Data Sheets of AVA technology
Chip Type White LED

Model : T2520

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Thin Top View with Reflector



1. FEATURES

- High intensity with small package, ideal for backlighting
- Wide viewing angle (120°)
- Suitable for all SMT assembly methods
- Suitable for all soldering methods
- Delivery on 8mm tape reels

2. APPLICATIONS

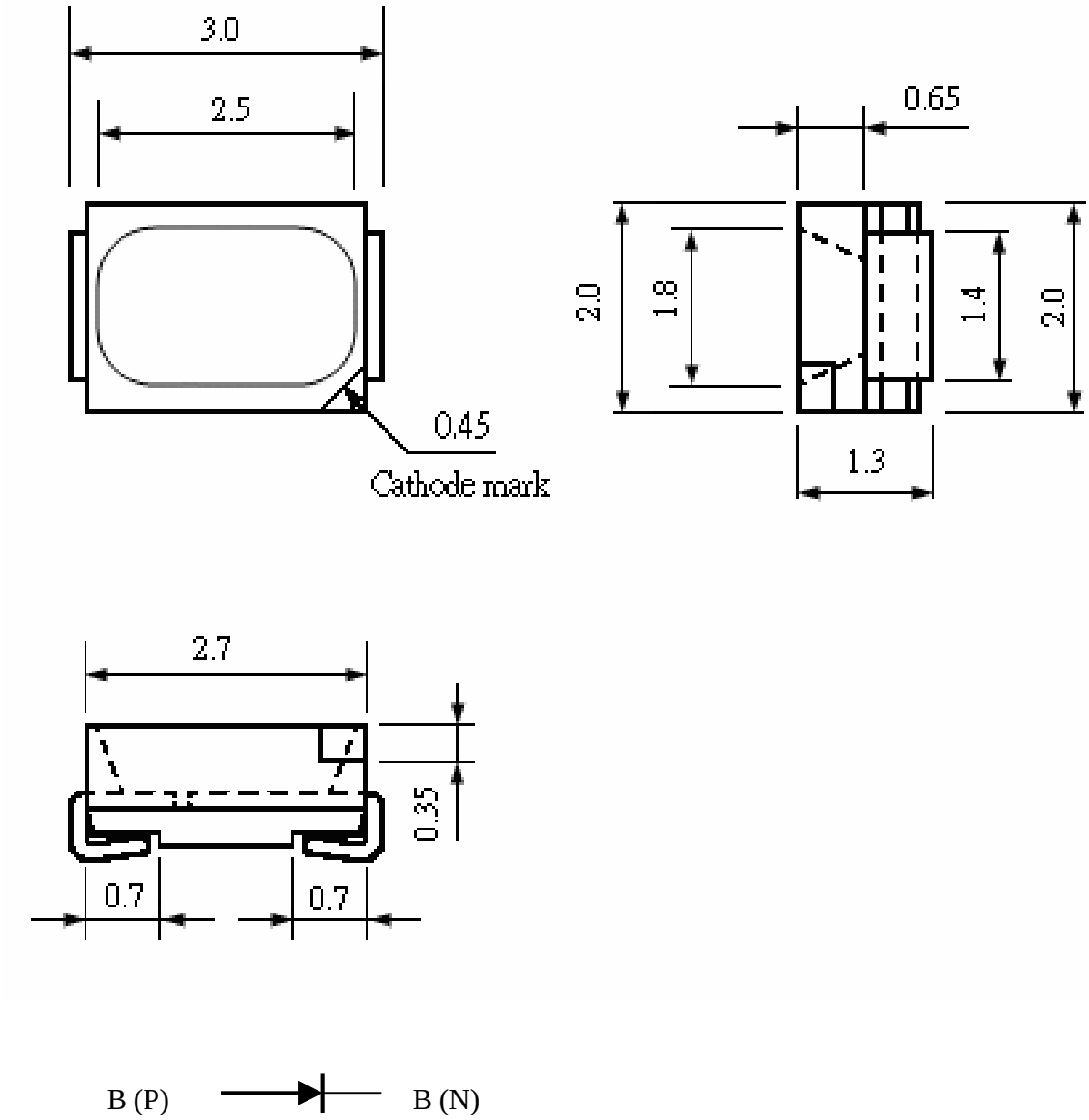
Automotive: indoor/outdoor lighting.
Signal and symbol lightings
Backlighting (TFT-LCD displays, PDA, Digital Camera, Navigator…..)
All applications in notice high intensities are required
Strobe light
Channel Letter

