



MODEL NO: 11-22VRVGC/S10/TR8

Device Number : DSE-112-014 REV. 1.1

**Chip LEDs with Bi-Color(Multi-Color)**

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**Features :**

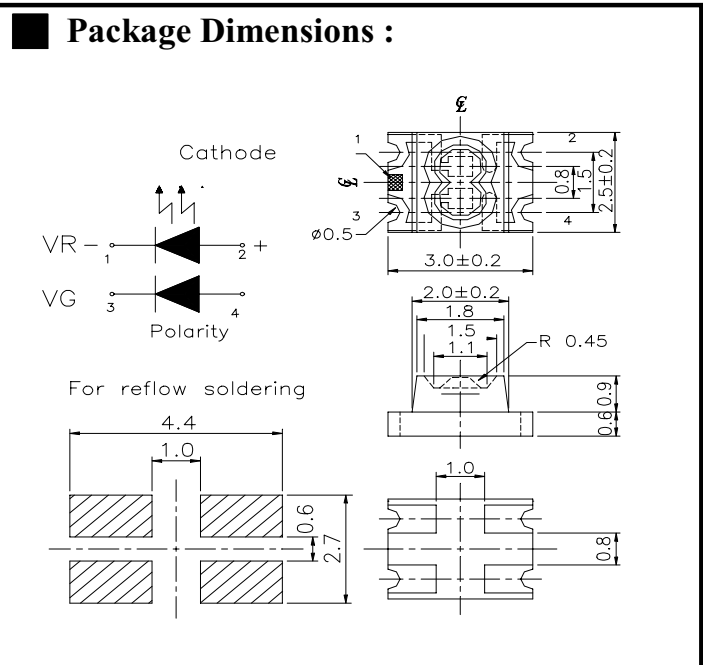
- Package in 8mm tape on 7" diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Multi-color type.

**Descriptions :**

- The 11-22 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.



**Notes :**

Tolerances Unless Dimension  $\pm 0.1\text{mm}$   
 Angle  $\pm 0.5^\circ$   
 Unit = mm

| PART NO            | Chip     |               | Lens Color  |
|--------------------|----------|---------------|-------------|
|                    | Material | Emitted Color |             |
| 11-22VRVGC/S10/TR8 | VR:      | GaAsP/GaP     | Water Clear |
|                    | VG:      | GaP           |             |

