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***CMDA31 Series Power LED (1 Watt) on Star PCB***  
***CMDA32 Series Power LED (1 Watt) on Square PCB***

**- Features**

- Super high flux output and high luminance
- Designed for high current operation
- Low thermal resistance
- SMT solder compatible
- Lead (Pb) Free Product – RoHS Compliant

**- Applications**

- General Illumination
  - Outdoor & Indoor Architectural Lighting
  - Decorative Lighting
  - Portable Lighting / Flash Light (Torch) Lamps
  - Reading Lamps and Task Lighting
  - Traffic Signaling

**- Description**

These packaged LED's on metal PCB's are designed for high current operation and high flux output applications. The package design features better thermal management characteristics than other LED solutions. Because of these advantages, this product has many applications such as internal & external lighting, automobile lighting, large size LCD backlight, etc.



**CML**

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**WHERE INNOVATION COMES TO LIGHT**

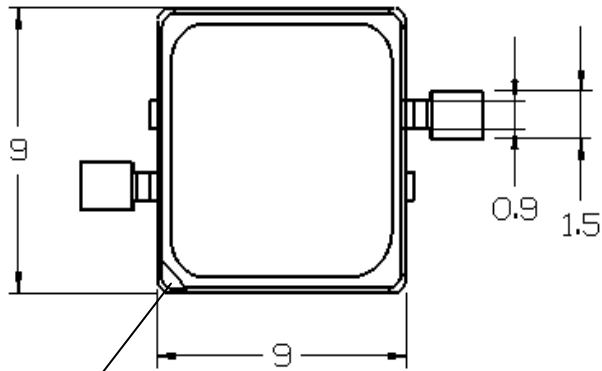
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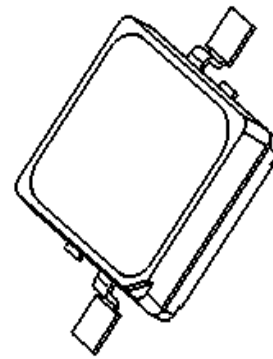
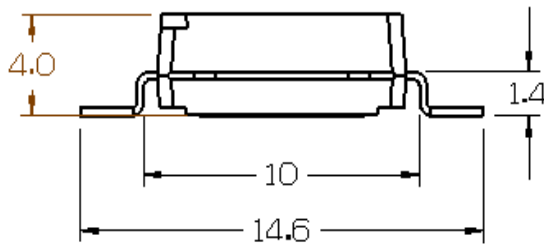
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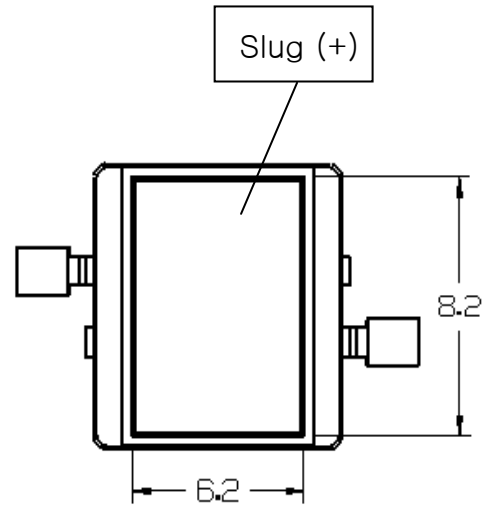
**1. Outline Dimensions**



