

# PRODUCT SPECIFICATION

DATE: 08/12/2008

<b>cosmo</b> ELECTRONICS CORPORATION	SMD LED : <b>KL195W05</b>	NO. 61L04005	REV. 1
		SHEET 1 OF 9	

## Features

**Package:** 1.6x0.8x0.6mm(0603) standard package

**Feature of the device:** extremely wide viewing angle; ideal for backlighting and coupling in light guides

**Wavelength:** , 630nm(Red),470nm(Blue)

**Viewing angle:** Extremely Wide( 120° )

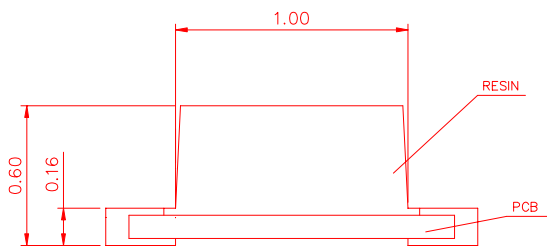
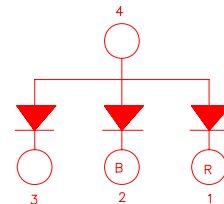
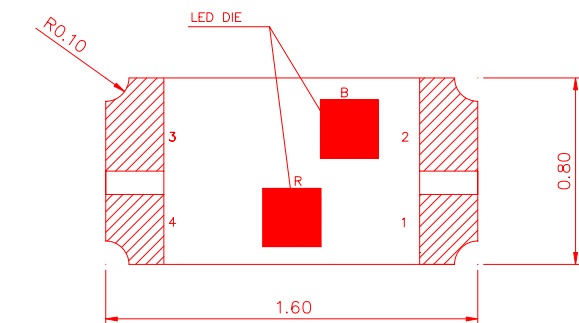
**Grouping parameter:** luminous intensity

**Assembly methods:** suitable for all SMT assembly methods

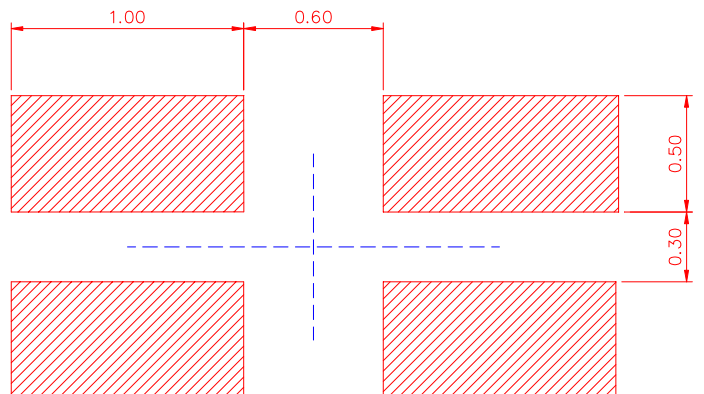
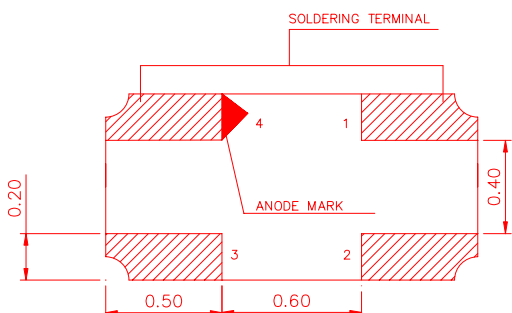
**Soldering methods:** IR reflow soldering

**Taping:** Package in 8mm tape on 7" diameter reel

## Package Dimensions



For reflow soldering



Unit: mm  
Tolerance: ±0.1

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## Absolute Maximum Ratings

At Ta = 25°C

Parameter	KL-195W05		Unit
Power Dissipation	B	R	mW
	80	72	
Peak Forward Current	100		mA
(1/10 Duty Cycle, 0.1ms Pulse Width)			
Forward Current	30		mA
Reverse Voltage	5		V
Operating Temperature Range	-25°C ~+ 80°C		
Storage Temperature Range	-30°C ~+ 85°C		
Wave Soldering Condition	240°C For 10 Seconds		

