



## Technical Data Sheet

### 0.6mm Height Flat Top LED

#### 19-213SYGC/S313/TR8

#### Features

- Package in 8mm tape on 7" diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Mono-color type.

#### Descriptions

- The 19-213 SMD Taping is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Besides, lightweight makes them ideal for miniature applications. etc.

#### Applications

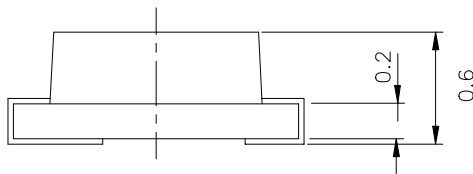
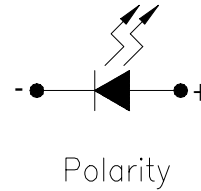
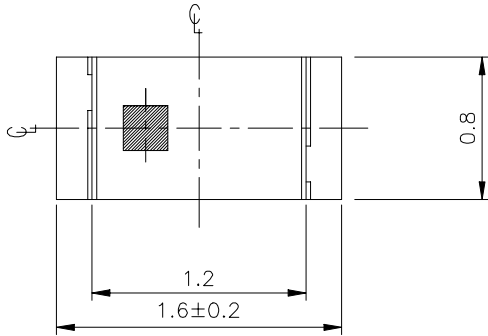
- Automotive: backlighting in dashboard and switch.
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- General use.



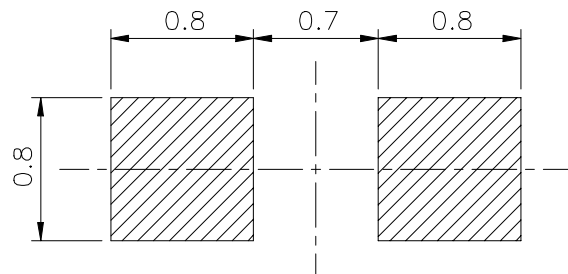
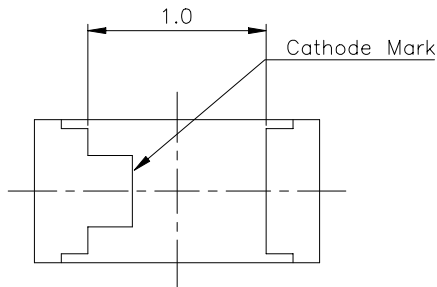
#### Device Selection Guide

Chip		Lens Color
Material	Emitted Color	
AlGaInP	Yellow Green	Water Clear

**Package Outline Dimensions**



For reflow soldering (Propose)



**Note:** The tolerances unless mentioned is  $\pm 0.1\text{mm}$  , Angle  $\pm 0.5^\circ$  ,Unit = mm

**Absolute Maximum Ratings (Ta=25°C)**

Reverse Voltage	V <sub>R</sub>	5	V
Forward Current	I <sub>F</sub>	25	mA
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +90	°C
Soldering Temperature	T <sub>sol</sub>	260 (for 5 seconds)	°C
Electrostatic Discharge	ESD	2000	V
Power Dissipation	P <sub>d</sub>	60	mW
Peak Forward Current (Duty 1/10 @1KHz)	I <sub>F</sub>	60	mA
Reverse Voltage	V <sub>R</sub>	5	V

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I <sub>v</sub>	14.5	-----	57.0	mcd	I <sub>F</sub> =20mA
Viewing Angle	2θ 1/2	-----	120	-----	deg	I <sub>F</sub> =20mA
Peak Wavelength	λ <sub>p</sub>	-----	575	-----	nm	I <sub>F</sub> =20mA
Dominant Wavelength	λ <sub>d</sub>	570.0	-----	574.5	nm	I <sub>F</sub> =20mA
Spectrum Radiation Bandwidth	Δλ	-----	20	-----	nm	I <sub>F</sub> =20mA
Forward Voltage	V <sub>F</sub>	1.75	-----	2.35	V	I <sub>F</sub> =20mA
Reverse Current	I <sub>R</sub>	-----	-----	10	μA	V <sub>R</sub> =5V

