

## Full Color Chip LEDs

### Features :

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

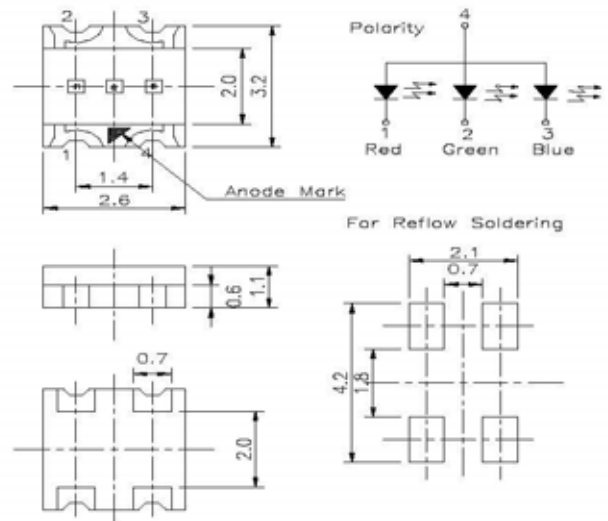
### Descriptions :

- The 15-21B 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.

### Package Dimensions :



### Notes :

Tolerances Unless Dimension  $\pm$   
0.1mm  
Angle  $\pm$  0.5° Unit=mm

PART NO	Chip		Lens Color
	Material	Emitted Color	
R	AlGaInP	Super Sunset Orange	Water Clear
	GaN	Super Green	
	GaN	Super Blue	

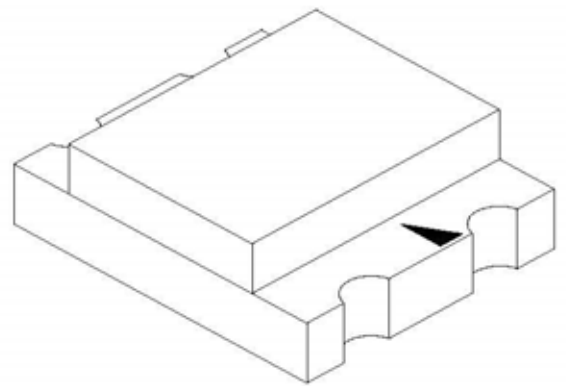
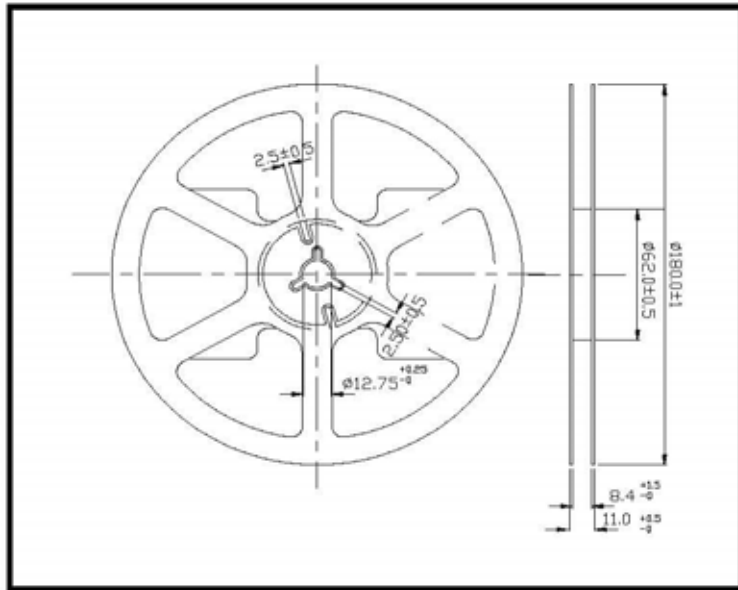
MODEL NO: \_\_\_\_\_