Cathode  
Mark



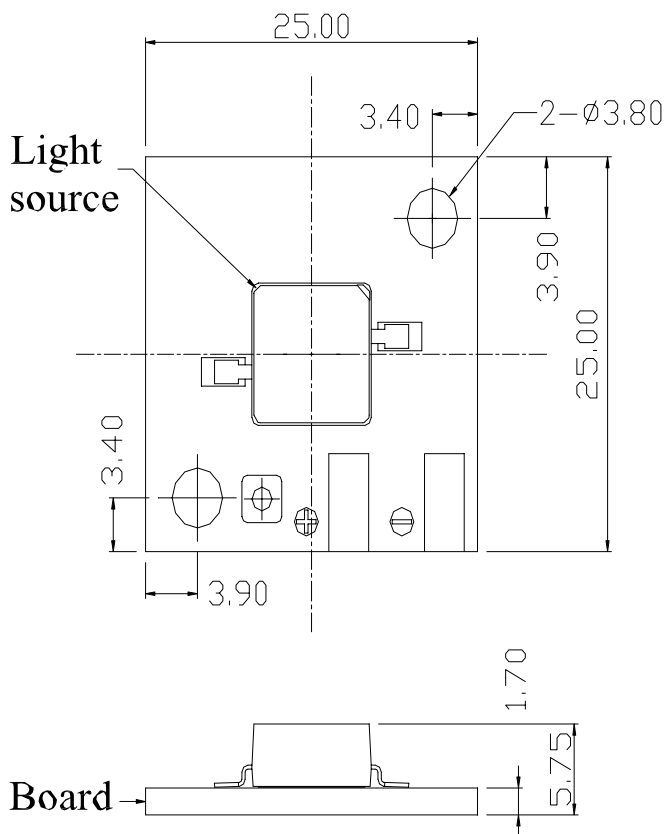
Isometric view  
Scale: None



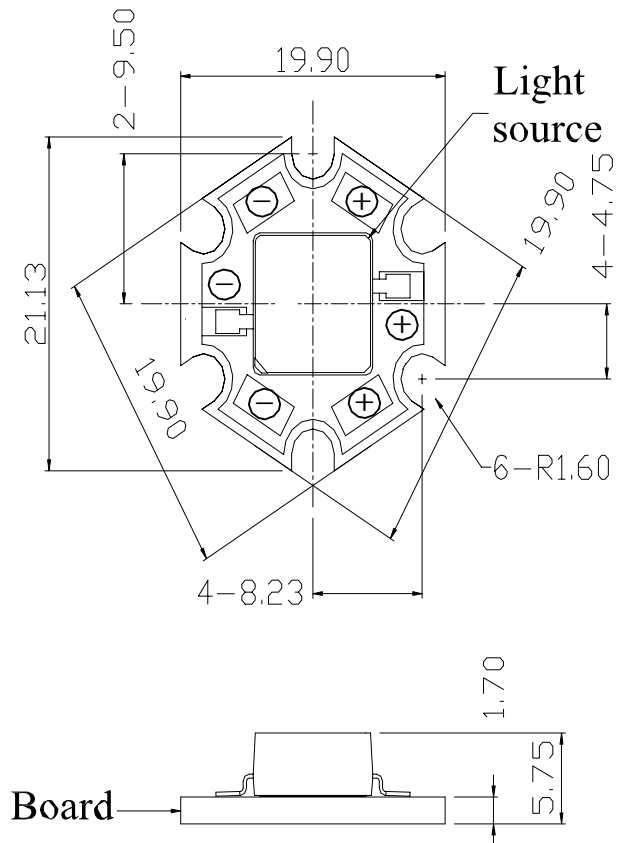
Rear view

- Notes : 1. All dimensions are in millimeters.  
2. Scale : none  
3. This drawing is reference only for engineering

## 2. Metal Outline Dimensions



**CMDA32xx15D13L  
Square Configuration**



**CMDA31xx15D13L  
Star Configuration**

- Note :
1. All dimensions are in millimeters
  2. Scale : none
  3. This drawing is reference only engineering.



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**3. Electro-Optical Characteristics (at IF=350mA, TA=25°C)**

**CMDA31xx15D13L Star PCB series**

P/N	Description	Luminous Flux Min./Typ. (lm)	Correlated Color Temperature (Kelvin)	CRI	Dominant Wavelength (nm) Min./Typ./Max.	Forward Voltage (volts) Min./Typ./Max.	View Angle (degrees)	Thermal resistance (°C /W)
	Symbol	ΦV [1]	CCT [3]	Ra	λD	V	2θ 1/2	Rθ [4]
CMDA31CW15D13L	Pure White	32 / 52	6500	76		3.0 / 3.4 / 4.3	110	16
CMDA31WW15D13L	Warm White	24 / 35	3000	76		3.0 / 3.4 / 4.3	110	16
CMDA31CB15D13L	Blue	6 / 11			455 / 460 / 475	3.0 / 3.4 / 4.3	130	16
CMDA31AG15D13L	Green	24 / 48			520 / 527 / 535	3.0 / 3.4 / 4.3	130	16
CMDA31AR15D13L	Red	24 / 30			620 / 625 / 630	2.0 / 2.5 / 3.0	128	19
CMDA31GB15D13L	Cyan	24 / 40			500 / 505 / 510	3.0 / 3.4 / 4.3	130	16
CMDA31DY15D13L	Amber	24 / 38			585 / 590 / 595	2.0 / 2.5 / 3.0	128	19

**4. Absolute Maximum Ratings (at TA=25°C)**

P/N	Description	Forward Current (A)	Power Dissipation (Watts)	Junction Temperature (°C)	Operating Temperature (°C)	Storage Temperature (°C)
	Symbol	I <sub>F</sub>	P <sub>D</sub>	T <sub>J</sub>	T <sub>opr</sub>	T <sub>stg</sub>
CMDA31CW15D13L	Pure White	0.4	1.9	125	-30~+85	-40~+120
CMDA31WW15D13L	Warm White	0.4	1.9	125	-30~+85	-40~+120
CMDA31CB15D13L	Blue	0.4	1.9	125	-30~+85	-40~+120
CMDA31AG15D13L	Green	0.4	1.9	125	-30~+85	-40~+120
CMDA31AR15D13L	Red	0.4	1.2	100	-30~+85	-40~+120
CMDA31GB15D13L	Cyan	0.4	1.9	125	-30~+85	-40~+120
CMDA31DY15D13L	Amber	0.4	1.2	100	-30~+85	-40~+120

**\*Notes:**

- [1] ΦV is the total luminous flux output as measured with an integrating sphere.
- [2] Zener diode chip included to protect the LED from ESD.
- [3] Rθ is measured with a metal core PCB (25 °C ≤T<sub>J</sub> ≤ 125 °C).
- [4] CML maintains a tolerance of ± 10% on flux and power measurements.
- [5] CCT ± 5% tester tolerance.
- [6] Color Coordinate Measurement allowance is ± 0.005
- [7] A tolerance of ± 0.006V on forward voltage measurements

**-----Caution-----**  
**Please do not drive at rated current more than 5 sec. without proper heat sink**



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**5. Electro-Optical Characteristics (at IF=350mA, TA=25°C)**

**CMDA32xx15D13L Square PCB series**

P/N	Description	Luminous Flux Min./Typ. (lm)	Correlated Color Temperature (Kelvin)	CRI	Dominant Wavelength (nm) Min./Typ./Max.	Forward Voltage (volts) Min./Typ./Max.	View Angle (degrees)	Thermal resistance (°C /W)
	Symbol	ΦV [1]	CCT [3]	Ra	λD	V	2Θ 1/2	Rθ [4]
CMDA32CW15D13L	Pure White	32 / 52	6500	76		3.0 / 3.4 / 4.3	110	16
CMDA32WW15D13L	Warm White	24 / 35	3000	76		3.0 / 3.4 / 4.3	110	16
CMDA32CB15D13L	Blue	6 / 11			455 / 460 / 475	3.0 / 3.4 / 4.3	130	16
CMDA32AG15D13L	Green	24 / 48			520 / 527 / 535	3.0 / 3.4 / 4.3	130	16
CMDA32AR15D13L	Red	24 / 30			620 / 625 / 630	2.0 / 2.5 / 3.0	128	19
CMDA32GB15D13L	Cyan	24 / 40			500 / 505 / 510	3.0 / 3.4 / 4.3	130	16
CMDA32DY15D13L	Amber	24 / 38			585 / 590 / 595	2.0 / 2.5 / 3.0	128	19

