



# Technical Data Sheet

## Top View LEDs

**Preliminary**

### 67-21-Y2SC-A0Q2S1B0E-2T8-AM



#### Feature

- RoHS compliant.
- P-LCC-2 package.
- Wide viewing angle 120°.
- Colorless clear resin.
- Wavelength: 590nm
- Brightness: 90 to 225mcd at 20mA
- Inner reflector and white package.
- Precondition: Bases on JEDEC J-STD 020D Level 3.
- Qualification according to AEC-Q101 rev C.
- Useable in severe lead free processes with automotive reflow profile (IR reflow or wave soldering)

This is a preliminary specification intended for design purposes and subject to change without prior notice.

#### Applications

- Automotive backlighting or indicator: Dashboard, switch, audio and video equipments...etc.
- Backlight: LCD, switches, symbol, mobile phone and illuminated advertising.
- Display for indoor and outdoor application.
- Ideal for coupling into light guides.
- Substitution of traditional light.
- Optical indicator.

#### Device Selection Guide

Chip	Emitted Color	Resin Color
Material		
AlGaInP	Brilliant Yellow	Water Clear

**Technical Data Sheet****Top View LEDs****Preliminary****67-21-Y2SC-A0Q2S1B0E-2T8-AM****Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating	Unit
Reverse Voltage	V <sub>R</sub>	12	V
Forward Current	I <sub>F</sub>	30	mA
Peak Forward Current (Duty 1/10 @1KHz)	I <sub>FP</sub>	100	mA
Power Dissipation	P <sub>d</sub>	120	mW
Junction Temperature	T <sub>j</sub>	115	°C
Operating Temperature	T <sub>opr</sub>	-40 ~ +100	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +110	°C
Thermal resistance	R <sub>th J-A</sub>	400	K/W
	R <sub>th J-S</sub>	300	K/W
Soldering Temperature	T <sub>sol</sub>	Reflow Soldering : 260 °C for 30 sec. Hand Soldering : 350 °C for 3 sec.	

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**Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	$I_v$	90	-----	225	mcd	$I_F=20mA$
Viewing Angle	$2\theta_{1/2}$	-----	120	-----	deg	$I_F=20mA$
Peak Wavelength	$\lambda_p$	-----	591	-----	nm	$I_F=20mA$
Dominant Wavelength	$\lambda_d$	585.5	590.0	594.5	nm	$I_F=20mA$
Spectrum Radiation Bandwidth	$\Delta\lambda$	-----	15	-----	nm	$I_F=20mA$
Forward Voltage	$V_F$	1.75	-----	2.35	V	$I_F=20mA$
Reverse Current	$I_R$	-----	0.01	10	$\mu A$	$V_R=12V$
Temperature coefficient of $\lambda_p$	$TC_{\lambda_p}$	-----	0.06	-----	nm/K	$I_F=20mA$
Temperature coefficient of $\lambda_d$	$TC_{\lambda_d}$	-----	0.05	-----	nm/K	$I_F=20mA$
Temperature coefficient of $V_F$	$TC_V$	-----	-3.8	-----	mV/K	$I_F=20mA$

**Note:**

 Tolerance of Luminous Intensity:  $\pm 11\%$ 

 Tolerance of Dominant Wavelength:  $\pm 1nm$ 

 Tolerance of Forward Voltage:  $\pm 0.1V$

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Group	Bin Code	Min.	Max.	Unit	Condition
A0	D3	585.5	588.5	nm	If=20mA
	D4	588.5	591.5		
	D5	591.5	594.5		

**Note:**Tolerance of Dominant Wavelength :  $\pm 11\%$ **Bin Range of Luminous Intensity**

Bin Code	Min	Max	Unit	Condition
Q2	90	112	mcd	If=20mA
R1	112	140		
R2	140	180		
S1	180	225		

