Part Number: PSA12-11SURKWA Hyper Red

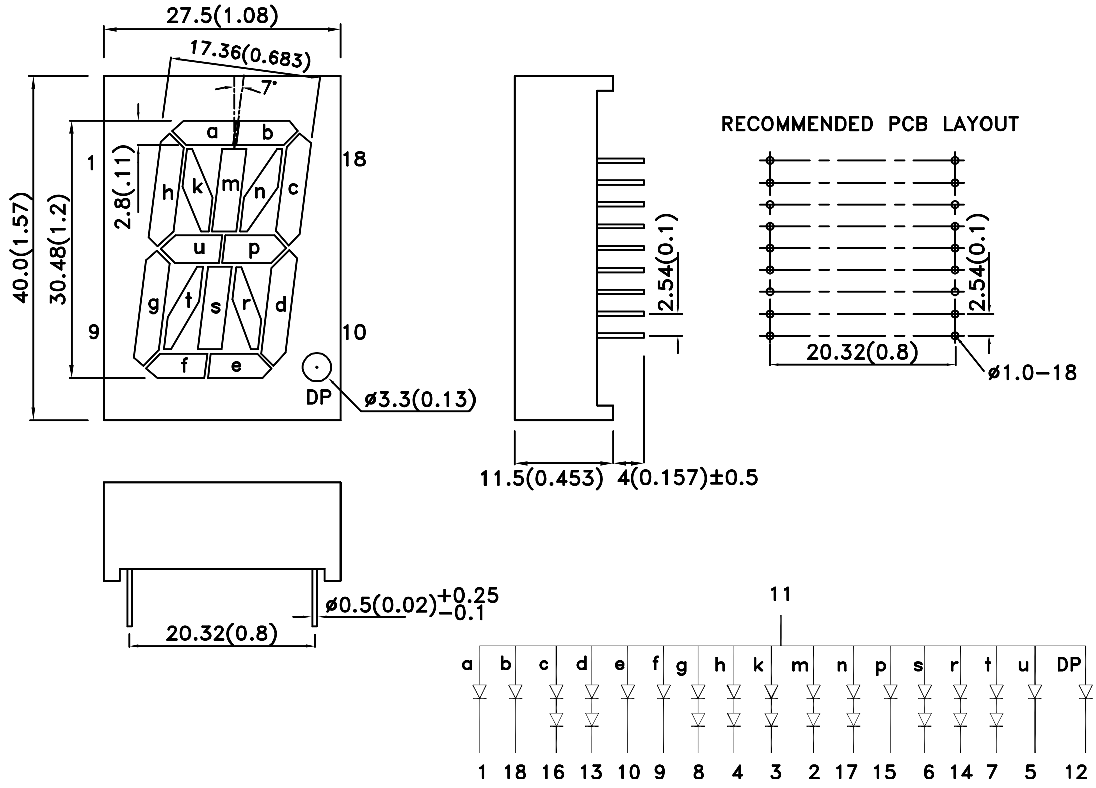
Features

- 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 AlGaInP on GaAs substrate Light Emitting Diode.

Package Dimensions& Internal Circuit Diagram



Notes:
1. All dimensions are in millimeters (inches), Tolerance is ±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.	Dice	Lens Type	Iv (ucd) [1] @ 10mA		Description
			Min.	Typ.	
PSA12-11SURKWA	Hyper Red (AlGaInP)	White Diffused	31000	63000	Common Cathode, Rt. Hand Decimal.
			*9000	*22000	

Note:
1. Luminous intensity/ luminous Flux: +/-15%.
 * Luminous intensity value is traceable to the CIE127-2007 compliant national standards.

