

## WP57EGW

T-1 3/4 (5mm) Bi-Color Indicator Lamp

### DESCRIPTIONS

- 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

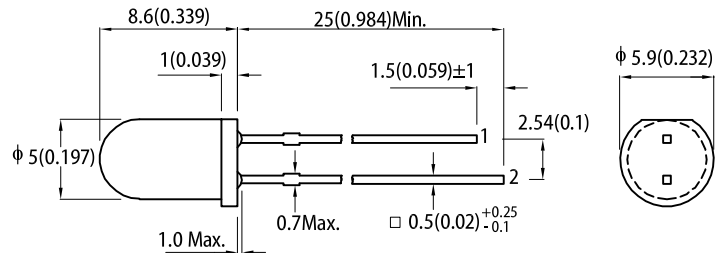
### FEATURES

- Low power consumption
- Long life - solid state reliability
- RoHS compliant

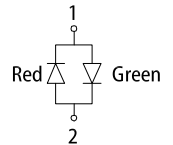
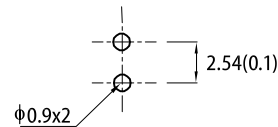
### APPLICATIONS

- Status indicator
- Illuminator
- Signage applications
- Decorative and entertainment lighting
- Commercial and residential architectural lighting

### PACKAGE DIMENSIONS



Recommended PCB Layout



**Notes:**

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25(0.01")$  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.

### SELECTION GUIDE

Part Number	Emitting Color (Material)	Lens Type	Iv (mcd) @ 20mA <sup>[2]</sup>		Viewing Angle <sup>[1]</sup>
			Min.	Typ.	2θ1/2
WP57EGW	<span style="color: red;">■</span> High Efficiency Red (GaAsP/GaP)	White Diffused	12	30	30°
			*6	*14	
	12		30		
	*12		*30		
	<span style="color: green;">■</span> Green (GaP)				

Notes:  
 1.  $\theta_{1/2}$  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 at T<sub>A</sub>=25°C

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Wavelength at Peak Emission I <sub>F</sub> = 20mA	λ <sub>peak</sub>	High Efficiency Red Green	627 565	-	nm
Dominant Wavelength I <sub>F</sub> = 20mA	λ <sub>dom</sub> <sup>[1]</sup>	High Efficiency Red Green	617 568	-	nm
Spectral Bandwidth at 50% Φ REL MAX I <sub>F</sub> = 20mA	Δλ	High Efficiency Red Green	45 30	-	nm
Capacitance	C	High Efficiency Red Green	15 15	-	pF
Forward Voltage I <sub>F</sub> = 20mA	V <sub>F</sub> <sup>[2]</sup>	High Efficiency Red Green	2.0 2.2	2.5 2.5	V
Temperature Coefficient of λ <sub>peak</sub> I <sub>F</sub> = 20mA, -10°C ≤ T ≤ 85°C	TC <sub>λpeak</sub>	High Efficiency Red Green	0.13 0.1	-	nm/°C
Temperature Coefficient of λ <sub>dom</sub> I <sub>F</sub> = 20mA, -10°C ≤ T ≤ 85°C	TC <sub>λdom</sub>	High Efficiency Red Green	0.06 0.06	-	nm/°C
Temperature Coefficient of V <sub>F</sub> I <sub>F</sub> = 20mA, -10°C ≤ T ≤ 85°C	TC <sub>V</sub>	High Efficiency Red Green	-1.9 -2	-	mV/°C

## Notes:

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

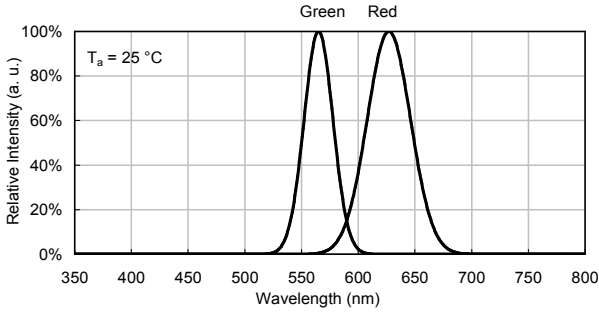
ABSOLUTE MAXIMUM RATINGS at T<sub>A</sub>=25°C