**Note:**Tolerance of Luminous Intensity:  $\pm 11\%$

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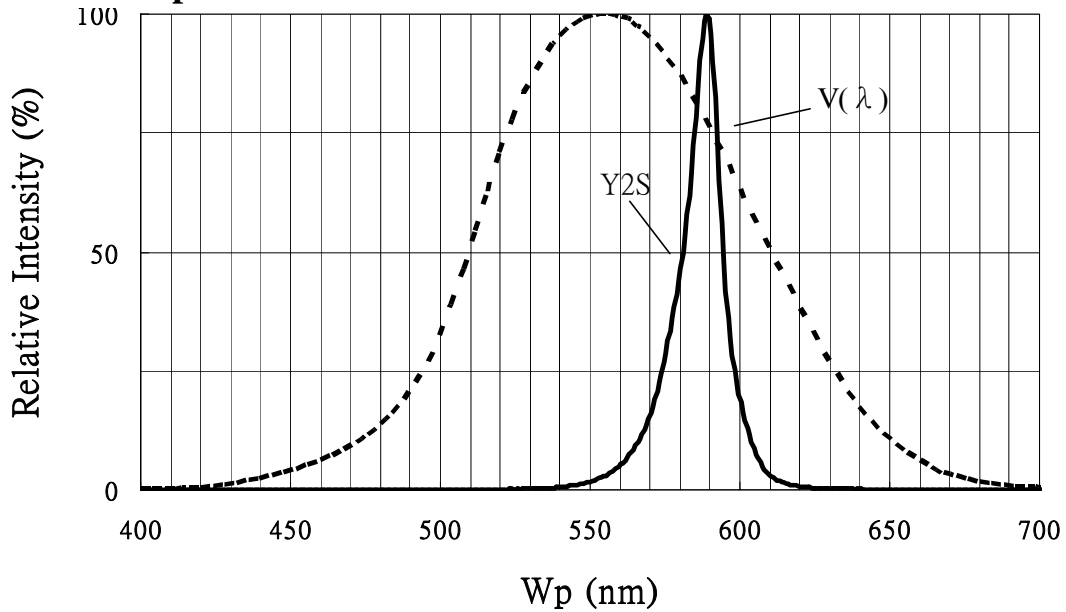
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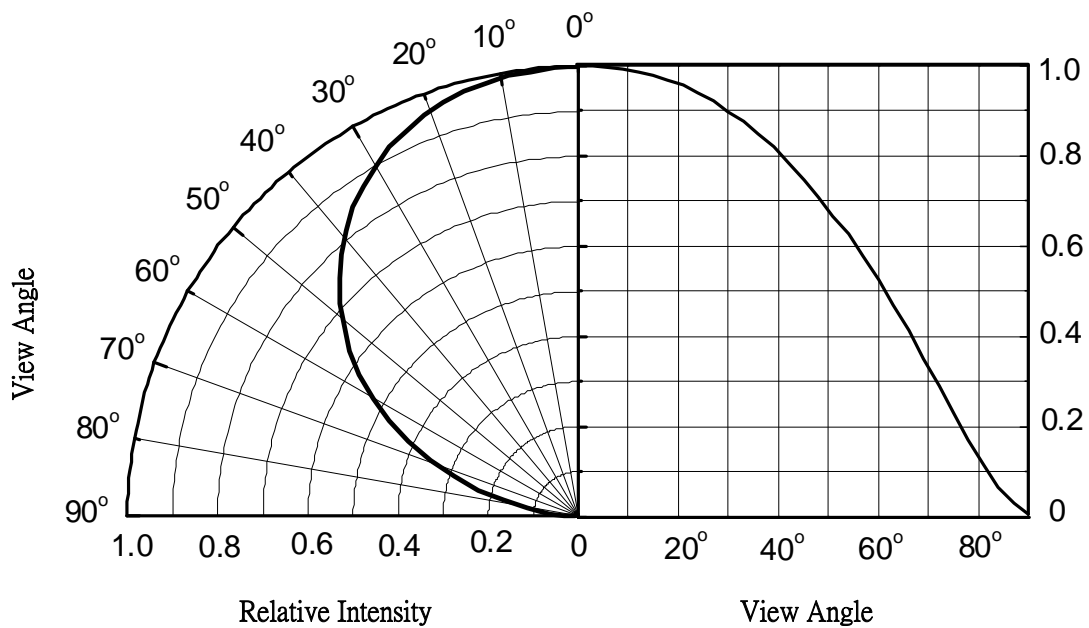
Typical Electro-Optical Characteristics Curves

Typical curve of spectral distribution:



