Kingbright

KPTD-2012SURCK
2.0 x 1.25 mm SMD Chip LED Lamp

DESCRIPTIONS

- The Hyper Red 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

- 2.0 mm x 1.25 mm SMD LED, 1.05 mm thickness
- Low power consumption
- Ideal for backlight and indicator
- Package: 3000 pcs / reel
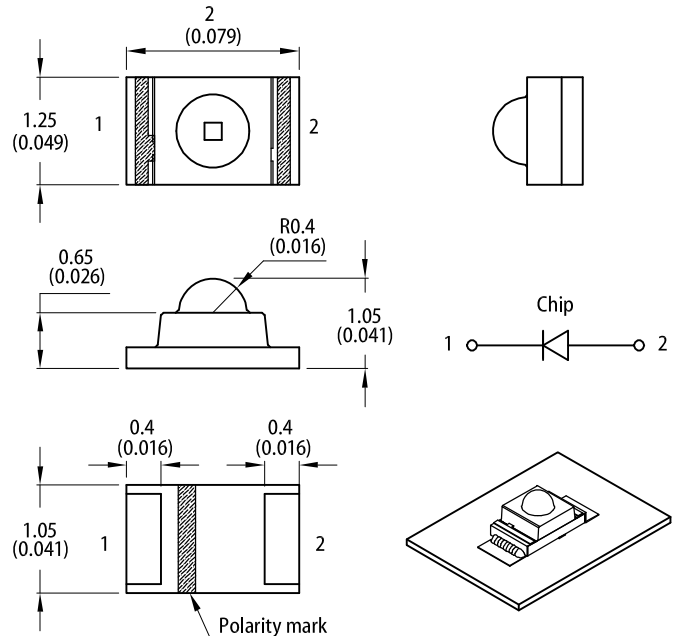- Moisture sensitivity level: 3
- RoHS compliant

APPLICATIONS

- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

ATTENTION

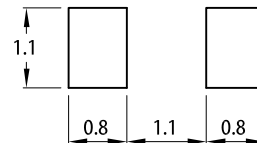Observe precautions for handling electrostatic discharge sensitive devices

PACKAGE DIMENSIONS

RECOMMENDED SOLDERING PATTERN
(units : mm; tolerance : ± 0.1)

Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.15(0.006") unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.

SELECTION GUIDE

Part Number	Emitting Color (Material)	Lens Type	Iv (mcd) @ 20mA [2]		Viewing Angle [1]
			Min.	**Typ.**	**2θ1/2**
KPTD-2012SURCK	■ Hyper Red (AlGaInP)	Water Clear	900	1650	40°
			*300	*550	

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_A=25°C

Parameter	Symbol	Emitting Color	Value Typ.	Max.	Unit
Wavelength at Peak Emission I_F = 20mA	λ_{peak}	Hyper Red	645	-	nm
Dominant Wavelength I_F = 20mA	λ_{dom} [1]	Hyper Red	630	-	nm
Spectral Bandwidth at 50% Φ REL MAX I_F = 20mA	$\Delta\lambda$	Hyper Red	28	-	nm
Capacitance	C	Hyper Red	35	-	pF
Forward Voltage I_F = 20mA	V_F [2]	Hyper Red	1.95	2.5	V
Reverse Current (V_R = 5V)	I_R	Hyper Red	-	10	uA
Temperature Coefficient of λ_{peak} I_F = 20mA, -10°C ≤ T ≤ 85°C	$TC_{\lambda peak}$	Hyper Red	0.13	-	nm/°C
Temperature Coefficient of λ_{dom} I_F = 20mA, -10°C ≤ T ≤ 85°C	$TC_{\lambda dom}$	Hyper Red	0.05	-	nm/°C
Temperature Coefficient of V_F I_F = 20mA, -10°C ≤ T ≤ 85°C	TC_V	Hyper Red	-1.9	-	mV/°C

Notes:
1. The dominant wavelength (λd) above is the setup value of the sorting machine. (Tolerance λd : ±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 T_A=25°C

| Parameter	Symbol	Value	Unit
Power Dissipation	P_D	75	mW
Reverse Voltage	V_R	5	V
Junction Temperature	T_j	115	°C
Operating Temperature	T_{op}	-40 to +85	°C
Storage Temperature	T_{stg}	-40 to +85	°C
DC Forward Current	I_F	30	mA
Peak Forward Current	I_{FM} [1]	185	mA
Electrostatic Discharge Threshold (HBM)	–	3000	V
Thermal Resistance (Junction / Ambient)	$R_{th\ JA}$ [2]	570	°C/W
Thermal Resistance (Junction / Solder point)	$R_{th\ JS}$ [2]	460	°C/W

Notes:
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. $R_{th\ JA}$,$R_{th\ JS}$ Results from mounting on PC board FR4 (pad size ≥ 16 mm² per pad).
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.

