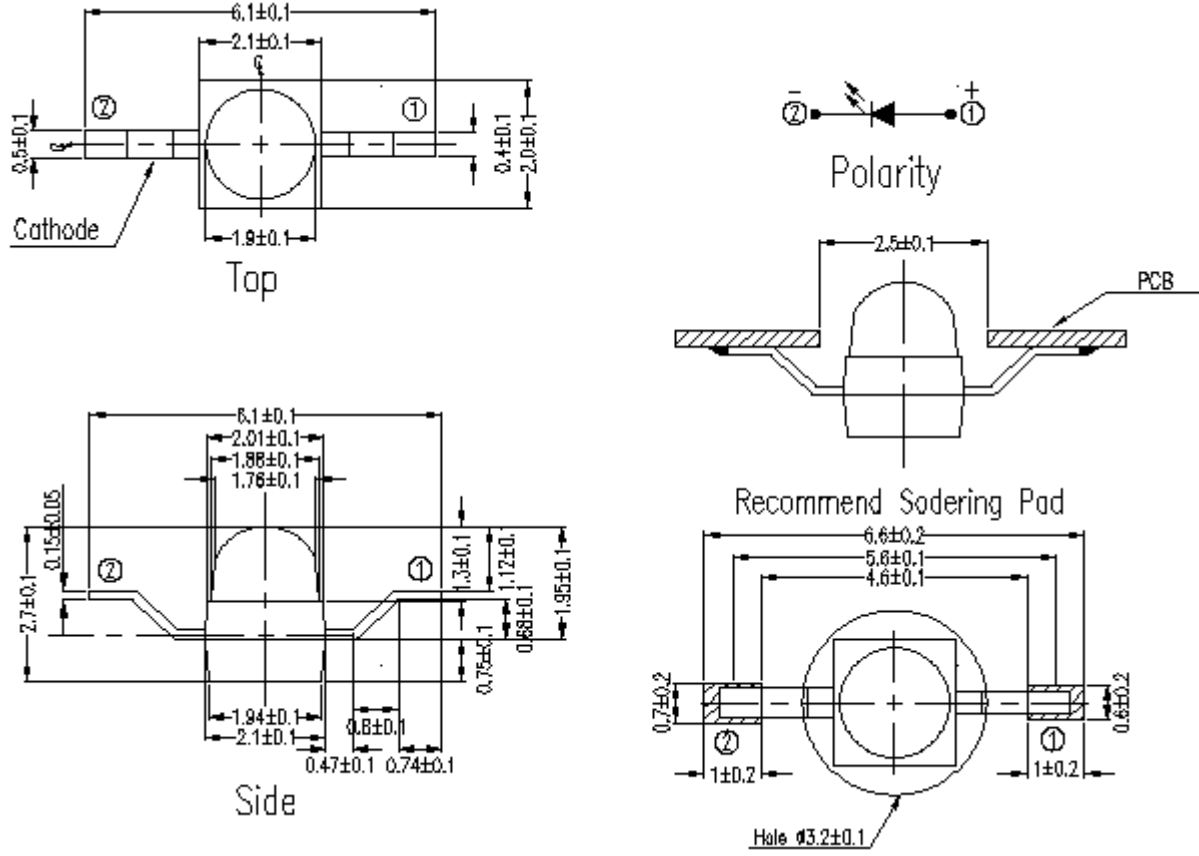


**SPECIFICATION** **CSM28R2CZ-1**
**PACKAGE OUTLINES**


- Notes:
1. All dimensions are in millimeters (inches).
  2. Tolerance is  $\pm 0.25$ mm (0.01") unless otherwise noted.
  3. Specifications are subject to change without notice.

Part Number	Chip Material	Color of Emission	Lens Type	Viewing Angle
CSM28R2CZ-1	InGaAlP	Red	Water Clear	25°



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**ABSOLUTE MAXIMUM RATINGS**
**(TA=25°C)**

Parameter	Symbol	Max Rating	Unit
Forward Current	IF	20	mA
Reverse Current @ 5V	IR	10	μA
Power Dissipation	Pd	60	mW
Operating Temperature Range	TOP	-40~+85	°C
Storage Temperature Range	TSTG	-40~+90	°C
Peak Pulsing Current (1/10 duty f = 10KHz)	IFP	60	mA
Soldering Temperature	TSOL	Max 260°C for 10 sec Max	

