

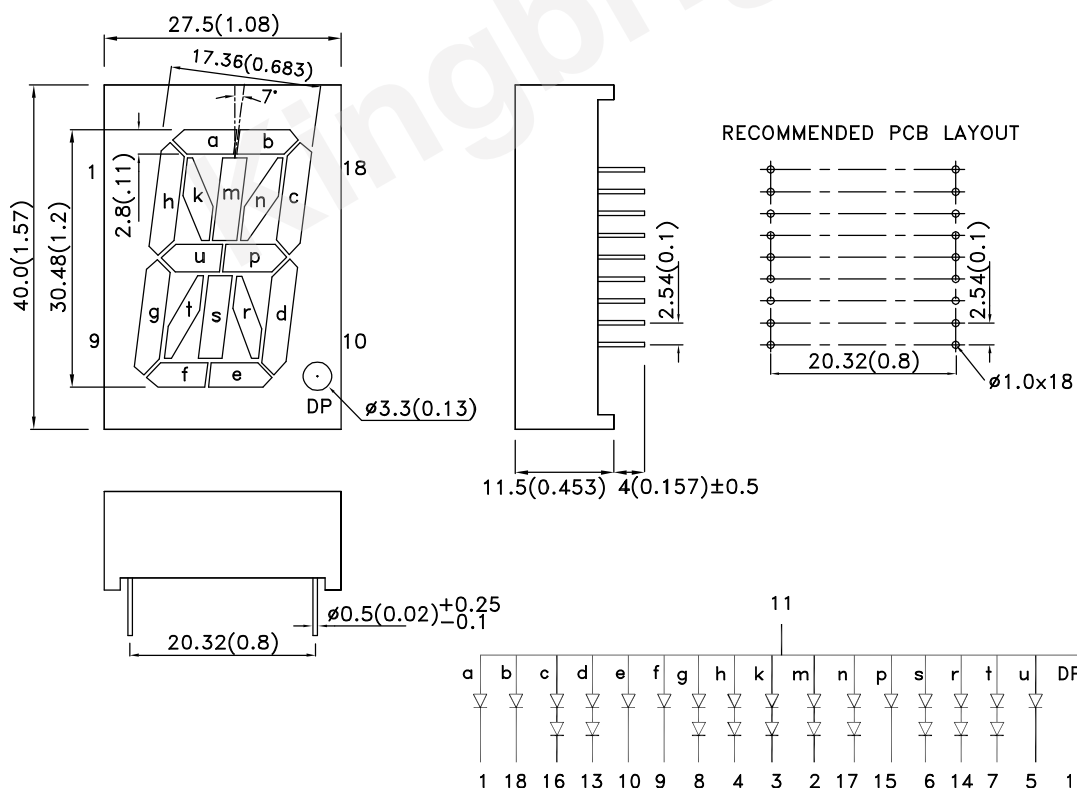
Features

- 1.2 inch character height .
- Low current operation.
- High contrast and light output.
- Easy mounting on P.C. boards or sockets.
- Categorized for luminous intensity.
- Mechanically rugged.
- Standard:gray face, white segment.
- RoHS compliant.

Description

The Hyper Red source color devices are made with Al-GaN on GaAs substrate Light Emitting Diode.

Package Dimensions& Internal Circuit Diagram



Notes:

1. All dimensions are in millimeters (inches), Tolerance is $\pm 0.25(0.01)$ unless otherwise noted.
2. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.



Selection Guide

Part No.	Emitting Color (Material)	Lens Type	Iv (ucd) [1] @ 10mA		Description
			Min.	Typ.	
PSA12-11SURKWA	Hyper Red (AlGaInP)	White Diffused	31000	63000	Common Anode, Rt. Hand Decimal.
			*9000	*22000	

Notes:

1. 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	Typ.	Max.	Units	Test Conditions
λ_{peak}	Peak Wavelength		Hyper Red	645		nm	IF=10mA
λ_D [1]	Dominant Wavelength		Hyper Red	630		nm	IF=10mA
$\Delta\lambda_{1/2}$	Spectral Line Half-width		Hyper Red	28		nm	IF=10mA
C	Capacitance		Hyper Red	35		pF	VF=0V;f=1MHz
VF [2]	Forward Voltage	c,d,g,h,k,m,n,s,r,t	Hyper Red	3.7	5.0	V	IF=10mA
		a,b,e,f,p,u and DP		1.85	2.5		
IR	Reverse Current (Per Chip)		Hyper Red		10	uA	VR=5V