Parameter	Symbol	Value		Unit
		High Efficiency Red	Green	
Power Dissipation	P <sub>D</sub>	75	62.5	mW
Junction Temperature	T <sub>j</sub>	125	110	°C
Operating Temperature	T <sub>op</sub>	-40 to +85		°C
Storage Temperature	T <sub>stg</sub>	-40 to +85		°C
DC Forward Current	I <sub>F</sub>	30	25	mA
Peak Forward Current	I <sub>FM</sub> <sup>[1]</sup>	160	140	mA
Electrostatic Discharge Threshold (HBM)	-	8000	8000	V
Thermal Resistance (Junction / Ambient)	R <sub>th JA</sub> <sup>[2]</sup>	650	650	°C/W
Thermal Resistance (Junction / Solder point)	R <sub>th JS</sub> <sup>[2]</sup>	450	420	°C/W
Lead Solder Temperature <sup>[3]</sup>		260°C For 3 Seconds		
Lead Solder Temperature <sup>[4]</sup>		260°C For 5 Seconds		

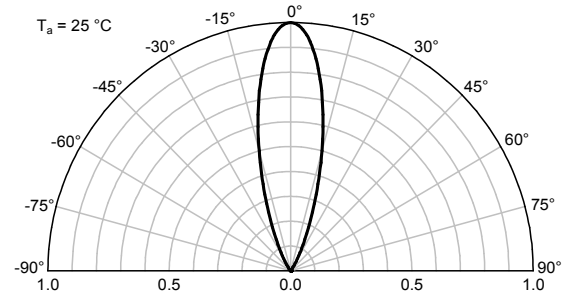
- Notes:
- 1/10 Duty Cycle, 0.1ms Pulse Width.
  - R<sub>th JA</sub>, R<sub>th JS</sub> Results from mounting on PC board FR4 (pad size ≥ 16 mm<sup>2</sup> per pad).
  - 2mm below package base.
  - 5mm below package base.
  - Relative humidity levels maintained between 40% and 60% in production area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