Note:  $V(\lambda)$ =Standard eye response curve ;  $I_F=20\text{mA}$

Diagram characteristics of radiation



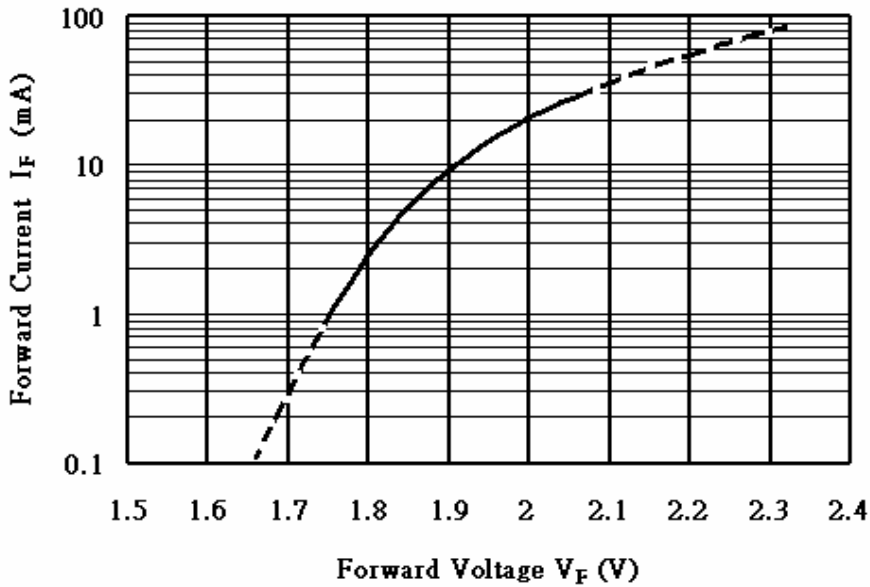
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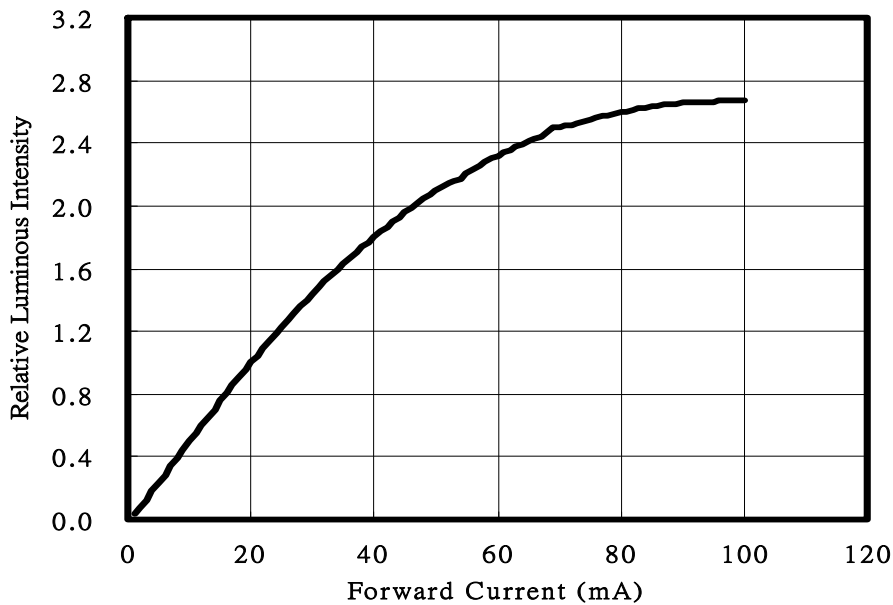
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Forward Current vs. Forward Voltage (Ta=25°C)



Forward Current vs. Relative Luminous Intensity (Ta=25°C)



