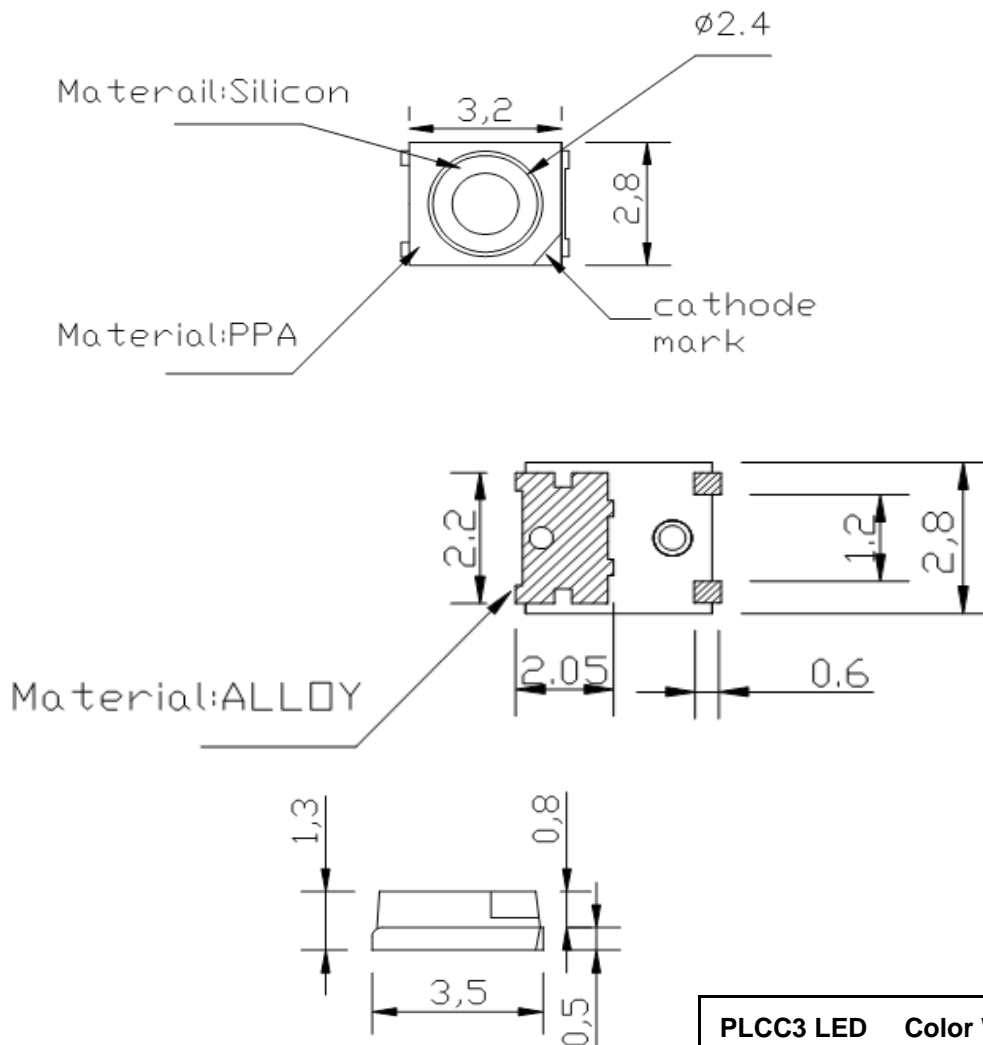




### Applications

- Interior automotive lighting(dashboard backlight etc...)
- Optical indicators
- Communication Products
- Backlighting
- Toys
- Tradffic Signal

### Package Dimensions



**Notes:**

All dimensions in mm tolerance is  $\pm 0.1$ mm unless otherwise noted.

|                                   |                 |
|-----------------------------------|-----------------|
| <b>PLCC3 LED Color Warm White</b> |                 |
| Part No.:                         | <b>M11A4003</b> |
| Customer:                         |                 |

|       |       |      |        |        |        |           |           |                 |
|-------|-------|------|--------|--------|--------|-----------|-----------|-----------------|
| DRW:  | Harry | CHKD | Dustin | MATL   | Wilson | TOLERANCE | Mason     | DATE 24.07.2009 |
| APPD: | Jason |      |        | FINISH | John   |           | Sheet No. | 1 from 12       |



**Absolute Maximum Ratings (Ta = 25°C)**

| Parameter             | Symbol | Value         | Unit |
|-----------------------|--------|---------------|------|
| Forward Current       | If     | 150           | mA   |
| Power Dissipation     | PD     | 0,5           | W    |
| Junction Temperature  | TJ     | 125           | °C   |
| Operating Temperature | Topr   | -30° ~ +85°C  | °C   |
| Storage Temperature   | Tstg   | -40° ~ +120°C | °C   |

\*Pulse width ≤0.1msec duty ≤1/10

**Typical Electrical & Optical Characteristics (IF=20mA and Ta = 25°C)**

| M11A4003               | Code   | Color Rank |      |      |      |
|------------------------|--------|------------|------|------|------|
| Parameter              | Symbol | Value      |      |      | Unit |
|                        |        | Min.       | Typ. | Max. |      |
| Muminous Flux          |        | 16         | 21   | ---- | Lm   |
| Correlated Color Temp. | CCT    | ----       | 4000 | ---- | K    |
| CRI                    | Ra     | 70         | 75   | ---- | ---  |
| Forward Voltage        | Vf     | ----       | 3,2  | 4,5  | V    |
| View Angle             | 20 1/2 | 120        |      |      | deg. |

**Ranks Combination (IF = 20mA)**

| Rank                |  |  |  |
|---------------------|--|--|--|
| Luminious Intensity |  |  |  |
|                     |  |  |  |
|                     |  |  |  |

**Notes:**

|  |         |                                   |
|--|---------|-----------------------------------|
| 1. Tolerance of measurement of luminous intensity    | : ±15%  | <b>PLCC3 LED Color Warm White</b> |
| 2. Tolerance of measurement of chromatic coordinates | : ±0.02 |                                   |
| 3. Tolerance of measurement of forward voltage       | : ±0.1V |                                   |

