JCS Hi-Technology Corp.
No. 83, Sec 3, Pei-Shen Road., Shen-Keng Hsien 222, Taipei County , Taiwan (R.O.C.)
Tel: 886-2-2662-7843 Fax: 886-2-8662-6799 www.jcs.com.tw

Product SMD Side View Type LED

Part Number JCS-SSR335A

Customer Name		
Customer Model No		
Specification		
Customer Approval Specification Signature		
APPROVED BY	**CHECKED BY**	**PREPARED BY**

Electrical/Optical Specification Ta = 25°C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward voltage	Vf	If = 20 mA		2	2.5	V
Reverse current	Ir	Vr = 5V	0	-	5	μA
Luminous intensity	Iv	If = 20 mA		100		mcd
Dominant Wavelength	λd	If = 20 mA	620	625	630	nm
View Angle	2θ 1/2	If = 20 mA	-	110	-	degree

Absolute Maximum Ratings Ta = 25°C

Item	Symbol	Maximum Rating	Unit
Forward current	If	30	mA
Pulse forward current*	Ifp	100	mA
Reverse voltage	Vr	5	V
Power dissipation	Pd	60	mW
Operation temperature	Top	- 30 ~ + 85	°C
Storage temperature	Tstg	- 40 ~ + 100	°C
Soldering temperature	Tsld	Reflow Soldering: 260 °C / 10 sec Hand Soldering: 350 °C / 3 sec	

* Duty Cycle ≤ 1/10; Pulse Width ≤ 10 msec.

Rank Table

- Forward Voltage Ranks

Forward Voltage measured at If = 20 mA. (unit:V)

Vf Code	Min.	Max.
T80	1.70	1.80
T90	1.80	1.90
U00	1.90	2.00
U10	2.00	2.10
U20	2.10	2.20
U30	2.20	2.30
U40	2.30	2.40

* Forward Voltage Measurement Tolerance is ± 0.05 Volt.

- Luminous Intensity Ranks

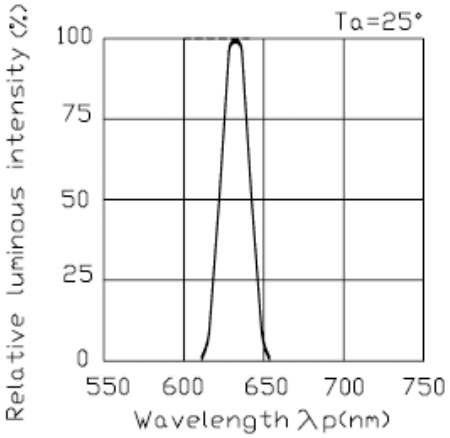
Luminous intensity measured at If = 20 mA, Ta = 25°C.(unit:mcd)

010	100	150
015	150	200
020	200	250
025	250	300
030	300	350
035	350	400

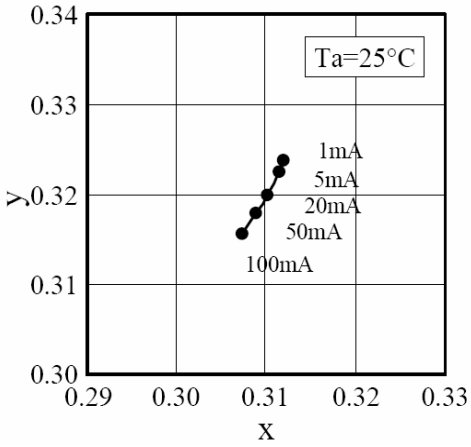
* Luminous Intensity Measurement Tolerance is ± 10%