Device Number : DSE-153-008 REV. 1.0

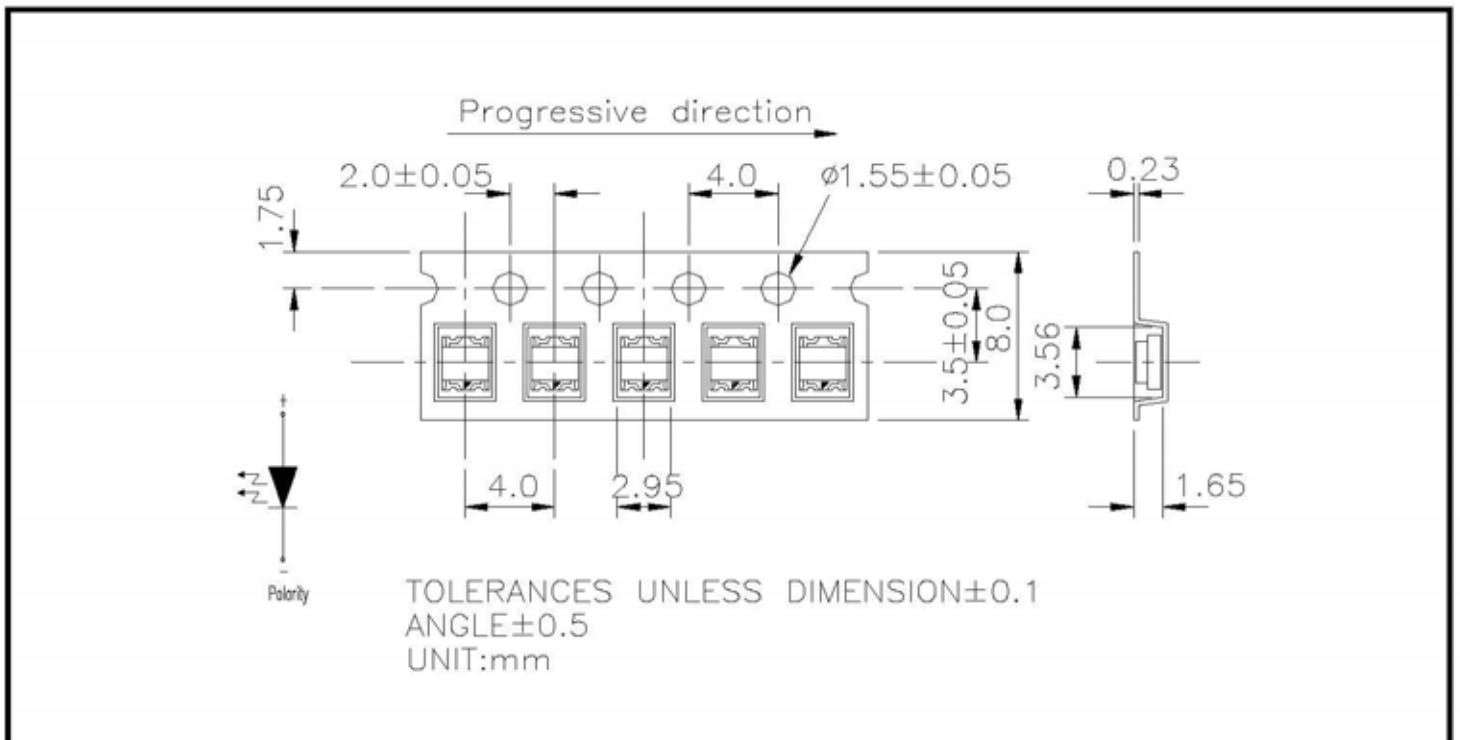
**Full Color Chip LEDs**

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**Package Dimensions :**



**Loaded quantity per reel 2000 PCS/reel :**



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■ **Absolute Maximum Ratings at Ta = 25°C**

Parameter	Symbol	Rating	Unit
Reverse Voltage	Vr	5	V
Forward Current	If	R:50	mA
		G:30	
		B:30	
Operating Temperature	Topr	-20 ~ +80	°C
Storage Temperature	Tstg	-30 ~ +90	°C
Soldering Temperature	Tsol	260 (for 5 second)	°C
Electrostatic Discharge	ESD	1000	V
Power Dissipation	Pd	R:120	mW
		G:120	
		B:120	
Peak Forward Current(Duty 1/10 @ 1KHZ)	If(Peak)	R:200	mA
		G:100	
		B:100	

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■ **Electronic Optical Characteristics :**

Parameter	Symbol		Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I <sub>v</sub>	R	54	81	-----	mcd	If=20mA
		G	90	130	-----		
		B	32	54	-----		
Viewing Angle	2θ 1/2		-----	120	-----	deg	If=20mA
Peak Wavelength	λ <sub>p</sub>	R	-----	621	-----	nm	If=20mA
		G	-----	525	-----		
		B	-----	475	-----		
Dominant Wavelength	λ <sub>d</sub>	R	-----	615	-----	nm	If=20mA
		G	-----	530	-----		
		B	-----	470	-----		
Spectrum Radiation Bandwidth	Δλ	R	-----	18	-----	nm	If=20mA
		G	-----	35	-----		
		B	-----	35	-----		
Forward Voltage	V <sub>f</sub>	R	-----	2.0	2.4	V	If=20mA
		G	3.1	3.5	4.0		
		B	3.2	3.5	4.0		
Reverse Current	I <sub>r</sub>	R	-----	-----	10	μA	V <sub>r</sub> =5V
		G	-----	-----	50		
		B	-----	-----	50		

