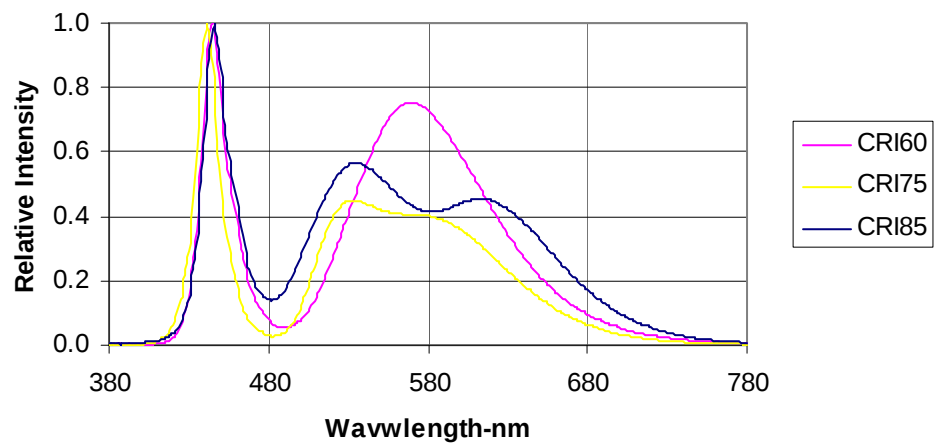
Relative Luminous Flux vs. Forward Current



