

## L-3WSURKCGKW

T-1(3mm) Bi-color Indicator Lamp

### DESCRIPTIONS

- The Hyper Red source color devices are made with AlGaInP on GaAs substrate Light Emitting Diode
- The Green source color devices are made with AlGaInP on GaAs substrate Light Emitting Diode
- Electrostatic discharge and power surge could damage the LEDs
- It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs
- All devices, equipments and machineries must be electrically grounded

### FEATURES

- Uniform light output
- Low power consumption
- 3 leads with one common lead
- Long life - solid state reliability
- Halogen-free
- RoHS compliant

### APPLICATIONS

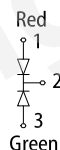
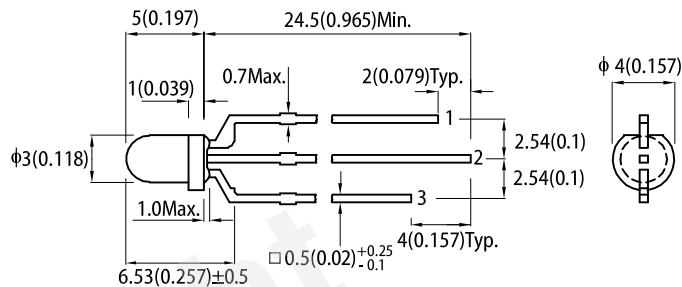
- Status indicator
- Illuminator
- Signage applications
- Decorative and entertainment lighting
- Commercial and residential architectural lighting

### ATTENTION

Observe precautions for handling electrostatic discharge sensitive devices

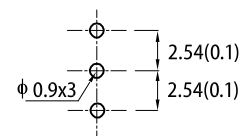


### PACKAGE DIMENSIONS



- 1 Anode Red
- 2 Common Cathode
- 3 Anode Green

#### 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
L-3WSURKCGKW	■ Hyper Red (AlGaInP)	White Diffused	400	700	60°
			*80	*160	
	60		160		
	*60		*160		
	■ Green (AlGaInP)				

Notes:  
 1. θ1/2 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>	Hyper Red Green	645 574	-	nm
Dominant Wavelength I <sub>F</sub> = 20mA	λ <sub>dom</sub> <sup>[1]</sup>	Hyper Red Green	630 570	-	nm
Spectral Bandwidth at 50% Φ REL MAX I <sub>F</sub> = 20mA	Δλ	Hyper Red Green	28 20	-	nm
Forward Voltage I <sub>F</sub> = 20mA	V <sub>F</sub> <sup>[2]</sup>	Hyper Red Green	1.95 2.1	2.5 2.5	V
Reverse Current (V <sub>R</sub> = 5V)	I <sub>R</sub>	Hyper Red Green	-	10 10	μA
Temperature Coefficient of λ <sub>peak</sub> I <sub>F</sub> = 20mA, -10°C ≤ T ≤ 85°C	TC <sub>λpeak</sub>	Hyper Red Green	0.13 0.12	-	nm/°C
Temperature Coefficient of λ <sub>dom</sub> I <sub>F</sub> = 20mA, -10°C ≤ T ≤ 85°C	TC <sub>λdom</sub>	Hyper Red Green	0.05 0.08	-	nm/°C
Temperature Coefficient of V <sub>F</sub> I <sub>F</sub> = 20mA, -10°C ≤ T ≤ 85°C	TC <sub>V</sub>	Hyper Red Green	-2.0 -2.0	-	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**

