



## Chip LED Lamp

LTST- C150/170/190AKT	Amber	
LTST- C150/170/190CKT	AlGaAs Red	
LTST- C150/170/190EKT	Red Orange	
LTST- C150/170/190GKT	Green	
LTST- C150/170/190YKT	Yellow	
LTST- C155GEKT	Red Orange	Dual Color
LTST- C155GYKT	Green-Yellow	Dual Color

### Features

- Package in 8mm tape on 7" diameter reels.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow and wave solder process.
- EIA STD package.

### Description

The Amber source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Amber Light Emitting Diode.

The AlGaAs Red source color devices are Aluminum Gallium Arsenide on Gallium Arsenide Red Light Emitting Diode.

The Red Orange source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Red Orange Light Emitting Diode.

The Green source color devices are made with Gallium Phosphide on Gallium Phosphide Green Light Emitting Diode.

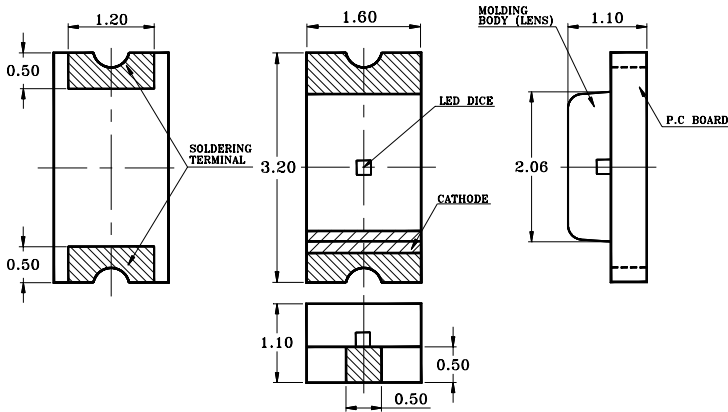
The Yellow source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Yellow Light Emitting Diode.

### Devices

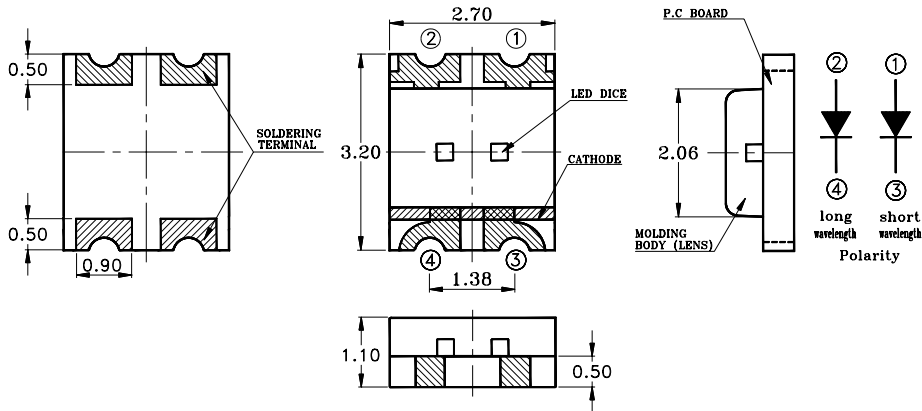
Part No.LTST-	Lens	Source Color
C150AKT C170AKT C190AKT	Water Clear	Amber
C150CKT C170CKT C190CKT	Water Clear	AlGaAs Red
C150EKT C170EKT C190EKT	Water Clear	Red Orange
C150GKT C170GKT C190GKT	Water Clear	Green
C150YKT C170YKT C190YKT	Water Clear	Yellow
C155GEKT	Water Clear	Green Red Orange
C155GYKT	Water Clear	Green Yellow