Optical/Electrical Characterization

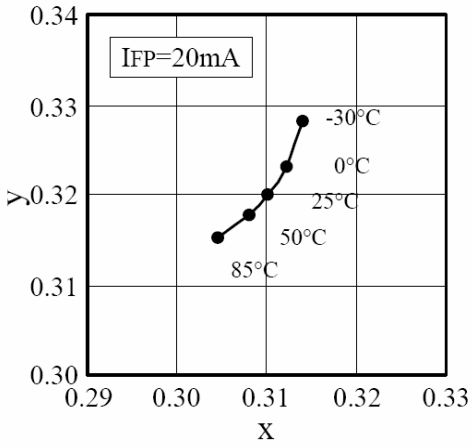
Spectrum



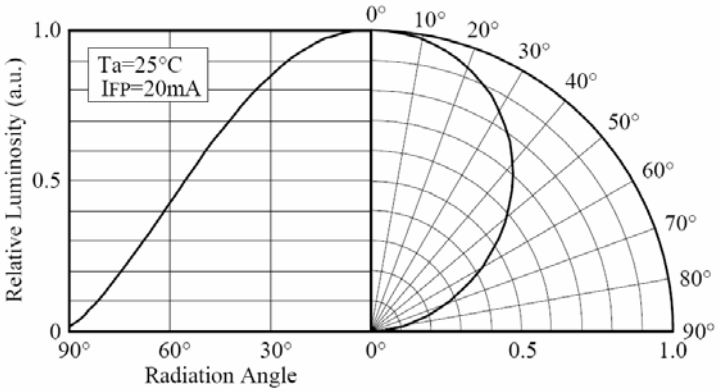
Forward Current vs. Chromaticity Coordinate



Ambient Temperature vs. Chromaticity Coordinate

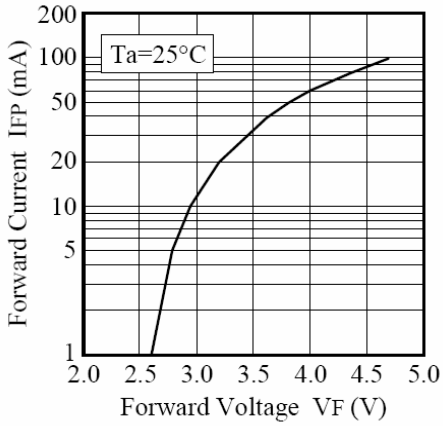


Directivity

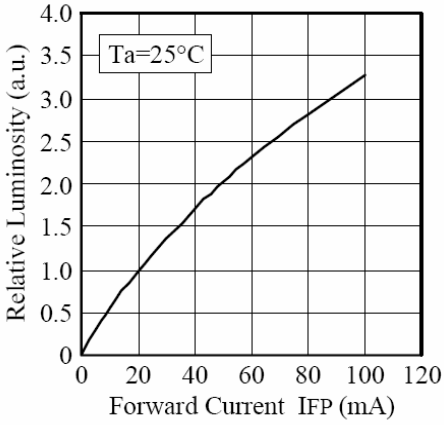


Optical/Electrical Characterization

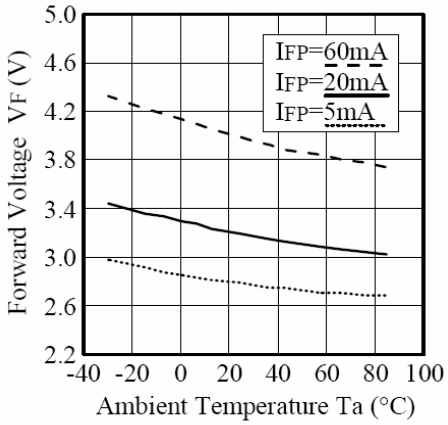
■ Forward Voltage vs. Forward Current



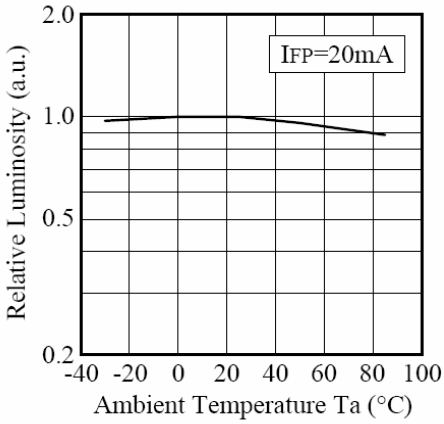
■ Forward Current vs. Relative Luminosity