Kingbright

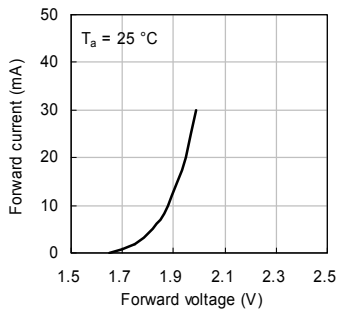## TECHNICAL DATA

RELATIVE INTENSITY vs. WAVELENGTH

Hyper Red

T_a = 25 °C

Relative Intensity (a. u.)

Wavelength (nm)
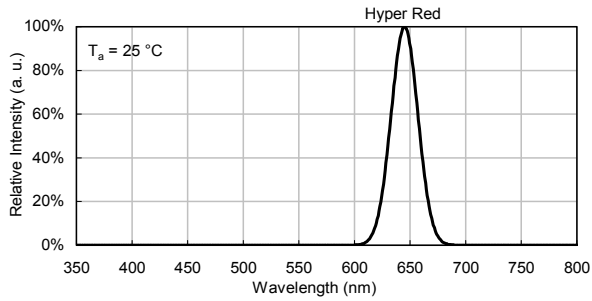
SPATIAL DISTRIBUTION

T_a = 25 °C
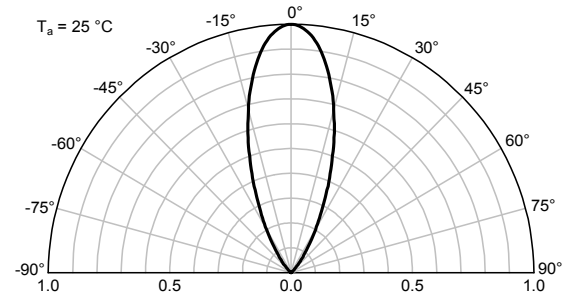
HYPER RED
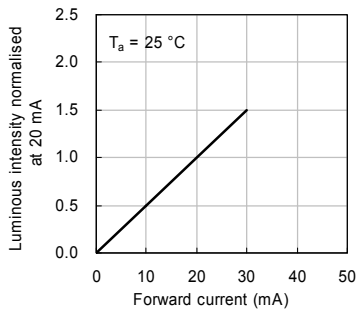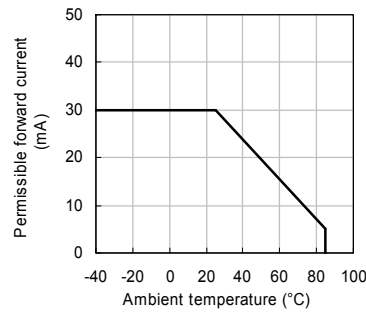
Forward Current vs. Forward Voltage

T_a = 25 °C

Forward current (mA)

Forward voltage (V)

Luminous Intensity vs. Forward Current

T_a = 25 °C

Luminous intensity normalised at 20 mA

Forward current (mA)

Forward Current Derating Curve

Permissible forward current (mA)

Ambient temperature (°C)

Luminous Intensity vs. Ambient Temperature

Luminous intensity normalised at T_a = 25 °C

Ambient temperature (°C)
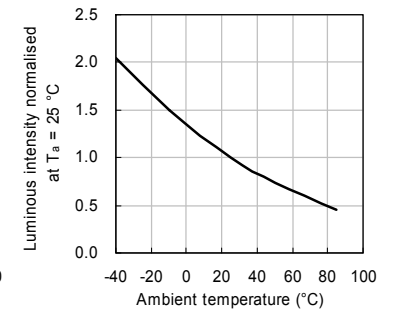
REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS

above 255°C
30s max.

260°C max.
10s max.

3°C/s max.

6°C/s max.

pre-heating
150~200°C
60~120s

above 217°C
60~150s

25°C

Temperature (°C)

Time (sec)

TAPE SPECIFICATIONS (units : mm)

TAPE

4±0.1

2±0.1

4±0.1

φ1.5±0.1

1.75±0.1

8±0.2

3.5±0.1

A   A

1.43±0.1

φ 1.0 Typ

1.25±0.1

0.23±0.1

2.2±0.1

1

2

A-A Section

REEL DIMENSION (units : mm)