# Package Dimensions

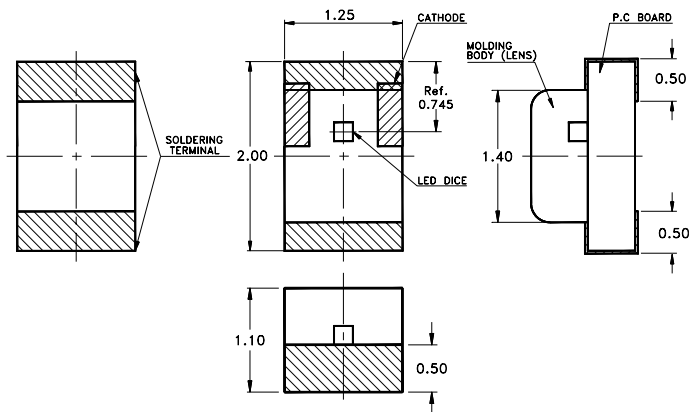
## (1) LTST-C150XKT



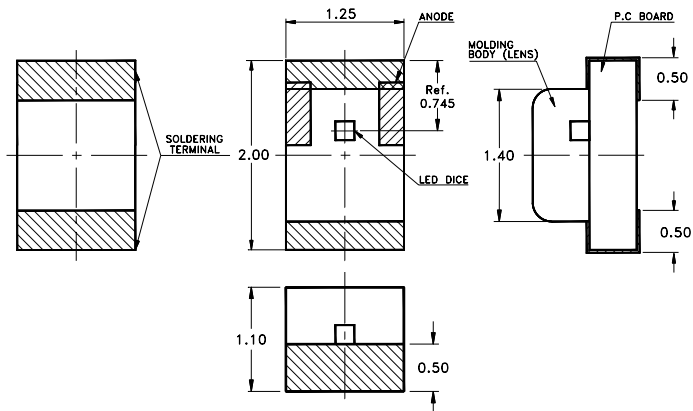
## (2) LTST-C155XKT



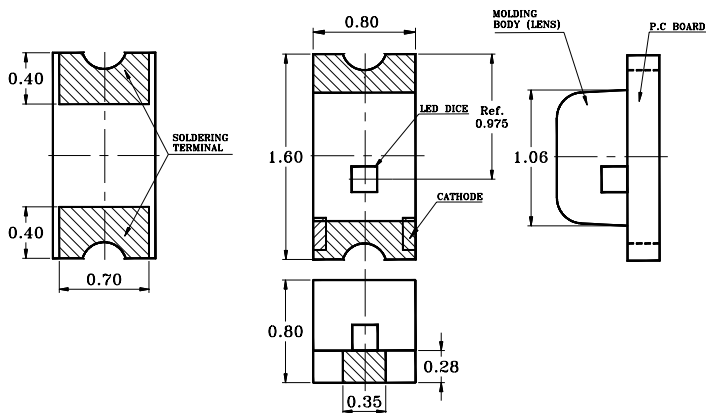
## (3) LTST-C170XKT



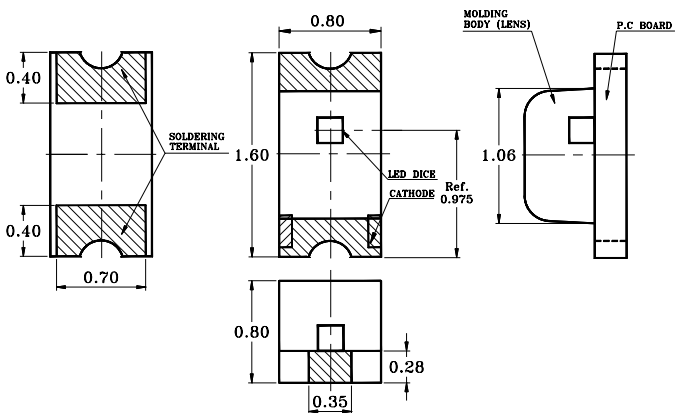
(4) LTST-C170CKT



(5) LTST-C190XKT



(6) LTST-C190CKT

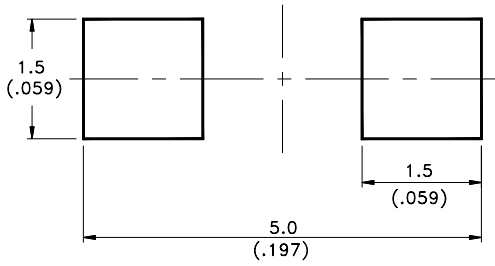


NOTES:

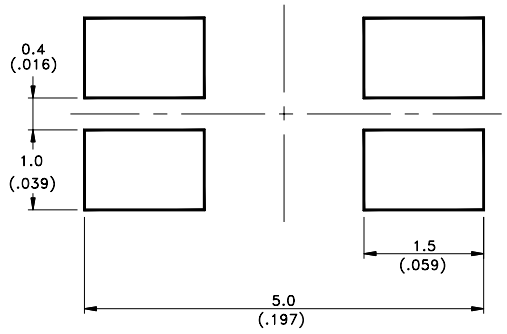
1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.1\text{mm}$  (.004") unless otherwise noted.
3. Specifications are subject to change without notice.

