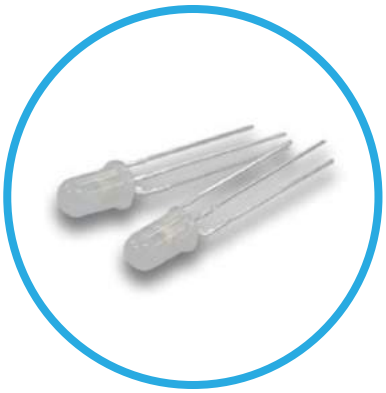
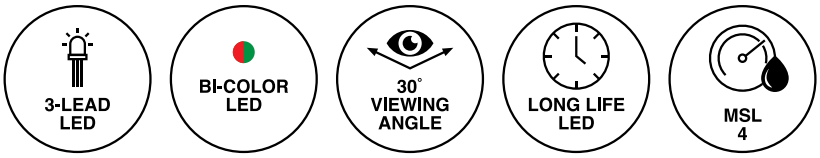
LTH5MM1152V
5mm (T-1 3/4) Through Hole LED Bi-Color, 3-Lead Domed Top Lamp



Three leaded Bi-Color light source designed for a variety of applications where a dual indication is required in the same package



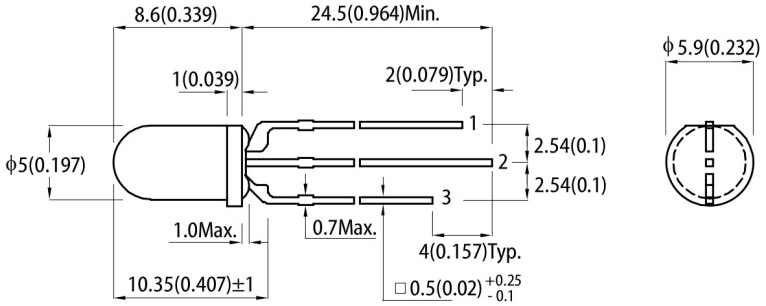
Application

- Status Indication
- Illuminator
- Automotive
- Signage Applications
- Entertainment Lighting
- Medical Devices
- Commercial Outdoor Sign Board
- Residential Architectural Lighting
- Industrial Control Systems

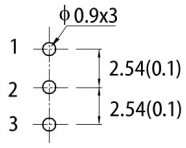
Key Features

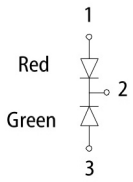
- High-Efficiency Red/Green Bi-Color LED lamp
- 5mm (T-1 3/4) industry standard package
- 3-lead Bi-Color LED (with one common lead)
- Viewing angle 30˚
- The High-Efficiency Red source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode
- The Green source color devices are made with Gallium Phosphide Green Light Emitting Diode
- Uniform light output
- Low power consumption
- Long life-solid state reliability
- White diffused lens
- Moisture sensitivity level (MSL): 4
- RoHS compliant

Product Dimensions



Recommended PCB Layout





1 Anode Red
2 Common Cathode
3 Anode Green

Notes:
1. All dimensions are in millimeters (inches)
2. Tolerance is ±0.25 in (0.01") unless otherwise noted
3. Lead spacing is measured where the leads emerge from the package.
4. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.

Product Specifications

Selection Guide

Part Number	Emitting Color (Material)	Lens Type	Iv (mcd) @ 20mA [2]		Viewing Angle [1]
			Min.	Typ.	2θ1/2
LTH5MM1152V	High Efficiency Red (GaAsP/GaP)	White Diffused	30	60	30˚
			*20	*40	
	Green (GaP)		20	60	
			*20	*60	

Notes:
1. θ 1/2 is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
2. Luminous intensity / luminous flux: +/-15%. *Luminous intensity value is traceable to CIE127-2007 standards.