Type	Color of Emission	Color of the Light Emitting Area	Luminous intensity Iv (mcd) I_F =20mA
T2520	White	Colored	600 ~1650

Materials Construction

ITEM	MATERIALS
Package	Heat-Resistant Polymer
Encapsulating Resin	Heat-Resistant Resin
Electrodes	Ag Plating Copper Alloy

3. OUTLINE DIMENSION:



Note:

1. Unit: mm

2. Tolerance: Dimension ± 0.15 / Angle ± 0.5°

4. ABSOLUTE MAXIMUM RATINGS (T_A=25□)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	30	mA
Operating Temperature	T_{opr}	-40 ~ +85	□
Storage Temperature	T_{stg}	-40 ~ +100	□
Soldering Temperature	T_{sol}	260 (for 5 sec)	□
Power Dissipation	P_D	114	mW
Peak Forward Current (Duty 1/10 @ 1KHz)	$I_{F(peak)}$	70	mA
Junction temperature	Tj	110	□
Thermal Resistance (Junction to ambient)	$R_{th)JA}$	500	□/W

5. ELECTRONIC OPTICAL CHARACTERISTICS

Parameter		**Symbol**	**Condition**	**PTA**	**Unit**
Chromaticity coordinate x acc. To CIE 1931		x	IF=20mA	0.31	---
Chromaticity coordinate y acc. To CIE 1931		y	IF=20mA	0.31	---
Viewing Angle		$2\theta_{1/2}$	IF=20mA	120	Deg
Forward Voltage	Max	V_F	IF=20mA	3.8	V
	Typ			3.4	
Reverse Current	Max	I_R	V_R=5V	50	μA
	Typ				

6. LUMINOUS INTENSITY GROUPS:

Luminous intensity group	Measurement condition	Luminous intensity Iv(mcd)
U	I_F = 20 mA	1000 ~ 1650
T2	I_F = 20 mA	800 ~ 1000
T1	I_F = 20 mA	700 ~ 800
S2	I_F = 20 mA	600 ~ 700

* Luminous intensity group includes 4 groups S2 to U
* Luminous intensity is tested at a current pulse duration of 25ms and a tolerance of ± 10%

7. CHROMATICITY COORDINATES RANKS :

a3	0.280	0.248	b5	0.296	0.276	b7	0.291	0.257
	0.264	0.267		0.287	0.295		0.279	0.276
	0.287	0.295		0.307	0.315		0.302	0.302
	0.296	0.276		0.311	0.294		0.308	0.279
b3	0.287	0.295	b6	0.311	0.294	b8	0.308	0.279
	0.283	0.307		0.307	0.315		0.302	0.302
	0.304	0.330		0.330	0.339		0.319	0.318
	0.307	0.315		0.330	0.318		0.321	0.294
b4	0.307	0.315	d0	0.330	0.360			
	0.304	0.330		0.330	0.318			
	0.330	0.360		0.350	0.318			
	0.330	0.339		0.350	0.360			

* Color rank is tested at a current pulse duration of 25ms and a tolerance of the chromaticity coordinate of ±0.01