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**Reliability Test Items And Conditions**

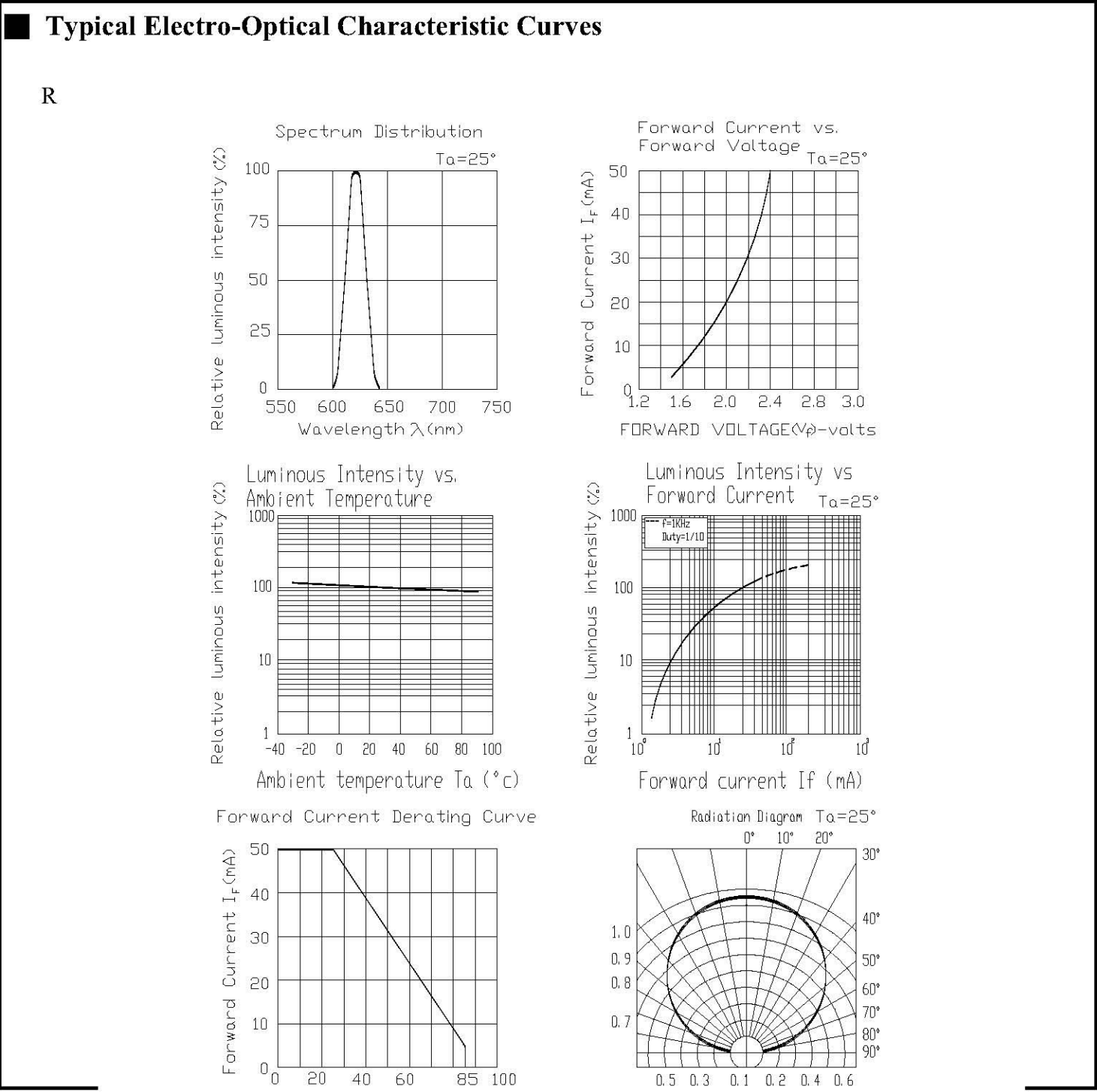
NO	Item	Test Conditions	Test Hours/Cycle	Sample Size	Ac/Re
1	Solder Heat	TEMP : 260°C ± 5 °C	5 SEC	76 PCS	0/1
2	Temperature Cycle	H : +85°C 30min ∫ 5 min L : -55°C 30min	50 CYCLE	76 PCS	0/1
3	Thermal Shock	H : +100°C 5min ∫ 10 sec L : -10°C 5min	50 CYCLE	76 PCS	0/1
4	High Temperature Storage	TEMP : 100°C	1000 HRS	76 PCS	0/1
5	Low Temperature Storage	TEMP : -55°C	1000 HRS	76 PCS	0/1
6	DC Operating Life	If = 20 mA	1000 HRS	76 PCS	0/1
7	High Temperature / High Humidity	85°C/85% RH	1000 HRS	76 PCS	0/1