**6. Absolute Maximum Ratings (at TA=25°C)**

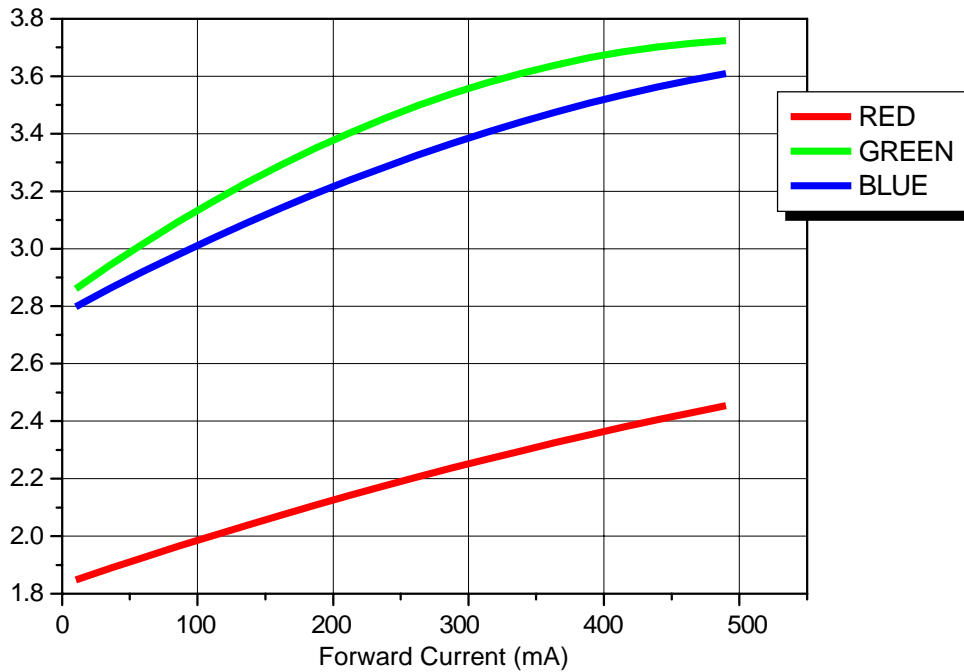
P/N	Description	Forward Current (A)	Power Dissipation (Watts)	Junction Temperat ure (°C)	Operating Temperature (°C)	Storage Temperature (°C)
	Symbol	IF	PD	Tj	Topr	Tstg
CMDA32CW15D13L	Pure White	0.4	1.9	125	-30~+85	-40~+120
CMDA32WW15D13L	Warm White	0.4	1.9	125	-30~+85	-40~+120
CMDA32CB15D13L	Blue	0.4	1.9	125	-30~+85	-40~+120
CMDA32AG15D13L	Green	0.4	1.9	125	-30~+85	-40~+120
CMDA32AR15D13L	Red	0.4	1.2	100	-30~+85	-40~+120
CMDA32GB15D13L	Cyan	0.4	1.9	125	-30~+85	-40~+120
CMDA32DY15D13L	Amber	0.4	1.2	100	-30~+85	-40~+120

**\*Notes:**

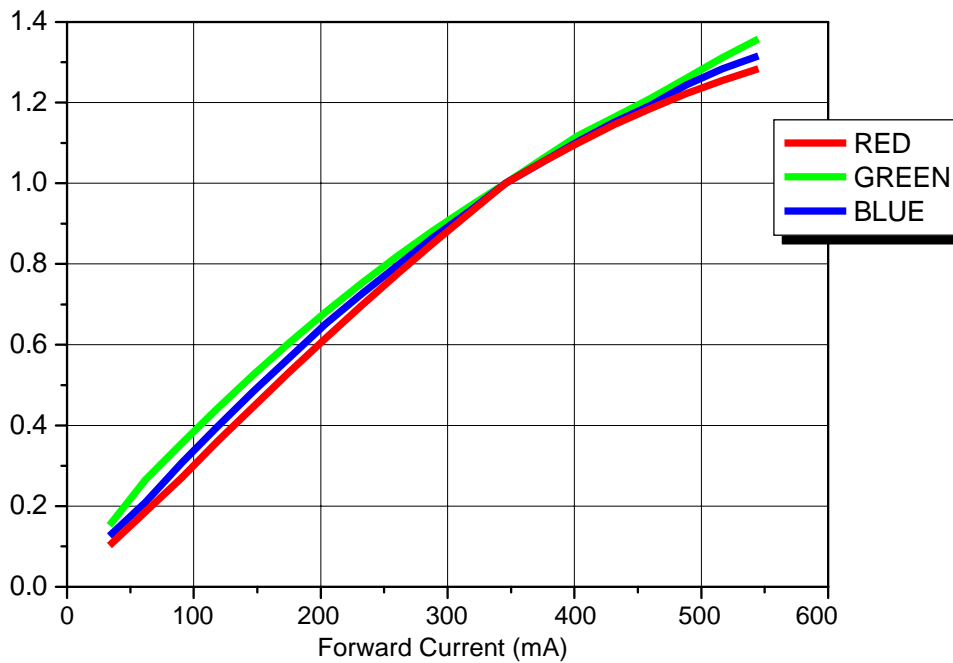
- [1] ΦV is the total luminous flux output as measured with an integrating sphere.
- [2] Zener diode chip included to protect the LED from ESD.
- [3] Rθ is measured with a metal core PCB (25 °C ≤ TJ ≤ 125 °C).
- [4] CML maintains a tolerance of ± 10% on flux and power measurements.
- [5] CCT ± 5% tester tolerance.
- [6] Color Coordinate Measurement allowance is ± 0.005
- [7] A tolerance of ± 0.006V on forward voltage measurements