**Notes:**

- 1.Tolerance of Luminous Intensity ± 10%**
- 2.Tolerance of Dominant Wavelength ± 1nm**
- 3.Tolerance of Forward Voltage ± 0.1V**

**Bin Rang Of Luminous Intensity**

Bin	Min	Max	Unit	Condition
1	14.5	22.5	mcd	If=20mA
2	22.5	36.0		
3	36.0	57.0		

**Bin Rang Of Dom. Wavelength**

Bin	Min	Max	Unit	Condition
1	570.0	571.5	nm	If=20mA
2	571.5	573.0		
3	573.0	574.5		

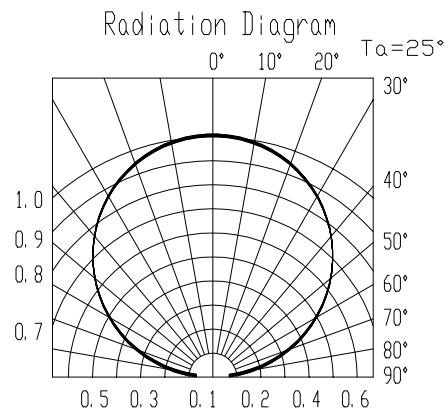
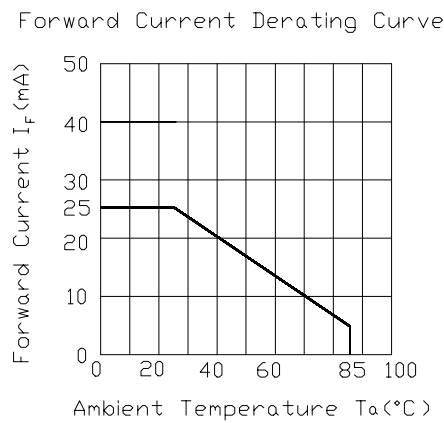
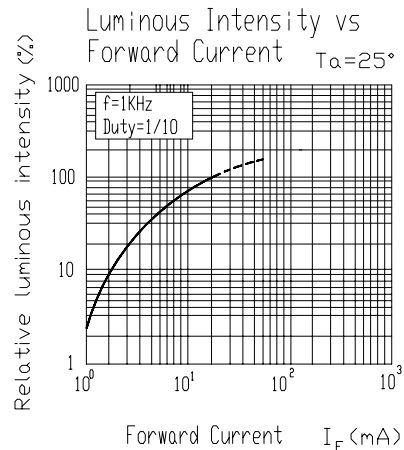
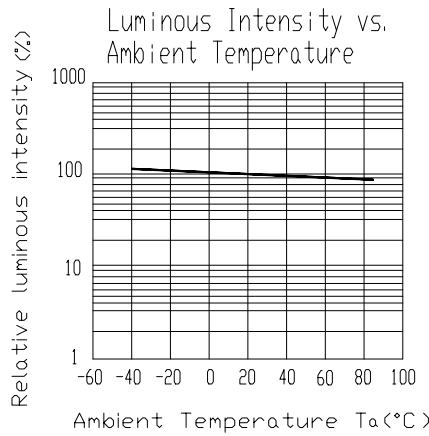
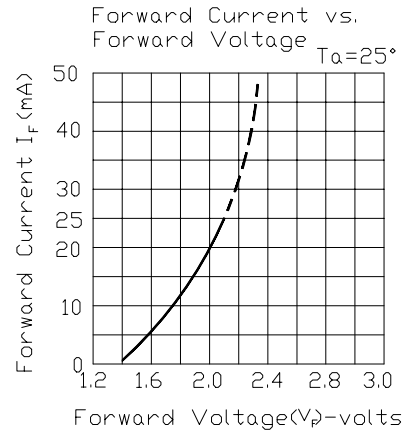
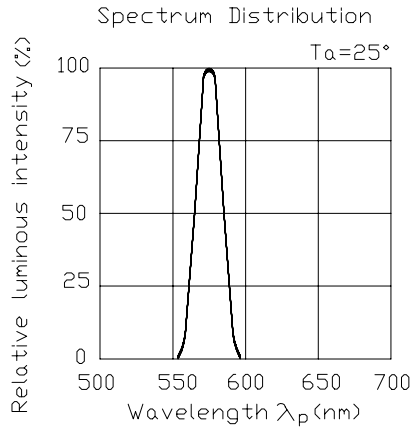
**Bin Rang Of Forward Voltage**