Electrical / Optical Characteristics at TA=25°C

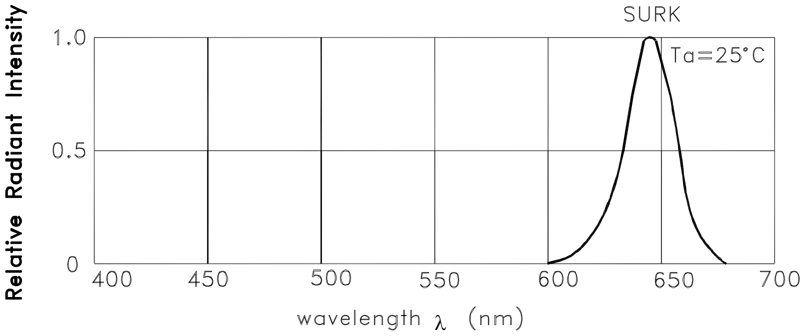
Symbol	Parameter		Device	Typ.	Max.	Units	Test Conditions
λpeak	**Peak Wavelength**		Hyper Red	645		nm	I_F=20mA
λD [1]	Dominant Wavelength		Hyper Red	630		nm	I_F=20mA
Δλ1/2	Spectral Line Half-width		Hyper Red	28		nm	I_F=20mA
C	Capacitance		Hyper Red	35		pF	V_F=0V;f=1MHz
V_F [2]	Forward Voltage	c,d,g,h,k,m,n,s,r,t	Hyper Red	3.9	5.0	V	I_F=20mA
		a,b,e,f,p,u and DP		1.95	2.5		
I_R	Reverse Current (Per Chip)	c,d,g,h,k,m,n,s,r,t	Hyper Red		10	uA	V_R=5V
		a,b,e,f,p,u and DP			10		

Notes:
1.Wavelength: +/-1nm.
2. Forward Voltage: +/-0.1V.
3. Wavelength value is traceable to the CIE127-2007 compliant national standards.

Absolute Maximum Ratings at TA=25°C

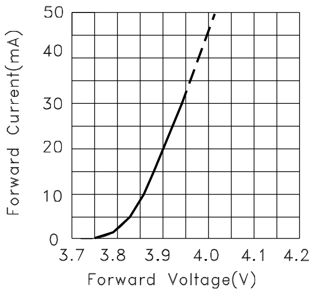
Parameter		Super Bright Red	Units
Power dissipation	c,d,g,h,k,m,n,s,r,t	150 (75)	mW
	a,b,e,f,p,u and DP		
DC Forward Current	c,d,g,h,k,m,n,s,r,t	30 (30)	mA
	a,b,e,f,p,u and DP		
Peak Forward Current [1]	c,d,g,h,k,m,n,s,r,t	185 (185)	mA
	a,b,e,f,p,u and DP		
Reverse Voltage (Per Chip)	c,d,g,h,k,m,n,s,r,t	5	V
	a,b,e,f,p,u and DP		
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.

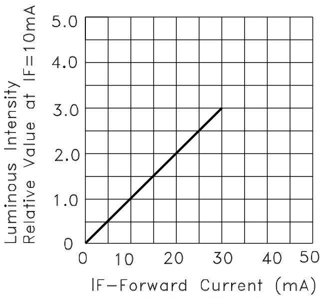


RELATIVE INTENSITY Vs. WAVELENGTH

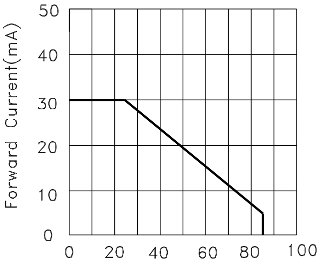
Hyper Red **PSA12-11SURKWA**



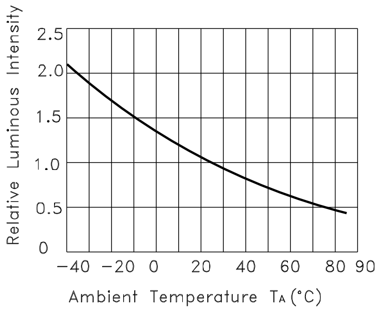
FORWARD CURRENT Vs
FORWARD VOLTAGE



LUMINOUS INTENSITY Vs.
FORWARD CURRENT

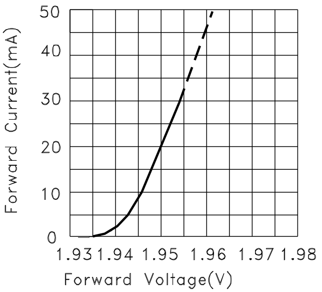


FORWARD CURRENT
DERATING CURVE

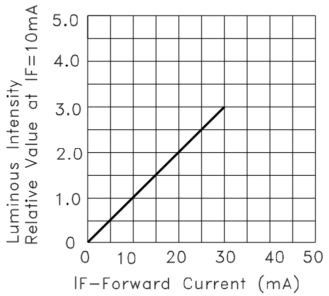


LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

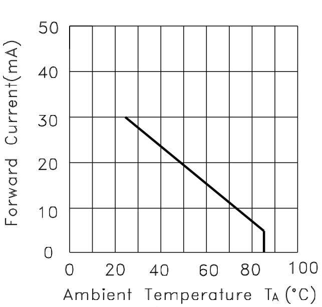
Note:the curves are on the segment c,d,g,h,k,m,n,s,r and t.