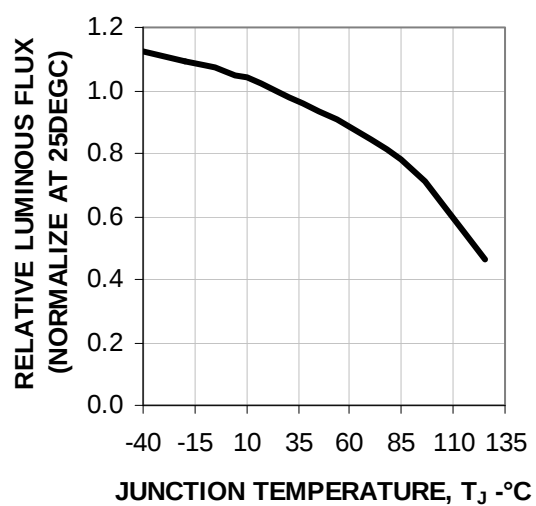
Forward Current vs. Forward Voltage



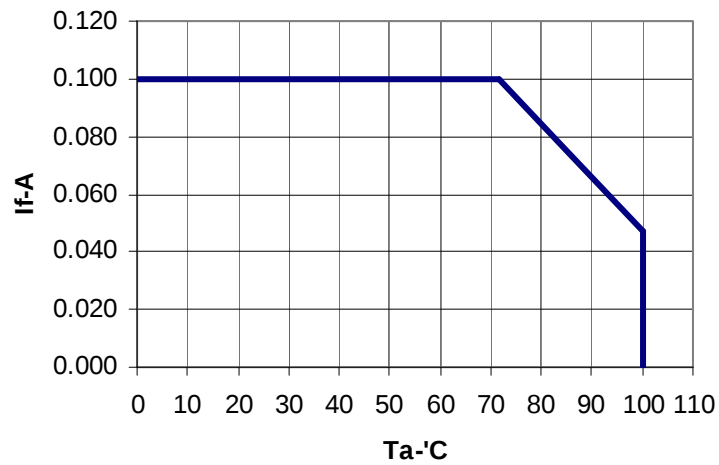
Radiation Diagram



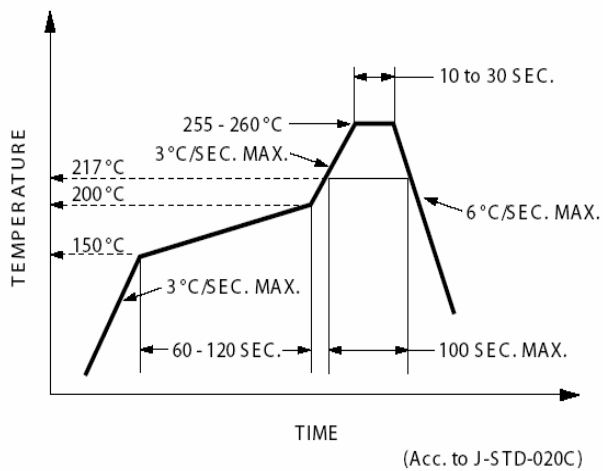
Spectrum Distribution



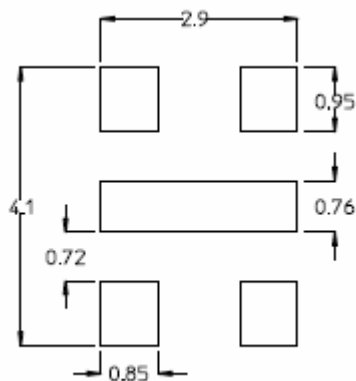
Relative Light Output



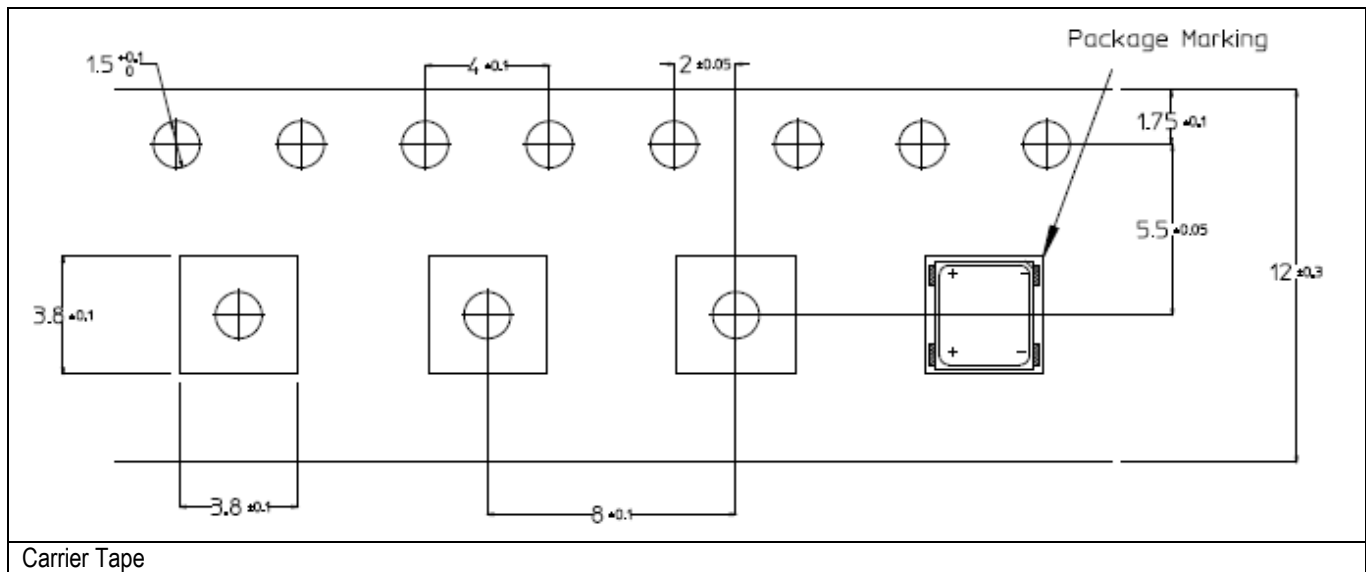
Forward Current Derating Curve. RTHja 140°C/W.



Recommended Pb Free Reflow Soldering Profile



Recommended Solder Pad



### Handling Precaution

The encapsulation material of the product is made of silicone for better reliability of the product. As silicone is a soft material, please do not press on the silicone or poke a sharp object onto the silicone. These might damage the product and cause premature failure. During assembly or handling, the unit should be held on the body only.