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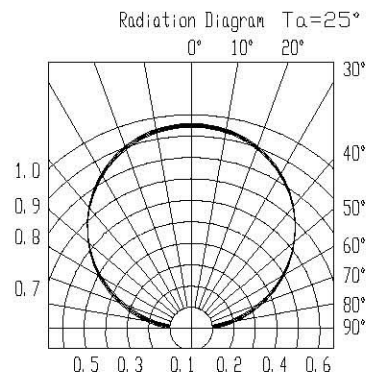
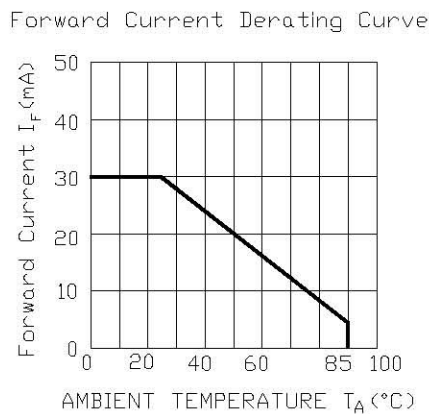
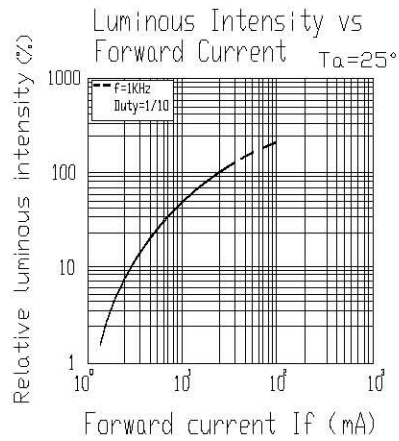
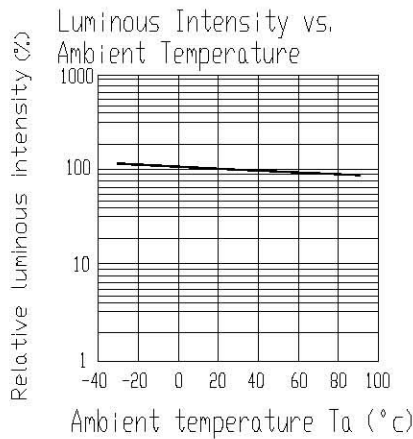
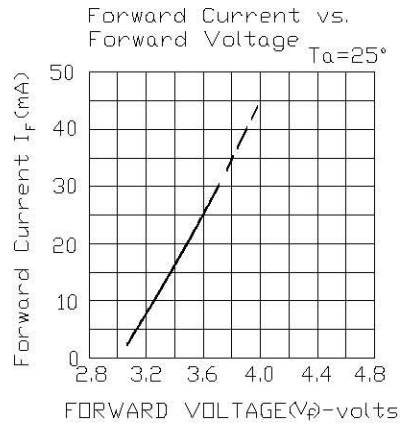
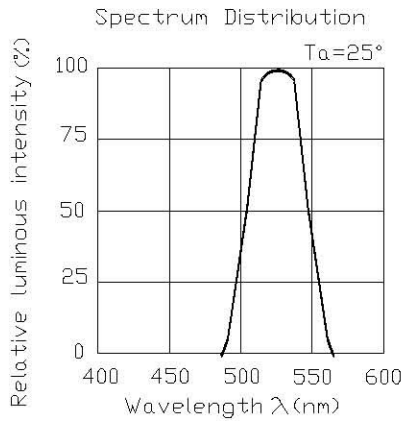
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**Typical Electro-Optical Characteristic Curves**