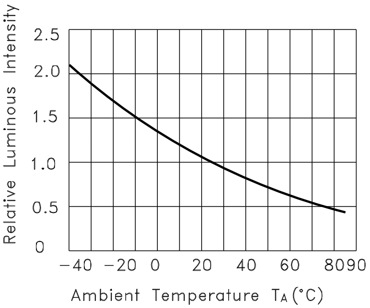
FORWARD CURRENT Vs
FORWARD VOLTAGE



LUMINOUS INTENSITY Vs.
FORWARD CURRENT



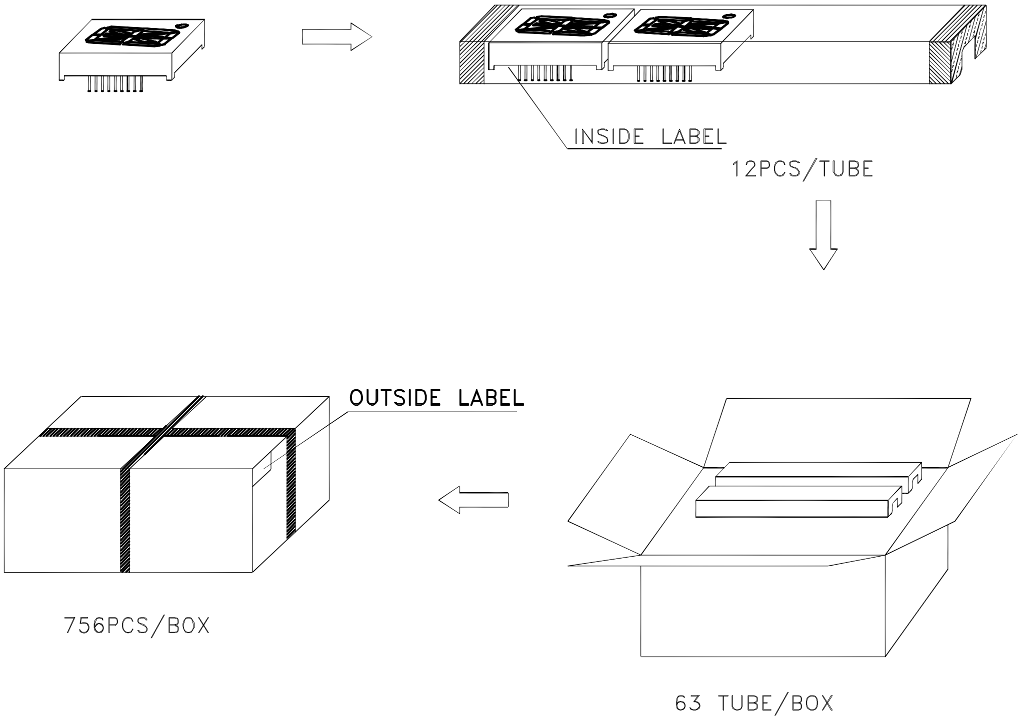
FORWARD CURRENT
DERATING CURVE



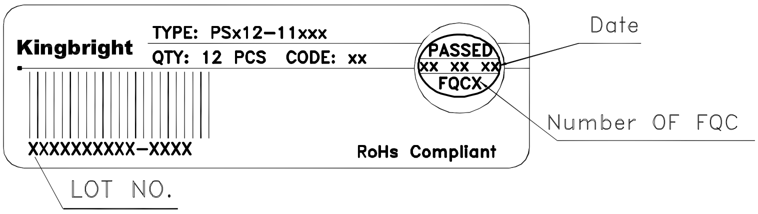
LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