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## Electrical & Optical Characteristics

At Ta = 25°C

Parameter	Symbol	PART NO	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	Blue	KL-195W05	40	60	-	mcd	IF = 20mA Note 1
	Red		60	75	-		
Viewing Angle	$2\theta 1/2$	Blue / Red	-	120	-	deg	Note 2
Dominant Wavelength	$\lambda d$	Blue	-	470	-	nm	IF = 20mA Note 3
		Red	-	630	-		
Spectral Line Half-Width	$\Delta \lambda$	Blue	-	30	-	nm	-
		Red	-	20	-		
Forward Voltage	VF	Blue	-	3.4	3.8	V	IF = 20mA
		Red	-	2.0	2.4		
Reverse Current	Ir	Blue / Red	-	-	100	$\mu$ A	VR = 5V

Note :

- Luminous intensity is measured with a photo detector and filter combination that follows the CIE etc - response curve. And the equipment measured luminous intensity tolerance is  $\pm 5\%$ .
- $\theta 1/2$  is the off - axis angle at which the luminous intensity is half the axial luminous intensity.
- The dominant wavelength,  $\lambda d$  is derived from the CIE chromaticity diagram and represents the color of the device.
- Caution in ESD: Static Electricity maybe cause damages to the LED. It is recommend to use a wrist band or anti - electrostatic glove when handing the LED. All devices, equipment and machinery must be properly grounded.

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## The Reliability criteria of SMD LED

Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	VF	IF=20mA	-	U.S.L*1.1
Reverse Current	IR	VR=5V	-	U.S.L*2.0
Light Integrity	$\Phi_V$	IF=20mA	ITV*0.7	-

\*U.S.L: Upper Standard Level

\*ITV : Initial Test Value

## Results of Reliability Test

Classification	NO	Test Item	Standard Test Method	Test Condition	Test Hours/Cycles	Sample NO	Ac/Re
Life Test	1	Operating Life Test	MIL-STD-750D1026	Constant current=20mA $T_A = 25^\circ\text{C}$	1000 HRS	22 PCS	0 / 22
Environment Test	2	High Temperature Storage	MIL-STD-883:1008	Temperature= $105^\circ\text{C}\pm 5^\circ\text{C}$	1000HRS	22 PCS	0 / 22
	3	Low Temperature Storage	MIL-STD-883:1009	Temperature= $-55^\circ\text{C}\pm 5^\circ\text{C}$	1000HRS	22 PCS	0 / 22
	4	High Temperature / High Humidity	MIL-STD-883E	$T_A = 85^\circ\text{C}$ 85%RH	1000HRS	22 PCS	0 / 22
	5	Temperature Cycling Test	MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1010	$105^\circ\text{C}\sim 25^\circ\text{C}\sim -55^\circ\text{C}\sim 25^\circ\text{C}$ 30mins~5mins~30mins~5mins	10Cycles	22 PCS	0 / 22
	6	Thermal Shock Test	MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1011	$85^\circ\text{C}\pm 5^\circ\text{C}$ & $-40^\circ\text{C}\pm 5^\circ\text{C}$ (10mins) (10mins)	100Cycles	22 PCS	0 / 22
	Mechanical Test	7	Resistance Soldering Heat Test	MIL-STD-202:210A MIL-STD-750:2031	$T_A = 260\pm 5^\circ\text{C}$	Time= 10 sec $\pm 1$ sec	22 PCS
8		Solderability	MIL-STD-883E Method 2003.7	$T_A = 230^\circ\text{C}\pm 5^\circ\text{C}$	Time= 5 sec $\pm 1$ sec	22 PCS	0 / 22