18±0.2

R6.5±0.1
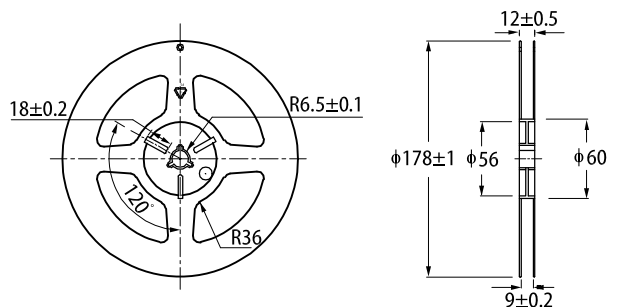
120°

R36

12±0.5

φ178±1   φ56   φ60

9±0.2
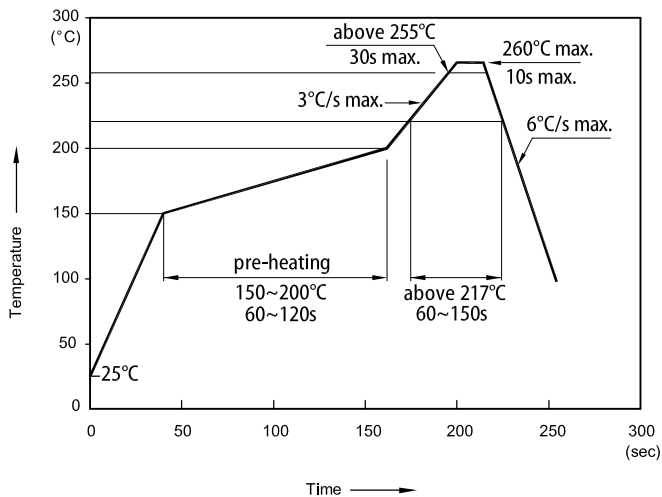
Notes:
1. Don't cause stress to the LEDs while it is exposed to high temperature.
2. The maximum number of reflow soldering passes is 2 times.
3. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product.
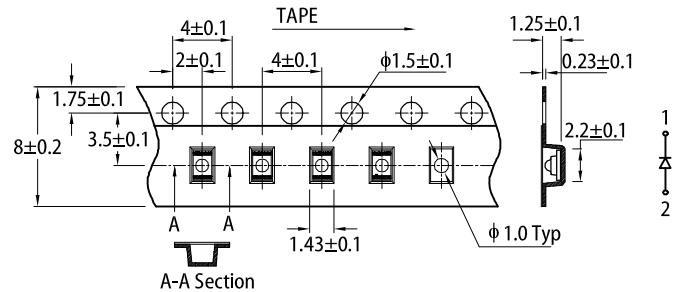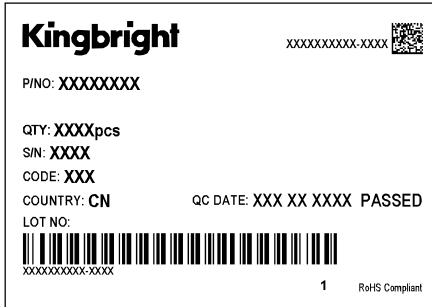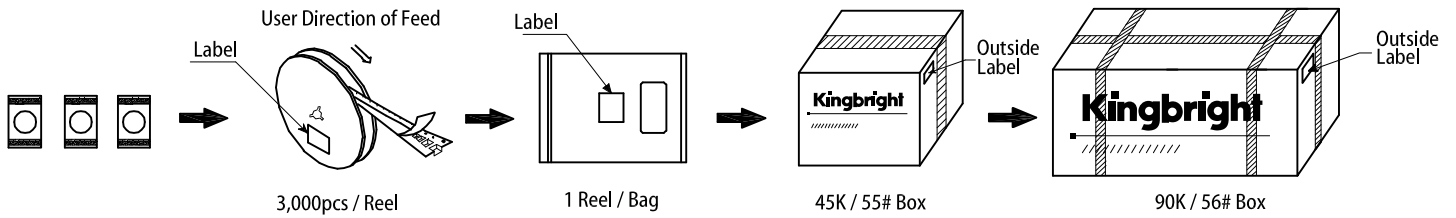
PACKING & LABEL SPECIFICATIONS

User Direction of Feed

Label

Label

3,000pcs / Reel

1 Reel / Bag

Outside Label

45K / 55# Box

Outside Label

90K / 56# Box

Kingbright

XXXXXXXXXX-XXXX

P/NO: **XXXXXXXX**

QTY: **XXXX**pcs
S/N: **XXXX**
CODE: **XXX**
COUNTRY: **CN**   QC DATE: **XXX XX XXXX PASSED**
LOT NO:

XXXXXXXXXX-XXXX

1   RoHS Compliant

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.
4. The information in this document applies to typical usage in consumer electronics applications. If customer's application has special reliability requirements or have life-threatening liabilities, such as automotive or medical usage, please consult with Kingbright representative for further assistance.
5. The contents and information of this document may not be reproduced or re-transmitted without permission by Kingbright.
6. All design applications should refer to Kingbright application notes available at http://www.Kingbright.com/ApplicationNotes