# Soldering Pad Dimensions

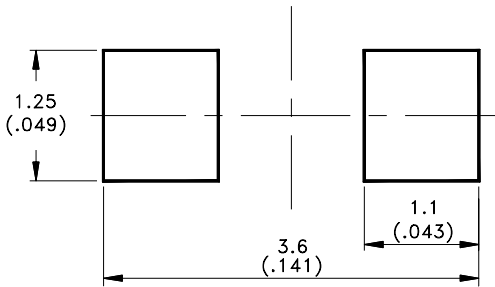
(1) LTST-C150XKT



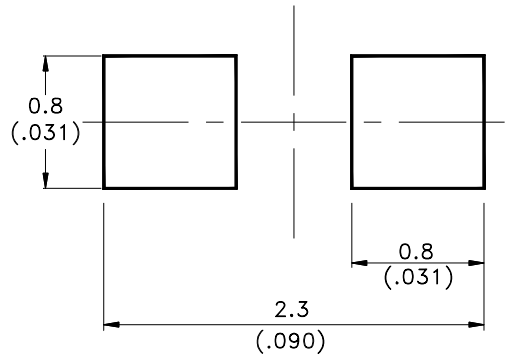
(2) LTST-C155XKT



(3) LTST-C170XKT

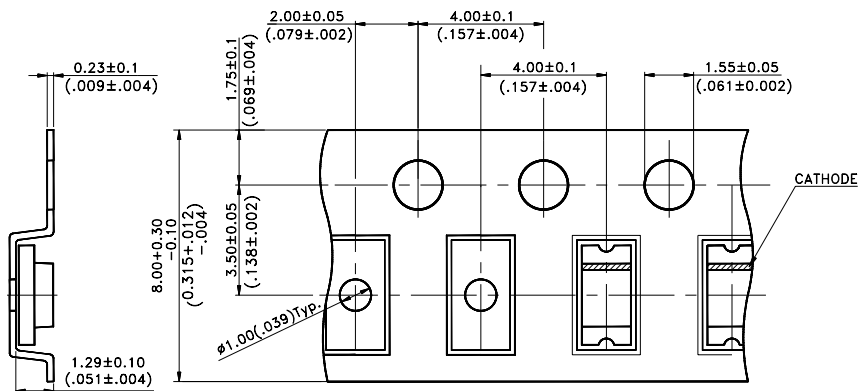


(4) LTST-C190XKT



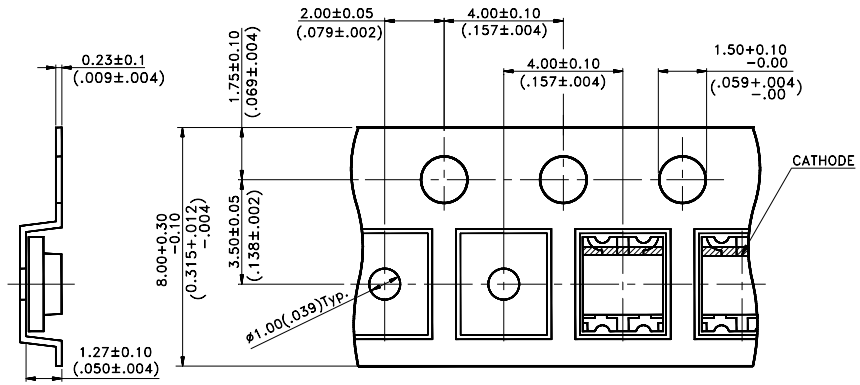
# Package Dimensions of Tape

(1) LTST-C150XKT

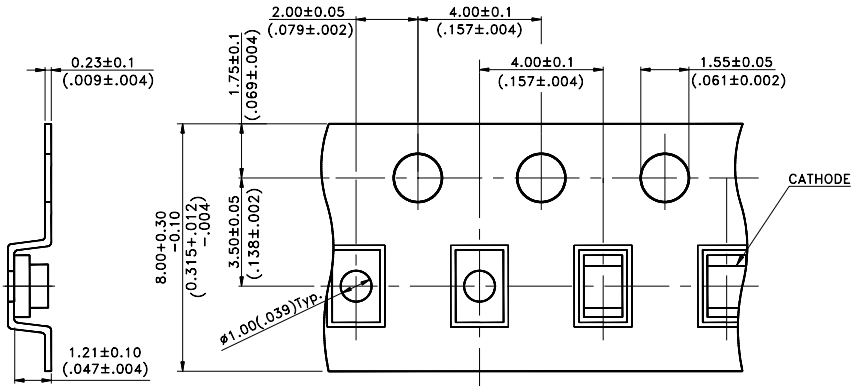


SMD LAMPS

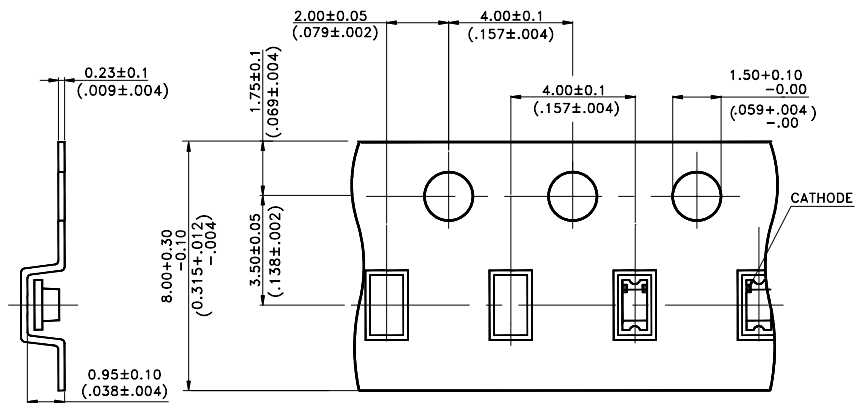
(2) LTST-C155XKT



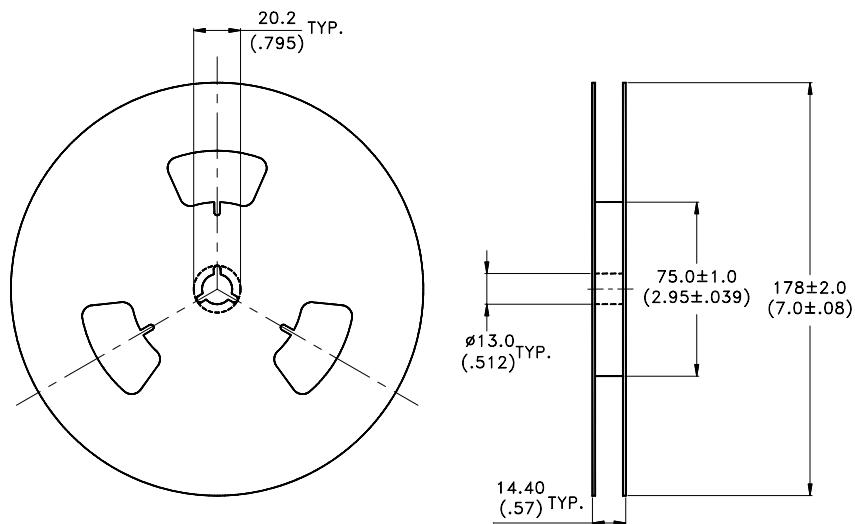
(3) LTST-C170XKT



(4) LTST-C190XKT



## Package Dimensions of Reel



### NOTES:

1. Empty component pockets sealed with top cover tape
2. 7 inch reel-3000 pieces per reel.
3. The maximum number of consecutive missing lamps is two.
4. In accordance with ANSI/EIA 481-1-A-1994 specifications.

## Absolute Maximum Ratings at Ta=25°C

Parameter	Amber	AlGaAs Red	Red Orange	Green	Yellow	Unit
Power Dissipation	100	100	100	100	60	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	120	200	120	120	80	mA
Continuous Forward Current	30	40	30	30	20	mA
Derating Linear From 50°C	0.6	0.8	0.6	0.6	0.4	mA/°C
Reverse Voltage	5	5	5	5	5	V
Operating Temperature Range	-55°C to +85°C					
Storage Temperature Range	-55°C to +85°C					
Wave Soldering Condition	260°C for 5 Seconds					
Infrared Soldering Condition	260°C for 5 Seconds					
Vapor Phase Soldering Condition	215°C for 3 Minutes					