**-----Caution-----**  
**Please do not drive at rated current more than 5 sec. without proper heat sink**

**7. Forward Voltage vs. Forward Current (Ta=25°C)**



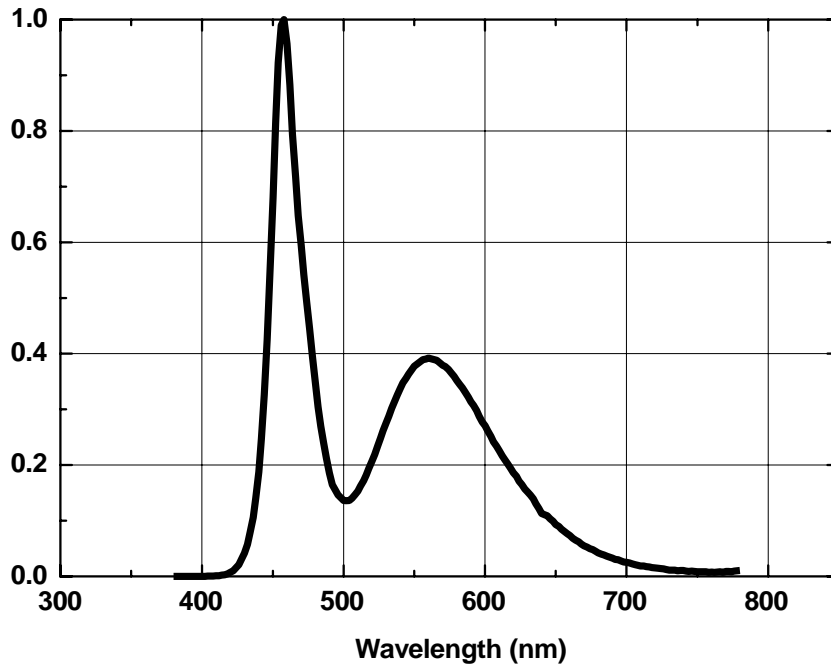
**8. Forward Current vs. Normalized Relative Luminous Flux (Ta=25°C)**



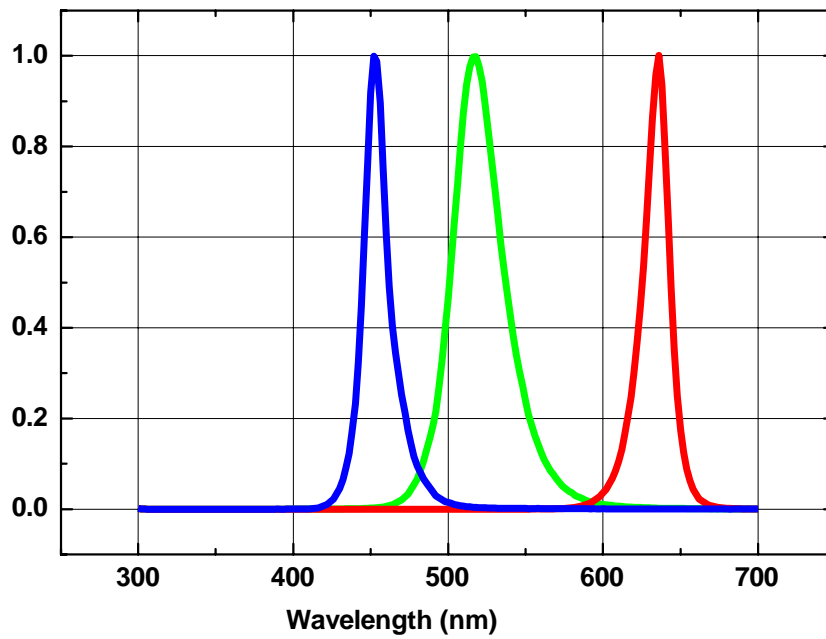
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### 9. White Color spectrum of Typical CCT (Ta=25°C)



