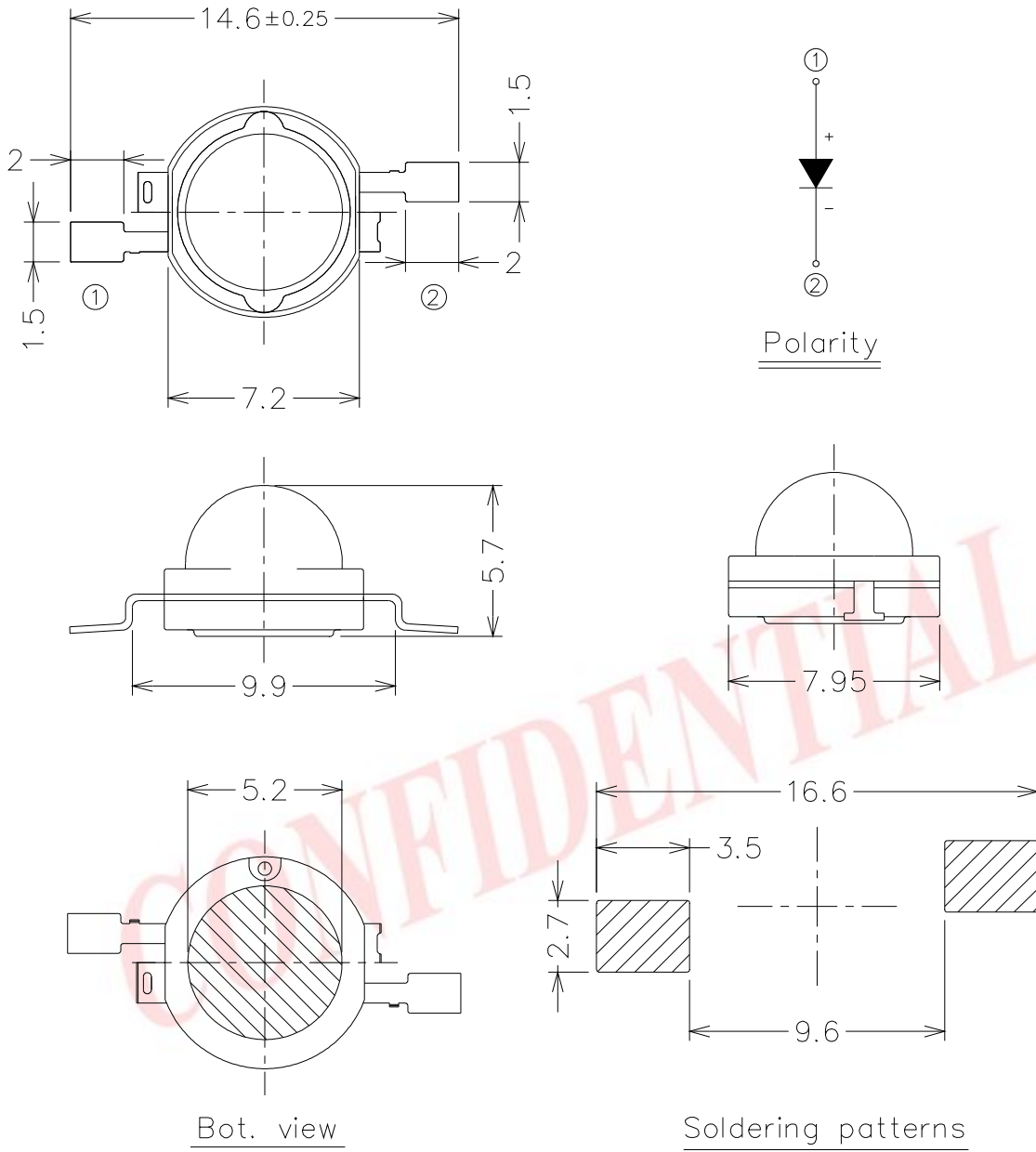


WS-AS2HPL-940

Package Dimensions



- Notes:**
- All dimensions are in millimeters
 - Tolerances unless dimensions $\pm 0.25\text{mm}$



Win Strong Electronics Co.,Ltd

WS-AS2HPL-940

Absolute Maximum Ratings (Ta=25)

Parameter	Symbol	Rating	Unit
Forward Current	I_F	700	mA
Reverse Voltage	V_R	5	V
Operating Temperature	T_{opr}	-40 ~ +85	
Storage Temperature	T_{stg}	-40 ~ +85	
Junction temperature	T_j	125	°C
Power Dissipation @ $I_F=700mA$	P_d	1	W

Note: We suggest that customer should add the heat sink with WS-AS2HPL-940 to exclude the heat.