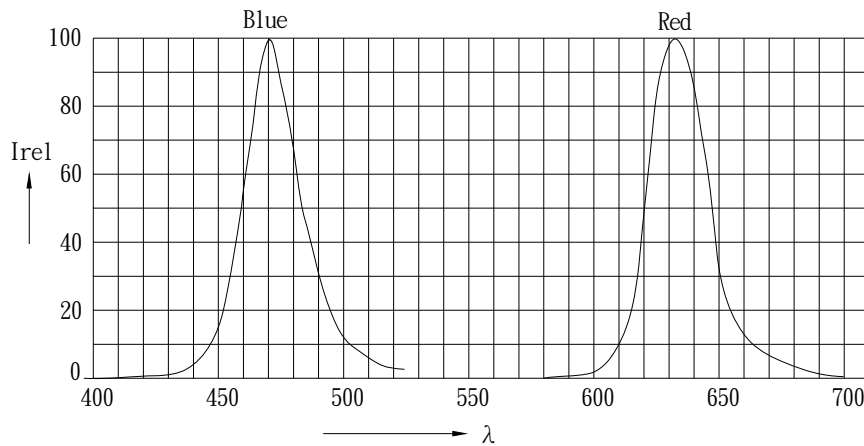
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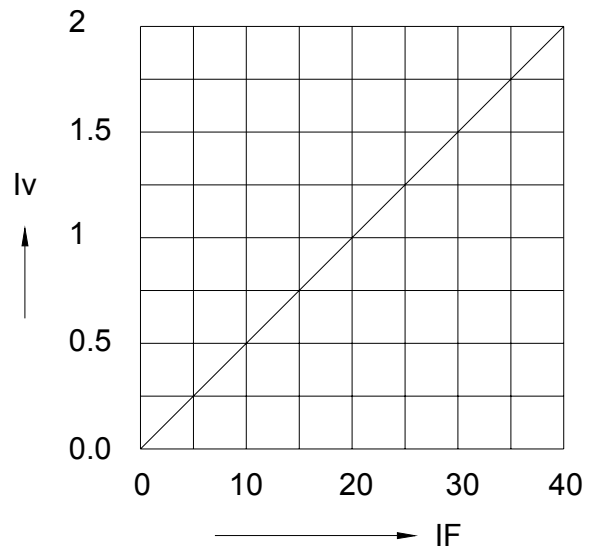
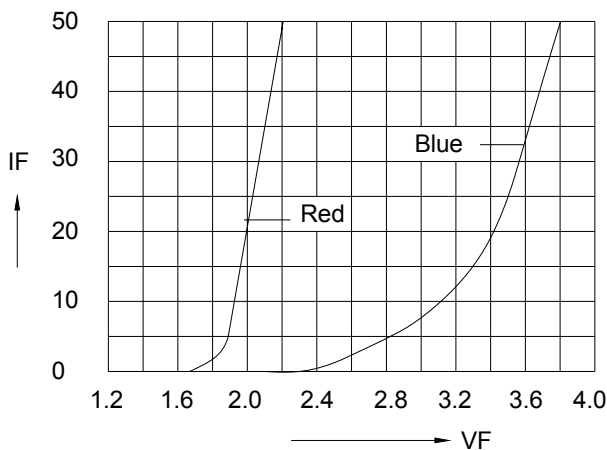
## Typical Electro-Optical Characteristics Curves (25°C Ambient Temperature Unless Otherwise Noted)