G



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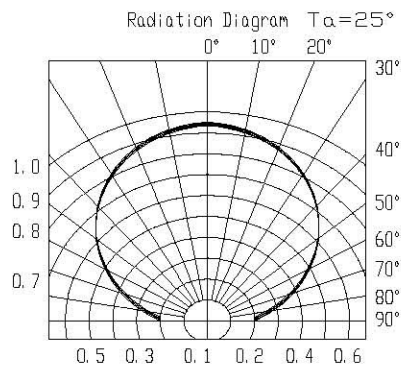
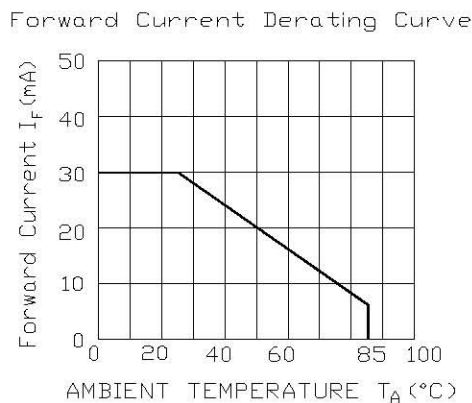
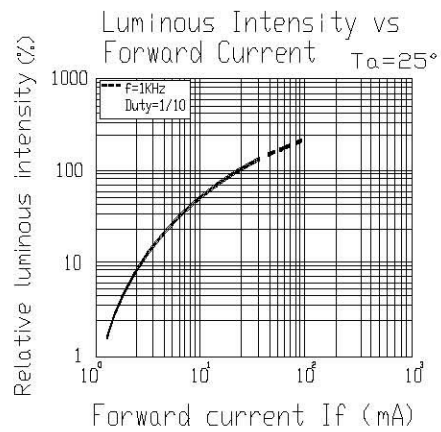
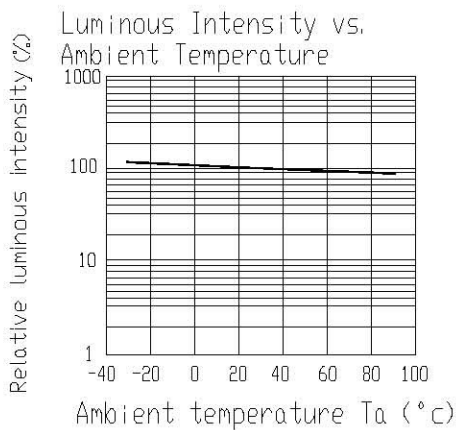
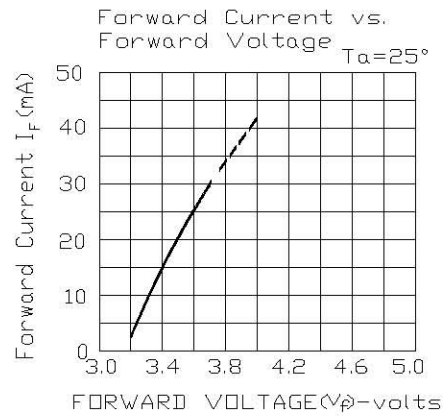
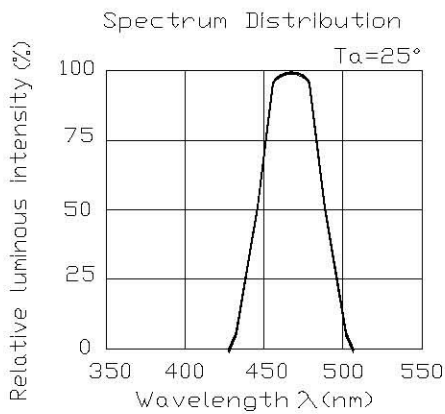
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**Typical Electro-Optical Characteristic Curves**