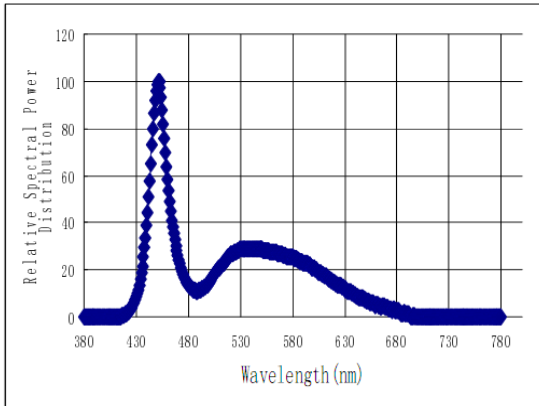
Part No.: **M11A4003**

Customer:

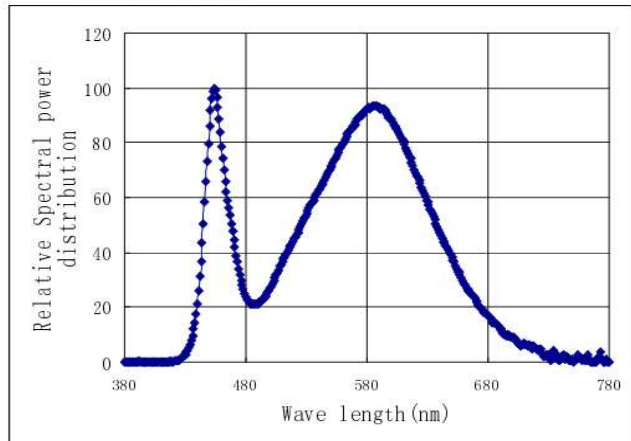
|       |       |      |        |        |        |           |           |                 |
|-------|-------|------|--------|--------|--------|-----------|-----------|-----------------|
| DRW:  | Harry | CHKD | Dustin | MATL   | Wilson | TOLERANCE | Mason     | DATE 24.07.2009 |
| APPD: | Jason |      |        | FINISH | John   |           | Sheet No. | 2 from 12       |



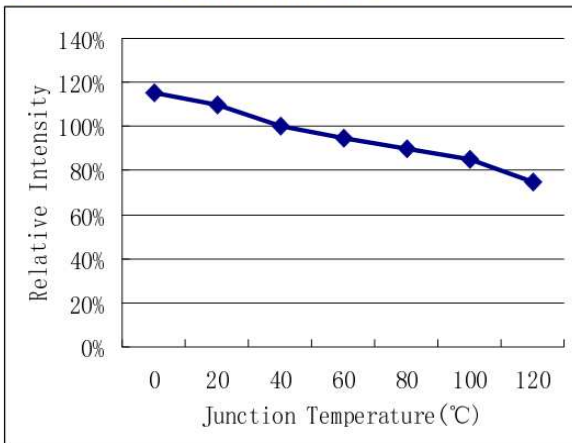
**White color spectrum, TA=25°C  
 Pure White**



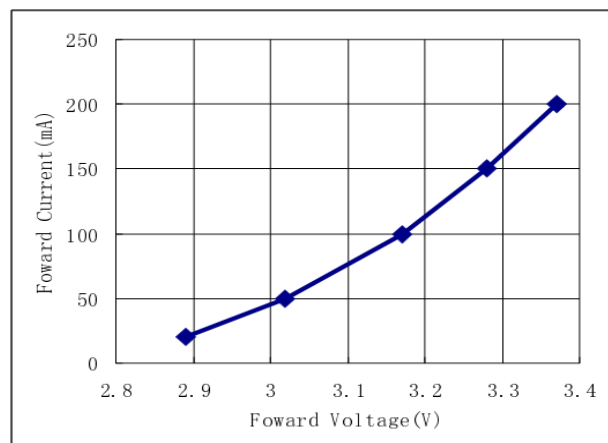
**Warm white**



**Relative Light Output vs. Junction Temperature  
 (All series) at IF=150mA, TA=25°C**



**Forward Voltage vs. Forward Current, TA=25°C  
 (Pure white, Warm white, blue and green)**



**PLCC3 LED Color Warm White**

Part No.: **M11A4003**

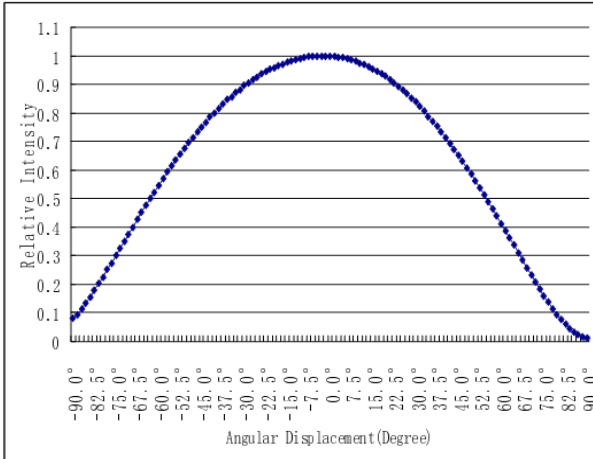
Customer:

|       |       |      |        |        |        |           |           |                 |
|-------|-------|------|--------|--------|--------|-----------|-----------|-----------------|
| DRW:  | Harry | CHKD | Dustin | MATL   | Wilson | TOLERANCE | Mason     | DATE 24.07.2009 |
| APPD: | Jason |      |        | FINISH | John   |           | Sheet No. | 3 from 12       |