Electro-Optical Characteristics (Ta=25)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Total Radiated Power	P_o	$I_F=350mA$	50	90	--	mW
		$I_F=700mA$	100	180	--	
Radiant Intensity	I_E	$I_F=350mA$	10	20	--	mW/sr
		$I_F=700mA$	20	40	--	
Peak Wavelength	p	$I_F=20mA$	--	940	--	nm
Spectral Bandwidth		$I_F=20mA$	--	50	--	nm
Forward Voltage	V_F	$I_F=350mA$	1.0	1.45	2.0	V
		$I_F=700mA$	1.2	1.75	2.3	
Reverse Current	I_R	$V_R=5V$	--	--	10	μA
View Angle	2 1/2	$I_F=20mA$	--	150	--	deg
Thermal resistance, junction to heat-sink	$R_{th j-L}$	$I_F=700mA$	--	20	--	/W

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Typical Electro-Optical Characteristics Curves

Fig.1 Forward Current vs. Ambient Temperature

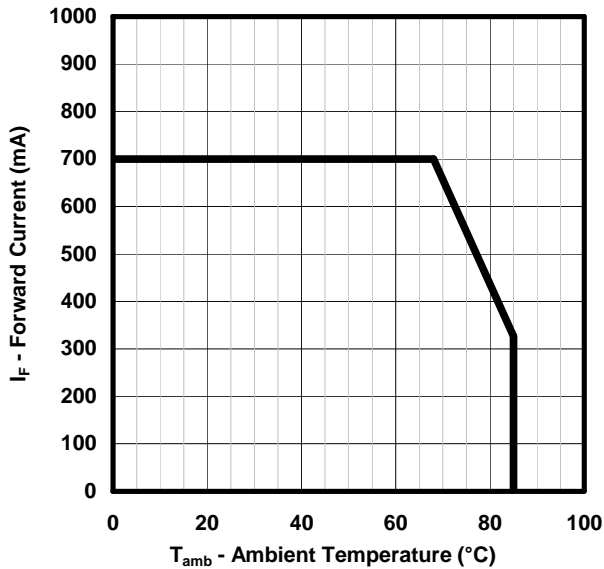


Fig.2 Spectral Distribution

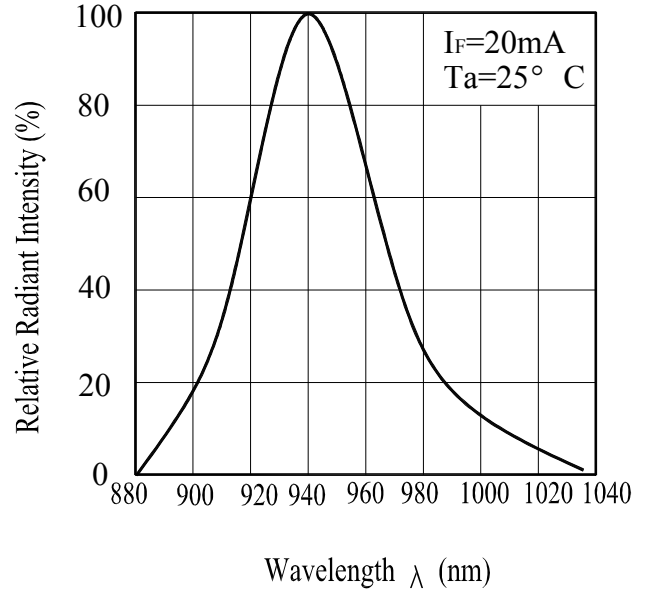


Fig.3 Peak Emission Wavelength vs. Ambient Temperature

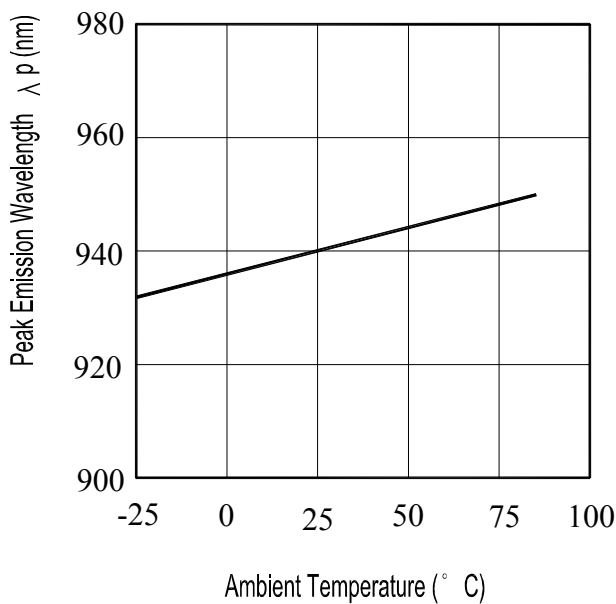
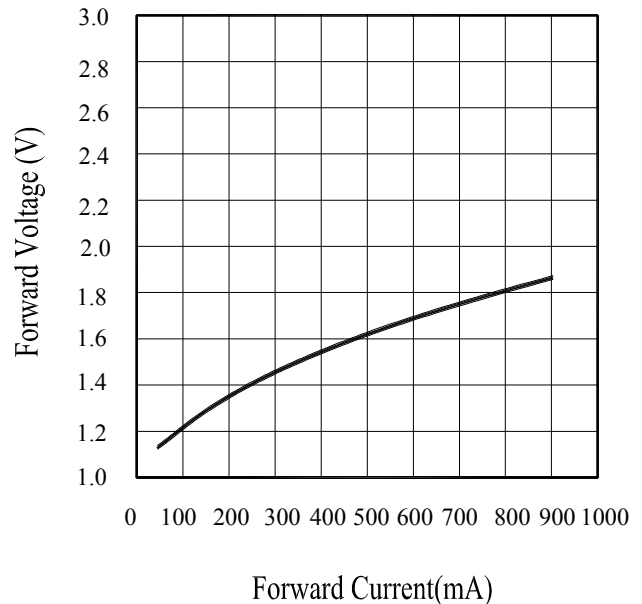


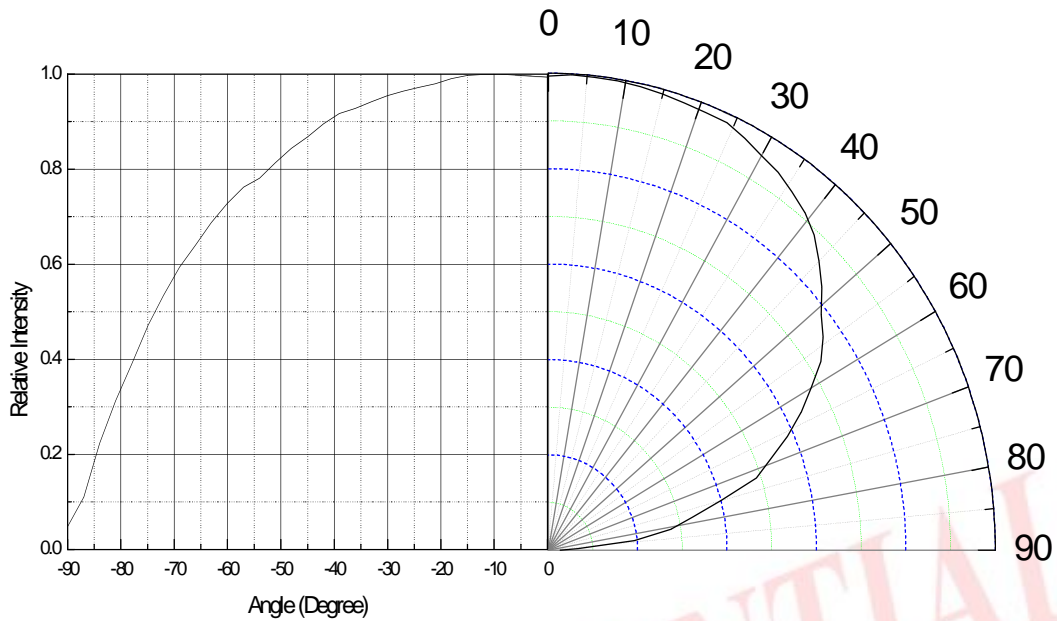
Fig.4 Forward Current vs. Forward Voltage