RELATIVE INTENSITY VS. WAVELENGTH



FORWARD CURRENT VS.  
FORWARD VOLTAGE

RELATIVE LUMINOUS INTENSITY  
VS. FORWARD CURRENT

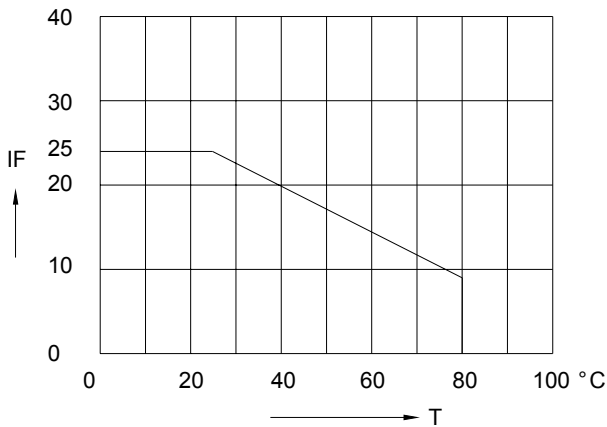


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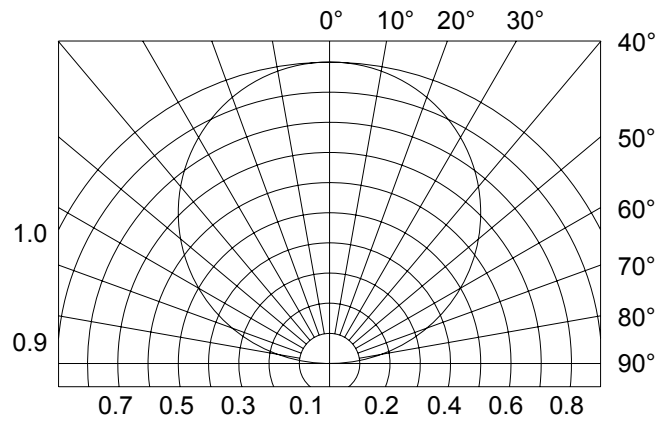
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FORWARD CURRENT DERATING CURVE

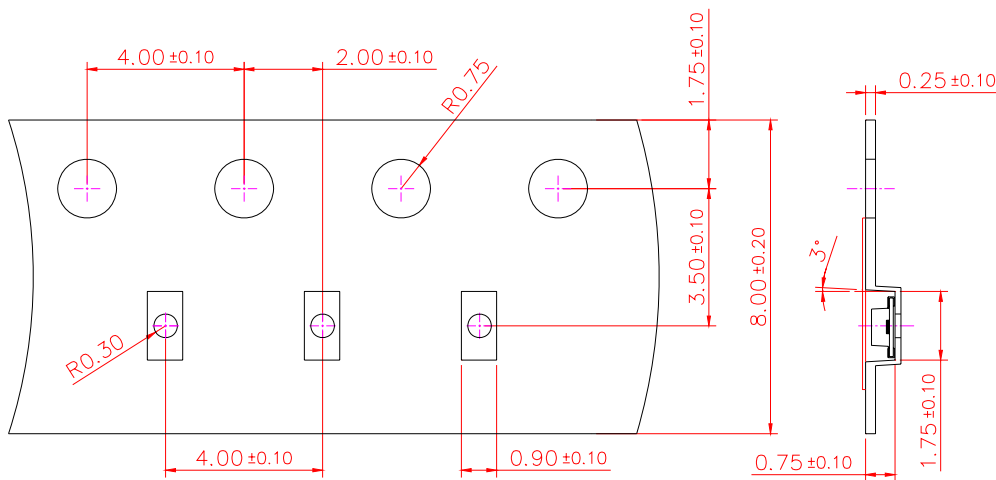


SPATIAL DISTRIBUTION



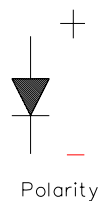
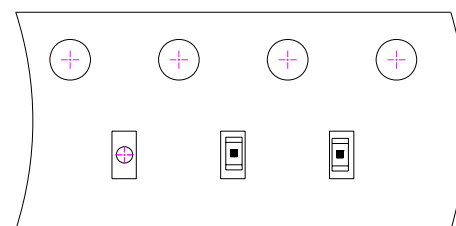
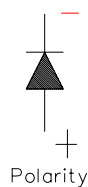
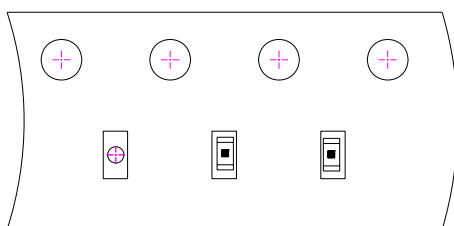
## Method of Taping / Polarity and Orientation

