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## T-1 (3mm) TRI-LEVEL LED INDICATOR

Part Number: WP934SA/IYGD5V

High Efficiency Red

Yellow Green

### **Features**

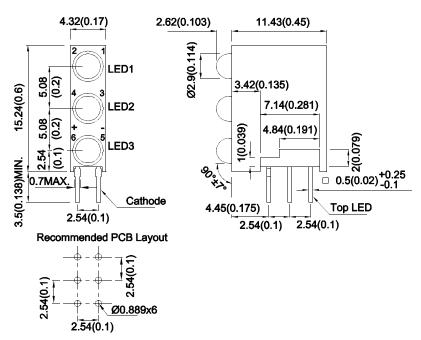
- Pre-trimmed leads for pc mounting.
- Black case enhances contrast ratio.
- Wide viewing angle.
- High reliability life measured in years.
- Housing UL rating:94V-0.
- Housing material: type 66 nylon.
- Housing color:black
- 5V internal resistor.
- RoHS compliant.

## **Descriptions**

- The High Efficiency Red source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode.
- The Yellow source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Yellow Light Emitting Diode.
- The Green source color devices are made with Gallium Phosphide Green Light Emitting Diode.

## **Package Dimensions**

LED1: Red LED2: Yellow LED3: Green



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

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### **Selection Guide**

Part No.	Emitting Color (Material)	Lens Type	Iv (mcd) [2] V= 5V		Viewing Angle [1]
			Min.	Тур.	201/2
WP934SA/IYGD5V	High Efficiency Red (GaAsP/GaP)	Red Diffused	12	25	40°
		Red Dillused	*6	*14	
	Yellow (GaAsP/GaP)	Yellow Diffused	7	15	40°
		reliow Diliuseu	*7	*15	
	Green (GaP)	Green Diffused	12	25	40°
			*12	*25	

### 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 TA=25°C

Symbol	Parameter	Emitting Color	Тур.	Max.	Units	Test Conditions
λpeak	Peak Wavelength	High Efficiency Red Yellow Green	627 590 565		nm	VF=5V
λD [1]	Dominant Wavelength	High Efficiency Red Yellow Green	617 588 568		nm	VF=5V
Δλ1/2	Spectral Line Half-width	High Efficiency Red Yellow Green	45 35 30		nm	VF=5V
lF	Forward Current	High Efficiency Red Yellow Green	13 13 11.5	17.5 17.5 17.5	mA	Vr=5V
lR	Reverse Current	High Efficiency Red Yellow Green		10 10 10	uA	VR=5V

### Note:

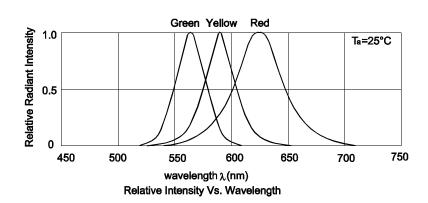
- 1.Wavelength: +/-1nm.
- Wavelength value is traceable to CIE127-2007 standards.
   Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static  $electricity-Ref\ JEDEC/JESD625-A\ and\ JEDEC/J-STD-033.$

## Absolute Maximum Ratings at TA=25°C

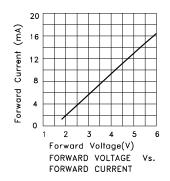
Parameter	High Efficiency Red	Yellow	Green	Units		
Power dissipation	85	85	85	mW		
Forward Voltage	6	6	6	V		
Reverse Voltage	5	5	5	V		
Operating Temperature	-40°C To +70°C					
Storage Temperature	-40°C To +85°C					
Lead Solder Temperature [2]	260°C For 3 Seconds					
Lead Solder Temperature [3]	260°C For 5 Seconds					

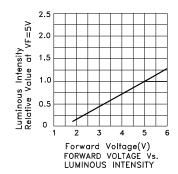
- 1. 2mm below package base.
- 2. 5mm below package base.
- Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

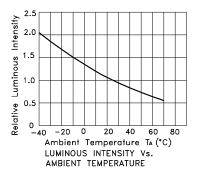
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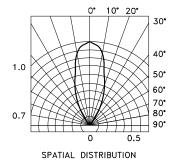


## WP934SA/IYGD5V High Efficiency Red





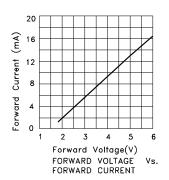


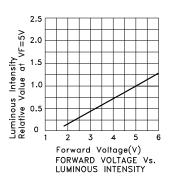


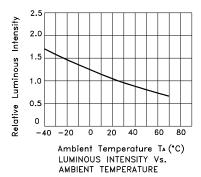
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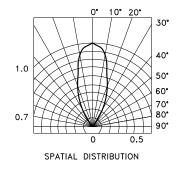
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## Yellow





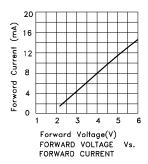


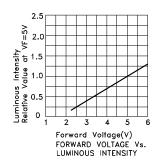


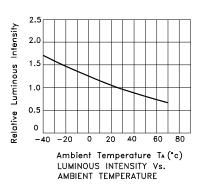
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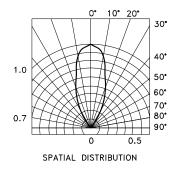
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## Green





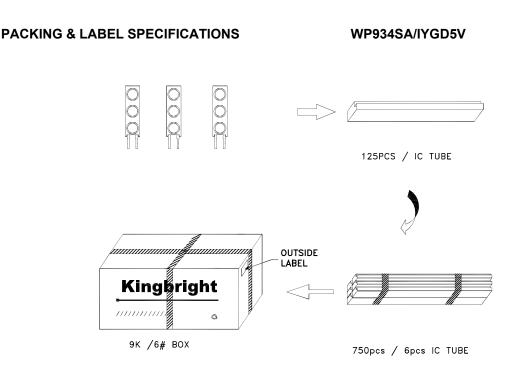




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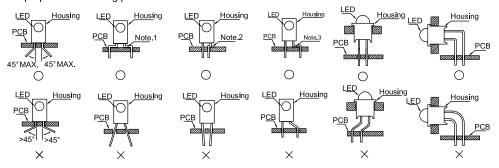
- 1. The information included in this document reflects representative usage scenarios and is intended for technical reference only.
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### **PRECAUTIONS**

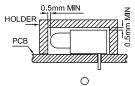
- 1. Storage conditions:
  - a. Avoid continued exposure to the condensing moisture environment and keep the product away from rapid transitions in ambient temperature.
  - b.LEDs should be stored with temperature ≤ 30° C and relative humidity < 60%.
  - c.Product in the original sealed package is recommended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

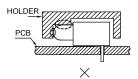


"  $\bigcirc$  " Correct mounting method " imes " Incorrect mounting method

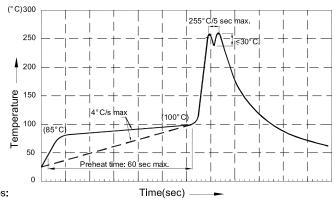
Note 1-3: Do not route PCB trace in the contact area between the leadframe and the PCB to prevent short-circuits.

During soldering, component covers and holders should leave clearance to avoid placing damaging stress on the LED during soldering.





- 4. The tip of the soldering iron should never touch the lens epoxy.
- 5. Through-hole LEDs are incompatible with reflow soldering.
- 6. 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.
- 7. Recommended Wave Soldering Profiles:



- 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.

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