WS-AS2HPL-940

Typical Electro-Optical Characteristics Curves

Fig.5 Relative Radiant Intensity vs. Angular Displacement





WS-AS2HPL-940

Precautions For Use

Over-current-proof

Although the HPL-940 series has a conductive ESD protection mechanism, customer must not use the device in reverse and should apply resistors for extra protection. Otherwise, slight voltage shifts may cause significant current change resulting in burn out failure.

1. Storage

- i. Do not open the moisture proof bag before the devices are ready to use.
- ii. Before the package is opened, LEDs should be stored at temperatures less than 30 °C and humidity less than 90%.
- iii. LEDs should be used within a year.
- iv. After the package is opened, LEDs should be stored at temperatures less than 30 °C and humidity less than 60%.
- v. LEDs should be used within 168 hours (7 days) after the package is opened.
- vi. If the moisture absorbent material (silicone gel) has faded away or LEDs have exceeded the storage time, baking treatment should be implemented based on the following conditions: pre-curing at 60±5 °C for 24 hours.

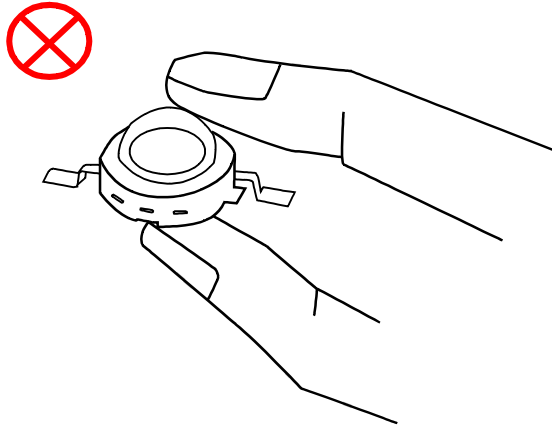
2. Thermal Management

- i. For maintaining the high flux output and achieving reliability, HPL-940 series LEDs should be mounted on a metal core printed circuit board (MCPCB) or other kinds of heat sink with proper thermal connection to dissipate approximately 1W of thermal energy at 350mA operation.
- ii. Heat dissipation or thermal conduction design is strongly recommended on PCB or MCPCB for reflow soldering purposes. Please refer to soldering patterns on Page 2.
- iii. Sufficient thermal management must be implemented. Otherwise, the junction temperature of die may exceed over the limit at high current driving conditions and the LEDs' lifetime may be decrease dramatically.
- iv. For further thermal management suggestions, please consult the Everlight Design Guide or local representatives for assistance.
- v. Special thermal designs are also recommended to take in outer heat sink design, such as FR4 PCB on Aluminum with thermal vias or FPC on Aluminum with thermal conductive adhesive, etc.
- vi. Sufficient thermal management must be conducted, or the die junction temperature will be over the limit under large electronic driving and LED lifetime will decrease critically.