Notes:

1. Wavelength: +/-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.

Absolute Maximum Ratings at TA=25°C

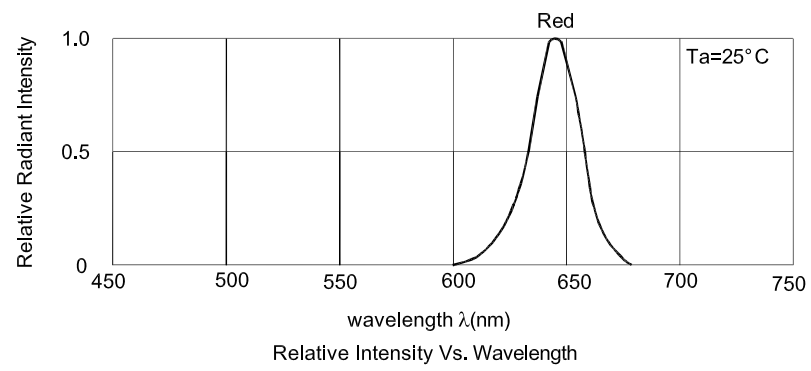
Parameter		Values	Units
Power dissipation	c,d,g,h,k,m,n,s,r,t	150	mW
	a,b,e,f,p,u and DP	75	
DC Forward Current	c,d,g,h,k,m,n,s,r,t	30	mA
	a,b,e,f,p,u and DP	30	
Peak Forward Current [1]	c,d,g,h,k,m,n,s,r,t	185	mA
	a,b,e,f,p,u and DP	185	
Reverse Voltage (Per Chip)		5	V
Operating/Storage Temperature		-40°C To +85°C	
Lead Solder Temperature [2]		260°C For 3-5 Seconds	

Notes:

1. 1/10 Duty Cycle, 0.1ms Pulse Width.

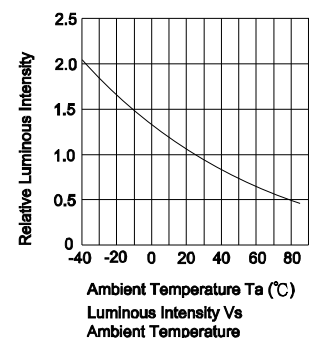
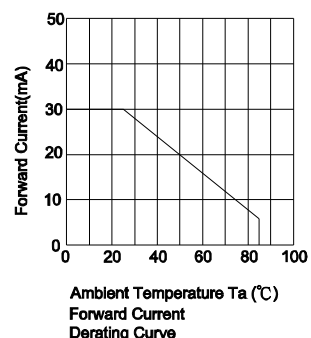
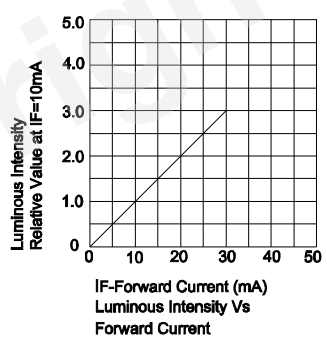
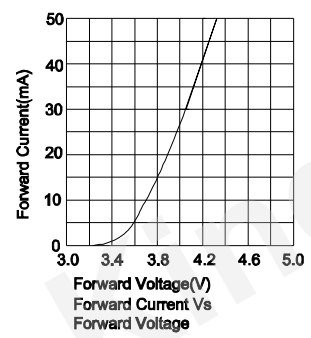
2. 2mm below package base.

3. 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.

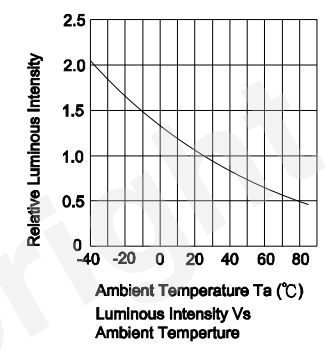
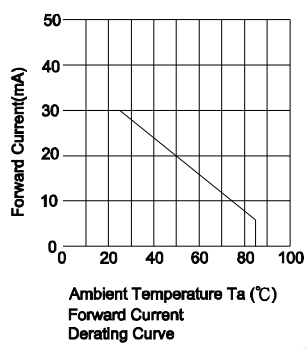
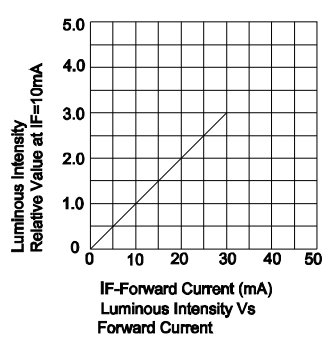
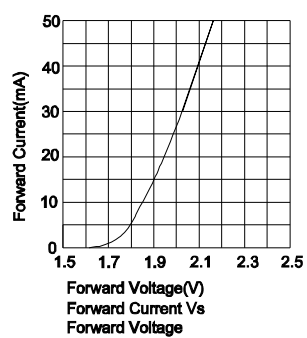