## Electrical / Optical Characteristics and Curves at Ta = 25°C

Parameter	Symbol	Color	Part No. LTST-C150/170/190	Min.	Typ.	Max.	Unit.	Test Condition.
Luminous Intensity	Iv	Amber	AKT	1.0	6.0	30.0	mcd	If=10 mA Note 1
		AlGaAs Red	CKT	3.0	20.0	100.0		
		Red Orange	EKT	1.0	6.0	30.0		
		Green	GKT	1.0	6.0	30.0		
		Yellow	YKT	1.0	6.0	30.0		
Viewing Angle	2θ <sub>1/2</sub>	Amber	AKT		130		deg	Note 2 (Fig.7)
		AlGaAs Red	CKT		130			
		Red Orange	EKT		130			
		Green	GKT		130			
		Yellow	YKT		130			
Peak Emission Wavelength	λ P	Amber	AKT		610		nm	Measurement @Peak (Fig.1)
		AlGaAs Red	CKT		660			
		Red Orange	EKT		635			
		Green	GKT		565			
		Yellow	YKT		585			
Dominant Wavelength	λ d	Amber	AKT		602		nm	Note 3
		AlGaAs Red	CKT		638			
		Red Orange	EKT		621			
		Green	GKT		569			
		Yellow	YKT		588			
Spectral Line Half Width	Δλ	Amber	AKT		35		nm	
		AlGaAs Red	CKT		20			
		Red Orange	EKT		24			
		Green	GKT		30			
		Yellow	YKT		35			
Forward Voltage	Vf	Amber	AKT		2.1	2.6	V	If=20mA
		AlGaAs Red	CKT		1.8	2.4		
		Red Orange	EKT		2.0	2.6		
		Green	GKT		2.1	2.6		
		Yellow	YKT		2.1	2.6		
Reverse Current	Ir	Amber	AKT			100	μ A	Vr=5V
		AlGaAs Red	CKT			100		
		Red Orange	EKT			100		
		Green	GKT			100		
		Yellow	YKT			100		
Capacitance	C	Amber	AKT		15		PF	Vf=0 f=1MHZ
		AlGaAs Red	CKT		30			
		Red Orange	EKT		20			
		Green	GKT		35			
		Yellow	YKT		30			

- Notes: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.  
2. 2θ<sub>1/2</sub> is the off-axis angle at which the luminous intensity is half the axial luminous intensity.  
3. The dominant wavelength, λ d is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

## Electrical / Optical Characteristics and Curves at Ta = 25°C

Parameter	Symbol	Color	Part No. LTST-C155	Min.	Typ.	Max.	Unit.	Test Condition.
Luminous Intensity	I <sub>v</sub>	Green	GEKT	1.0	6.0	30.0	mcd	I <sub>F</sub> =10 mA Note 1
		Red Orange		1.0	6.0	30.0		
Viewing Angle	2θ <sub>1/2</sub>	Green			130		deg	Note 2 (Fig.6)
		Red Orange			130			
Peak Emission Wavelength	λ <sub>P</sub>	Green			565		nm	Measurement @Peak (Fig.1)
		Red Orange			635			
Dominant Wavelength	λ <sub>d</sub>	Green			569		nm	Note 3
		Red Orange			621			
Spectral Line Half Width	Δλ	Green			30		nm	
		Red Orange			24			
Forward Voltage	V <sub>F</sub>	Green			2.1	2.6	V	I <sub>F</sub> =20mA
		Red Orange			2.0	2.6		
Reverse Current	I <sub>R</sub>	Green				100	μA	V <sub>R</sub> =5V
		Red Orange				100		
Capacitance	C	Green			35		PF	V <sub>F</sub> =0 f=1MHZ
		Red Orange			20			
Luminous Intensity	I <sub>v</sub>	Green	GYKT	1.0	6.0	30.0	mcd	I <sub>F</sub> =10mA Note 1
		Yellow		1.0	6.0	30.0		
Viewing Angle	2θ <sub>1/2</sub>	Green			130		deg	Note 2 (Fig.6)
		Yellow			130			
Peak Emission Wavelength	λ <sub>P</sub>	Green			565		nm	Measurement @ peak (Fig.!)
		Yellow			585			
Dominant Wavelength	λ <sub>d</sub>	Green			569		nm	Note3
		Yellow			588			
Spectral Line Half Width	Δλ	Green			30		nm	
		Yellow			35			
Forward Voltage	V <sub>F</sub>	Green			2.1	2.6	V	I <sub>F</sub> =20mA
		Yellow			2.1	2.6		
Reverse Current	I <sub>R</sub>	Green				100	μA	V <sub>R</sub> =5V
		Yellow				100		
Capacitance	C	Green			35		PF	V <sub>F</sub> =0 f=1MHZ
		Yellow			30			