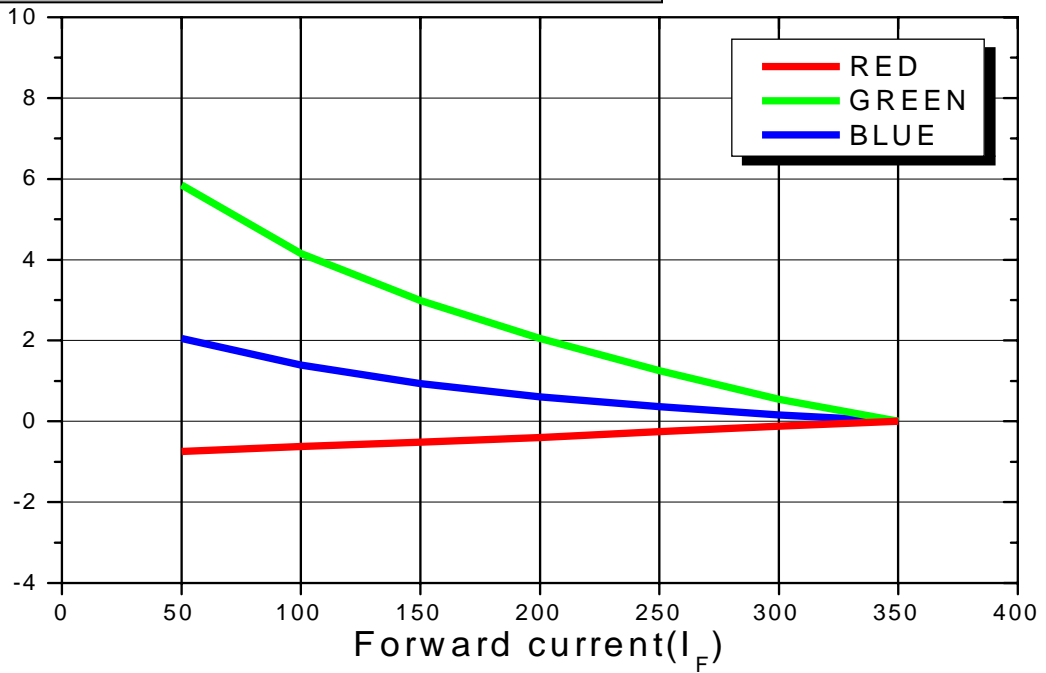
### 10. Wavelength Curve for Red, Green, Blue



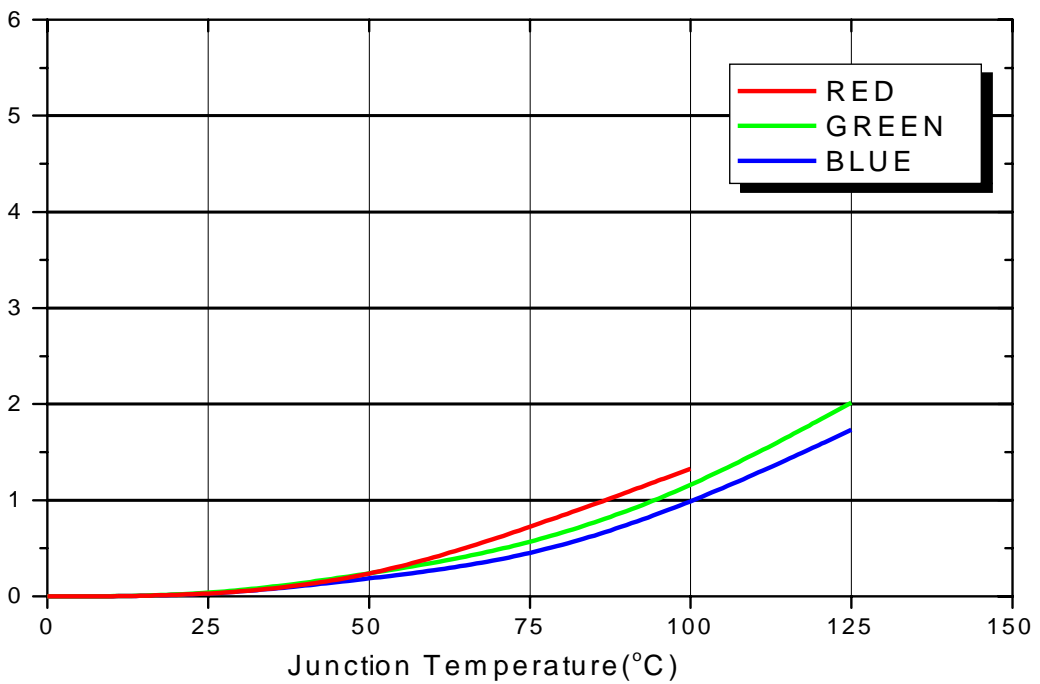
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**11. Forward Current vs. Wavelength shift (Ta=25°C)**