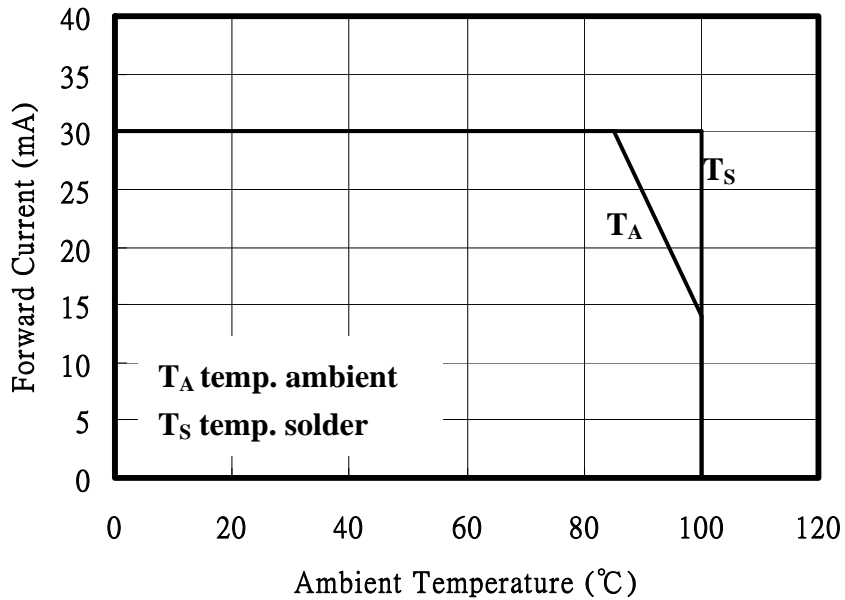
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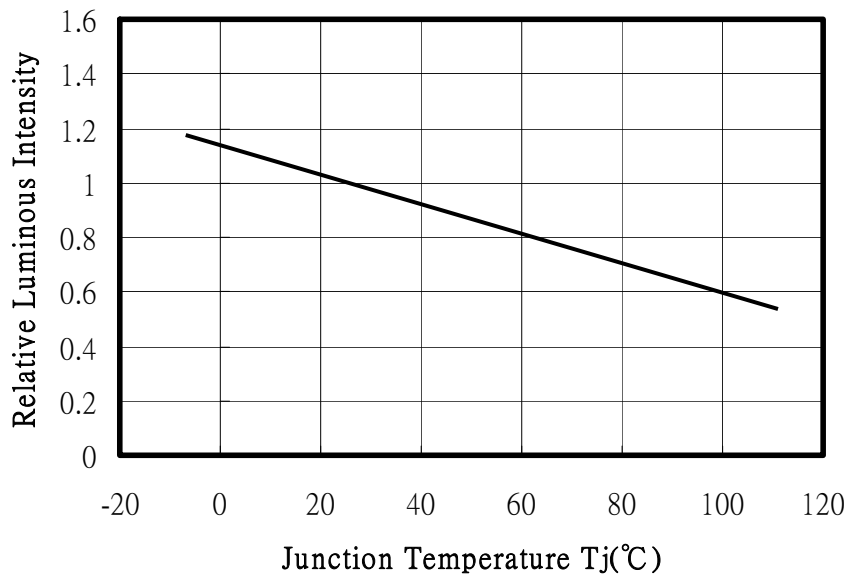
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Forward current vs. Ambient Temperature



Relative Luminous Intensity vs. Junction Temperature



Note:  $f(T_j) = I_v / I_v(25^\circ\text{C})$ ;  $I_f=20\text{mA}$

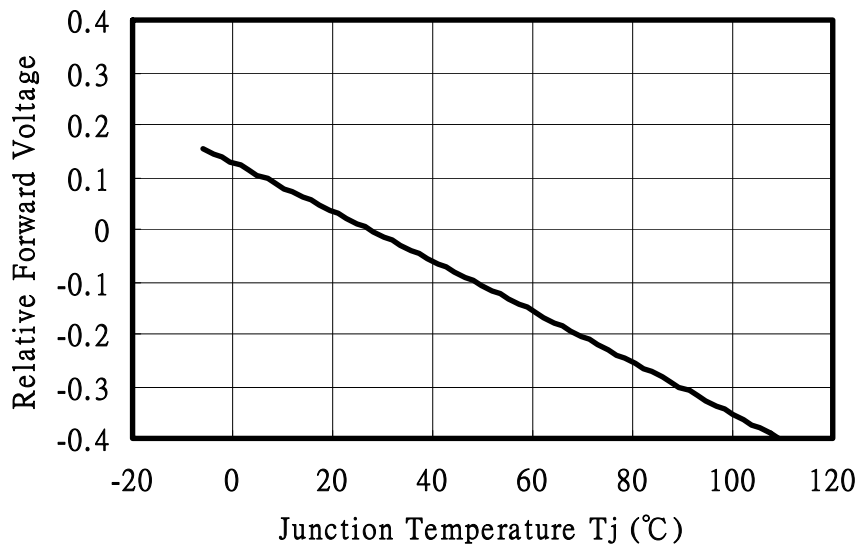
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Relative Forward Voltage vs. Junction Temperature