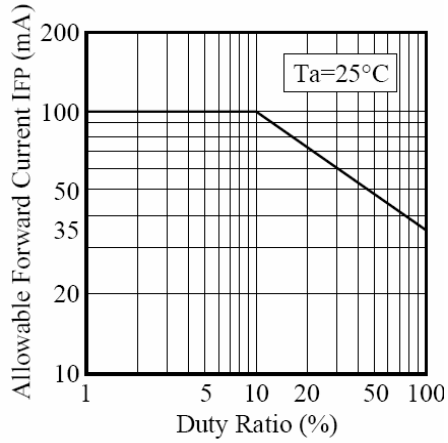
■ Ambient Temperature vs. Forward Voltage



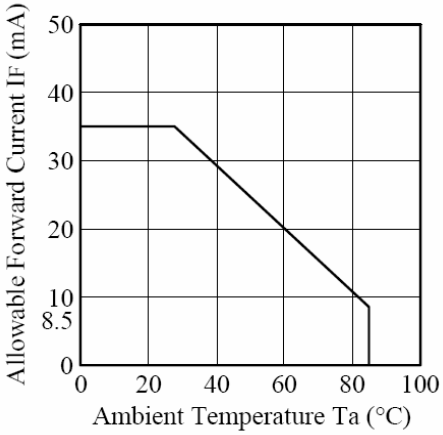
■ Ambient Temperature vs. Relative Luminosity