### Device Color (X<sub>1</sub>)

|   |            |
|---|------------|
| W | Cool White |
| Y | Warm White |

### Flux Bin (X<sub>2</sub>X<sub>3</sub>)

Individual reel will contain parts from one bin only.

|                |              |
|----------------|--------------|
| X <sub>2</sub> | Min Flux Bin |
| X <sub>3</sub> | Max Flux Bin |

| Bin | Min (lm) | Max (lm) |
|-----|----------|----------|
| A   | 18.1     | 23.5     |
| B   | 23.5     | 30.6     |
| C   | 30.6     | 35.2     |
| D   | 35.2     | 39.8     |
| E   | 39.8     | 45.7     |
| F   | 45.7     | 51.7     |
| G   | 51.7     | 56.8     |
| H   | 56.8     | 62       |
| J   | 62.0     | 67.2     |
| K   | 67.2     | 73.9     |

Tolerance ± 12%

### Color Bin (X<sub>4</sub>)

Individual reel will contain parts from one sub bin only.

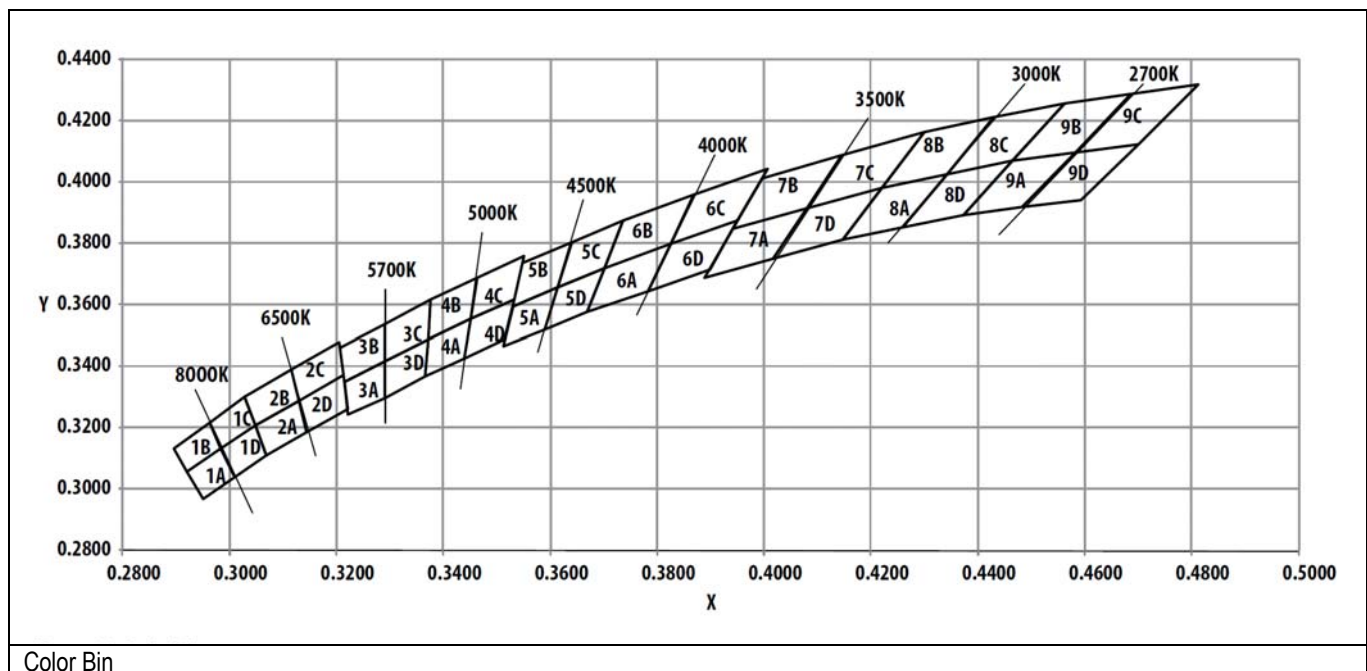
| Bin | Sub Bin        |
|-----|----------------|
| A   | 1A, 1B, 1C, 1D |
| B   | 2A, 2B, 2C, 2D |
| C   | 3A, 3B, 3C, 3D |
| D   | 4A, 4B, 4C, 4D |
| E   | 5A, 5B, 5C, 5D |
| F   | 6A, 6B, 6C, 6D |
| G   | 7A, 7B, 7C, 7D |
| H   | 8A, 8B, 8C, 8D |