Electrical/Optical Characteristics and Curves (Ta=25°C)

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Wavelength at Peak Emission I_F = 20mA	λpeak	High Efficiency Red Green	627 565	-	nm
Dominant Wavelength I_F = 20mA	λdom [1]	High Efficiency Red Green	617 568	-	nm
Spectral Bandwidth at 50% Φ REL MAX IF = 20mA	Δλ	High Efficiency Red Green	45 30	-	nm
Capacitance	C	High Efficiency Red Green	15 15	-	pF
Forward Voltage I_F = 20mA	V_F [2]	High Efficiency Red Green	2.0 2.2	2.5 2.5	V
Reverse Current (V_R = 5V)	I_R	High Efficiency Red Green	-	10 10	μA
Temperature Coefficient of λ_{peak} I_F = 20mA, -10°C ≤ T ≤ 85°C	$TC_{\lambda peak}$	High Efficiency Red Green	0.13 0.1	-	nm/°C
Temperature Coefficient of λ_{dom} I_F = 20mA, -10°C ≤ T ≤ 85°C	$TC_{\lambda dom}$	High Efficiency Red Green	0.06 0.06	-	nm/°C
Temperature Coefficient of V_F I_F = 20mA, -10°C ≤ T ≤ 85°C	TC_V	High Efficiency Red Green	-1.9 -2	-	nm/°C

Notes:
1. The dominant wavelength (λd) above is the setup value of the sorting machine. (Tolerance λd : ±1nm.)
2. Forward voltage: ±0.1V.
3. Wavelength value is traceable to CIE127-2007 standards.
4. Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

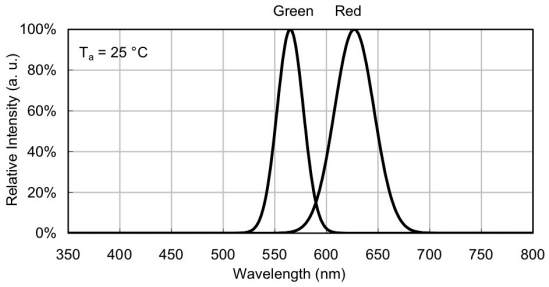
Product Specifications

Absolute Maximum Ratings (Ta=25°C)

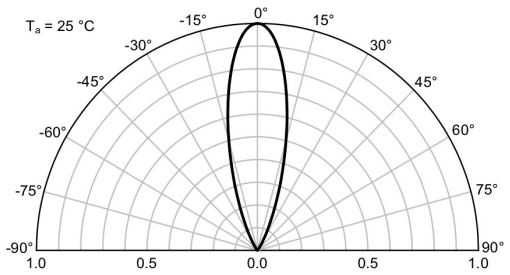
Parameter	Symbol	Value		Unit
		High Efficiency Red	Green	
Power Dissipation	P_D	75	62.5	mW
Reverse Voltage	V_R	5	5	V
Junction Temperature	T_j	125	110	°C
Operating Temperature	T_{op}	-40 to +85		°C
Storage Temperature	T^{stg}	-40 to +85		°C
DC Forward Current	I_F	30	25	mA
Peak Forward Current	I_{FM} [1]	160	140	mA
Electrostatic Discharge Threshold (HBM)	-	8000	8000	V
Thermal Resistance (Junction / Ambient)	$R_{th\ JA}$ [2]	550	600	°C/W
Thermal Resistance (Junction / Solder point)	$R_{th\ JS}$ [2]	300	420	°C/W
Lead Solder Temperature [3]		260°C For 3 Seconds		
Lead Solder Temperature [4]		260°C For 5 Seconds		

Notes:
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. $R_{th\ JA}$,$R_{th\ JS}$ Results from mounting on PC board FR4 (pad size ≥ 16 mm^2 per pad).
3. 2mm below package base.
4. 5mm below package base.
5. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