B





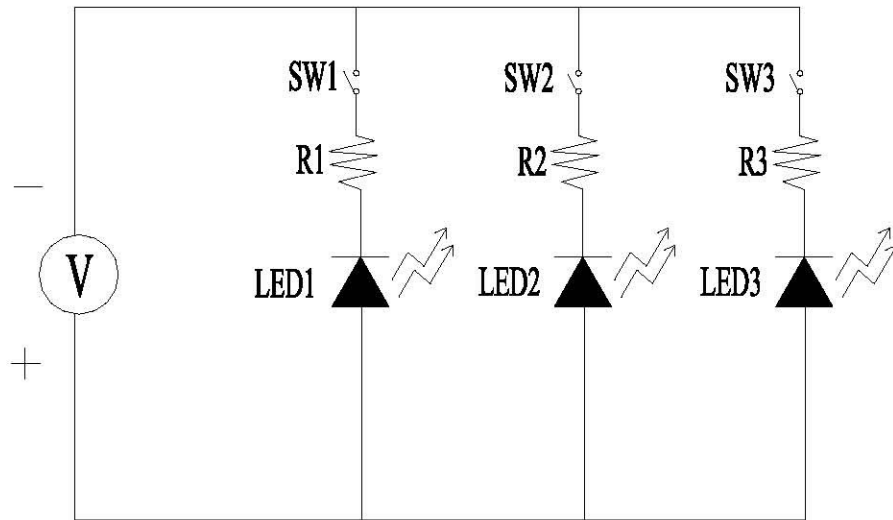
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### Test Circuit



### 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 R.H. are :  $5^{\circ}\text{C}\sim 35^{\circ}\text{C}$  , R.H.60%.

2.2 Once the package is opened , the products should be used within a week.

Otherwise , they should be keep in a damp proof box with desiccating agent.  
Considering the tape life , we suggest our customers to use our products within a year(from production date).

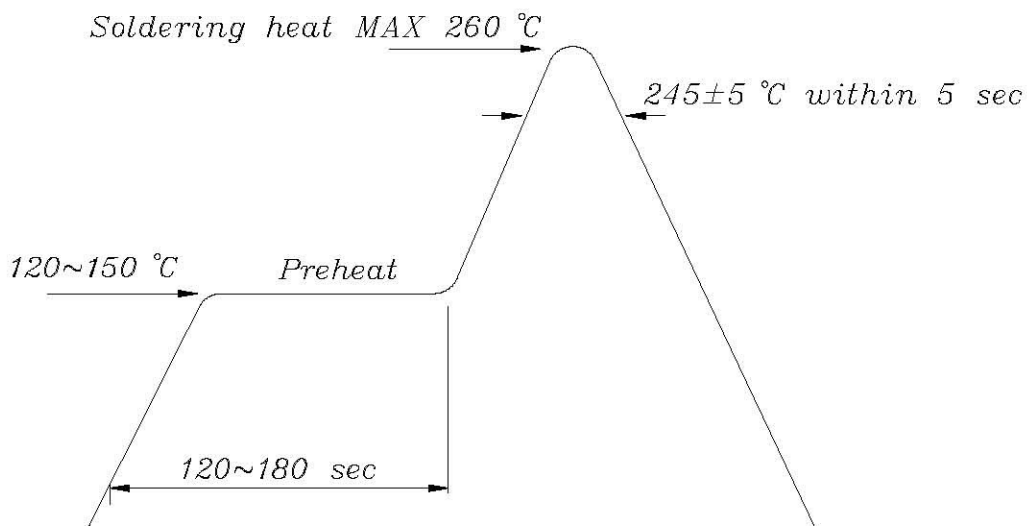
2.3 If opened more than one week in an atmosphere  $5^{\circ}\text{C}\sim 35^{\circ}\text{C}$  , R.H.60% , they should be treated at  $60^{\circ}\text{C}\pm 5^{\circ}\text{C}$  for 15hrs.

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.

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■ **Soldering heat reliability ( DIP )**

Please refer to the following figure :

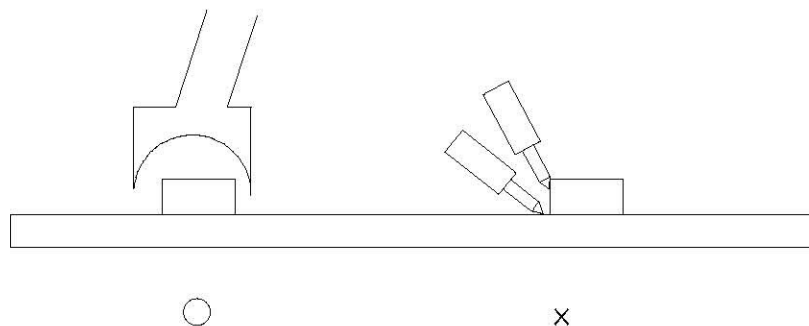


■ **Soldering Iron**

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

■ **Rework**

1. Customer must finish rework within 5 sec under  $260^{\circ}\text{C}$ .
2. Copper foil can not be touched by the head of iron.
3. Twin-head type is preferred.



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■ Reflow Temp / Time :