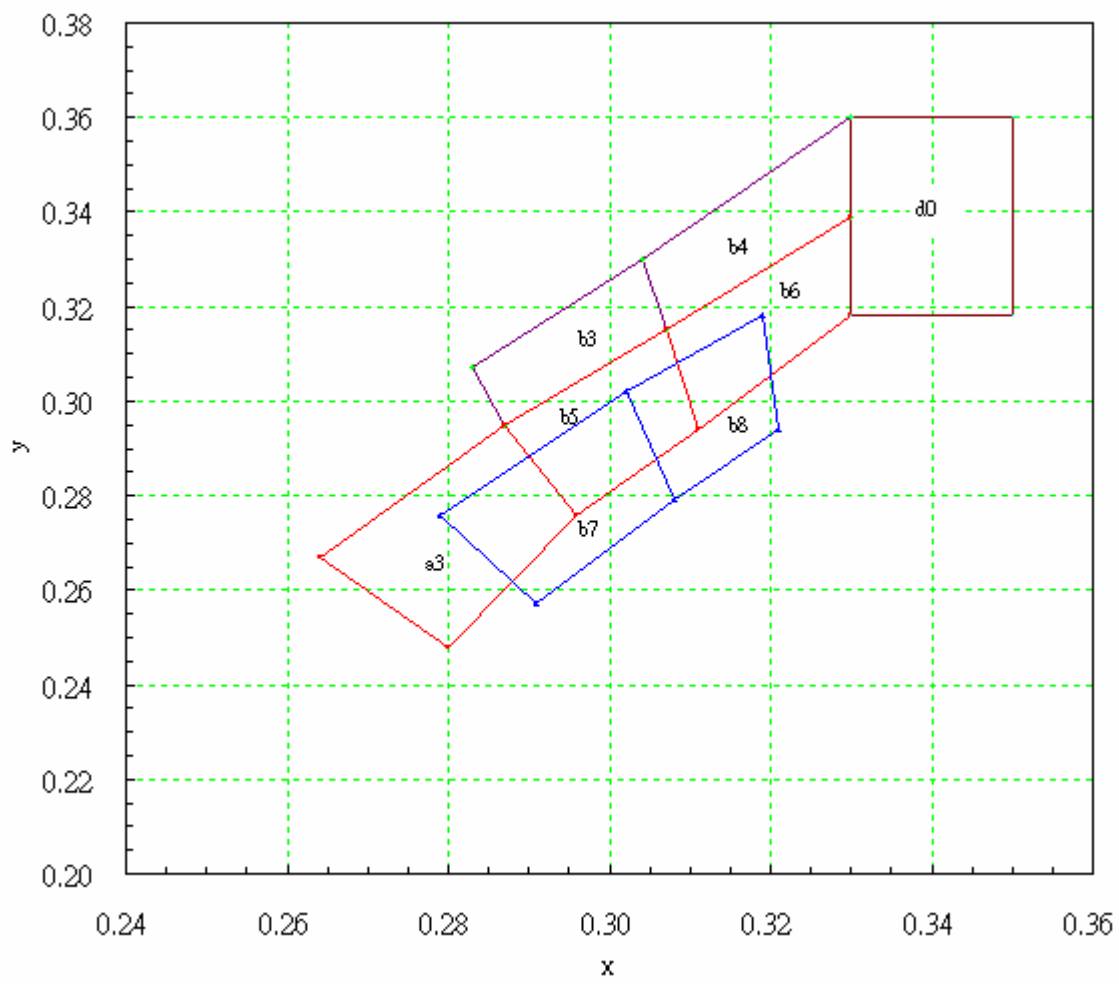
8. FORWORD VOLTAGE :

Bin	VF(Volt)	Forward Current
VT1	3.00-3.40	20mA
VT2	3.40-3.60	

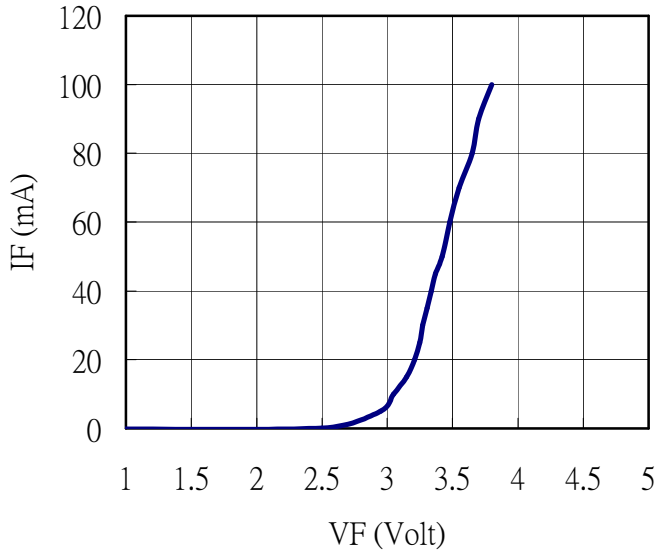
* Tolerance of Forward Voltage is ± 0.05V