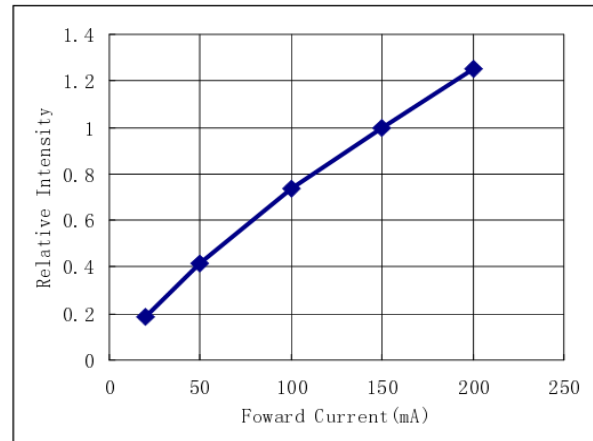


**Typical Electrical/ Optical Characteristics Curves (Ta=25°C Unless Otherwise Noted)**

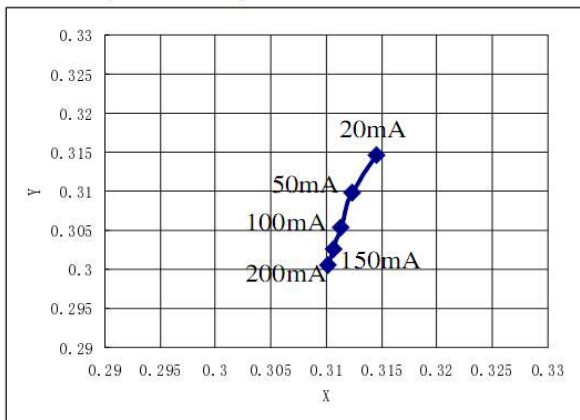
**Typical Radiation(All series)**



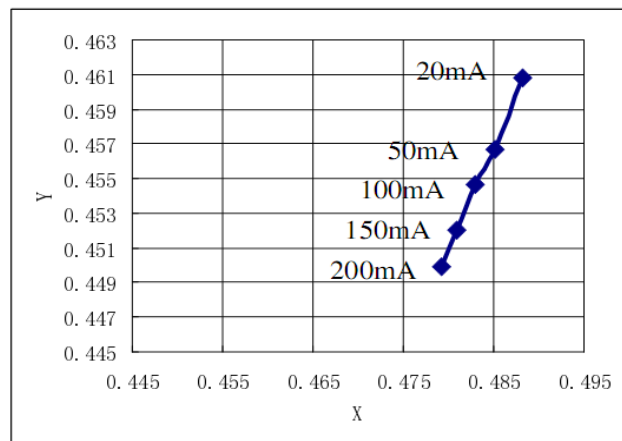
**Forward Current VS Relative Luminosity(All series)**



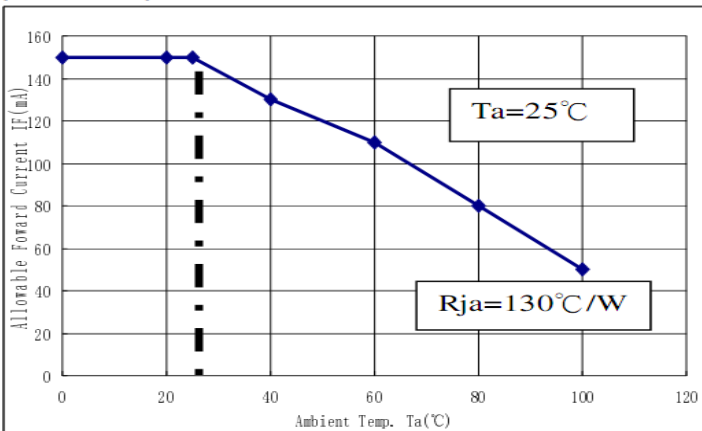
**Forward Current VS Chromaticity Coordinate: TA=25°C (Pure white)**



**Forward Current VS Chromaticity Coordinate: TA=25°C (Warm white)**



**Ambient Temperature. VS Allowable Forward Current (All series)**



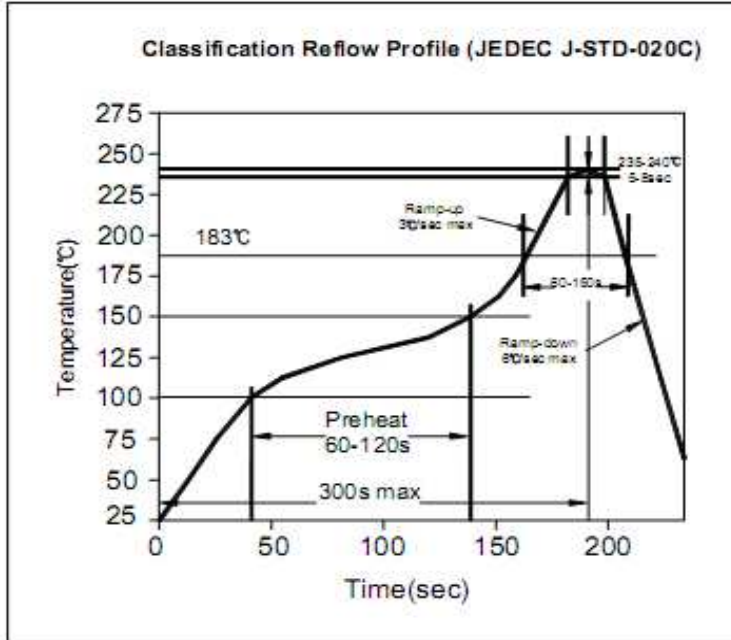
|                                   |                 |
|-----------------------------------|-----------------|
| <b>PLCC3 LED Color Warm White</b> |                 |
| Part No.:                         | <b>M11A4003</b> |
| Customer:                         |                 |

|       |       |      |        |        |        |           |           |                 |
|-------|-------|------|--------|--------|--------|-----------|-----------|-----------------|
| DRW:  | Harry | CHKD | Dustin | MATL   | Wilson | TOLERANCE | Mason     | DATE 24.07.2009 |
| APPD: | Jason |      |        | FINISH | John   |           | Sheet No. | 4 from 12       |