Note:  $\Delta V_F = V_F - V_F(25\text{ }^\circ\text{C}) = f(T_j)$  ;  $I_F=20\text{mA}$



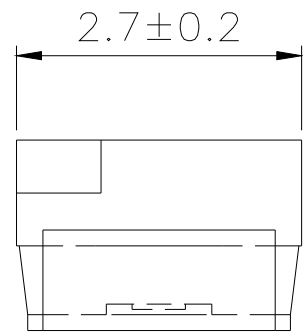
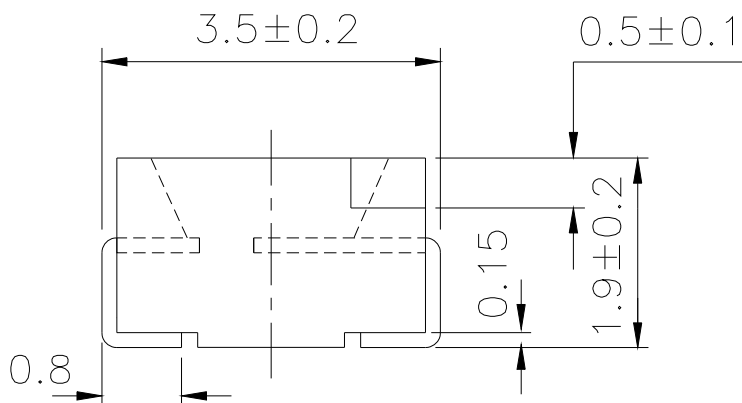
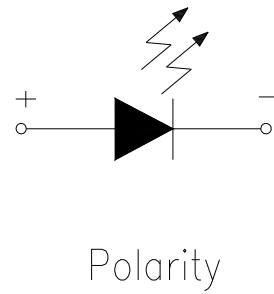
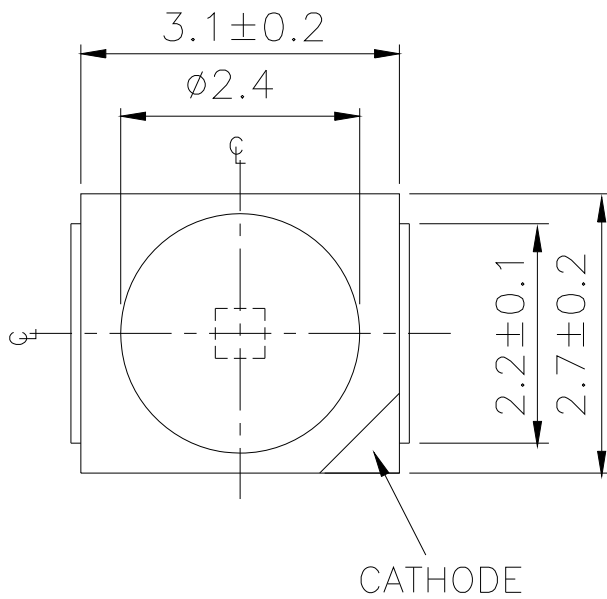
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Package Dimension



Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm



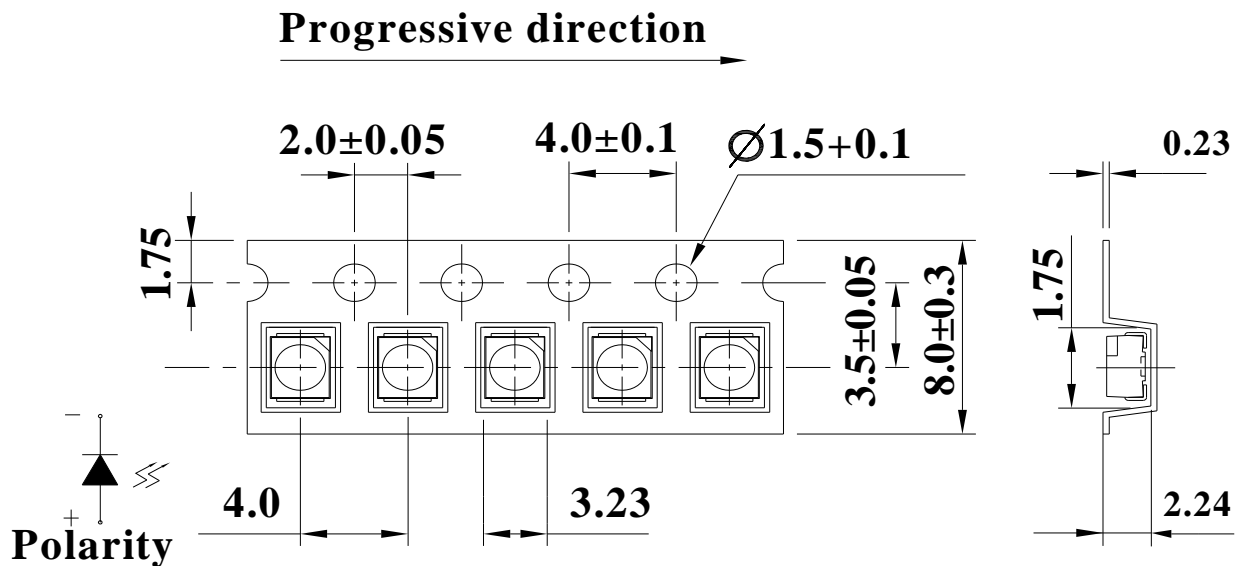
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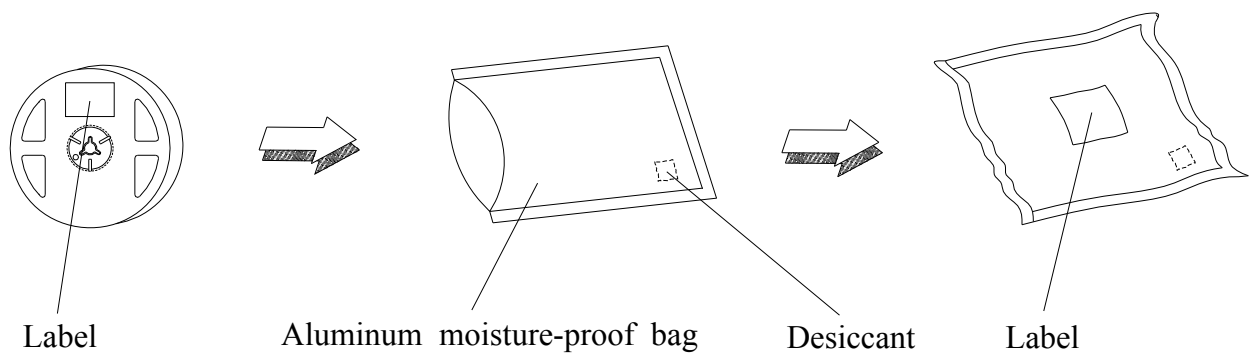
67-21-Y2SC-A0Q2S1B0E-2T8-AM

Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel



Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

Moisture Resistant Packaging Process and Materials



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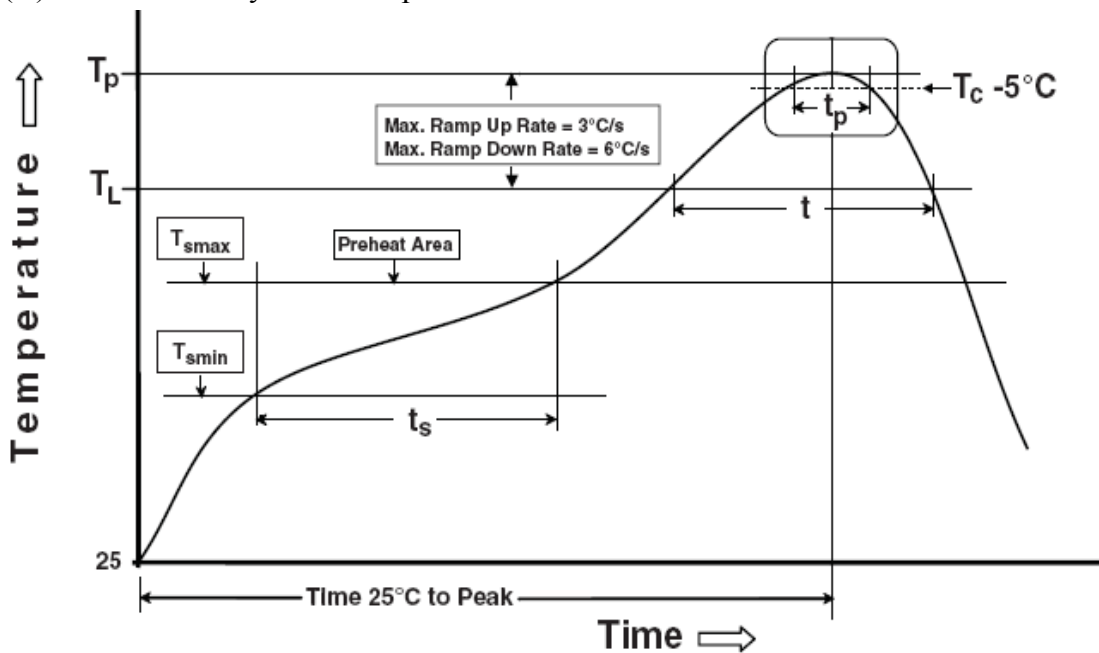
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Precautions for Use