Bin	Min	Max	Unit	Condition
1	1.75	1.95	V	If=20mA
2	1.95	2.15		
3	2.15	2.35		

**Notes:**

- 1.Tolerance of Luminous Intensity  $\pm 10\%$**
- 2.Tolerance of Dominant Wavelength  $\pm 1\text{nm}$**
- 3.Tolerance of Forward Voltage  $\pm 0.1\text{V}$**

**Typical Electro-Optical Characteristics Curves**

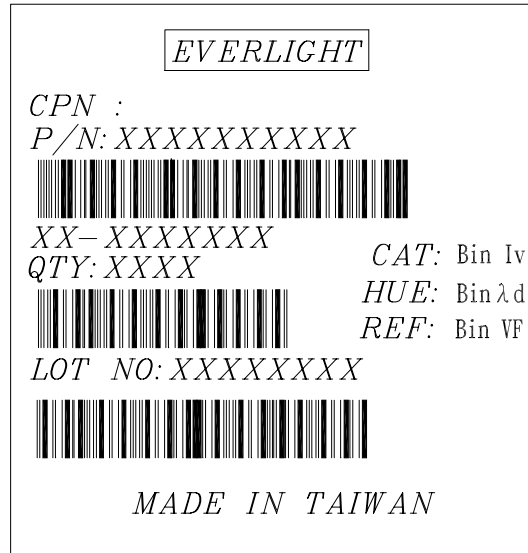