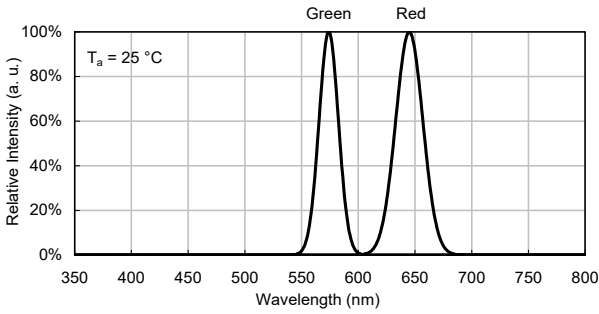
Parameter	Symbol	Value		Unit
		Hyper Red	Green	
Power Dissipation	P <sub>D</sub>	75	75	mW
Reverse Voltage	V <sub>R</sub>	5	5	V
Junction Temperature	T <sub>j</sub>	115	115	°C
Operating Temperature	T <sub>op</sub>	-40 to +85		°C
Storage Temperature	T <sub>stg</sub>	-40 to +85		°C
DC Forward Current	I <sub>F</sub>	30	30	mA
Peak Forward Current	I <sub>FP</sub> <sup>[1]</sup>	185	150	mA
Electrostatic Discharge Threshold (HBM)	-	3000	3000	V
Thermal Resistance (Junction / Ambient)	R <sub>th JA</sub> <sup>[2]</sup>	590	690	°C/W
Thermal Resistance (Junction / Solder point)	R <sub>th JS</sub> <sup>[2]</sup>	450	540	°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:**

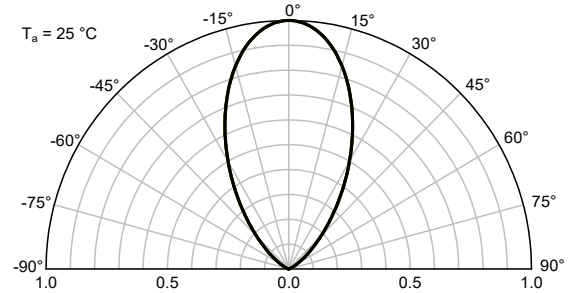
- 1/10 Duty Cycle, 0.1ms Pulse Width.
- R<sub>th JA</sub>, R<sub>th JS</sub> Results from mounting on PC board FR4 (pad size ≥ 16 mm<sup>2</sup> per pad).
- 2mm below package base.
- 5mm below package base.
- Relative humidity levels maintained between 40% and 60% in production area are recommended to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

## TECHNICAL DATA

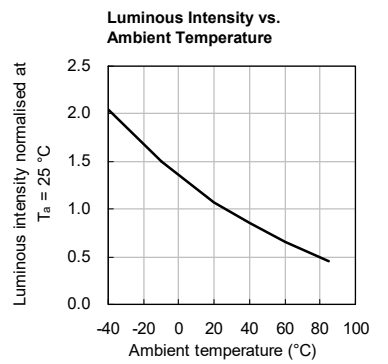
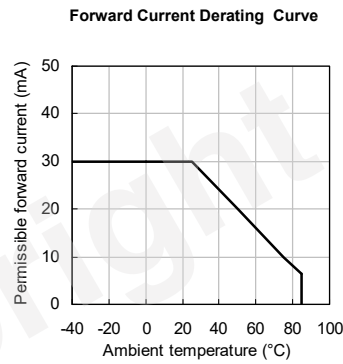
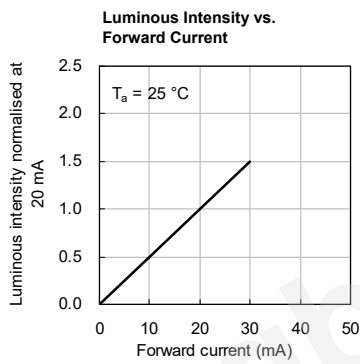
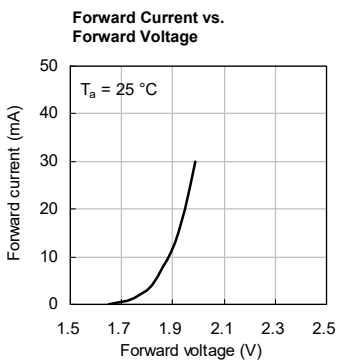
### RELATIVE INTENSITY vs. WAVELENGTH