1. Soldering Condition

1.1 (A) Maximum Body Case Temperature Profile for evaluation of Reflow Profile



Note:

**Preheat**

Temperature min ( $T_{smin}$ )

Temperature max ( $T_{smax}$ )

Time ( $T_{smin}$  to  $T_{smax}$ ) ( $t_s$ )

Average ramp-up rate ( $T_{smax}$  to  $T_p$ )

**Other**

Liquidus Temperature ( $T_L$ )

Time above Liquidus Temperature ( $t_L$ )

Peak Temperature ( $T_p$ )

Time within 5 °C of Actual Peak Temperature:  $T_p - 5^\circ\text{C}$

Ramp- Down Rate from Peak Temperature

Time 25°C to peak temperature

All parameters are maximum body case temperature values and cannot be considered as a soldering profile. The body temperature was measured by soldering a thermal couple to the soldering point of LEDs.

Reference: IPC/JEDEC J-STD-020D

150 °C

200°C

60-120 seconds

3 °C/second max.

217 °C

60-150 sec

260°C

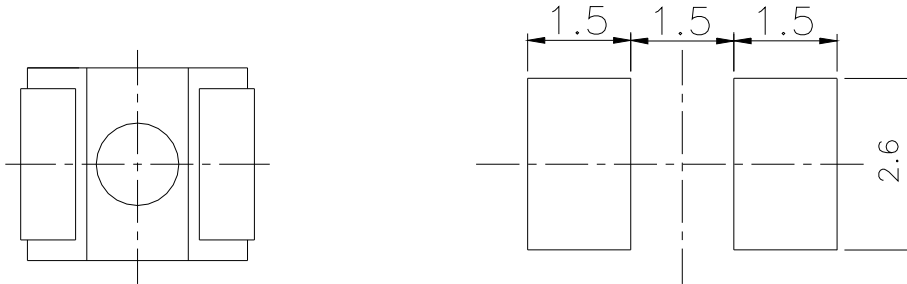
30 s

6°C /second max.

8 minutes max.

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(B) Recommend soldering pad

Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm**2. Current limiting**

A resistor should be used to limit current spikes that can be caused by voltage fluctuations. Otherwise damage could occur.

**3. Storage**

3.1 Moisture proof bag should only be opened immediately prior to usage.

3.2 Environment should be less than  $30^{\circ}\text{C}$  and 90% RH when moisture proof bag is opened.

3.3 After opening the package MSL Conditions stated on page 1 of this spec should not be exceeded.

3.4 If the moisture sensitivity card indicates higher than acceptable moisture, the component should be baked at min.  $60^{\circ}\text{deg}$   $\pm 5^{\circ}\text{deg}$  for 25 hours.

**4. Iron Soldering**

Hand soldering is not recommended for regular production. These guidelines are for rework only. Soldering iron tip should contact each terminal no more than 3 sec at  $350^{\circ}\text{C}$ , using soldering iron with nominal power less than 25W. Allow min. 2 sec. between soldering intervals.

**5. Usage**

Do not exceed the values given in this specification.

**Application Restrictions**

1. If you need higher reliability and safety such as Military, Automotive security relevant, medical equipment and cosmic rocket you will require different product. Please inquire to Everlight before using this product in your application if you have any concerns. This specification guarantees the quality and performance of the product as individual component. Do not use this product beyond the specification described in this document.