**Label explanation**

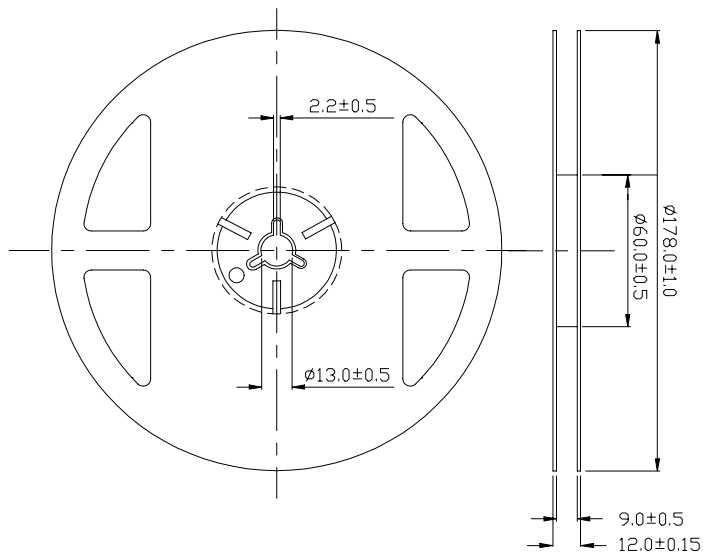
**CAT: Luminous Intensity (mcd)**

**HUE: Dom. Wavelength (nm)**

**REF: Forward Voltage (V)**

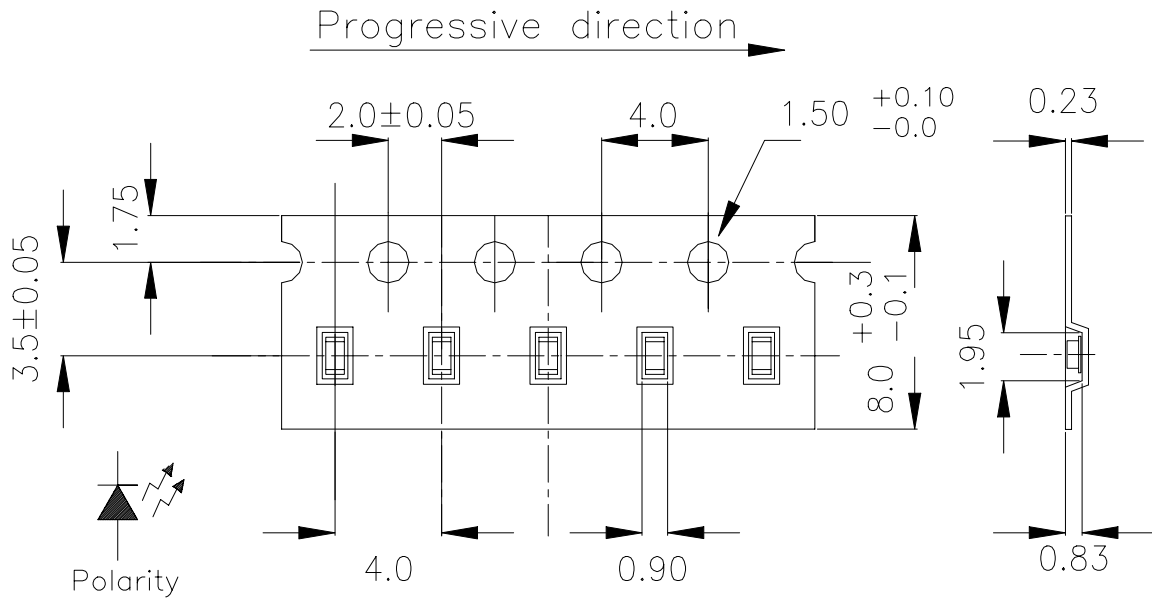


**Reel Dimensions**



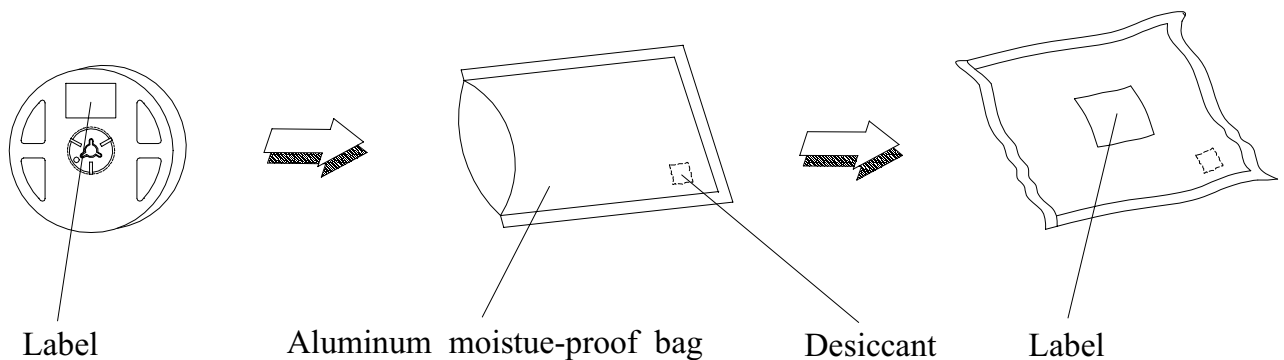
**Note:** The tolerances unless mentioned is  $\pm 0.1\text{mm}$  , Angle $\pm 0.5^\circ$  ,Unit = mm