Relative Intensity vs. Wavelength

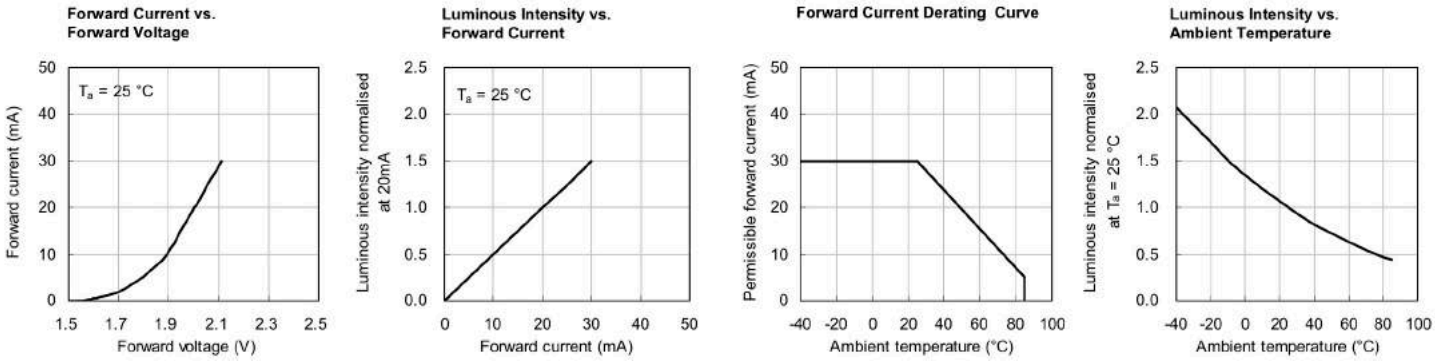


Spatial Distribution

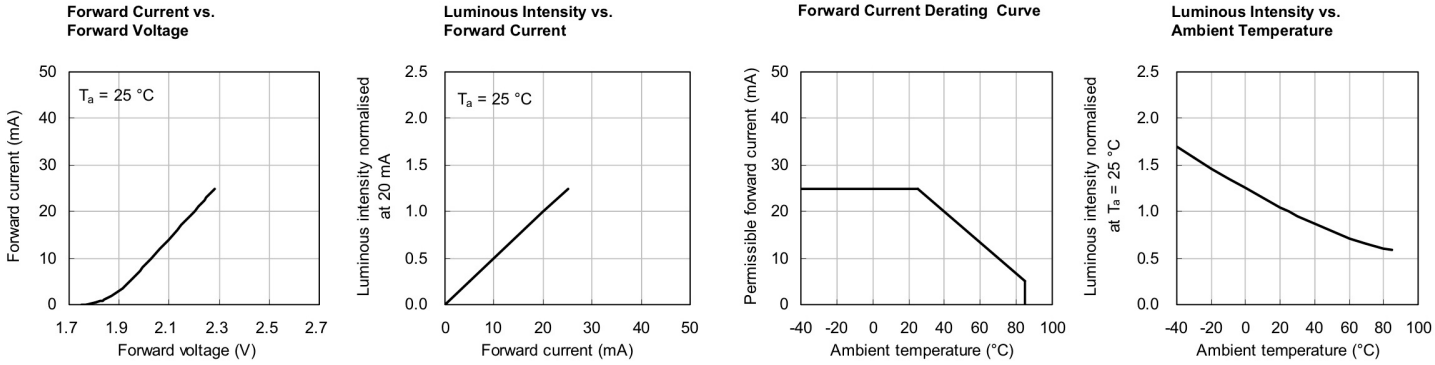


Product Specifications

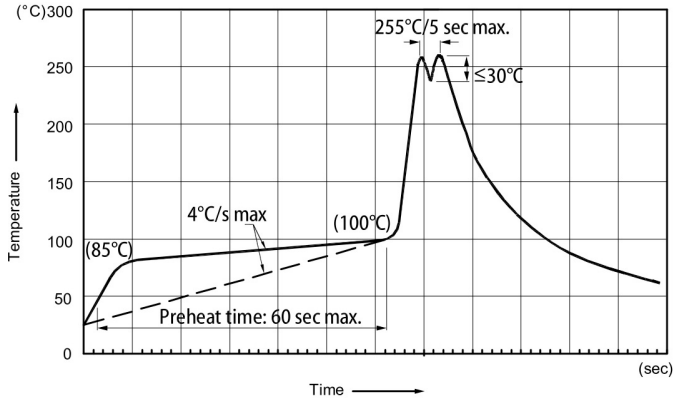
High Efficiency Red



Green



Recommended Wave Soldering Profile



Notes:
1. Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C
2. Peak wave soldering temperature between 245°C ~ 255°C for 3 sec (5 sec max).
3. Do not apply stress to the epoxy resin while the temperature is above 85°C.
4. Fixtures should not incur stress on the component when mounting and during soldering process.
5. SAC 305 solder alloy is recommended.
6. No more than one wave soldering pass.