|   |                                                                                                |
|---|------------------------------------------------------------------------------------------------|
| J | 9A, 9B, 9C, 9D                                                                                 |
| K | 1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D                                                                 |
| L | 2A, 2B, 2C, 2D, 3A, 3B, 3C, 3D                                                                 |
| M | 3A, 3B, 3C, 3D, 4A, 4B, 4C, 4D                                                                 |
| N | 4A, 4B, 4C, 4D, 5A, 5B, 5C, 5D                                                                 |
| P | 5A, 5B, 5C, 5D, 6A, 6B, 6C, 6D                                                                 |
| R | 7A, 7B, 7C, 7D, 8A, 8B, 8C, 8D                                                                 |
| S | 8A, 8B, 8C, 8D, 9A, 9B, 9C, 9D                                                                 |
| 0 | 1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D, 3A, 3B, 3C, 3D, 4A, 4B, 4C, 4D, 5A, 5B, 5C, 5D, 6A, 6B, 6C, 6D |
| 1 | 7A, 7B, 7C, 7D, 8A, 8B, 8C, 8D, 9A, 9B, 9C, 9D                                                 |

| Sub Bin | Chromaticity Coordinates |        |        |        |        |
|---------|--------------------------|--------|--------|--------|--------|
| 1A      | x                        | 0.2950 | 0.2920 | 0.2984 | 0.3009 |
|         | y                        | 0.2970 | 0.3060 | 0.3133 | 0.3042 |
| 1B      | x                        | 0.2920 | 0.2895 | 0.2962 | 0.2984 |
|         | y                        | 0.3060 | 0.3135 | 0.3220 | 0.3133 |
| 1C      | x                        | 0.2984 | 0.2962 | 0.3028 | 0.3048 |
|         | y                        | 0.3133 | 0.3220 | 0.3304 | 0.3207 |
| 1D      | x                        | 0.2984 | 0.3048 | 0.3068 | 0.3009 |
|         | y                        | 0.3133 | 0.3207 | 0.3113 | 0.3042 |
| 2A      | x                        | 0.3048 | 0.3130 | 0.3144 | 0.3068 |
|         | y                        | 0.3207 | 0.3290 | 0.3186 | 0.3113 |
| 2B      | x                        | 0.3028 | 0.3115 | 0.3130 | 0.3048 |
|         | y                        | 0.3304 | 0.3391 | 0.3290 | 0.3207 |
| 2C      | x                        | 0.3115 | 0.3205 | 0.3213 | 0.3130 |
|         | y                        | 0.3391 | 0.3481 | 0.3373 | 0.3290 |
| 2D      | x                        | 0.3130 | 0.3213 | 0.3221 | 0.3144 |
|         | y                        | 0.3290 | 0.3373 | 0.3261 | 0.3186 |
| 3A      | x                        | 0.3215 | 0.3290 | 0.3290 | 0.3222 |
|         | y                        | 0.3350 | 0.3417 | 0.3300 | 0.3243 |
| 3B      | x                        | 0.3207 | 0.3290 | 0.3290 | 0.3215 |
|         | y                        | 0.3462 | 0.3538 | 0.3417 | 0.3350 |
| 3C      | x                        | 0.3290 | 0.3376 | 0.3371 | 0.3290 |
|         | y                        | 0.3538 | 0.3616 | 0.3490 | 0.3417 |
| 3D      | x                        | 0.3290 | 0.3371 | 0.3366 | 0.3290 |
|         | y                        | 0.3417 | 0.3490 | 0.3369 | 0.3300 |
| 4A      | x                        | 0.3371 | 0.3451 | 0.3440 | 0.3366 |
|         | y                        | 0.3490 | 0.3554 | 0.3427 | 0.3369 |
| 4B      | x                        | 0.3376 | 0.3463 | 0.3451 | 0.3371 |
|         | y                        | 0.3616 | 0.3687 | 0.3554 | 0.3490 |
| 4C      | x                        | 0.3463 | 0.3551 | 0.3533 | 0.3451 |
|         | y                        | 0.3687 | 0.3760 | 0.3620 | 0.3554 |
| 4D      | x                        | 0.3451 | 0.3533 | 0.3515 | 0.3440 |
|         | y                        | 0.3554 | 0.3620 | 0.3487 | 0.3427 |
| 5A      | x                        | 0.3530 | 0.3615 | 0.3590 | 0.3512 |
|         | y                        | 0.3597 | 0.3659 | 0.3521 | 0.3465 |
| 5B      | x                        | 0.3548 | 0.3641 | 0.3615 | 0.3530 |
|         | y                        | 0.3736 | 0.3804 | 0.3659 | 0.3597 |
| 5C      | x                        | 0.3641 | 0.3736 | 0.3702 | 0.3615 |
|         | y                        | 0.3804 | 0.3874 | 0.3722 | 0.3659 |
| 5D      | x                        | 0.3615 | 0.3702 | 0.3670 | 0.3590 |
|         | y                        | 0.3659 | 0.3722 | 0.3578 | 0.3521 |
| 6A      | x                        | 0.3670 | 0.3702 | 0.3825 | 0.3783 |
|         | y                        | 0.3578 | 0.3722 | 0.3798 | 0.3646 |
| 6B      | x                        | 0.3702 | 0.3736 | 0.3869 | 0.3825 |