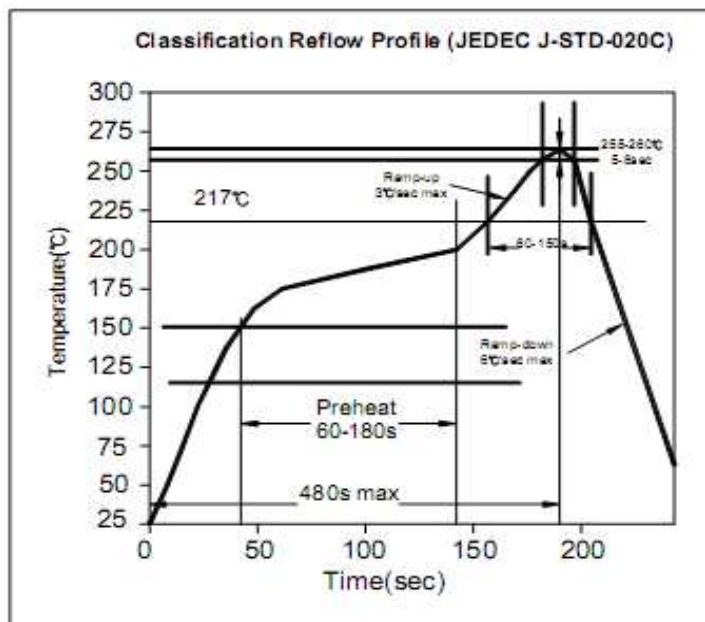


**Solder Condition**

lead solder



lead free solder

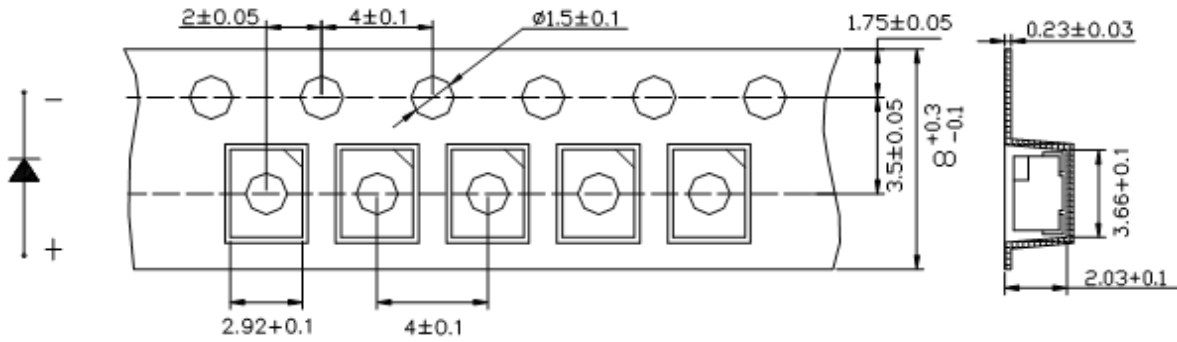


|                                   |                 |
|-----------------------------------|-----------------|
| <b>PLCC3 LED Color Warm White</b> |                 |
| Part No.:                         | <b>M11A4003</b> |
| Customer:                         |                 |

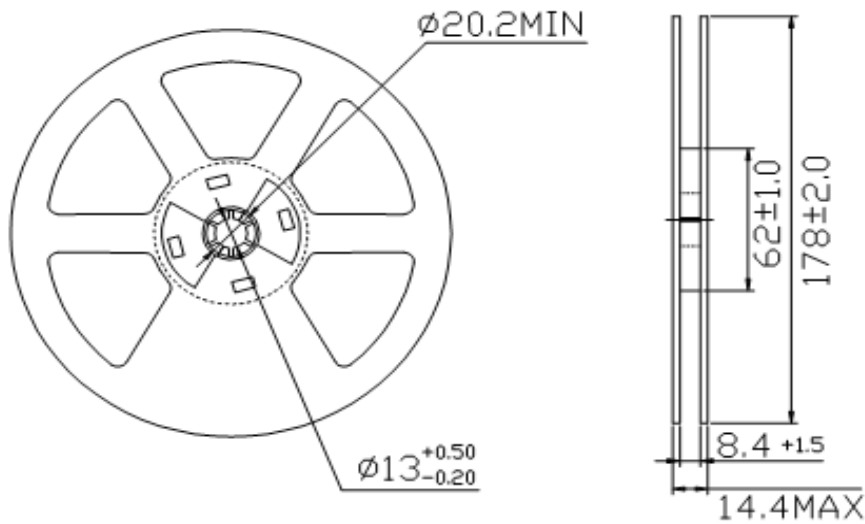
|       |       |      |        |        |        |           |           |                 |
|-------|-------|------|--------|--------|--------|-----------|-----------|-----------------|
| DRW:  | Harry | CHKD | Dustin | MATL   | Wilson | TOLERANCE | Mason     | DATE 24.07.2009 |
| APPD: | Jason |      |        | FINISH | John   |           | Sheet No. | 5 from 12       |



**Packing Specifications:**



**Reel Specifications**



Dimensions are specified as follows: mm

Notes:

- 1) The packing only appropriate for ECGD
- 2) Normal packing quantity: 2,000pcs/reel

|                                   |                 |
|-----------------------------------|-----------------|
| <b>PLCC3 LED Color Warm White</b> |                 |
| Part No.:                         | <b>M11A4003</b> |
| Customer:                         |                 |

|       |       |      |        |        |        |           |           |                 |
|-------|-------|------|--------|--------|--------|-----------|-----------|-----------------|
| DRW:  | Harry | CHKD | Dustin | MATL   | Wilson | TOLERANCE | Mason     | DATE 24.07.2009 |
| APPD: | Jason |      |        | FINISH | John   |           | Sheet No. | 6 from 12       |

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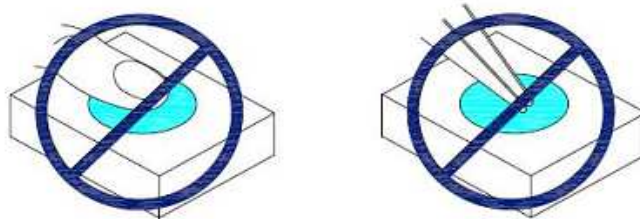
**Handling Precautions**

Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might leads to damage and premature failure of the LED.