Packing unit 3000/reel



Unit : mm

Direction



U: Taping upward

D: Taping downward

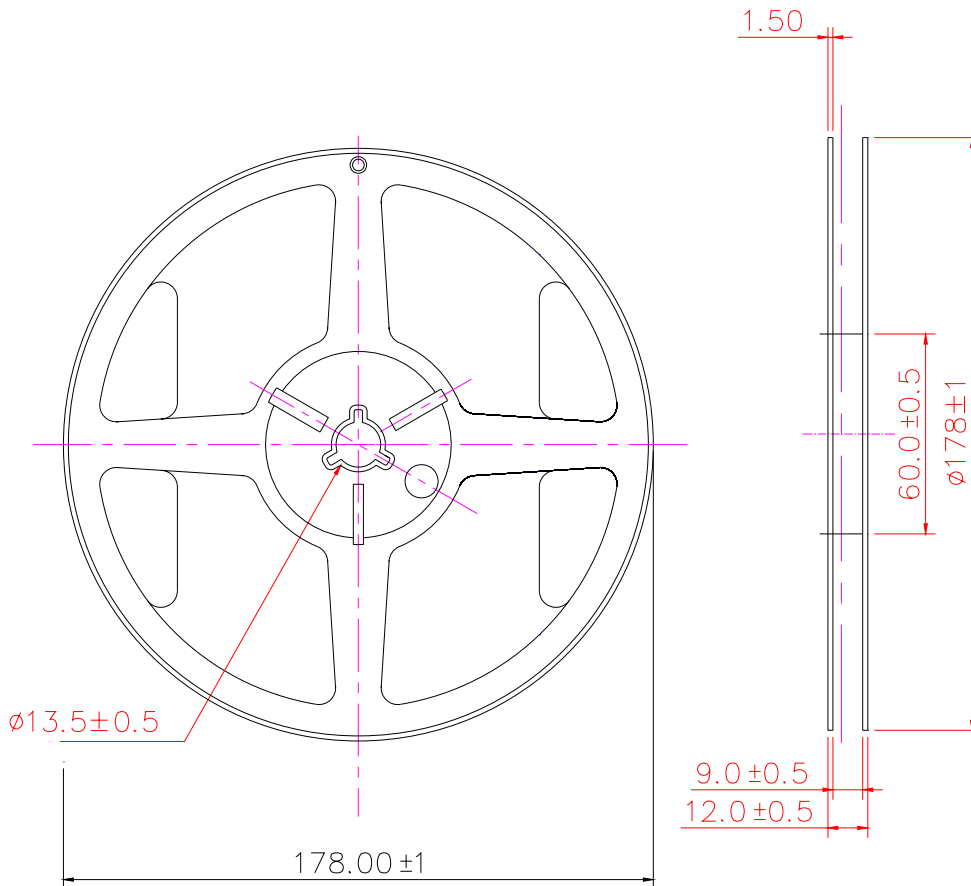
Notes: All dimensions are in millimeters (inches)

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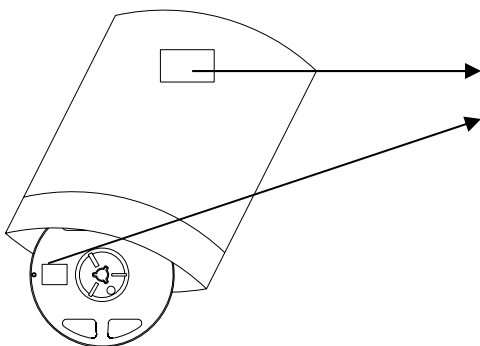
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## Package Dimensions of Reel