|    |   |        |        |        |        |
|----|---|--------|--------|--------|--------|
|    | y | 0.3722 | 0.3874 | 0.3958 | 0.3798 |
| 6C | x | 0.3825 | 0.3869 | 0.4006 | 0.3950 |
|    | y | 0.3798 | 0.3958 | 0.4044 | 0.3875 |
| 6D | x | 0.3783 | 0.3825 | 0.3950 | 0.3898 |
|    | y | 0.3646 | 0.3798 | 0.3875 | 0.3716 |
| 7A | x | 0.3889 | 0.3941 | 0.4080 | 0.4017 |
|    | y | 0.3690 | 0.3848 | 0.3916 | 0.3751 |
| 7B | x | 0.3941 | 0.3996 | 0.4146 | 0.4080 |
|    | y | 0.3848 | 0.4015 | 0.4089 | 0.3916 |
| 7C | x | 0.4080 | 0.4146 | 0.4299 | 0.4221 |
|    | y | 0.3916 | 0.4089 | 0.4165 | 0.3984 |
| 7D | x | 0.4017 | 0.4080 | 0.4221 | 0.4147 |
|    | y | 0.3751 | 0.3916 | 0.3984 | 0.3814 |
| 8A | x | 0.4147 | 0.4221 | 0.4342 | 0.4259 |
|    | y | 0.3814 | 0.3984 | 0.4028 | 0.3853 |
| 8B | x | 0.4221 | 0.4299 | 0.4430 | 0.4342 |
|    | y | 0.3984 | 0.4165 | 0.4212 | 0.4028 |
| 8C | x | 0.4342 | 0.4430 | 0.4562 | 0.4465 |
|    | y | 0.4028 | 0.4212 | 0.4260 | 0.4071 |
| 8D | x | 0.4259 | 0.4342 | 0.4465 | 0.4373 |
|    | y | 0.3853 | 0.4028 | 0.4071 | 0.3893 |
| 9A | x | 0.4373 | 0.4465 | 0.4582 | 0.4483 |
|    | y | 0.3893 | 0.4071 | 0.4099 | 0.3919 |
| 9B | x | 0.4465 | 0.4562 | 0.4687 | 0.4582 |
|    | y | 0.4071 | 0.4260 | 0.4289 | 0.4099 |
| 9C | x | 0.4582 | 0.4687 | 0.4813 | 0.4700 |
|    | y | 0.4099 | 0.4289 | 0.4319 | 0.4126 |
| 9D | x | 0.4483 | 0.4582 | 0.4700 | 0.4593 |
|    | y | 0.3919 | 0.4099 | 0.4126 | 0.3944 |

Tolerance  $\pm 0.01$



Color Bin

#### Packaging Option (X<sub>s</sub>)

| Option | Test Current | Package Type | Reel Size |
|--------|--------------|--------------|-----------|
| 8      | 80mA         | Top Mount    | 7 Inch    |

**Forward Voltage Bin**

| Bin | Min (V) | Max (V) |
|-----|---------|---------|
| F05 | 2.8     | 3.0     |
| F06 | 3.0     | 3.2     |
| F07 | 3.2     | 3.4     |
| F08 | 3.4     | 3.6     |

Tolerance  $\pm 0.1V$ **DISCLAIMER**

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