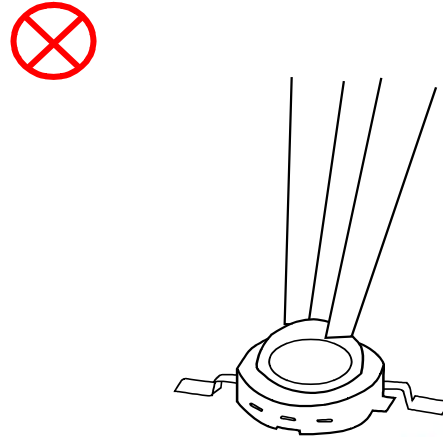
WS-AS2HPL-940

3. Proper Handling

To avoid contamination of materials, damage of internal components, and shortening of LED lifetime, do not subject LEDs to conditions as those listed below.



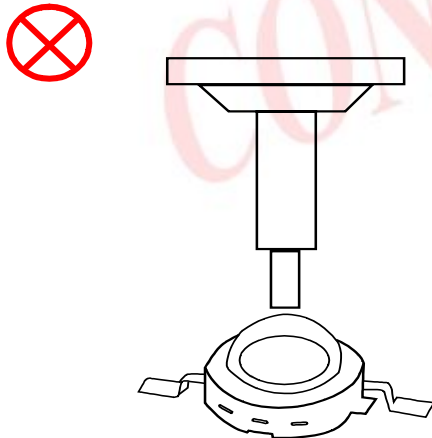
When handling the product, do not apply direct pressure on the resin.



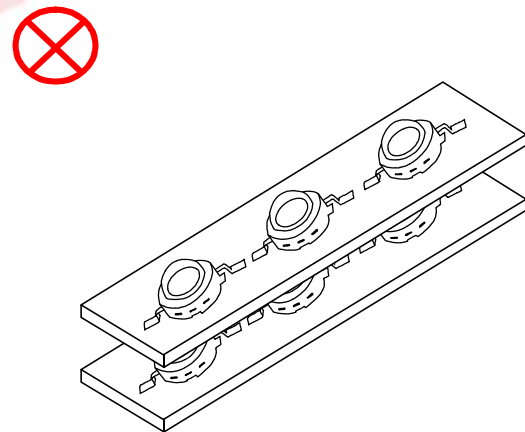
Do not touch the resin to avoid scratching or other damage.

Pick and Place Nozzle for Surface Mount Assembly.

During Module Assembly



Avoid directly contacting with



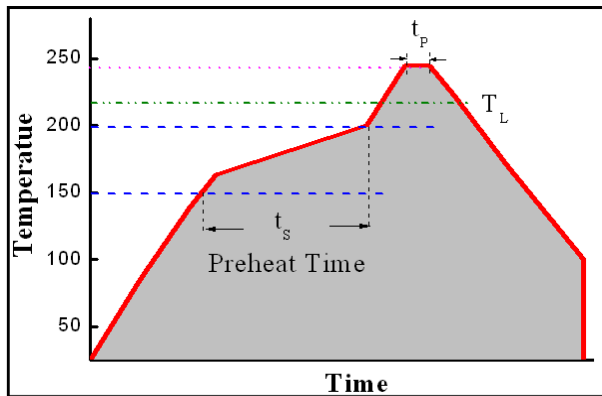
Do not stack the modules together, it could damage the resin or scratch the lens.

WS-AS2HPL-940

4. Soldering Iron

i. For Reflow Process

- HPL-940 series are suitable for SMT process.
- Curing of glue in oven according to standard operation flow processes.



Profile Feature	Lead Free Assembly
Ramp-Up Rate	2-3 °C/S
Preheat Temperature	150-200 °C
Preheat Time (t_s)	60-120 S
Liquid Temperature (T_L)	217 °C
Time maintained above T_L	60-90 S
Peak Temperature (T_P)	240±5 °C
Peak Time (t_p)	Max 20 S
Ramp-Down Rate	3-5 °C/S

- Reflow soldering should not be done more than twice.
- In soldering process, stress on the LEDs during heating should be avoided.
- After soldering, do not warp the circuit board.