Unit: mm

## Packaging



## Product lable

CUSTOMER:
CUSTOMER P/N:
DEVICE TYPE:
BIN:
COLOR RANK:
LOT NO:
QTY:

CAUTION: After open the aluminum laminate bag the lamps should be storage in the Follow condition

Temperautre: 5 to 30 °C, Humidity: 70%, Storage time: 72hrs max

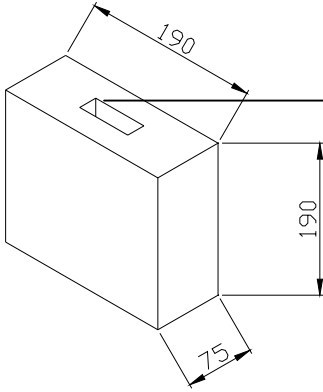
Backing condition : If backing is necessary , we recommended the backing condition is 60 +/- 5°C 10hours

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## Packing



CUSTOMER:  
CUSTOMER P/N:  
DEVICE TYPE:  
BIN:  
COLOR RANK:  
LOT NO:  
QTY:

## Cautions for use

### Over-current-proof

Customer must apply resistors for protection ,others slight voltage shit will cause big current change (Burn out will happen).

### Storage time

The operation of temperature and RH are : 5 °C ~35 °C,RH60%.

Once the package is opened , the products should be used within a week.

Otherwise , they should be kept in a damp proof box with descanting agent.

Considering the tape life , we suggest our customers to use our products within a year(from production date)

If opened more than one week in an atmosphere 5 °C ~35 °C , RH60% , they should be treated at 60 °C ±5 °C for 15 hrs.

COSMO-Innotek will not be held responsible for any damage to the user that may result from accidents or any other reasons during operation of the user's unit if use to exceed the absolute maximum ratings, or not keep the matters that demand special attention.



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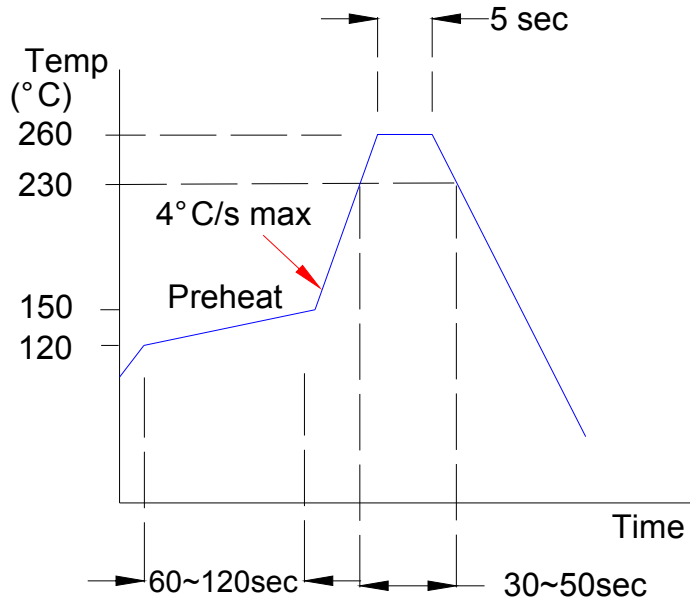
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## Others

Soldering Heat Reliability

Available for Pb free soldering process

Please refer to the following figure :



## Soldering Iron

Basic spec is  $\leq 5\text{sec}$  when  $260^{\circ}\text{C}$ . If temperature is higher, time shorter (  $+10^{\circ}\text{C} \rightarrow -1\text{sec}$  ). Power dissipation of Iron should be smaller than 15W, and temperature should be controllable. Surface temperature of the device should be under  $230^{\circ}\text{C}$ .

## Rework

Customer must finish rework within 5sec under  $245^{\circ}\text{C}$ .

The head of Iron can not touch copper foil.

Twin-head type is preferred.