9. TYPICAL ELECTRO-OPTICAL CHATACTERISTIC CURVES:

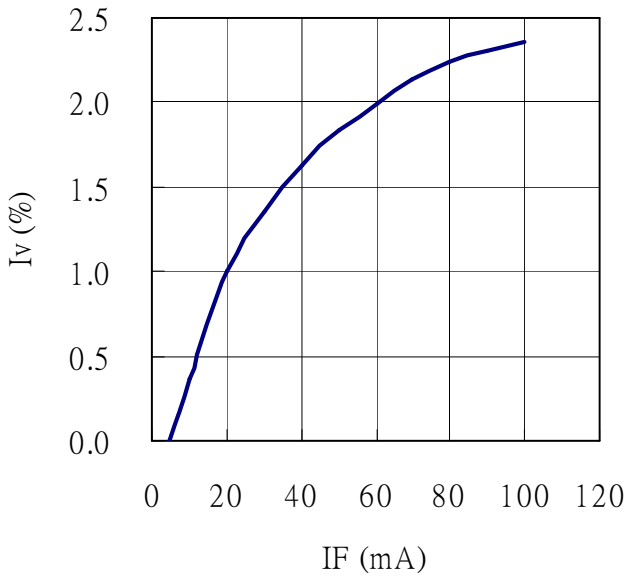
*** Chromaticity Coordinates (CIE 1931 system)**



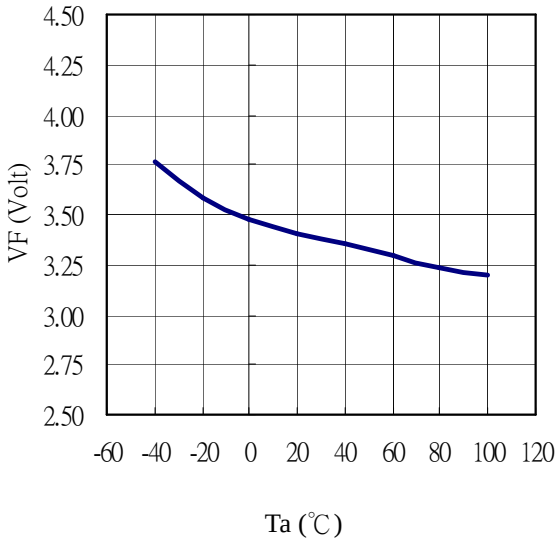
*** Forward Voltage vs. Forward Current @25℃**



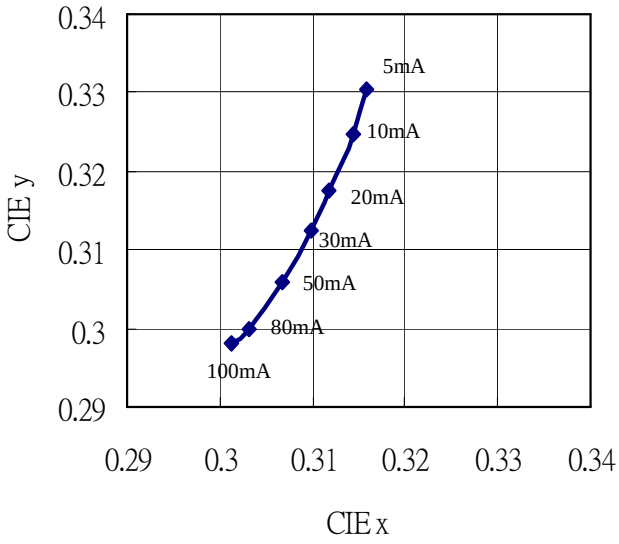
Forward Current vs. Relative Luminosity@25℃