■ **Carrier Tape Dimensions: Loaded quantity 3000 PCS per reel**



**Note:** The tolerances unless mentioned is  $\pm 0.1\text{mm}$  , Angle $\pm 0.5^\circ$  ,Unit = mm

■ **Moisture Resistant Packaging**



**Reliability Test Items And Conditions**

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

Confidence level : 90 %

LTPD : 10 %

No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Reflow	Temp. : 240°C ± 5°C Min. 5 sec.	6 min.	22 Pcs.	0/1
2	Temperature Cycle	H : +100°C 15min. ∫ 5 min. L : -40°C 15min.	300 Cycles	22 Pcs.	0/1
3	Thermal Shock	H : +100°C 5min. ∫ 10 sec. L : -10°C 5min.	300 Cycles	22 Pcs.	0/1
4	High Temperature Storage	Temp. : 100°C	1000 Hrs.	22 Pcs.	0/1
5	Low Temperature Storage	Temp. : -55°C	1000 Hrs.	22 Pcs.	0/1
6	DC Operating Life	I <sub>F</sub> = 20 mA	1000 Hrs.	22 Pcs.	0/1
7	High Temperature / High Humidity	85°C/R.H85%	1000 Hrs.	22 Pcs.	0/1



**Precautions For Use**

1. Over-current-proof

Customer must apply resistors for protection , otherwise slight voltage shift will cause big current change ( Burn out will happen ).

2. Storage time

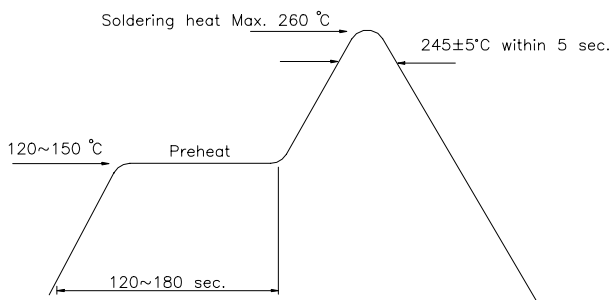
2.1 The operation of Temperature and RH are : 5°C~35°C, RH60%.

2.2 Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp proof box with descanting agent. Considering the tape life , we suggest our customers to use our products within a year(from production date).

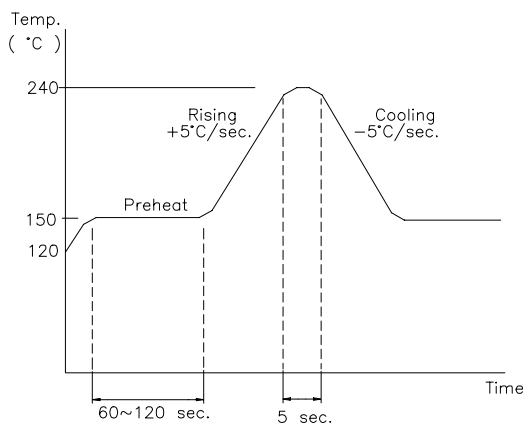
2.3 If opened more than one week in an atmosphere 5°C~35°C, RH 60%, they should be treated at 60°C± 5°C for 15hrs.

2.4 When you discover that the desiccant in the package has a pink color (Normal = blue) , you should treat them in the same conditions as 2.3.

**Soldering heat**



**Reflow Temp / Time**

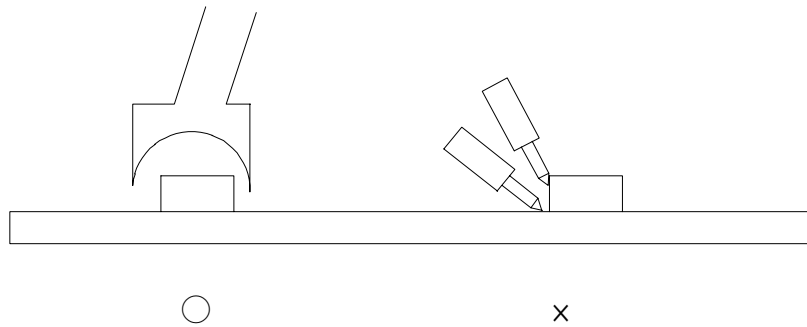


**Soldering Iron**

Basic spec is  $\leq 5$  sec when 260°C. If temperature is higher, time should be shorter (+10°C → -1sec). Power dissipation of Iron should be smaller than 15 W , and temperature should be controllable. Surface temperature of the device should be under 230 °C .

**Rework**

1. Customer must finish rework within 5 sec under 245°C.
2. The head of iron can not touch copper foil.
3. Twin-head type is preferred.

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