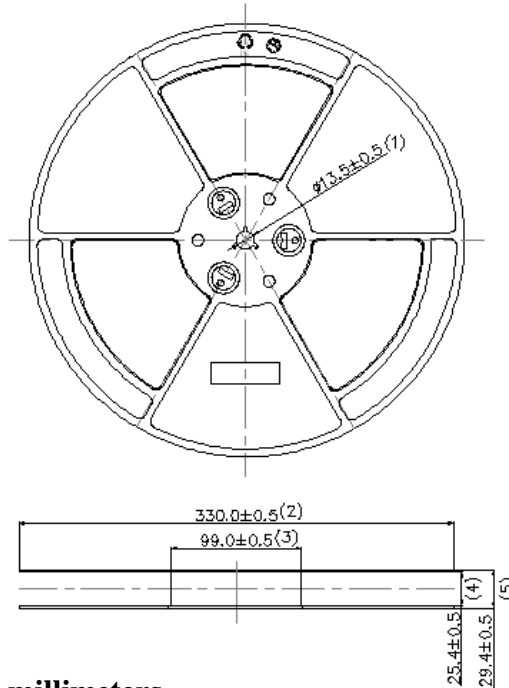
ii. For Manual Soldering Process

- For prototype builds or small series production runs it is possible to place and solder the LED by hand.
- Dispense thermal conductive glue or grease on the substrates and follow its curing specifications. Gently press LED housing to closely connect LED and substrate.
- It is recommended to hand solder the leads with a solder tip temperature of 280°C for less than 3 second, at a time with a soldering iron of less than 25W. Solder at intervals of two seconds or more.

Take caution and be aware that damaged products are often a result of improper hand soldering technique.

WS-AS2HPL-940

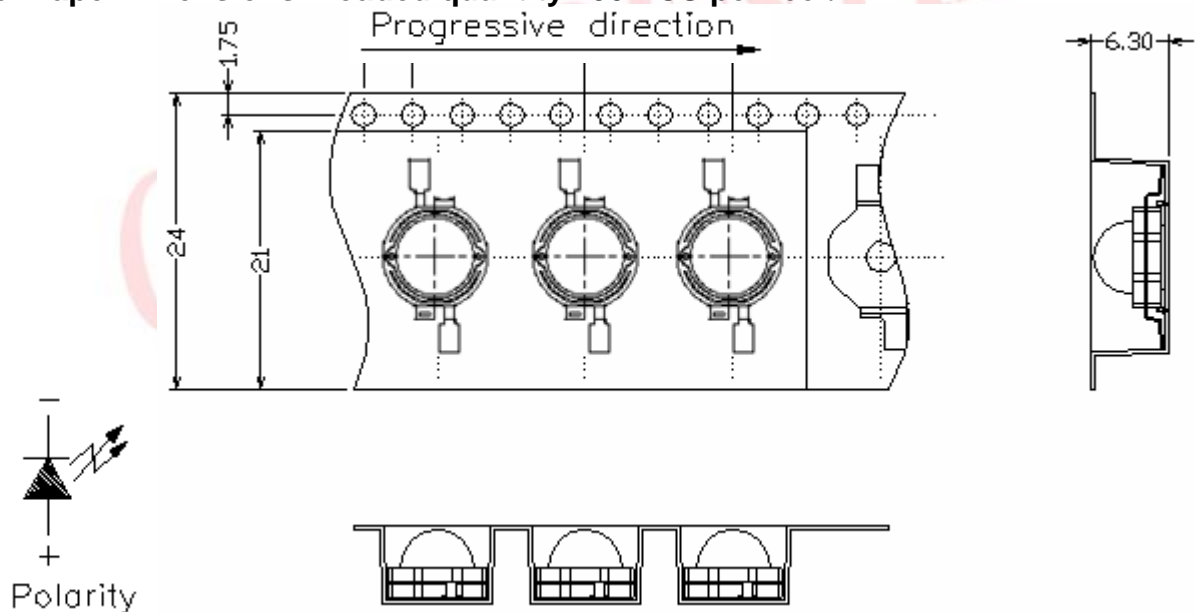
Package Dimensions



Note: 1. Dimensions are in millimeters

2. The tolerances unless mentioned is ± 0.1 mm

Carrier Tape Dimensions: Loaded quantity 250 PCS per reel.



Note: 1. Dimensions are in millimeters

2. The tolerances unless mentioned is ± 0.1 mm