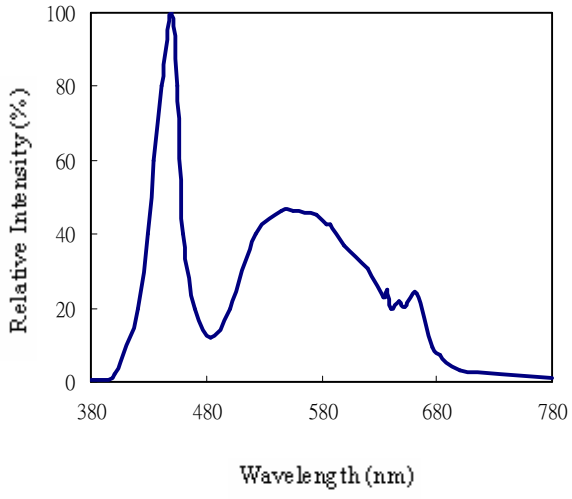
*** Ambient Temperature vs. Forward Voltage@20mA**



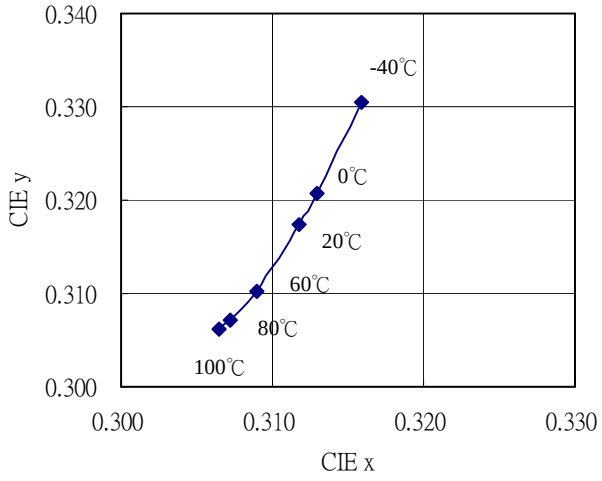
*** Forward Current vs. Chromaticity diagram @ 25℃**