■ Duty Ratio vs. Allowable Forward Current

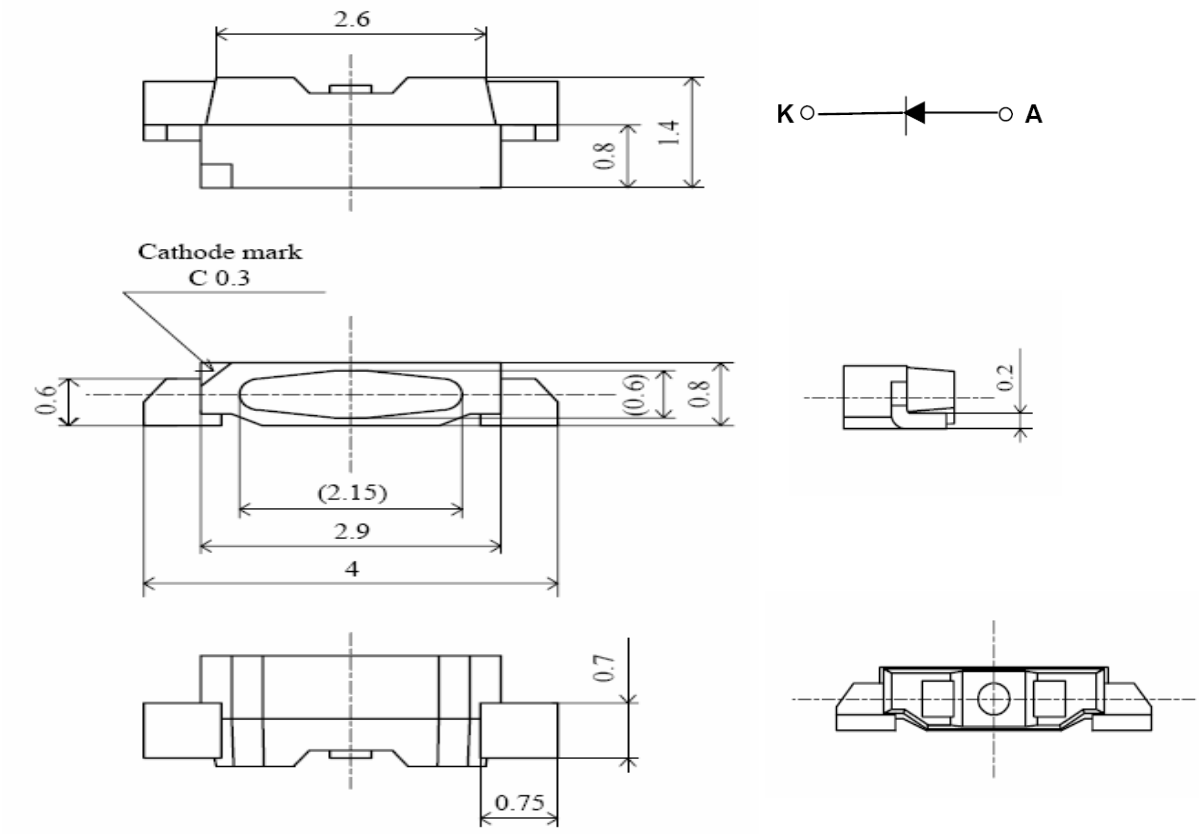


■ Ambient Temperature vs. Allowable Forward Current



Outline Dimensions and Materials

Item	Materials
Package	Heat-resistant polymer
Encapsulating Resin	Silicone Resin (with Phosphor)
Electrodes	Ag plating Copper Alloy



Note: 1.All dimension are in millimeters
2.Tolerances unspecified are ±0.1mm

Reliability

Test Items	Test Standard	Test Conditions	Failure Rate
Resistance to Soldering Heat (Reflow Soldering)	JEITA ED-4701 300 301	Tsld=260°C, 10 sec, 2 times (Pre-treatment 30°C, 70%, 168 hrs)	0/50
Solderability (Reflow Soldering)	JEITA ED-4701 300 303	Tsld=215±5°C, 3 sec, 1 time (Lead Solder)	0/50
Thermal Shock	JEITA ED-4701 300 307	0°C ~ 100°C, 20 cycles 15 sec. 15 sec.	0/50
Temperature Cycle	JEITA ED-4701 100 105	-40°C ~ 25°C ~ 100°C ~ 25°C, 100 cycles 30min. 5min. 30min. 5min.	0/50
Moisture Resistance Cycle	JEITA ED-4701 200 203	25°C ~ 65°C ~ -10°C, 10 cycles 90%RH, 24 hrs./cycle	0/50
High Temperature Storage	JEITA ED-4701 200 201	Ta = 100°C 1000 hrs.	0/50
Temperature Humidity Storage	JEITA ED-4701 100 103	Ta = 60°C, RH = 90% 1000 hrs.	0/50
Low Temperature Storage	JEITA ED-4701 200 202	Ta = -40°C 1000 hrs.	0/50
Steady State Operation Life		Ta = 25°C, If = 20 mA 1000 hrs.	0/50
Steady State Operation Life - Condition II		Ta = 25°C, If = 30 mA 1000 hrs.	0/50
Steady State Operation Life of High Temperature		Ta = 85°C, If = 5 mA 1000 hrs.	0/50
Steady State Operation Life of High Humidity Heat		Ta = 60°C, RH = 90%, If = 20 mA 500 hrs.	0/50
Steady State Operation Life of Low Temperature		Ta = -30°C, If = 20 mA 1000 hrs.	0/50
Vibration	JEITA ED-4701 400 403	100 ~ 2000 ~ 100 Hz Sweep, 4 min. 200 m/sec^2, 3 direction, 4 cycles, 48 min.	0/50