- Notes: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.  
 2. 2θ<sub>1/2</sub> is the off-axis angle at which the luminous intensity is half the axial luminous intensity.  
 3. The dominant wavelength, λ<sub>d</sub> is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.



# Typical Electrical / Optical Characteristic Curves (25°C Ambient Temperature Unless Otherwise Noted)

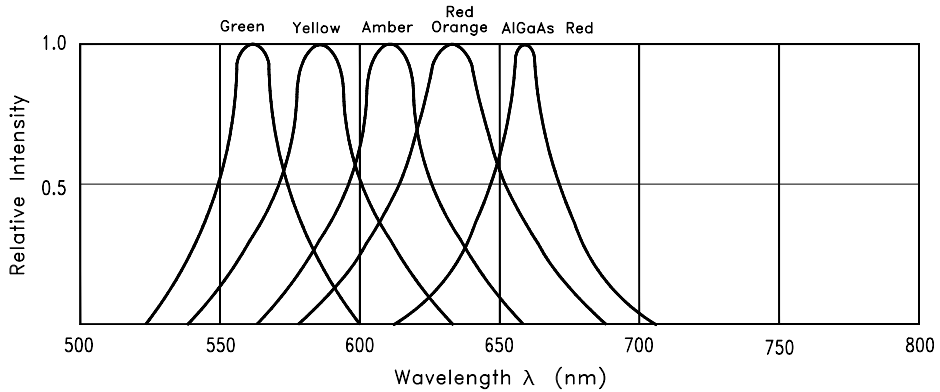


Fig.1 RELATIVE INTENSITY VS. WAVELENGTH

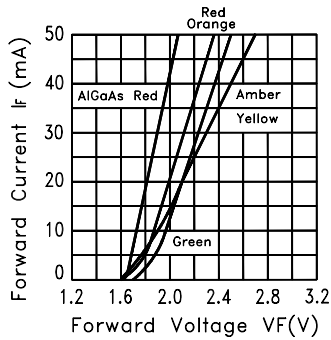


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

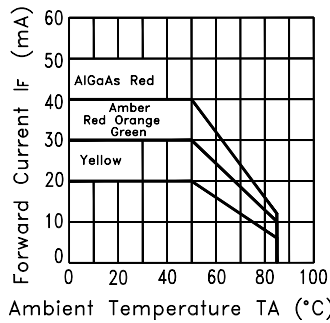


Fig.3 FORWARD CURRENT DERATING CURVE

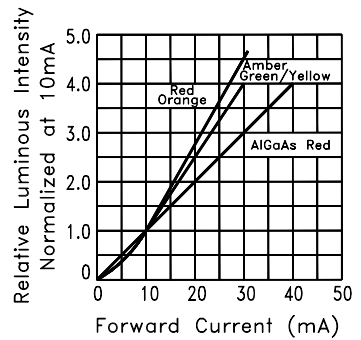


Fig.4 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

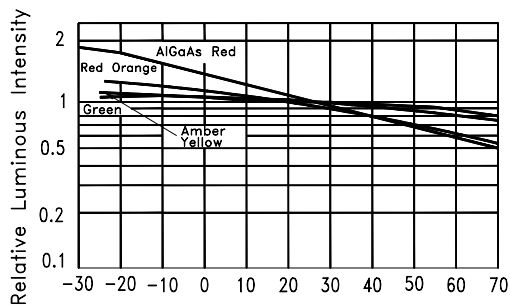


Fig.5 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

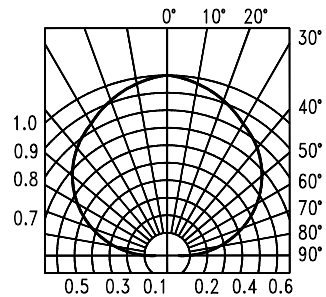


Fig.6 SPATIAL DISTRIBUTION