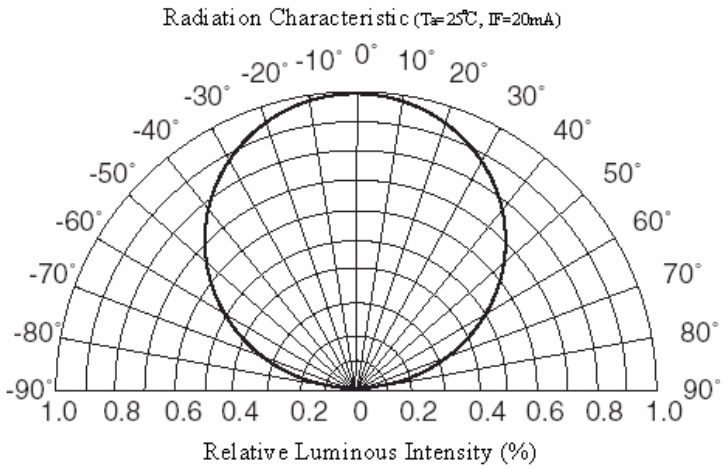
*** Spectrum @ 20mA, 25℃**



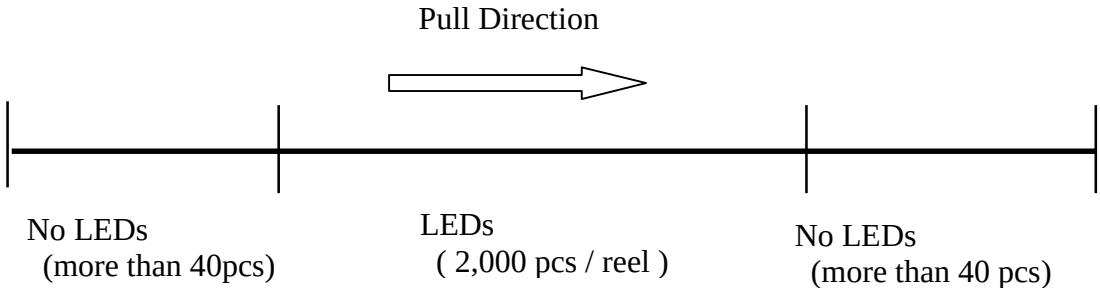
*** Ambient Temperature vs. Chromaticity Diagram @ 20mA**

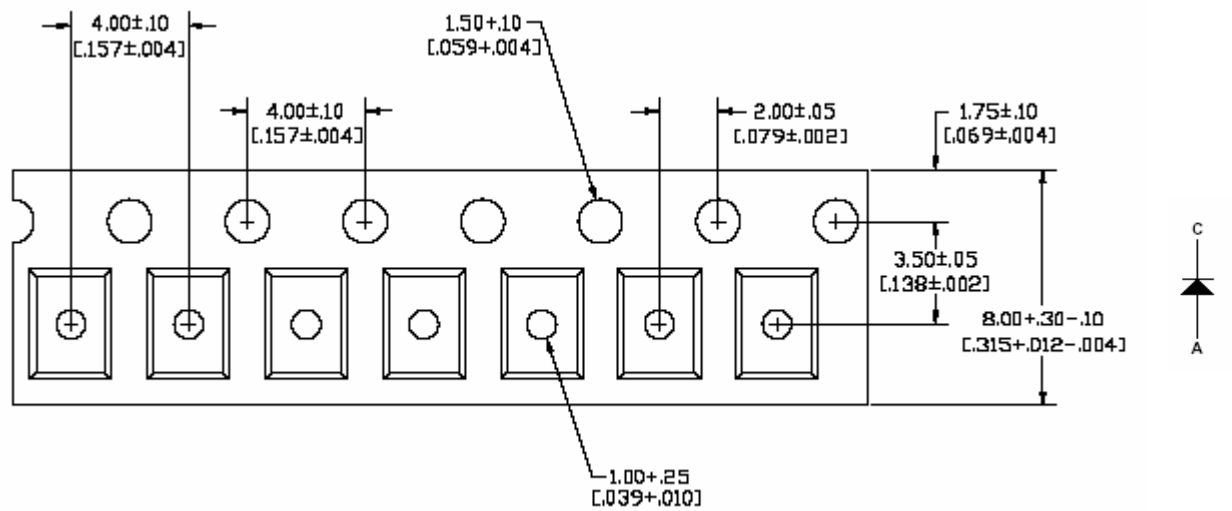


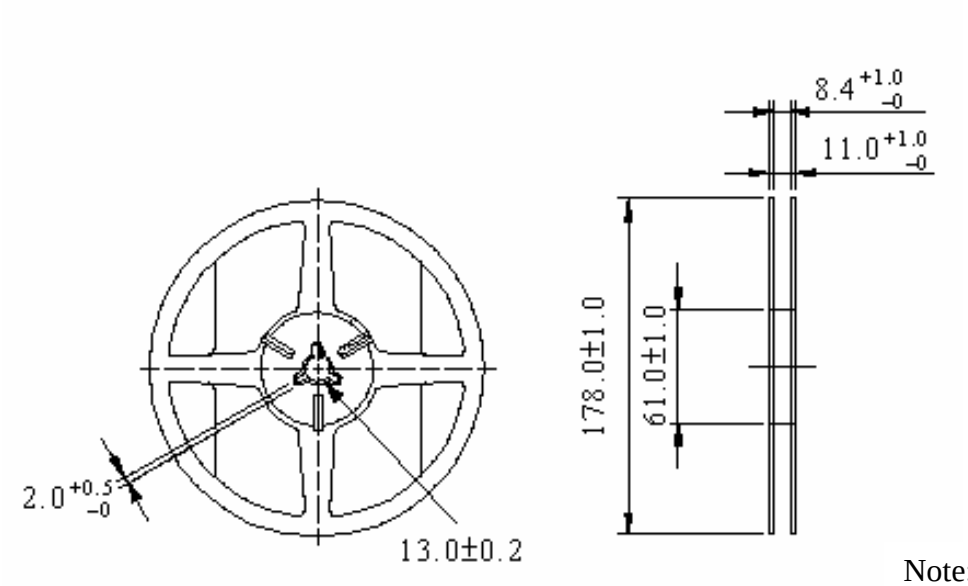
*** Radiation Characteristic (@ 25℃, 20mA)**