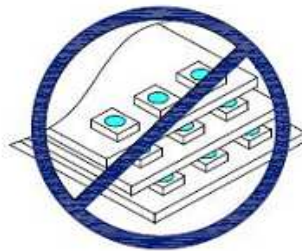
1. Handle the component along the side surfaces by using forceps or appropriate tools.



2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.



3. Do not stack together assembled PCBs containing exposed LEDs. Outside impact may scratch the silicone lens or damage the internal circuitry.



4. The outer diameter of the TOP LED pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible.

|                                   |                 |       |        |         |        |            |            |           |            |
|-----------------------------------|-----------------|-------|--------|---------|--------|------------|------------|-----------|------------|
| <b>PLCC3 LED Color Warm White</b> |                 |       |        |         |        |            |            |           |            |
| Part No.:                         | <b>M11A4003</b> |       |        |         |        |            |            |           |            |
| Customer:                         |                 |       |        |         |        |            |            |           |            |
| DRW:                              | Harry           | CHKD: | Dustin | MATL:   | Wilson | TOLERANCE: | Mason      | DATE:     | 24.07.2009 |
| APPD:                             | Jason           |       |        | FINISH: | John   |            | Sheet No.: | 7 from 12 |            |

|       |       |       |        |         |        |            |            |           |            |
|-------|-------|-------|--------|---------|--------|------------|------------|-----------|------------|
| DRW:  | Harry | CHKD: | Dustin | MATL:   | Wilson | TOLERANCE: | Mason      | DATE:     | 24.07.2009 |
| APPD: | Jason |       |        | FINISH: | John   |            | Sheet No.: | 7 from 12 |            |

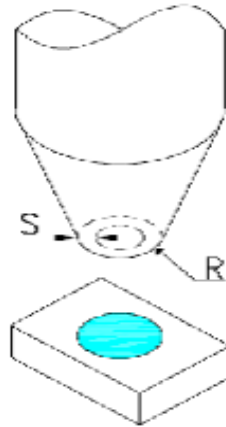






5. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup.

6. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.



|                                   |                 |
|-----------------------------------|-----------------|
| <b>PLCC3 LED Color Warm White</b> |                 |
| Part No.:                         | <b>M11A4003</b> |
| Customer:                         |                 |

|       |       |      |        |        |        |           |           |                 |
|-------|-------|------|--------|--------|--------|-----------|-----------|-----------------|
| DRW:  | Harry | CHKD | Dustin | MATL   | Wilson | TOLERANCE | Mason     | DATE 24.07.2009 |
| APPD: | Jason |      |        | FINISH | John   |           | Sheet No. | 8 from 12       |

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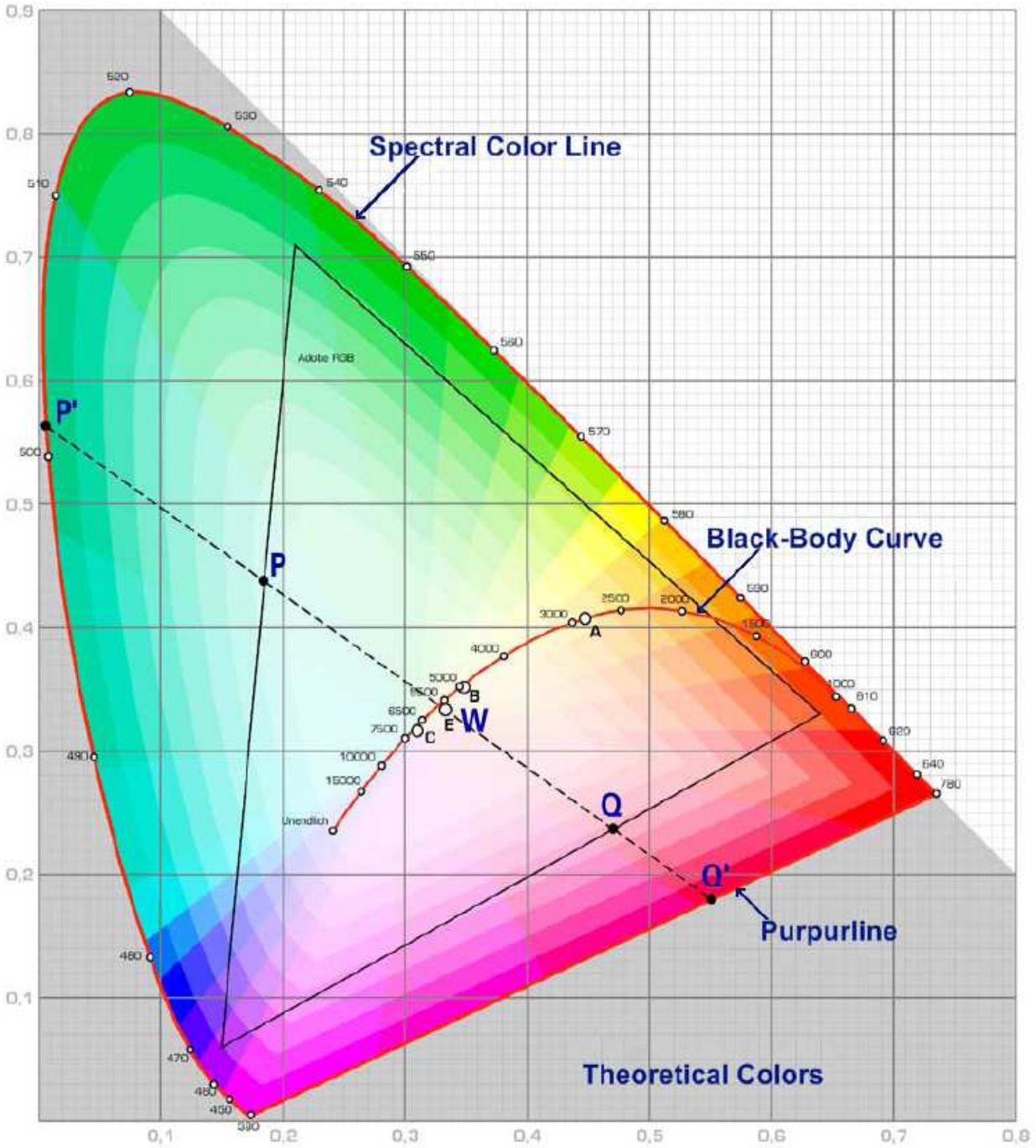
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**Color table curve**