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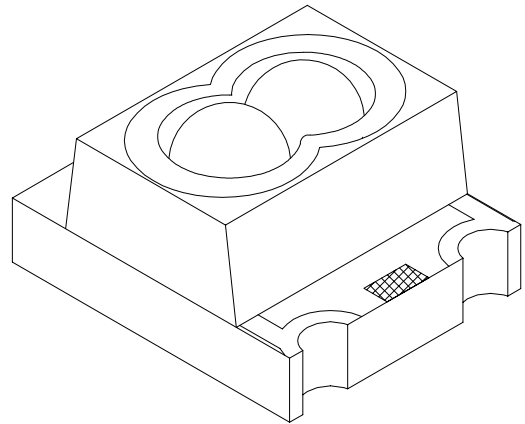
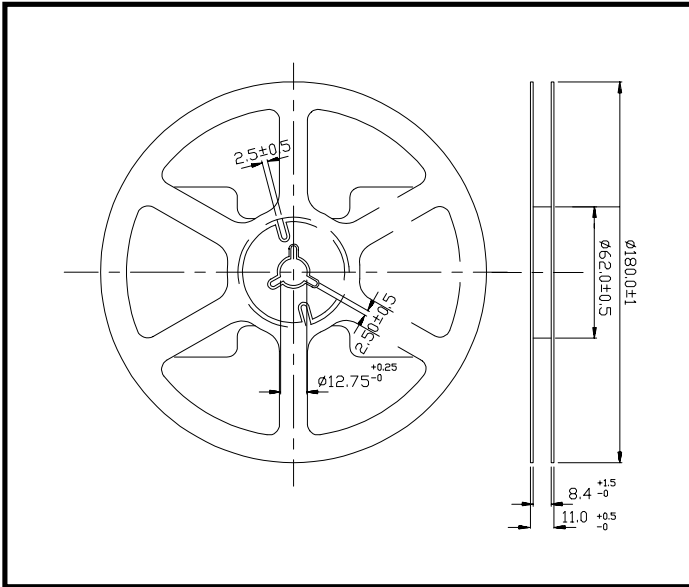
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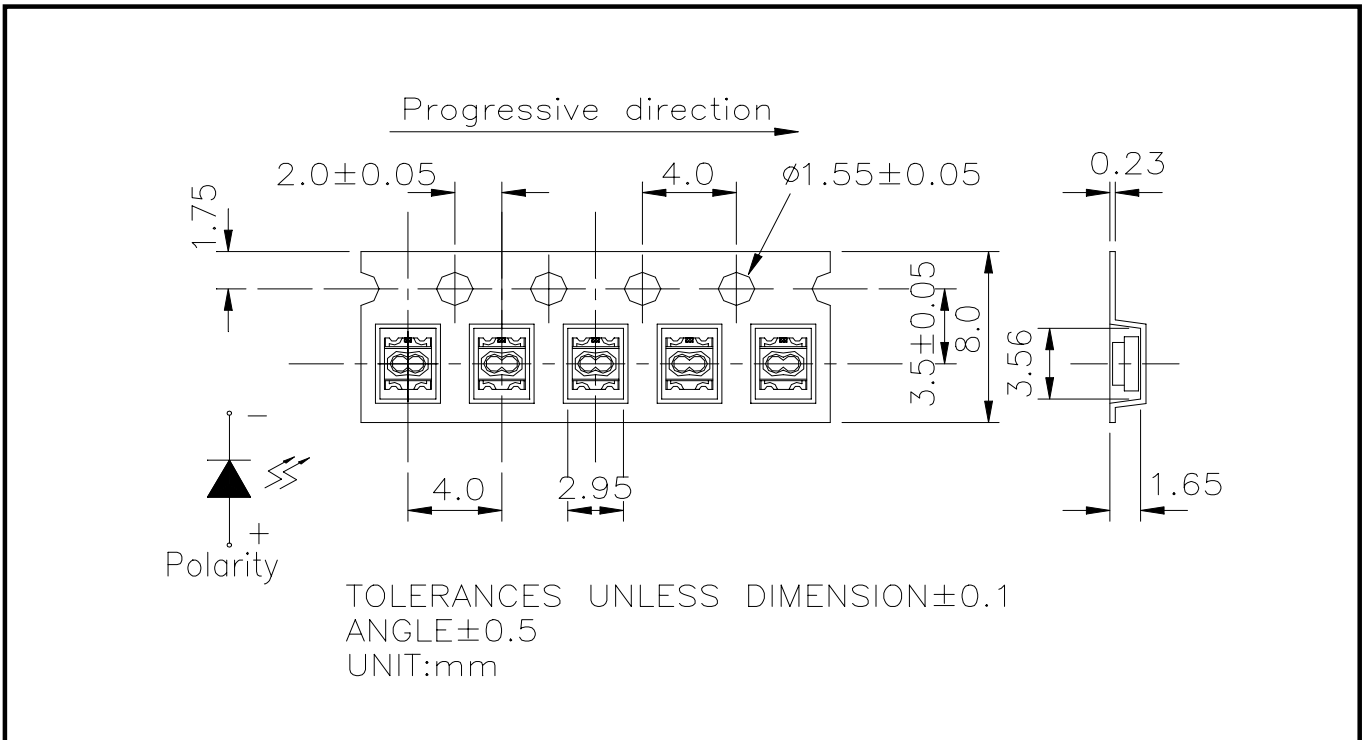
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■ **Package Dimensions :**



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





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

| Parameter                              | Symbol               | Rating             | Unit |
|--|----------------------|--------------------|------|
| Reverse Voltage                        | V <sub>R</sub>       | 5                  | V    |
| Forward Current                        | I <sub>F</sub>       | VR: 30<br>VG: 30   | 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 second) | °C   |
| Power Dissipation                      | P <sub>d</sub>       | VR: 100<br>VG: 100 | mW   |
| Peak Forward Current(Duty 1/10 @ 1KHZ) | I <sub>F(Peak)</sub> | VR: 160<br>VG: 160 | mA   |



