



## Technical Data Sheet

# High performance SMD LED with Reflector

**93-22 VRVGC/TR8**

### Features

- Package in 12mm tape on 7" diameter reels.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Eia std. package.
- IC compatible.

### Applications

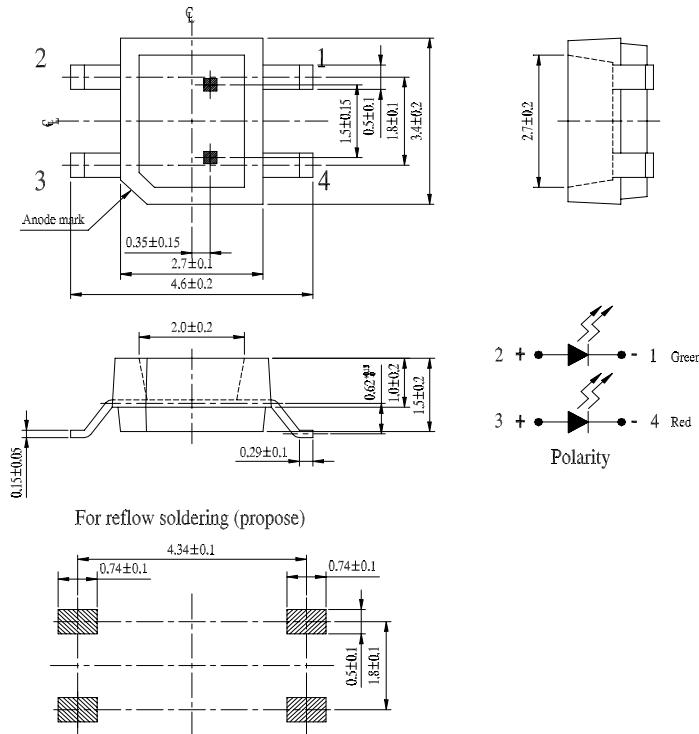
- Automotive: backlighting in dashboard and switch.
- Telecommunication: indicator and backlighting in telephone and fax.
- Indicator and backlight for audio and video equipment.
- Indicator and backlight for battery driven equipment.
- Small indicator for outdoor applications.
- Indicator and backlight in office equipment.
- Flat backlight for LED, switches and symbol.
- General use.



### Device Selection Guide

Chip			Lens Color
Type	Material	Emitted Color	
VR	GaAsP/GaP	Hi-Eff Red	Water Clear
VG	GaP	Green	

**Package Dimensions**



**Notes:** All dimensions are in millimeters.

**Absolute Maximum Ratings @Ta=25°C (VR,VG)**

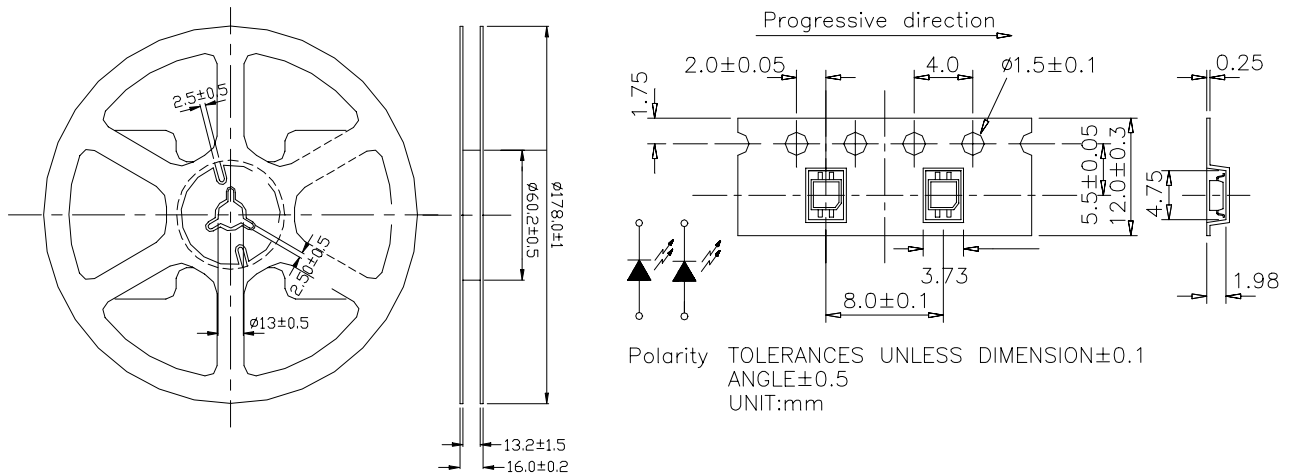
Parameter	Symbol	Rating	Unit
Reverse Voltage	V <sub>R</sub>	5	V
Forward Current	I <sub>F</sub>	30	mA
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40~ +100	°C
Soldering Temperature	T <sub>sol</sub>	260 (for 5 second)	°C
Power Dissipation	P <sub>d</sub>	120	mW
Peak Forward Current (Duty 1/10 @ 1KHz)	I <sub>F(Peak)</sub>	160	mA