## TECHNICAL DATA

### RELATIVE INTENSITY vs. WAVELENGTH

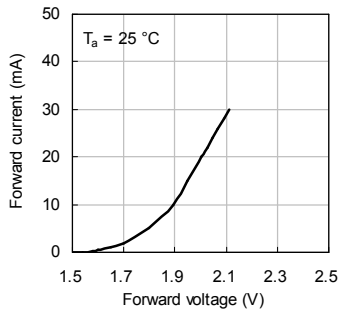


### SPATIAL DISTRIBUTION

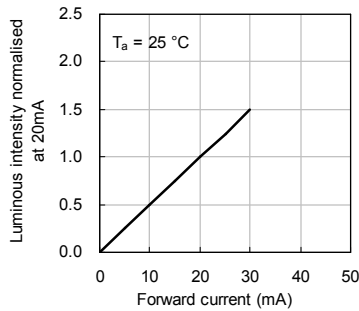


## HIGH EFFICIENCY RED

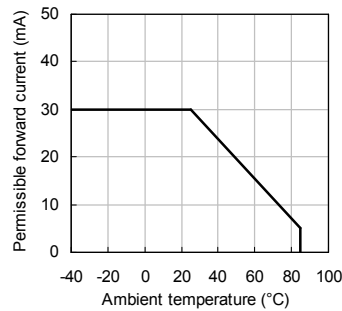
Forward Current vs. Forward Voltage



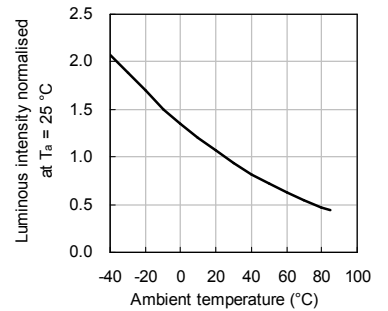
Luminous Intensity vs. Forward Current



Forward Current Derating Curve

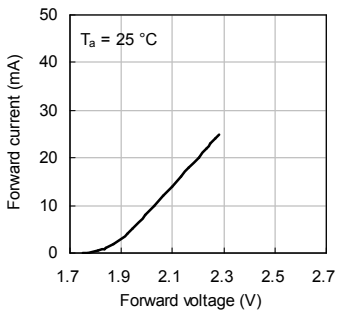


Luminous Intensity vs. Ambient Temperature

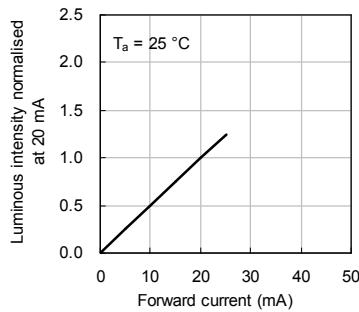


## GREEN

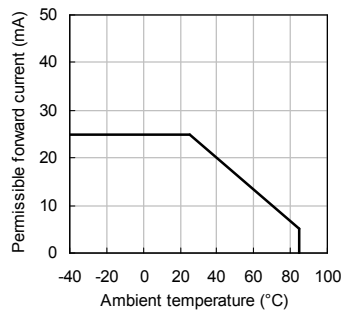
Forward Current vs. Forward Voltage



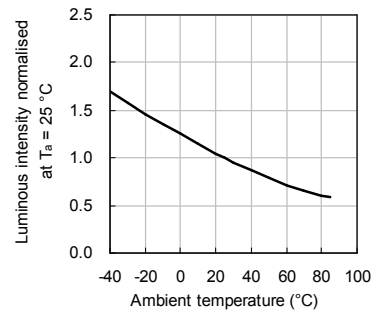
Luminous Intensity vs. Forward Current



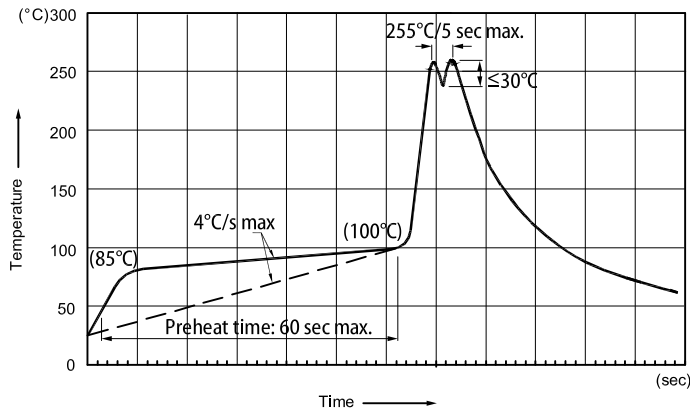
Forward Current Derating Curve



Luminous Intensity vs. Ambient Temperature



## RECOMMENDED WAVE SOLDERING PROFILE



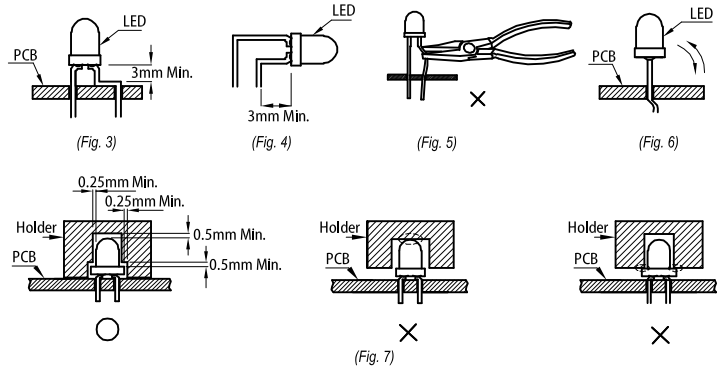
Notes:

1. Recommend pre-heat temperature of 105 $^\circ\text{C}$  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 $^\circ\text{C}$ .
2. Peak wave soldering temperature between 245 $^\circ\text{C}$  ~ 255 $^\circ\text{C}$  for 3 sec (5 sec max).
3. Do not apply stress to the epoxy resin while the temperature is above 85 $^\circ\text{C}$ .
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.



## 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.



## PRECAUTIONARY NOTES

1. The information included in this document reflects representative usage scenarios and is intended for technical reference only.
2. The part number, type, and specifications mentioned in this document are subject to future change and improvement without notice. Before production usage customer should refer to the latest datasheet for the updated specifications.
3. When using the products referenced in this document, please make sure the product is being operated within the environmental and electrical limits specified in the datasheet. If customer usage exceeds the specified limits, Kingbright will not be responsible for any subsequent issues.
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