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■ **Electronic Optical Characteristics :**

| Parameter                    | Symbol         | Min.  | Typ.  | Max.  | Unit  | Condition            |                      |
|------------------------------|----------------|-------|-------|-------|-------|----------------------|----------------------|
| Luminous Intensity           | I <sub>v</sub> | VR:   | 7.0   | 12.0  | ----- | mcd                  | I <sub>F</sub> =20mA |
|                              |                | VG:   | 14.0  | 21.0  |       |                      |                      |
| Viewing Angle                | 2θ 1/2         | ----- | 90    | ----- | deg   | I <sub>F</sub> =20mA |                      |
| Peak Wavelength              | λ <sub>p</sub> | VR:   | ----- | 640   | ----- | nm                   | I <sub>F</sub> =20mA |
|                              |                | VG:   | ----- | 570   |       |                      |                      |
| Dominant Wavelength          | λ <sub>d</sub> | VR:   | ----- | 625   | ----- | nm                   | I <sub>F</sub> =20mA |
|                              |                | VG:   | ----- | 571   |       |                      |                      |
| Spectrum Radiation Bandwidth | Δλ             | VR:   | ----- | 45    | ----- | nm                   | I <sub>F</sub> =20mA |
|                              |                | VG:   | ----- | 30    |       |                      |                      |
| Forward Voltage              | V <sub>F</sub> | VR:   | 1.7   | 2.0   | 2.6   | V                    | I <sub>F</sub> =20mA |
|                              |                | VG:   | 1.7   | 2.1   | 2.4   |                      |                      |
| Reverse Current              | I <sub>R</sub> | ----- | ----- | 10    | μA    | V <sub>R</sub> =5V   |                      |



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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<br>∫ 5 min<br>L : -55°C 30min | 50 CYCLE         | 76 PCS      | 0/1   |
| 3  | Thermal Shock                    | H : +100°C 5min<br>∫ 10 sec<br>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                | I <sub>F</sub> = 20 m A                       | 1000 HRS         | 76 PCS      | 0/1   |
| 7  | High Temperature / High Humidity | 85°C/85% RH                                   | 1000 HRS         | 76 PCS      | 0/1   |



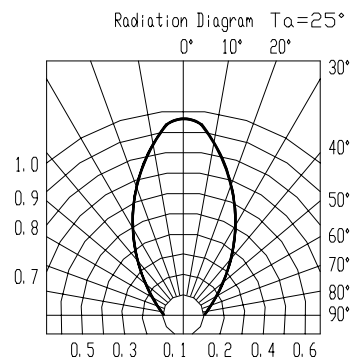
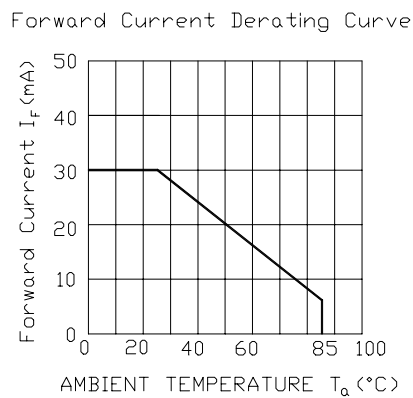
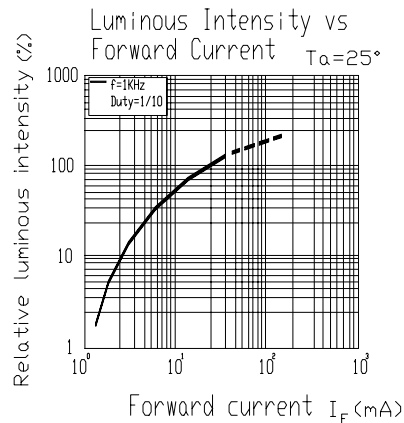
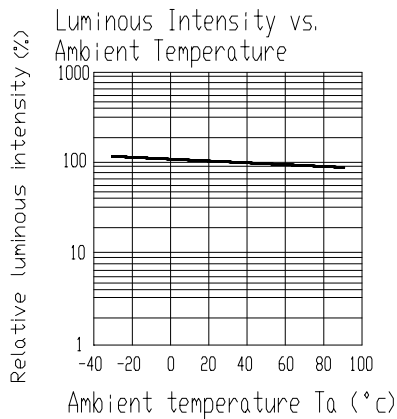
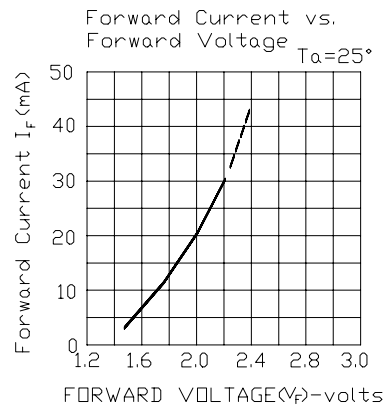
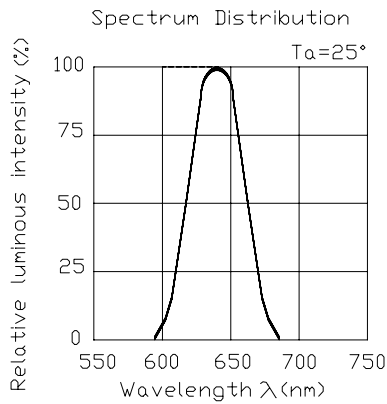
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**Chip LEDs with Bi-Color(Multi-Color)**