**Electro-Optical Characteristics @ Ta=25°C**

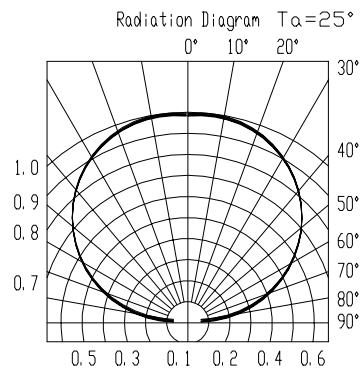
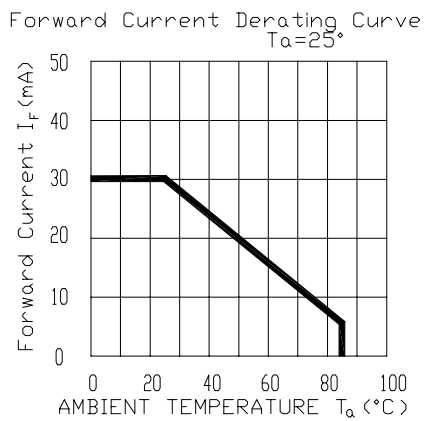
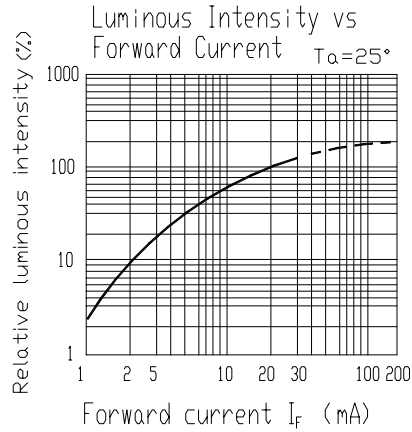
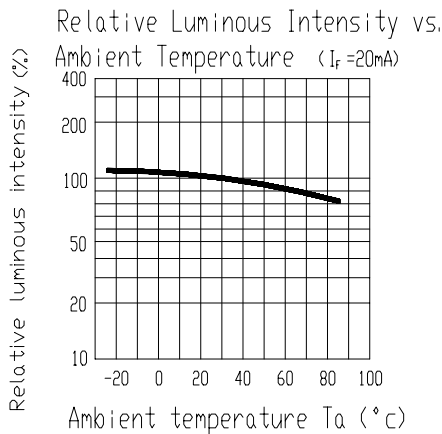
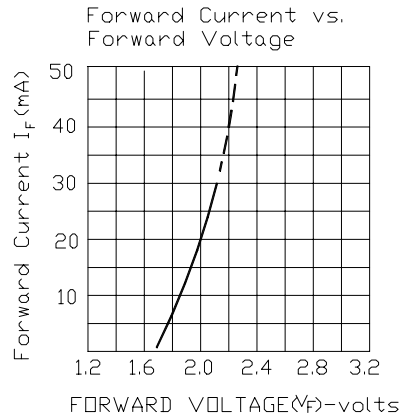
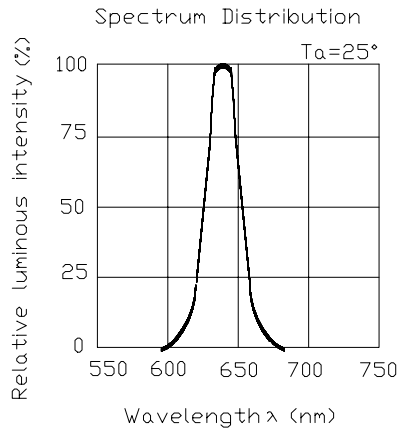
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition	
Luminous Intensity	I <sub>v</sub>	VR	7	12	-----	mcd	
		VG	12	20	-----	mcd	
Viewing Angle	2θ 1/2	-----	130	-----	deg	I <sub>F</sub> =20mA	
Peak Wavelength	λ <sub>p</sub>	VR	-----	640	-----	nm	I <sub>F</sub> =20mA
		VG	-----	570	-----		
Dominant Wavelength	λ <sub>d</sub>	VR	-----	625	-----	nm	I <sub>F</sub> =20mA
		VG	-----	571	-----		
Spectrum Radiation Bandwidth	Δλ	VR	-----	20	-----	nm	I <sub>F</sub> =20mA
		VG	-----	30	-----		
Forward Voltage	V <sub>F</sub>	VR	-----	2.0	2.4	V	I <sub>F</sub> =20mA
		VG	-----	2.1	2.4		
Reverse Current	I <sub>R</sub>	-----	-----	10	μA	V <sub>R</sub> =5V	