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

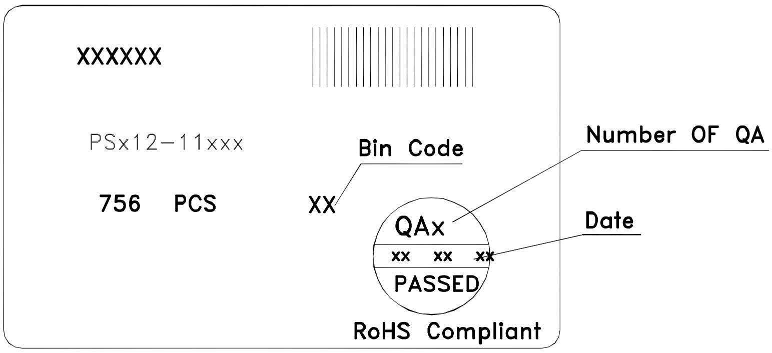
PACKING & LABEL SPECIFICATIONS PSA12-11SURKWA



Inside Label On IC-tube



Outside Label On Box

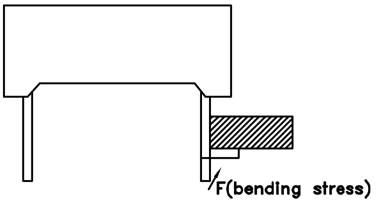


THROUGH HOLE DISPLAY MOUNTING METHOD

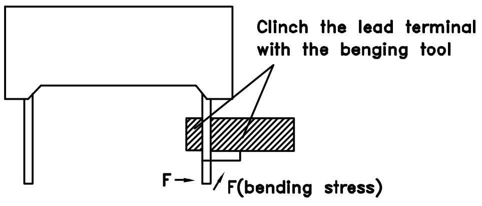
Lead Forming

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

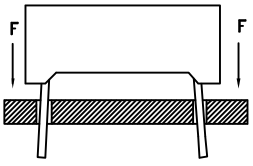


Recommended

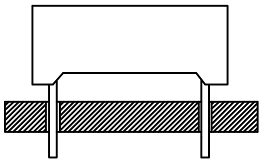
Installation

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.

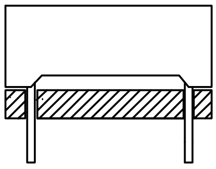


Not Recommended

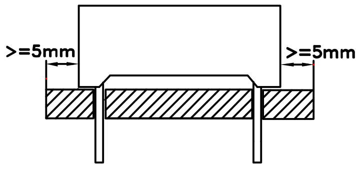


Recommended

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



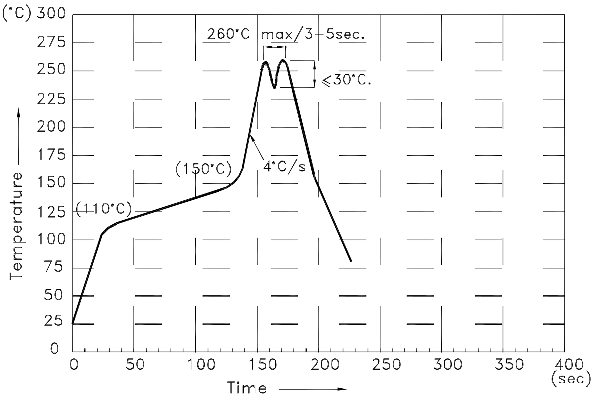
Not Recommended



Recommended

DISPLAY SOLDERING CONDITIONS

Wave Soldering Profile For Lead-free Through-hole LED.



NOTES:

1. Recommend the wave temperature 245°C~260°C.The maximum soldering temperature should be less than 260°C.
2. Do not apply stress on epoxy resins when temperature is over 85°C.
3. The soldering profile apply to the lead free soldering (Sn/Cu/Ag alloy).
4. During wave soldering , the PCB top-surface temperature should be kept below 105°C
5. No more than once.

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.

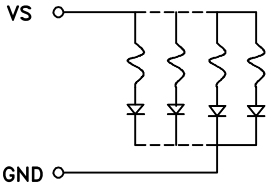
CLEANING

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 .And the devices should not be washed for more than one minute.

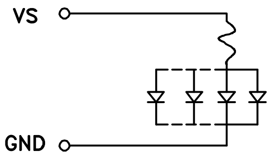
CIRCUIT DESIGN NOTES

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

Recommended Set-up



invalid Set-up



Detailed application notes are listed on our website.
http://www.kingbright.com/application_notes