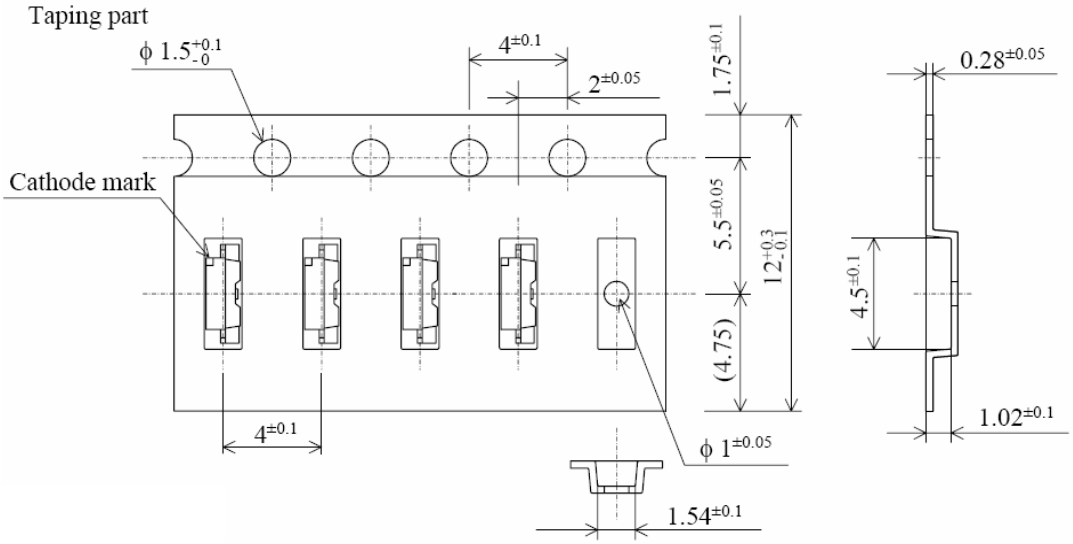
Failure criteria

Items	Conditions	Failure Criteria
Forward voltage	@ If = 20 mA, Ta =25°C	> 1.1 x USL
Reverse current	@Vr = 5V, Ta = 25°C	> 2.0 x USL
Luminous intensity	@ If = 20 mA, Ta =25°C	< 0.7 x LSL

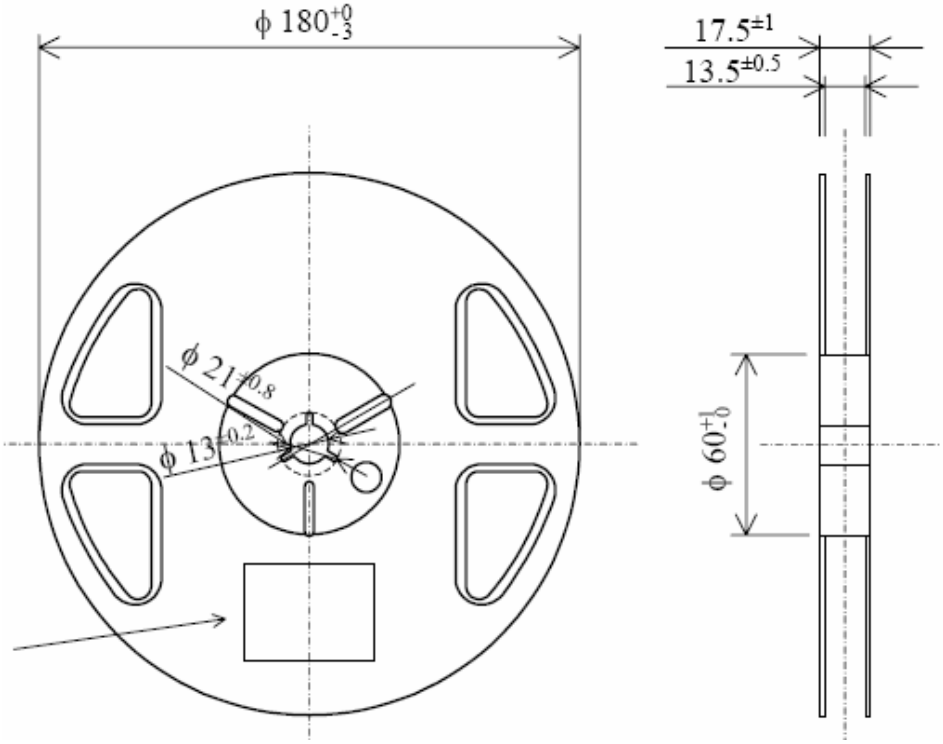
Lumileds defined failure criteria as single 50% or average 35% degradation.