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**Typical Electro-Optical Characteristic Curves :**

**VR**





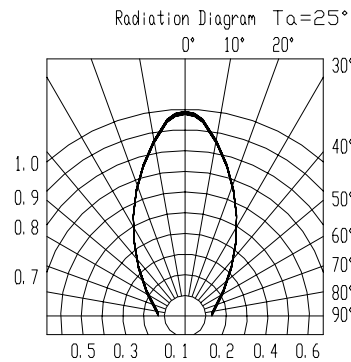
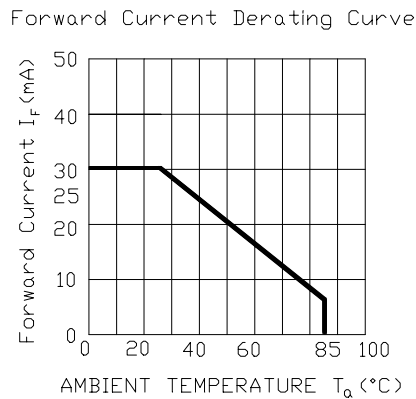
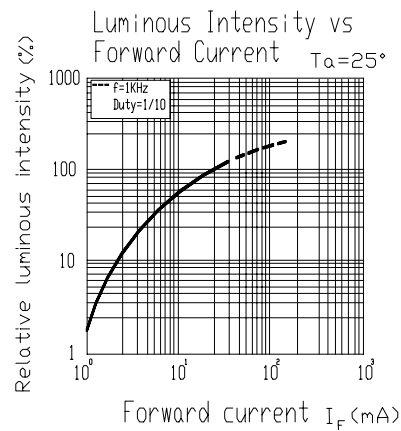
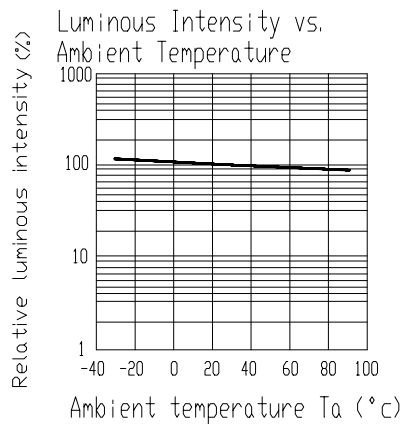
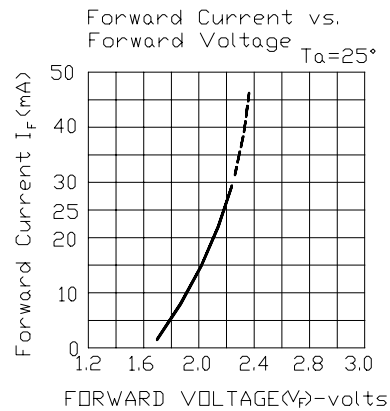
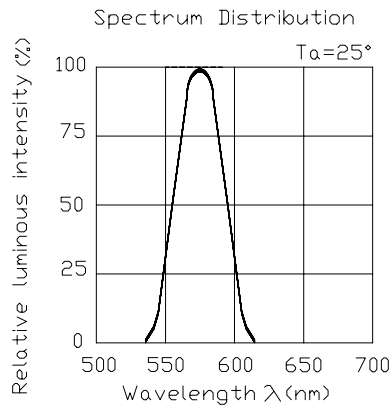
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**Typical Electro-Optical Characteristic Curves :**