Hyper Red

PSA12-11SURKWA



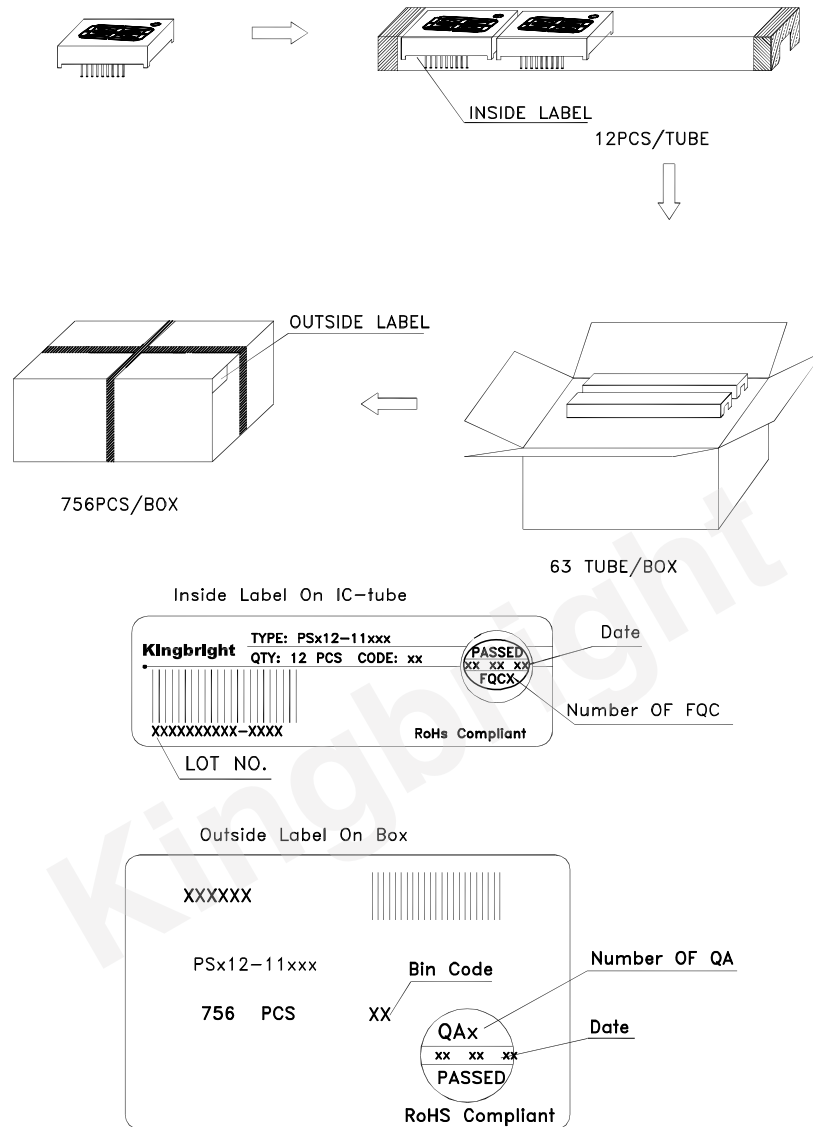
Note:the curves are on the segment c,d,g,h,k,m,n,s,r and t.



Note: the curves are on the segment a,b,e,f,p,u and DP.

PACKING & LABEL SPECIFICATIONS

PSA12-11SURKWA



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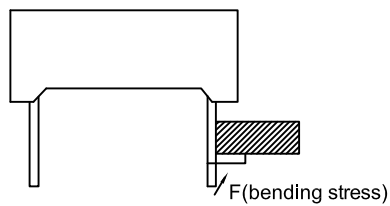
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Through Hole Display Mounting Method

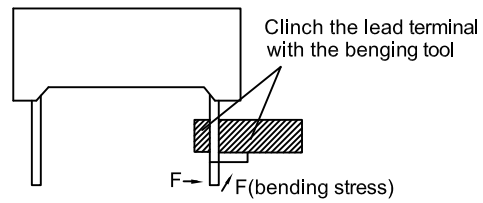
Lead Forming

Do not bend the component leads by hand without proper tools.