Packing Information

- Embossed Tape Dimension



- Reel Dimension

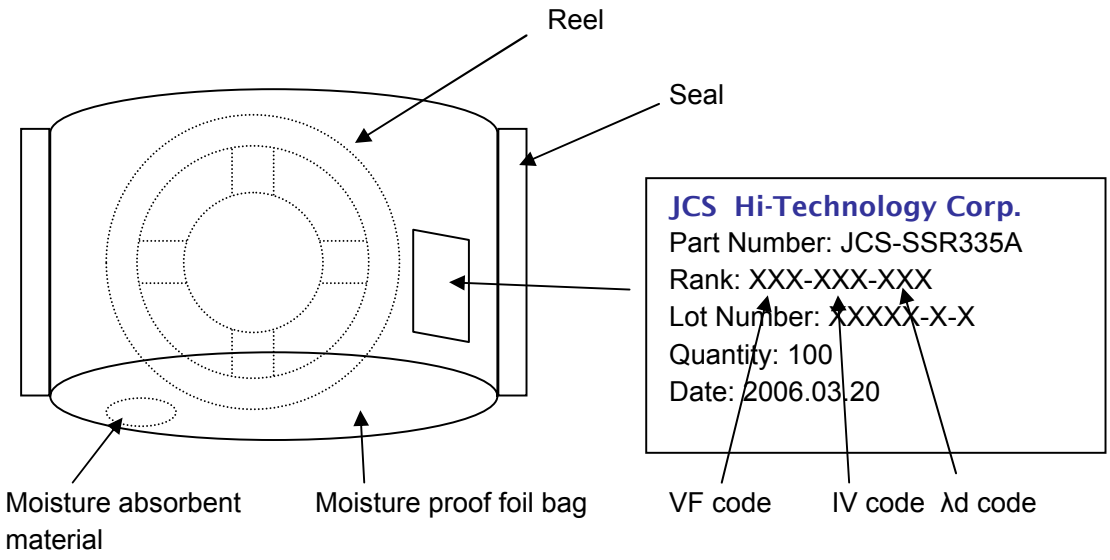


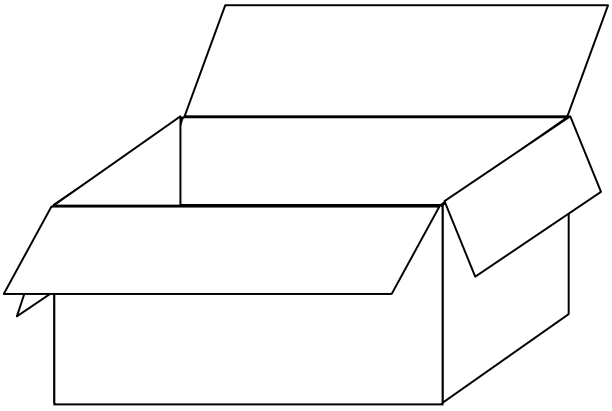
Notes:

1. Dimensions are in millimeters (inches).
2. Dimensions conform to JIS-C-0806 and EIA-481.
3. The maximum packing sizes are 3500 pieces per reel.

- Moisture Proof Bag

Label on the moisture proof bag consists the following information.