|                                   |                 |
|-----------------------------------|-----------------|
| <b>PLCC3 LED Color Warm White</b> |                 |
| Part No.:                         | <b>M11A4003</b> |
| Customer:                         |                 |

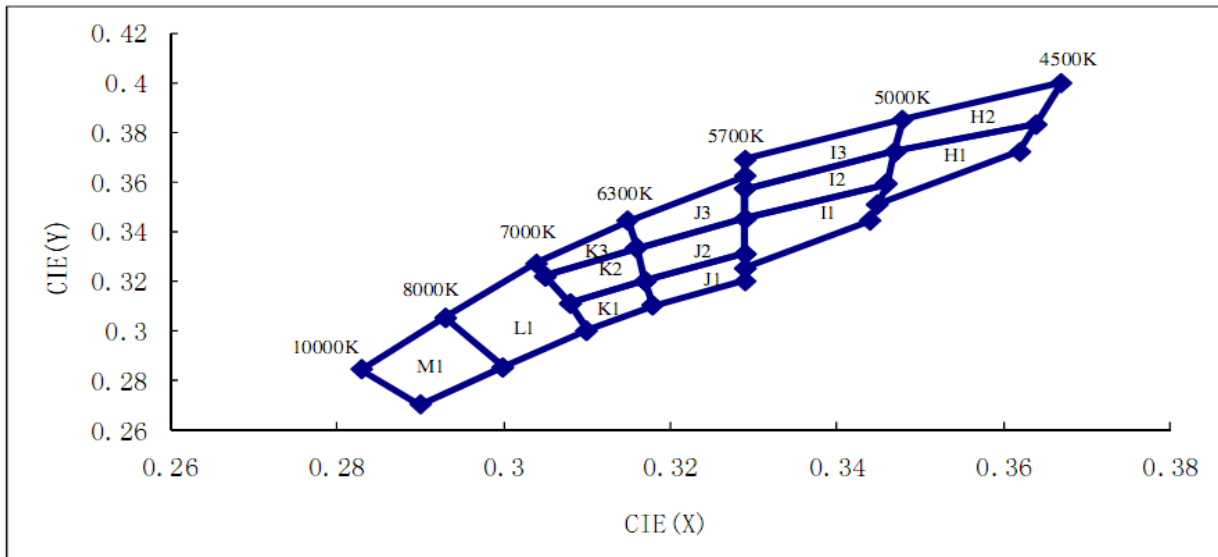
|       |       |      |        |        |        |           |           |           |            |
|-------|-------|------|--------|--------|--------|-----------|-----------|-----------|------------|
| DRW:  | Harry | CHKD | Dustin | MATL   | Wilson | TOLERANCE | Mason     | DATE      | 24.07.2009 |
| APPD: | Jason |      |        | FINISH | John   |           | Sheet No. | 9 from 12 |            |

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| BIN | CHR-X | CHR-Y | TC(K) | BIN | CHR-X | CHR-Y | TC(K) |
|-----|-------|-------|-------|-----|-------|-------|-------|
| M1  | 0.293 | 0.305 | 9000  | J1  | 0.329 | 0.331 | 6050  |
|     | 0.283 | 0.284 |       |     | 0.317 | 0.32  |       |
|     | 0.29  | 0.27  |       |     | 0.318 | 0.31  |       |
|     | 0.3   | 0.285 |       |     | 0.329 | 0.32  |       |
| L1  | 0.304 | 0.327 | 7500  | I3  | 0.329 | 0.325 | 5350  |
|     | 0.293 | 0.305 |       |     | 0.348 | 0.385 |       |
|     | 0.3   | 0.285 |       |     | 0.329 | 0.369 |       |
|     | 0.31  | 0.3   |       |     | 0.329 | 0.362 |       |
|     | 0.308 | 0.311 |       |     | 0.329 | 0.357 |       |
| K3  | 0.305 | 0.322 | 6700  | I2  | 0.347 | 0.372 | 5350  |
|     | 0.316 | 0.333 |       |     | 0.329 | 0.357 |       |
|     | 0.316 | 0.333 |       |     | 0.329 | 0.345 |       |
|     | 0.305 | 0.322 |       |     | 0.346 | 0.359 |       |
| K2  | 0.316 | 0.333 | 6700  | I1  | 0.346 | 0.359 | 5350  |
|     | 0.305 | 0.322 |       |     | 0.329 | 0.345 |       |
|     | 0.308 | 0.311 |       |     | 0.329 | 0.331 |       |
| K1  | 0.317 | 0.32  | 6700  | H2  | 0.329 | 0.325 | 4800  |
|     | 0.308 | 0.311 |       |     | 0.344 | 0.344 |       |
|     | 0.31  | 0.3   |       |     | 0.345 | 0.351 |       |
| J3  | 0.318 | 0.31  | 6050  | H1  | 0.367 | 0.4   | 4800  |
|     | 0.329 | 0.362 |       |     | 0.348 | 0.385 |       |
|     | 0.315 | 0.344 |       |     | 0.347 | 0.372 |       |
|     | 0.316 | 0.333 |       |     | 0.364 | 0.383 |       |
| J2  | 0.329 | 0.345 | 6050  | H1  | 0.364 | 0.383 | 4800  |
|     | 0.329 | 0.357 |       |     | 0.347 | 0.372 |       |
|     | 0.329 | 0.345 |       |     | 0.346 | 0.359 |       |
| J2  | 0.316 | 0.333 | 6050  | H1  | 0.345 | 0.351 | 4800  |
|     | 0.317 | 0.32  |       |     | 0.362 | 0.372 |       |
|     | 0.329 | 0.331 |       |     |       |       |       |