**VG**





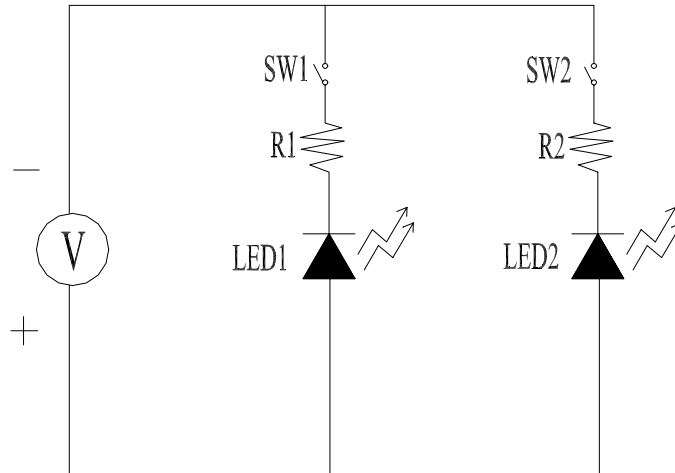
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**Chip LEDs with Bi-Color(Multi-Color)**

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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 keeping 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.



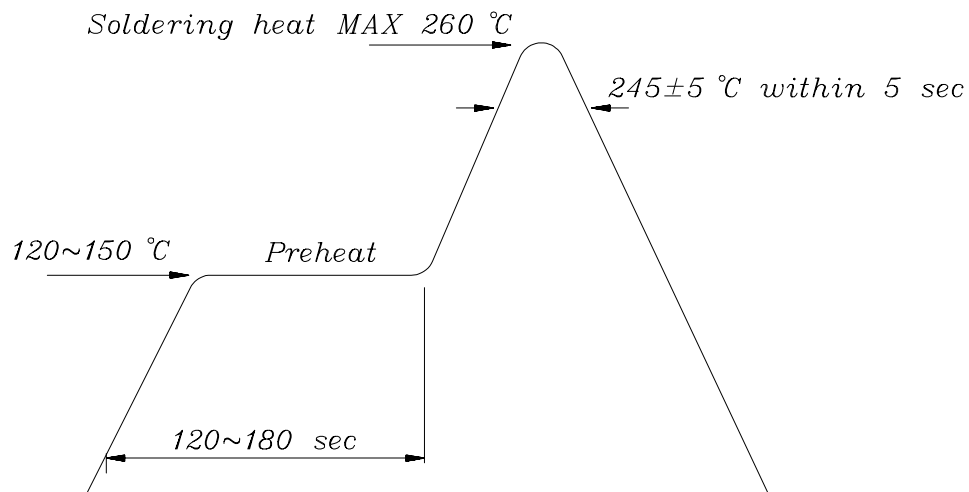
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**■ Soldering heat reliability ( DIP ) :**

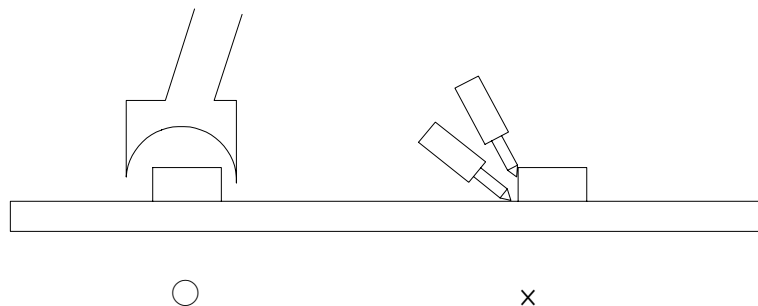
Please refer to the following figure :

**■ Soldering Iron :**

Basic spec is  $\leq 5$  sec when 260°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 260°C.
2. The head of iron can not touch copper foil.
3. Twin-head type is preferred.





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■ Reflow Temp / Time :