- Packing unit

Package	Dimensions (mm)	No. of Reel/Unit	Quantity (pcs)
Moisture proof foil bag		1 reel/bag	3500 Max.
Cardboard box S	240 x 280 x 90 x 4t	5 reels/box Max.	17500 Max.
Cardboard box M	240 x 280 x 180 x 4t	20 reels/box Max.	70000 Max.
Cardboard box L	240 x 280 x 360 x 4t	30 reels/box Max.	105000 Max.

Notes:

1. To avoid possible damages, it is recommended that same packing arrangement should be used for future transportation.

Cautions

The lifetime and performance of the LEDs are sensitive to environment and operating conditions. Cautions should be taken after due consideration when using LEDs.

(1) Moisture Proof Package

SMD type LED devices is sensitive to moisture uptake. Changes of optical characteristics or contact exfoliation may be resulted from moisture uptake. Moisture proof packages are used for product delivery. It is recommended that the original moisture proof bag or similar arrangement should be used for storage after the opening of sealed packages.

(2) Storage

- Storage Conditions

  Prior to opening of the package :

  The LEDs should be stored in an environment with temperature less than 30°C and 90% RH or less. The shelf lifetime of unopened LEDs is one year.

  After opening of the package:

  The storage environment should be kept at 30°C or less and 70%RH or less. The LEDs should be soldered within 168 hours (7days) after opening the package. It is recommended to store those unused LEDs in the original moisture proof bag with moisture absorbent material.

- JCS LED electrode and lead frame are comprised of a silver plated copper alloy. Please avoid conditions which may cause the LED to corrode, tarnish or discolor. This corrosion or discoloration might lower solderability or might affect on optical characteristics.
- Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condensation can occur.