**Remark :** J1 J2 K1 K2 I1 (White and lightly Purplish) J2 J3 K2 K3 (White and lightly Yellowish)  
I2 I3 H1 H2 (White and deeply Yellowish) Customer can choose any group

**PLCC3 LED Color Warm White**

Part No.: **M11A4003**

Customer:

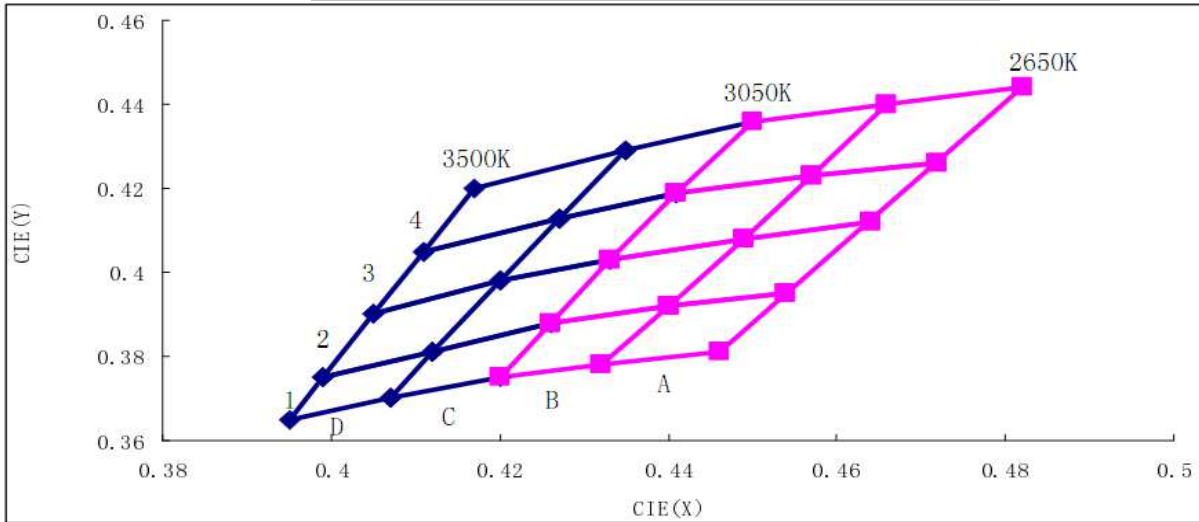
|       |       |      |        |        |        |           |           |                 |
|-------|-------|------|--------|--------|--------|-----------|-----------|-----------------|
| DRW:  | Harry | CHKD | Dustin | MATL   | Wilson | TOLERANCE | Mason     | DATE 24.07.2009 |
| APPD: | Jason |      |        | FINISH | John   |           | Sheet No. | 10 from 12      |

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| BIN | CHR-X | CHR-Y | TC (K) | BIN | CHR-X | CHR-Y | TC (K) |
|-----|-------|-------|--------|-----|-------|-------|--------|
| D4  | 0.435 | 0.429 | 3375   | B4  | 0.466 | 0.44  | 2950   |
|     | 0.417 | 0.42  |        |     | 0.45  | 0.436 |        |
|     | 0.411 | 0.405 |        |     | 0.441 | 0.419 |        |
|     | 0.427 | 0.413 |        |     | 0.457 | 0.423 |        |
| D3  | 0.427 | 0.413 | 3375   | B3  | 0.457 | 0.423 | 2950   |
|     | 0.411 | 0.405 |        |     | 0.441 | 0.419 |        |
|     | 0.405 | 0.39  |        |     | 0.433 | 0.403 |        |
|     | 0.42  | 0.398 |        |     | 0.449 | 0.408 |        |
| D2  | 0.42  | 0.398 | 3375   | B2  | 0.449 | 0.408 | 2950   |
|     | 0.405 | 0.39  |        |     | 0.433 | 0.403 |        |
|     | 0.399 | 0.375 |        |     | 0.426 | 0.388 |        |
|     | 0.412 | 0.381 |        |     | 0.44  | 0.392 |        |
| D1  | 0.412 | 0.381 | 3375   | B1  | 0.44  | 0.392 | 2950   |
|     | 0.399 | 0.375 |        |     | 0.426 | 0.388 |        |
|     | 0.395 | 0.365 |        |     | 0.42  | 0.375 |        |
|     | 0.407 | 0.37  |        |     | 0.432 | 0.378 |        |
| C4  | 0.45  | 0.436 | 3250   | A4  | 0.482 | 0.444 | 2750   |
|     | 0.435 | 0.429 |        |     | 0.466 | 0.44  |        |
|     | 0.427 | 0.413 |        |     | 0.457 | 0.423 |        |
|     | 0.441 | 0.419 |        |     | 0.472 | 0.426 |        |
| C3  | 0.441 | 0.419 | 3150   | A3  | 0.472 | 0.426 | 2750   |
|     | 0.427 | 0.413 |        |     | 0.457 | 0.423 |        |
|     | 0.42  | 0.398 |        |     | 0.449 | 0.408 |        |
|     | 0.433 | 0.403 |        |     | 0.464 | 0.412 |        |
| C2  | 0.433 | 0.403 | 3150   | A2  | 0.464 | 0.412 | 2750   |
|     | 0.42  | 0.398 |        |     | 0.449 | 0.408 |        |
|     | 0.412 | 0.381 |        |     | 0.44  | 0.392 |        |
|     | 0.426 | 0.388 |        |     | 0.454 | 0.395 |        |
| C1  | 0.426 | 0.388 | 3150   | A1  | 0.454 | 0.395 | 2750   |
|     | 0.412 | 0.381 |        |     | 0.44  | 0.392 |        |
|     | 0.407 | 0.37  |        |     | 0.432 | 0.378 |        |
|     | 0.42  | 0.375 |        |     | 0.446 | 0.381 |        |