Precautions

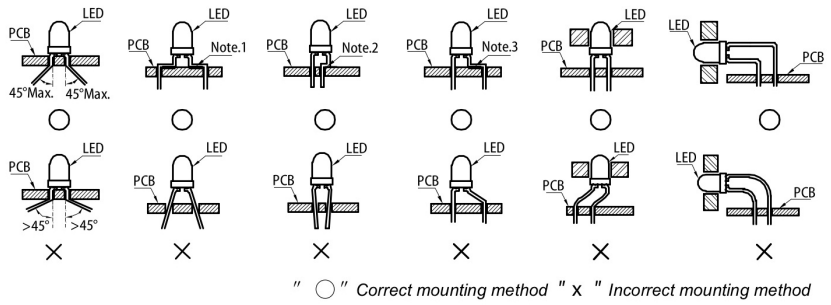
Storage Conditions

1. Avoid continued exposure to the condensing moisture environment and keep the product away from rapid transitions in ambient temperature.
2. LEDs should be stored with temperature ≤ 30°C and relative humidity < 60%.
3. Product in the original sealed package is recommended to be assembled within 72 hours of opening. Product in opened package for more than a week should be baked for 30 (+10/-0) hours at 85 ~ 100°C.

LED Mounting Method

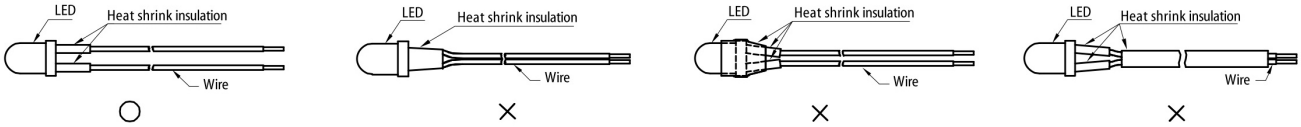
1. The lead pitch of the LED must match the pitch of the mounting holes on the PCB during component placement Lead-forming may be required to insure the lead pitch matches the hole pitch. Refer to the figure below for proper lead forming procedures.

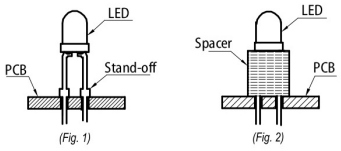
Note 1-3: Do not route PCB trace in the contact area between the leadframe and the PCB to prevent short-circuits.



" ○ " *Correct mounting method* " x " *Incorrect mounting method*

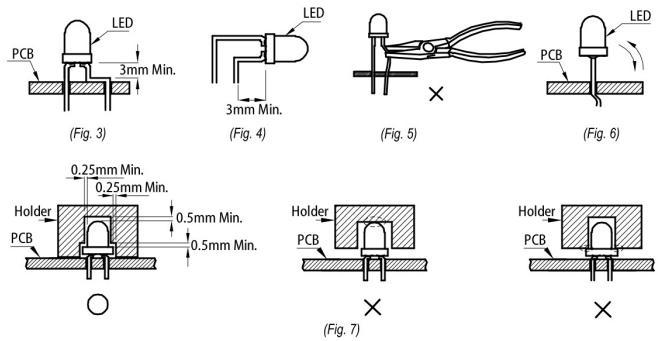
2. When soldering wires to the LED, each wire joint should be separately insulated with heat-shrink tube to prevent short-circuit contact. Do not bundle both wires in one heat shrink tube to avoid pinching the LED leads. Pinching stress on the LED leads may damage the internal structures and cause failure.





3. Use stand-offs (Fig.1) or spacers (Fig.2) to securely position the LED above the PCB.
4. Maintain a minimum of 3mm clearance between the base of the LED lens and the first lead bend (Fig. 3 ,Fig. 4).
5. During lead forming, use tools or jigs to hold the leads securely so that the bending force will not be transmitted to the LED lens and its internal structures. Do not perform lead forming once the component has been mounted onto the PCB. (Fig. 5)

Precautions



Lead Forming Procedures

1. Do not bend the leads more than twice. (Fig. 6)
2. During soldering, component covers and holders should leave clearance to avoid placing damaging stress on the LED during soldering. (Fig. 7)
3. The tip of the soldering iron should never touch the lens epoxy.
4. Through-hole LEDs are incompatible with reflow soldering.
5. If the LED will undergo multiple soldering passes or face other processes where the part may be subjected to intense heat, please check with Kingbright for compatibility.

Compliances and Approvals

RoHS COMPLIANT