**12. Junction Temp vs. Wavelength shift**

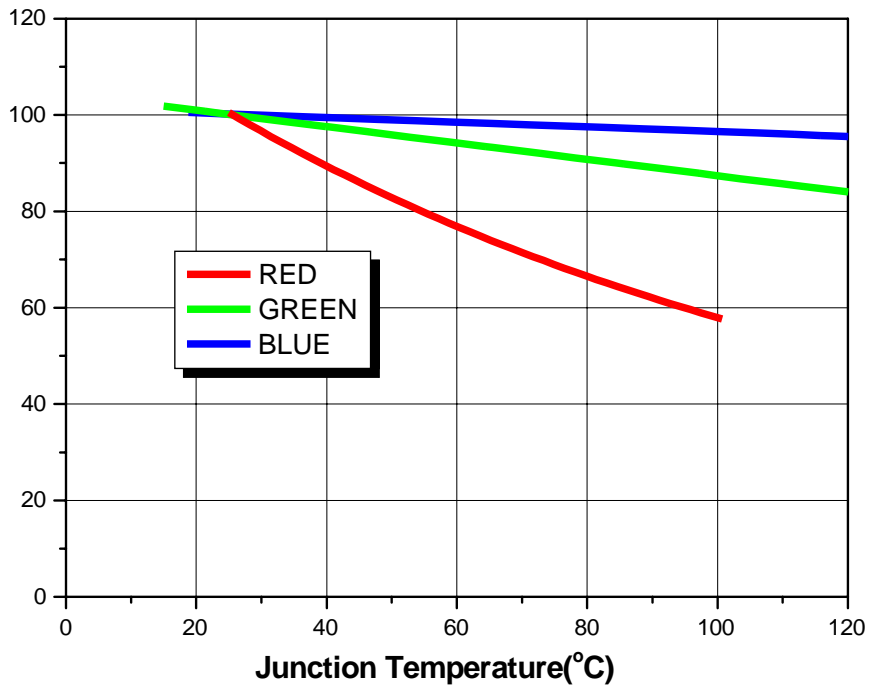


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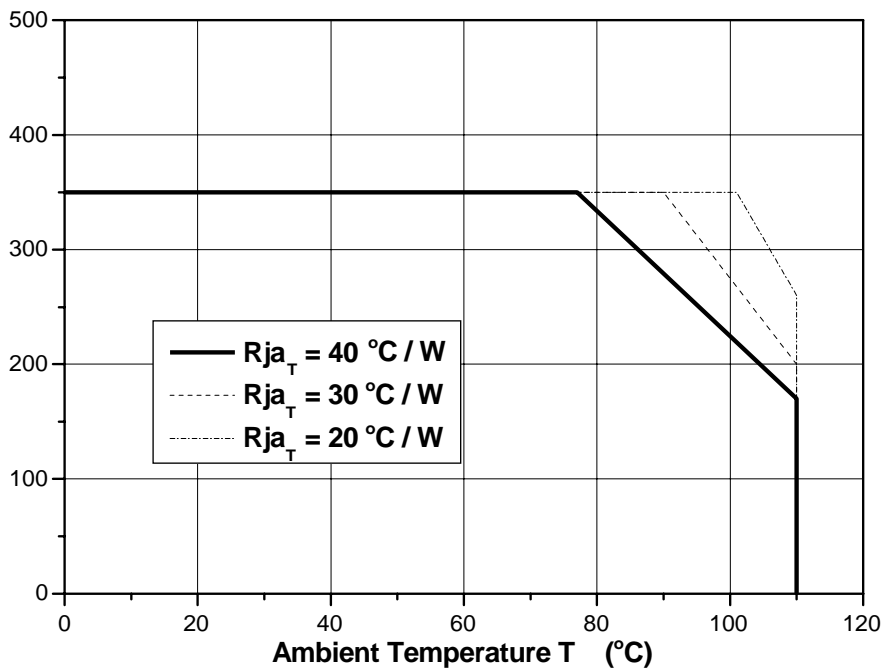
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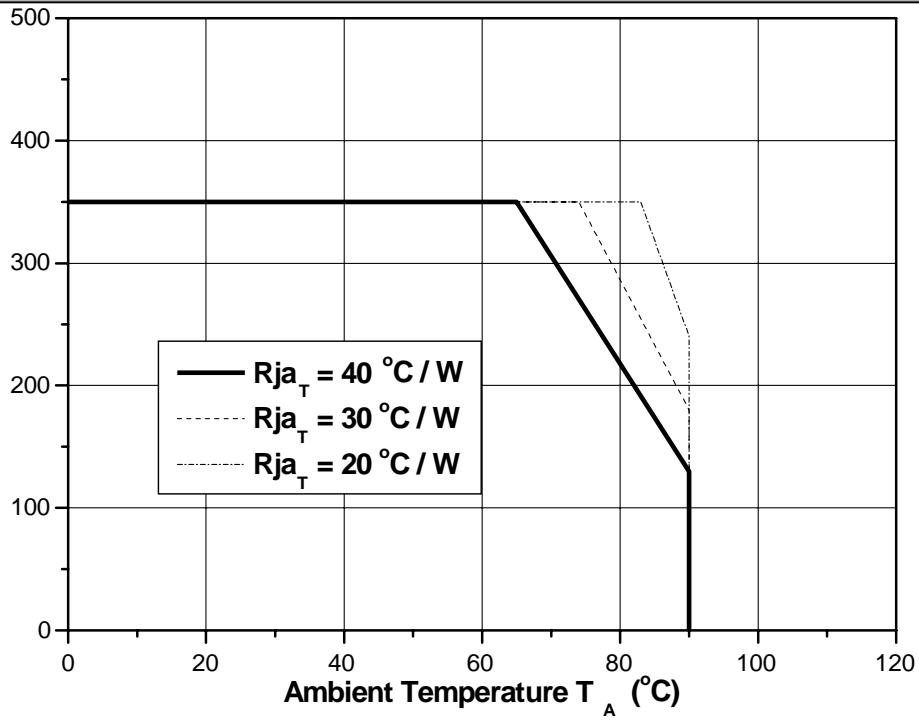
### 13. Temperature of Junction vs. Relative Light Output for Blue, Green, Red