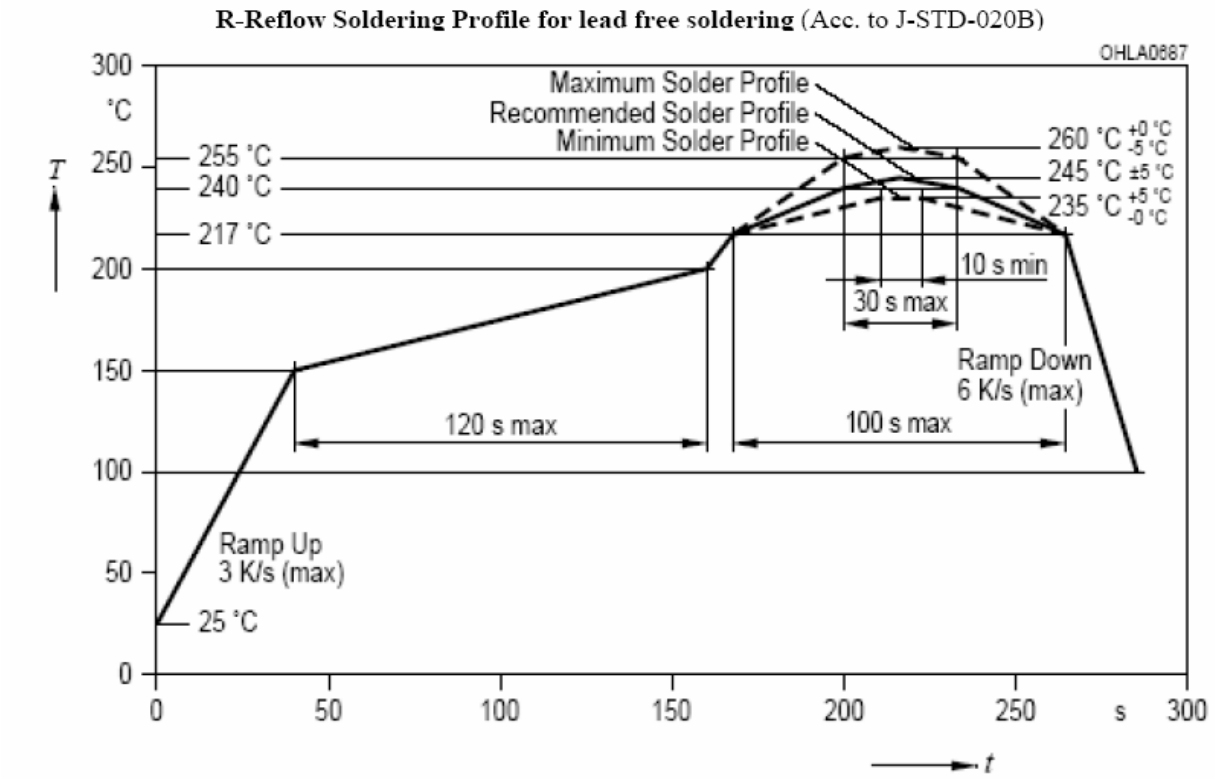
(3) Heat Generation

- The optical characteristics of LEDs are very sensitive to temperature. Therefore, thermal design of the end product is of paramount importance. It is necessary to avoid intense heat generation and operate within the maximum ratings given in this specification.

Cautions

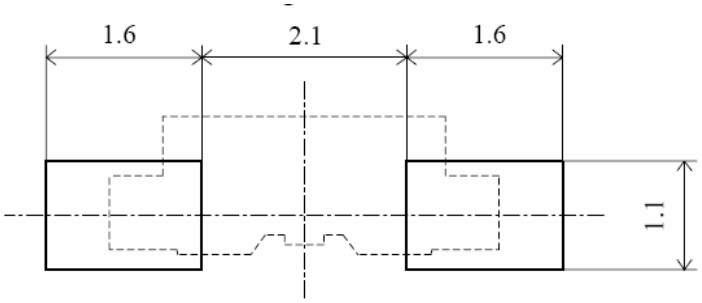
(4) Soldering Conditions

Recommend reflow conditions for lead free soldering



*Recommend soldering pad design, recommend soldering thickness is >0.12mm.

Recommend soldering pad design



Cautions

(5) Cleaning

It is recommended to clean the LEDs using Isopropyl alcohol. When using other solvents, it should be confirmed beforehand whether the solvents will dissolve the package and the resin or not. Freon solvents should not be used to clean the LEDs because of worldwide regulations. Never clean the LEDs with the ultrasonic machines.

(6) Static Electricity

- Static electricity or surge voltage will damage the LEDs.
  It is recommended that a wrist band or an anti-electrostatic glove be used when handling the LEDs.
- All devices, equipment and machinery must be properly grounded.
  It is recommended that measures be taken against surge voltage to the equipment that mounts the LEDs.
- When inspecting the final products in which LEDs were assembled, it is recommended to check whether the assembled LEDs are damaged by static electricity or not. It is easy to find static damaged LEDs by a light-on test or a VF test at a lower current (below 1mA is recommended).
- Damaged LEDs will show some unusual characteristics such as the leak current remarkably increases, the forward voltage becomes lower, or the LEDs do not light at the low current.
  Criteria: (Vf > 2.0V at If=0.5mA)

(7) Others

- Care must be taken to ensure that the reverse voltage will not exceed the absolute maximum rating when using the LEDs with matrix drive.
- The LED light output is strong enough to injure human eyes. Precautions must be taken to prevent looking directly at the LEDs with unaided eyes for more than a few seconds.
- Flashing lights have been known to cause discomfort in people: you can prevent this by taking precautions during use. Also. people should be cautious when using equipment that has had LEDs incorporated into it.
- The LEDs described in this brochure are intended to be used for ordinary electronic equipment. LED devices used in applications in which exceptional quality and reliability are required, particularly when the failure or malfunction of the LEDs may directly jeopardize life or health, must be expressly authorized.
- The formal specifications must be exchanged and signed by both parties before large volume purchase begins.
- Due to the special conditions of the manufacturing processes of LED, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typical data will be changed without any further notice.