10. REEL PACKAGE:







Note:
1. Unit: mm
2. 2,000 pcs / reel

11. RELIABILITY PLAN:

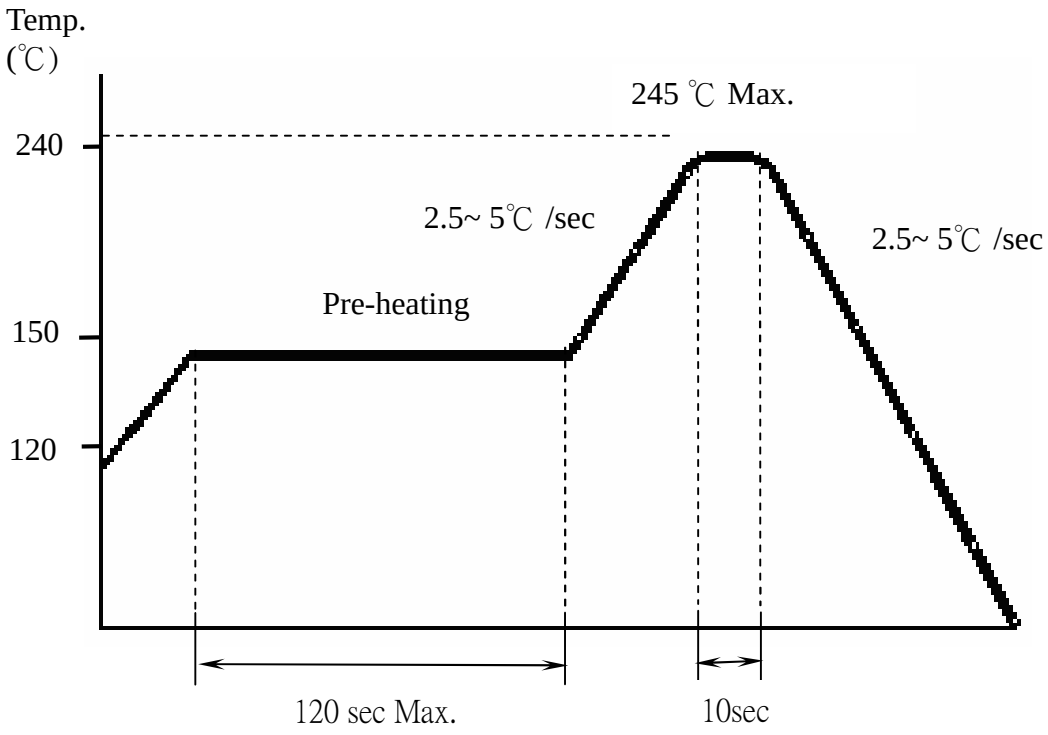
* The reliability of products shall be satisfied with items listed below.