### 14. Ambient Temperature vs. Allowable Forward Current for 1 chip White, Blue, Green, Cyan



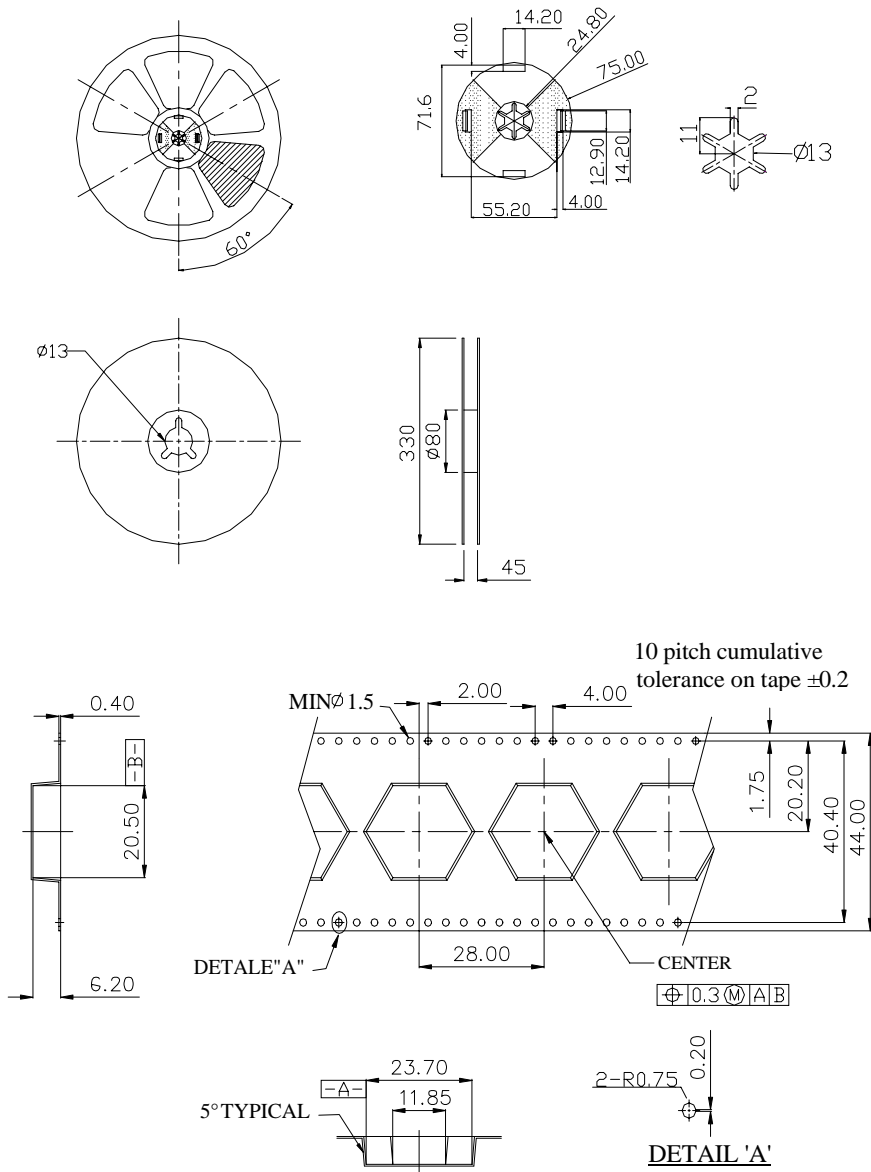
**15. Ambient Temperature vs. Allowable Forward Current for 1 chip Red, Amber**



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## 16. Reel Packaging Dimensions (Star type)



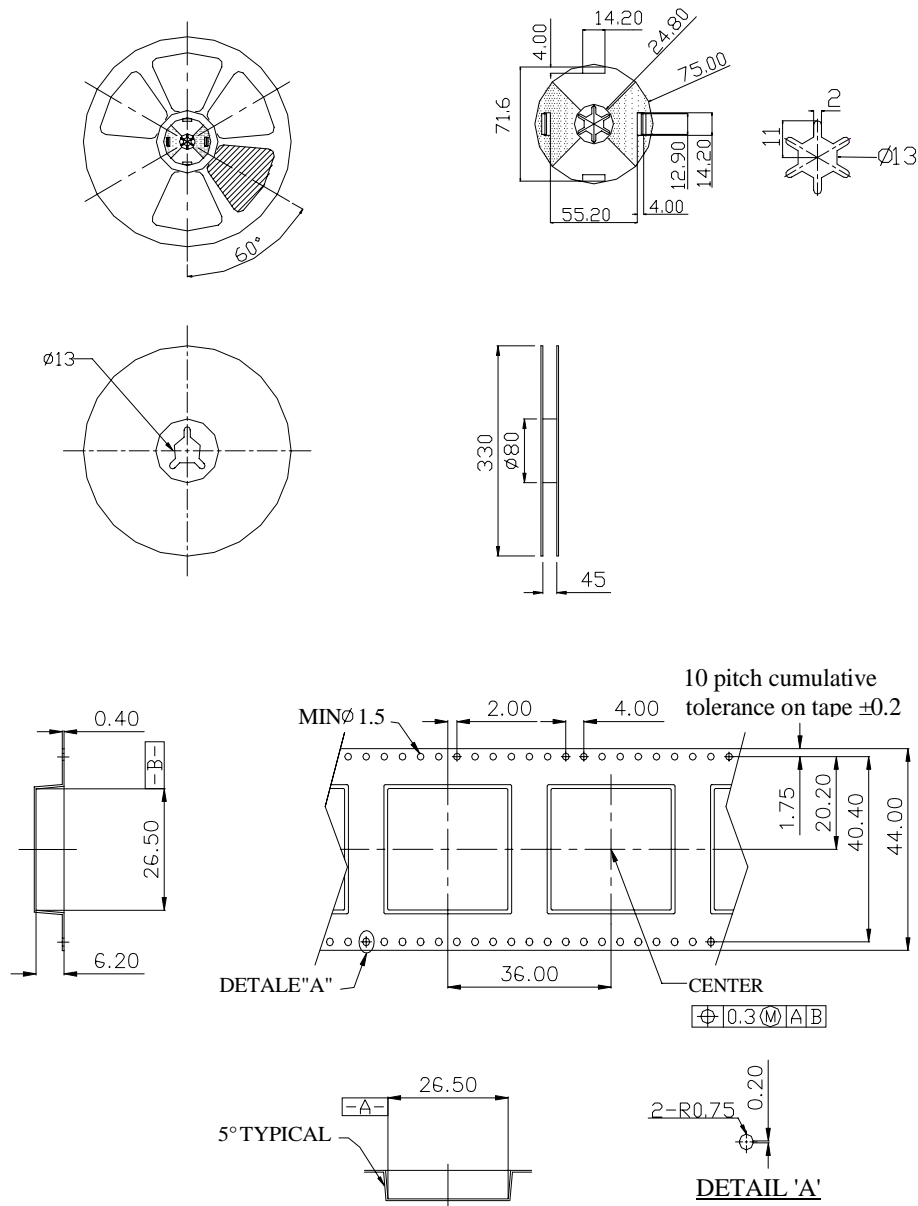
- Note : 1. The number of loaded products in the reel is 350ea  
 2. All dimensions are in millimeters  
 3. Scale : none  
 4. This drawing is reference only engineering