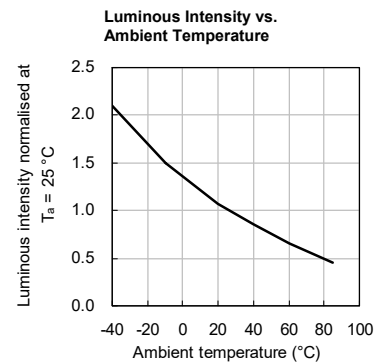
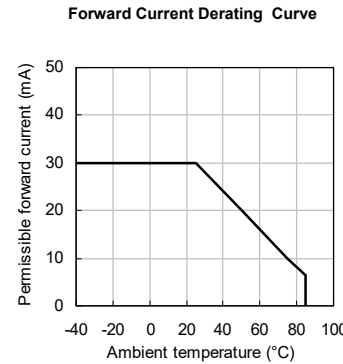
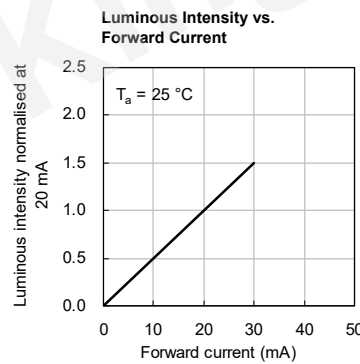
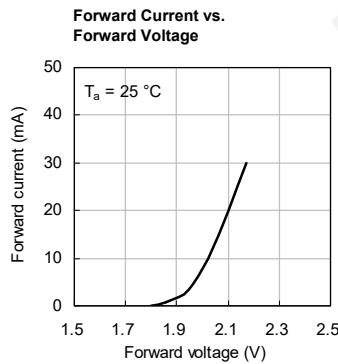
### SPATIAL DISTRIBUTION



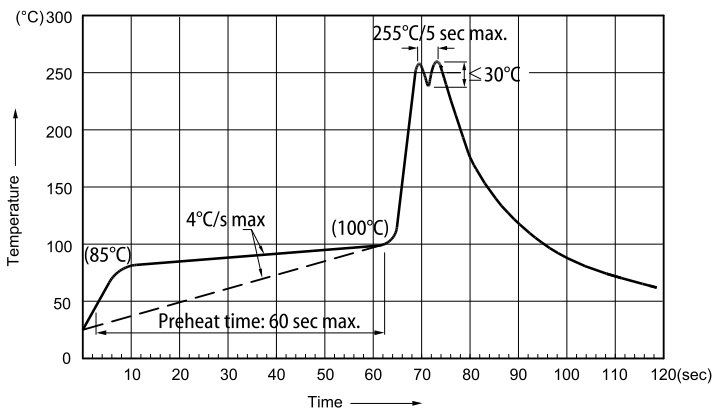
## HYPER RED



## GREEN



### RECOMMENDED WAVE SOLDERING PROFILE



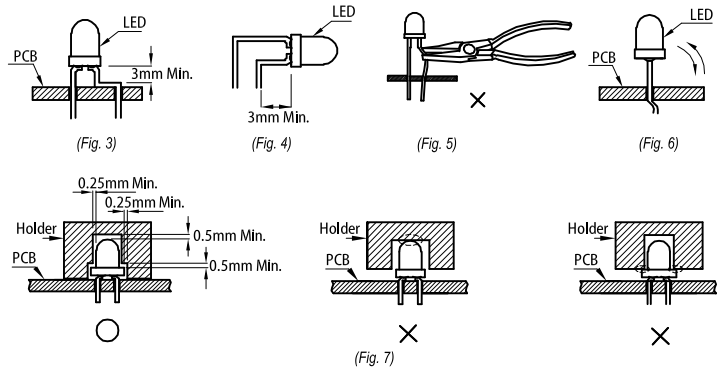
#### Notes:

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.



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### 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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