**PLCC3 LED Color Warm White**

Part No.: **M11A4003**

Customer:

|       |       |      |        |        |        |           |           |                 |
|-------|-------|------|--------|--------|--------|-----------|-----------|-----------------|
| DRW:  | Harry | CHKD | Dustin | MATL   | Wilson | TOLERANCE | Mason     | DATE 24.07.2009 |
| APPD: | Jason |      |        | FINISH | John   |           | Sheet No. | 11 from 12      |

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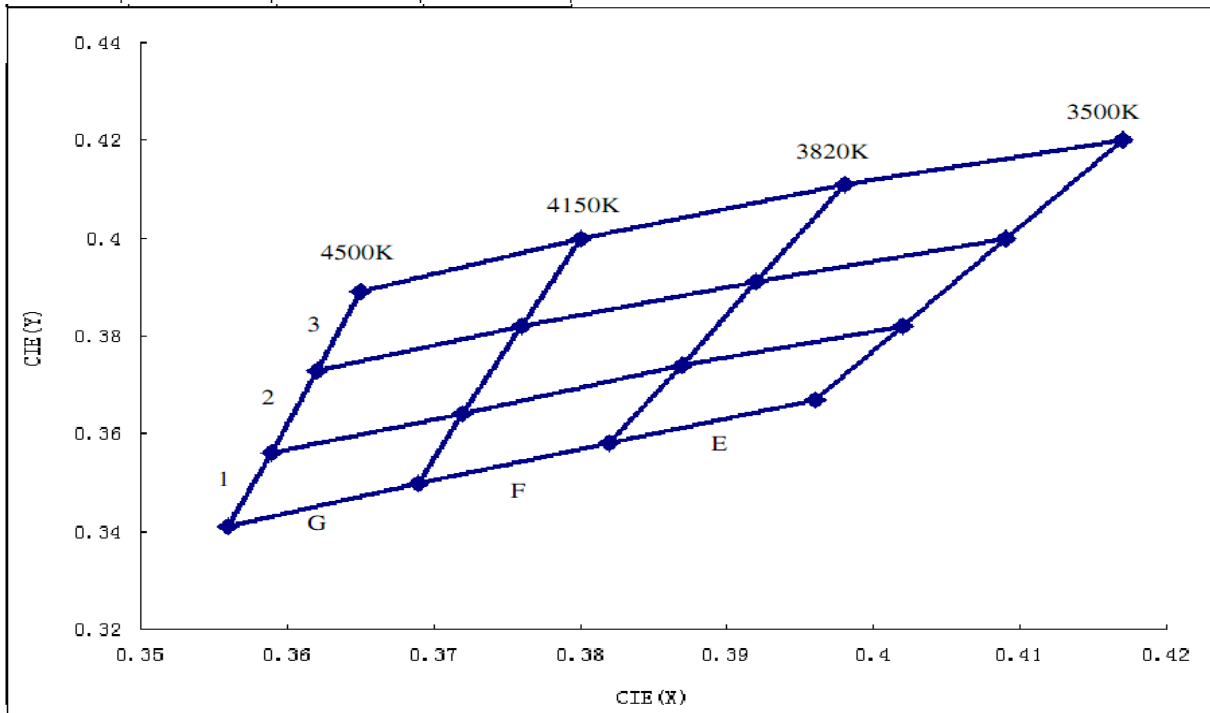
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| BIN | CHR-X | CHR-Y | TC (K) | BIN | CHR-X | CHR-Y | TC (K) |
|-----|-------|-------|--------|-----|-------|-------|--------|
| G3  | 0.38  | 0.4   | 4325   | F1  | 0.387 | 0.374 | 3985   |
|     | 0.365 | 0.389 |        |     | 0.372 | 0.364 |        |
|     | 0.362 | 0.373 |        |     | 0.369 | 0.35  |        |
|     | 0.376 | 0.382 |        |     | 0.382 | 0.358 |        |
| G2  | 0.376 | 0.382 | 4325   | E3  | 0.417 | 0.42  | 3660   |
|     | 0.362 | 0.373 |        |     | 0.398 | 0.411 |        |
|     | 0.359 | 0.356 |        |     | 0.392 | 0.391 |        |
|     | 0.372 | 0.364 |        |     | 0.409 | 0.4   |        |
| G1  | 0.372 | 0.364 | 4325   | E2  | 0.409 | 0.4   | 3660   |
|     | 0.359 | 0.356 |        |     | 0.392 | 0.391 |        |
|     | 0.356 | 0.341 |        |     | 0.387 | 0.374 |        |
|     | 0.369 | 0.35  |        |     | 0.402 | 0.382 |        |
| F3  | 0.398 | 0.411 | 3985   | E1  | 0.402 | 0.382 | 3660   |
|     | 0.38  | 0.4   |        |     | 0.387 | 0.374 |        |
|     | 0.376 | 0.382 |        |     | 0.382 | 0.358 |        |
|     | 0.392 | 0.391 |        |     | 0.396 | 0.367 |        |
| F2  | 0.392 | 0.391 | 3985   |     |       |       |        |
|     | 0.376 | 0.382 |        |     |       |       |        |
|     | 0.372 | 0.364 |        |     |       |       |        |
|     | 0.387 | 0.374 |        |     |       |       |        |



|                                   |                 |
|-----------------------------------|-----------------|
| <b>PLCC3 LED Color Warm White</b> |                 |
| Part No.:                         | <b>M11A4003</b> |
| Customer:                         |                 |

|       |       |      |        |        |        |           |           |                 |
|-------|-------|------|--------|--------|--------|-----------|-----------|-----------------|
| DRW:  | Harry | CHKD | Dustin | MATL   | Wilson | TOLERANCE | Mason     | DATE 24.07.2009 |
| APPD: | Jason |      |        | FINISH | John   |           | Sheet No. | 12 from 12      |