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## 17. Reel Packaging Dimensions (Square type)



Note : 1. The number of loaded products in the reel is 200ea

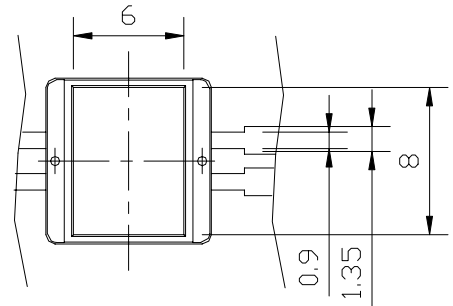
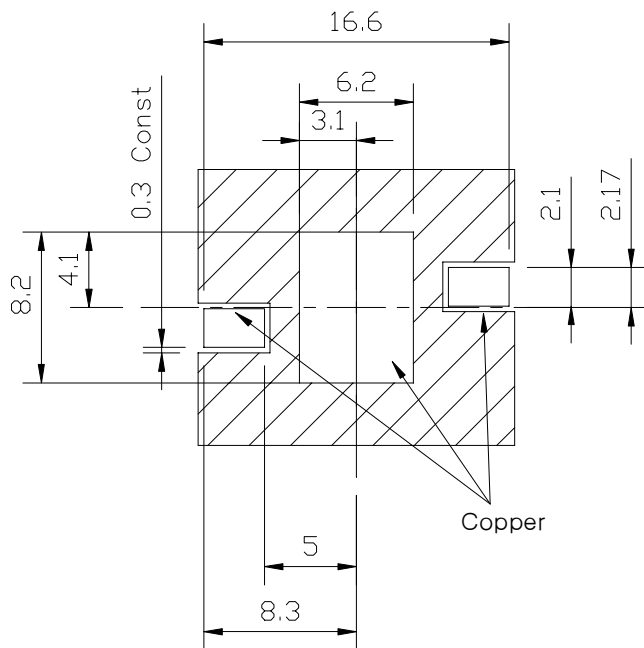
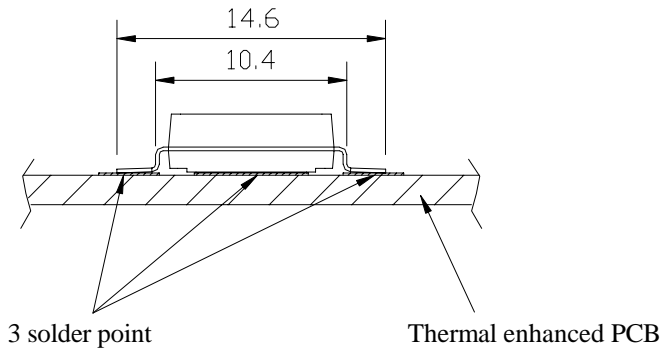
2. All dimensions are in millimeters
3. Scale is none
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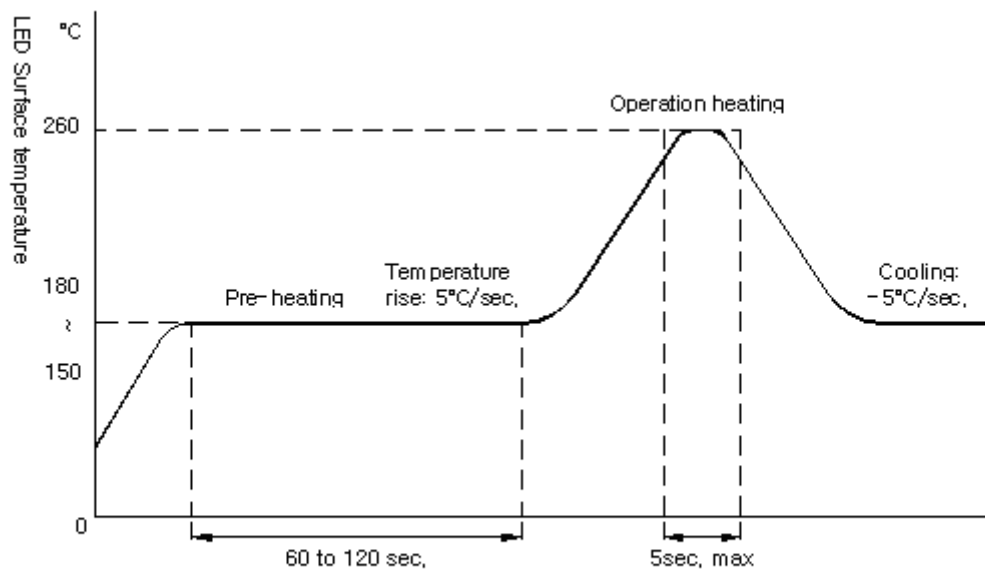
## 18. Recommended solder pad



<Rear view>

## 19. Soldering Profile

- (1) Reflow Soldering Conditions / Profile  
Preliminary heating to be at 180°C max. for 2 minutes max.  
Soldering heat to be at 260°C max. for 5 seconds max.



- (2) Hand Soldering conditions  
-Lead : Not more than 3 seconds @MAX280°C, under Soldering iron.

Should soldered products be reused during the soldering process, CML-IT voids all liability on the SMT LED units.



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