**Package Dimensions**

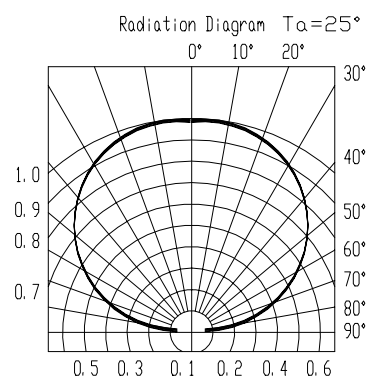
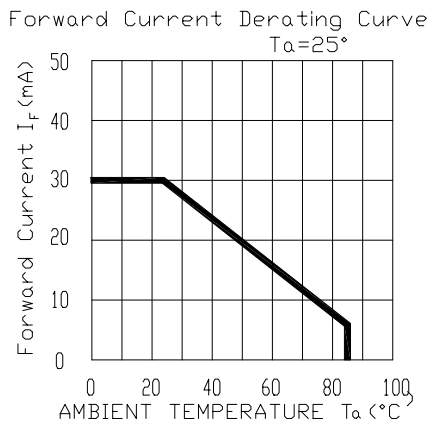
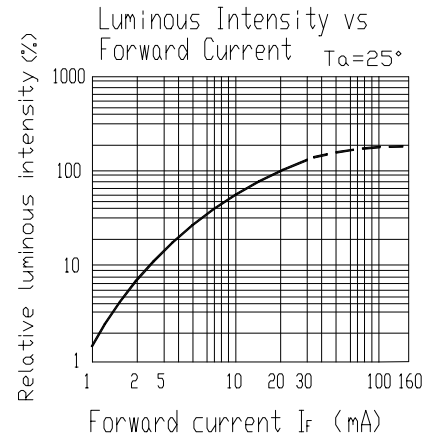
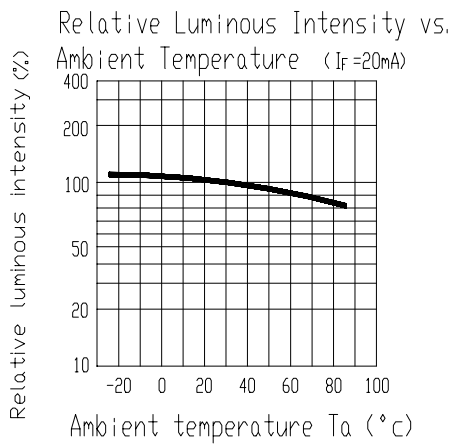
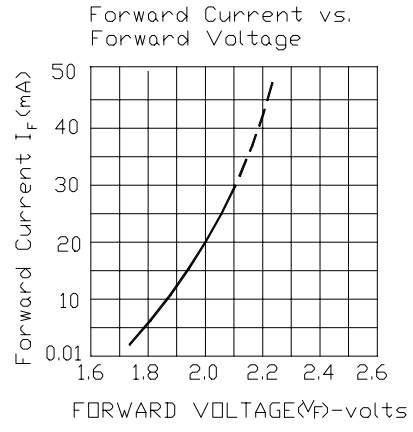
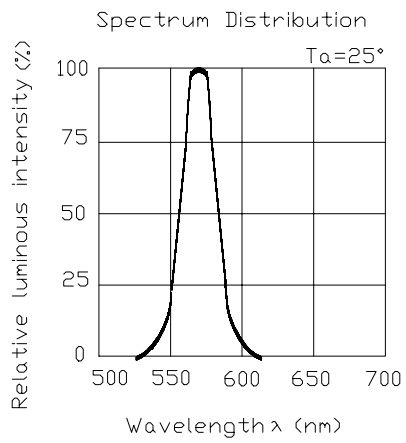
**Loaded quantity per reel 2000 PCS/reel**