The leads should be bent by clinching the upper part of the lead firmly such that the bending force is not exerted on the plastic body.



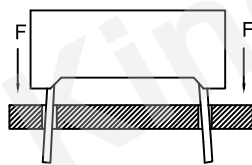
Not Recommended



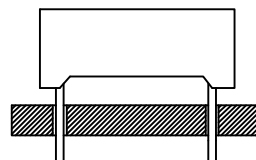
Recommended

Installation

- 1.The installation process should not apply stress to the lead terminals.
- 2.When inserting for assembly, ensure the terminal pitch matches the substrate board's hole pitch to prevent spreading or pinching the lead terminals.

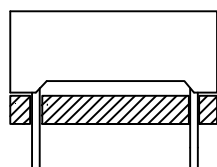


Not Recommended

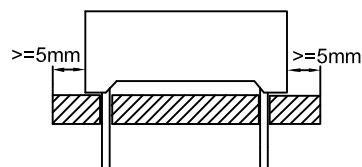


Recommended

- 3.The component shall be placed at least 5mm from edge of PCB to avoid damage caused excessive heat during wave soldering.

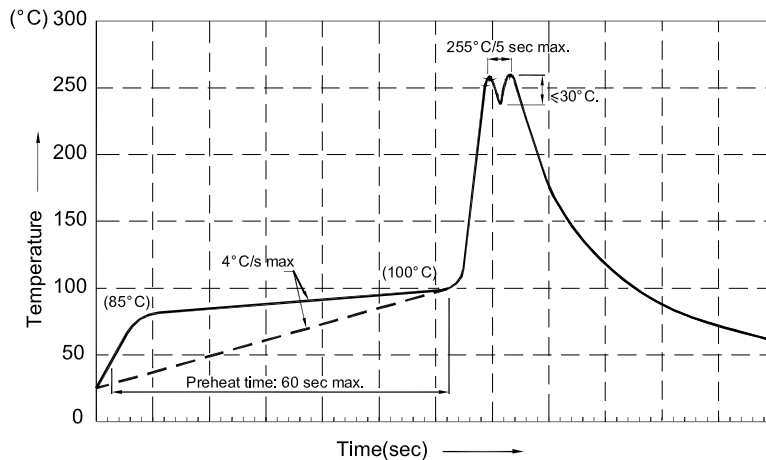


Not Recommended



Recommended

Recommended Wave Soldering Profiles:



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.
7. During wave soldering, the PCB top-surface temperature should be kept below 105°C.

Soldering General Notes:

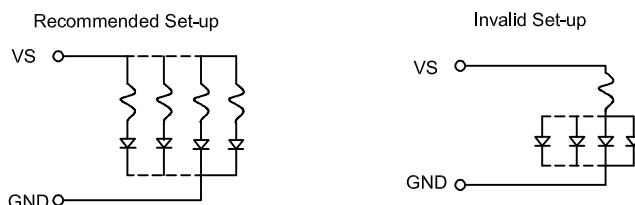
1. Through-hole displays are incompatible with reflow soldering.
2. If components will undergo multiple soldering processes, or other processes where the components may be subjected to intense heat, please check with Kingbright for compatibility.

Cleaning

1. Mild "no-clean" fluxes are recommended for use in soldering.
2. If cleaning is required, Kingbright recommends to wash components with water only. Do not use harsh organic solvents for cleaning because they may damage the plastic parts.
3. The cleaning process should take place at room temperature and the devices should not be washed for more than one minute.
4. When water is used in the cleaning process, immediately remove excess moisture from the component with forced-air drying afterwards.

Circuit Design Notes

1. Protective current-limiting resistors may be necessary to operate the LEDs within the specified range.
2. LEDs mounted in parallel should each be placed in series with its own current-limiting resistor.



3. The driving circuit should be designed to protect the LED against reverse voltages and transient voltage spikes when the circuit is powered up or shut down.
4. The safe operating current should be chosen after considering the maximum ambient temperature of the operating environment.
5. Prolonged reverse bias should be avoided, as it could cause metal migration, leading to an increase in leakage current or causing a short circuit.