Confidence Level : 90 % , LTPD : 10 %

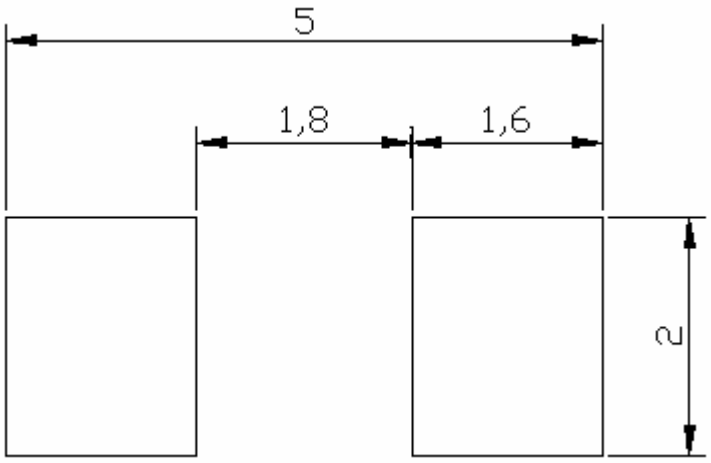
No	Test Item	Description & Condition		Sample size	Ac/Re	Failure Criteria
1	Solderability	Tsld =245±5□, 10sec,	1 time	22	0/1	IV < L* 0.6 (I_F: 20mA) V_F > U * 1.1 (I_F: 20mA) I_R > U * 2.0 (V_R:5V) L: Lower Spec. Level U: Upper Spec. Level
2	Room Temperature operating	Ta = 25 □ I_F =20mA	1000 hrs	22	0/1	
3	Room Temperature operating	Ta = 25 □ I_F = 30mA	500 hrs	22	0/1	
4	High Temperature operating	Ta = 85 □ I_F =15mA	500 hrs	22	0/1	
5	Low Temperature Storage	Ta = -40 □	1000 hrs	22	0/1	
6	High Temperature Storage	Ta = 100 □	1000 hrs	22	0/1	
7	Temperature Cycle	-40□ ~ 25□ ~ 100□ ~ 25 □ 30min 5min 30min 5 min	100 cycles	22	0/1	
8	High Humidity Heat	Ta = 60□ RH=90% I_F = 15mA	500 hrs	22	0/1	

12. SOLDERING CONDITIONS:

Re-flow Profile



Recommended Soldering Pad



Note:
1. Unit: mm

13. CAUTIONS:

(1)Storage

- Before opening the package :
  The LEDs should be kept at 30℃ or less and 30%RH~85%RH. The LEDs should be used within a year. When storing the LEDs, moisture proof packaging with desiccant (Silica gel)is recommended.
- After opening the package :
  The LEDs should be kept at 30℃ or less and 30%RH~70%RH.The LEDs should be soldered within 168hours (7days) after opening the package. If unused LEDs remain, they should be stored in moisture proof packages, such as sealed containers with packages of moisture desiccant (Silica ge1), or reseal the moisture proof bag again.
  If the moisture desiccant (Silica ge1) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the fo1lowing conditions.
  Baking treatment: more than 24 hours at 65℃.
  Please avoid conditions which may cause the LED to corrode, tarnish or disco1or. This corrosion or discoloration might lower solderability or might effect on optical characteristics. Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condensation can occur.
- Moisture Proof package
  When moisture is absorbed into the SMT package it may vaporize and expand during soldering. There is a possibility that this can cause exfoliation of the contacts and damage to the optical characteristics of the LEDs. For this reason, the moisture proof package is used to keep moisture to a minimum in the package. A package of a moisture desiccant (silica gel)is inserted into the moisture proof bag. The silica gel changes its color from blue to pink as it absorbs moisture.

(2)Static Electricity

- Static electricity or surge voltage damages the LEDs. It is recommended that a wrist band or an anti-electrostatic glove and shoe 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 End static-damaged LEDs by a light-on test or a V_F test at a lower current (below l mA).
- 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 : V_F>2.0V at I_F=0.5mA.)

(3)Heat Generation

- Please consider the heat generation of the LED when making the system design that it’s very importance. The coefficient of temperature increase per input electric power is affected by the thermal resistance of the circuit board and density of LED placement on the board, and other components. It is necessary to avoid intense heat generation and operate within the maximum ratings given in this specification.
- The operating current should be decided after considering the ambient maximum temperature of LEDs.

(4)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 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.

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