**Typical Electro-Optical Characteristics Curves (VR)**



**Typical Electro-Optical Characteristics Curves (VG)**



**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

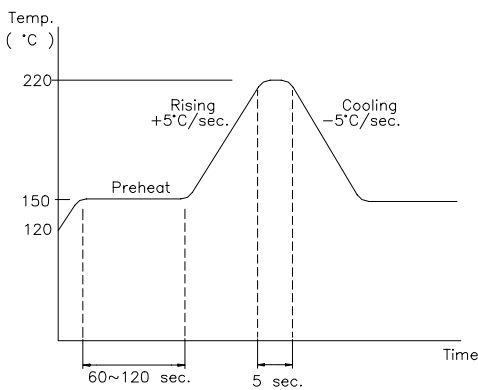
2.1 The operation of Temperature and RH are : 5°C~35°C, RH60%.

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 desiccating agent. Considering the tape life , we suggest our customers to use our products within a year(from production date).

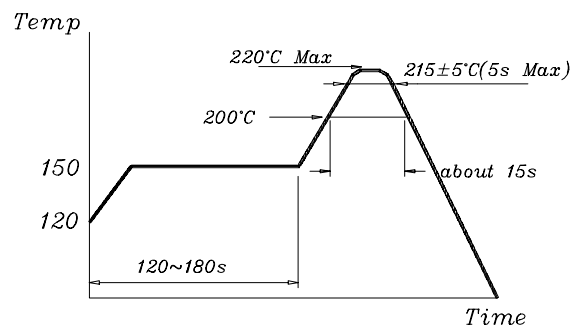
2.3 If opened more than one week in an atmosphere 5°C~35°C, RH 60%, they should be treated at 60°C ±5°C for 15hrs.

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 reliability ( DIP )**



**Reflow Temp / Time**

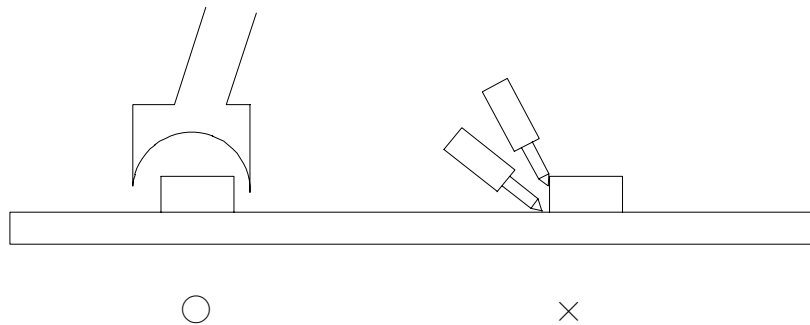


**Soldering Iron**

Basic spec is ≤ 5 sec when 245°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.



**EVERLIGHT ELECTRONICS CO., LTD.**  
Office: No 25, Lane 76, Sec 3, Chung Yang Rd,  
Tucheng, Taipei 236, Taiwan, R.O.C

Tel: 886-2-2267-2000, 2267-9936  
Fax: 886-2267-6244, 2267-6189, 2267-6306  
<http://www.everlight.com>