**OPTICAL-ELECTRICAL CHARACTERISTICS**
**(TA=25°C)**

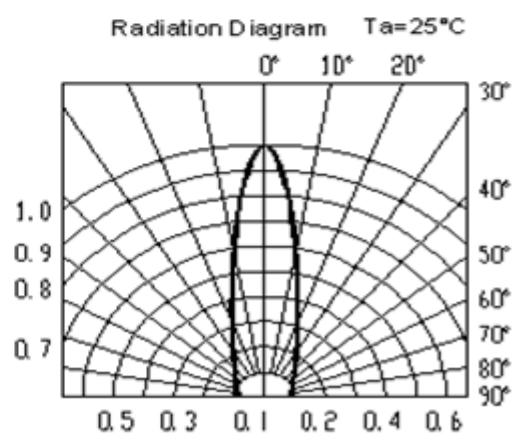
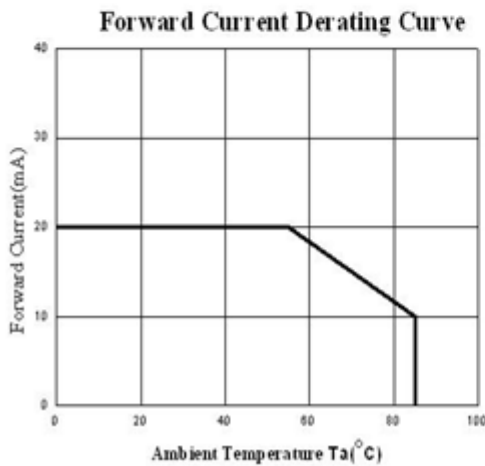
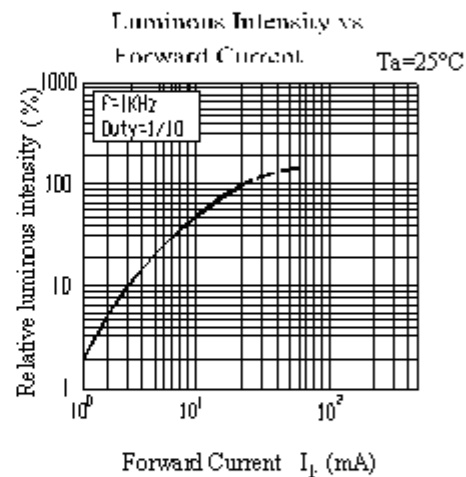
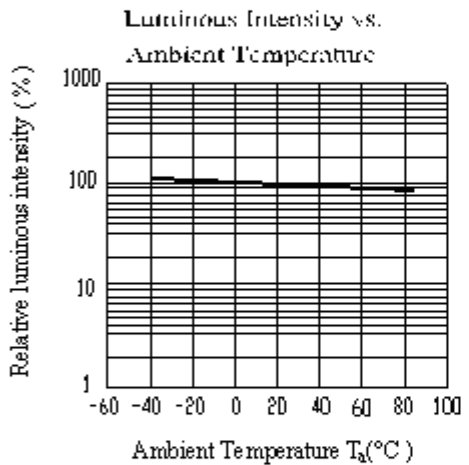
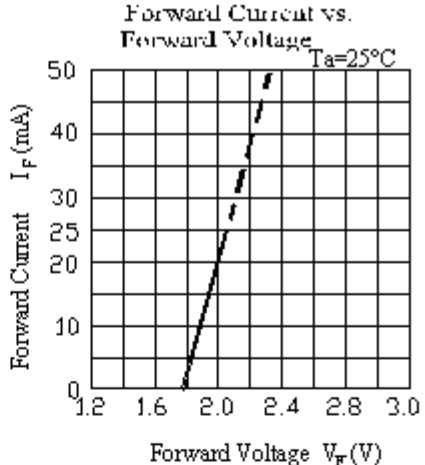
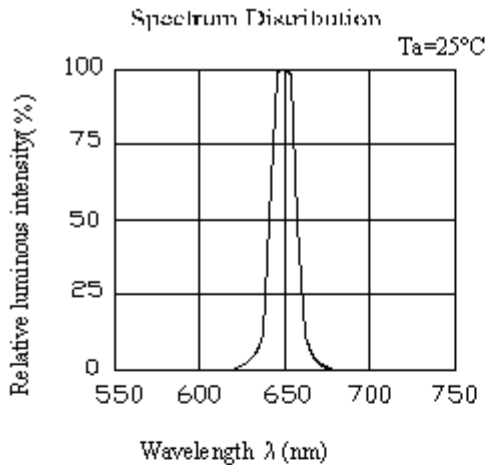

Parameter	Symbol	Test Condition	Value			Unit
			Min	Typ	Max	
Luminous Intensity	Iv	IF = 20mA	661	992	-	mcd
Forward Voltage	VF	IF = 20mA	-	2.0	2.4	V
Reverse Leakage Current	IR	VR = 5V	-	-	10	μA
Viewing Angle at 50% Iv	2θ1/2	IF = 20mA	-	25	-	Deg
Peak Wavelength	λP	IF = 20mA	-	650	-	nm
Dominant Wavelength	λD	IF = 20mA	-	639	-	nm

\*Tolerance of viewing angle: -10 / +5 deg.



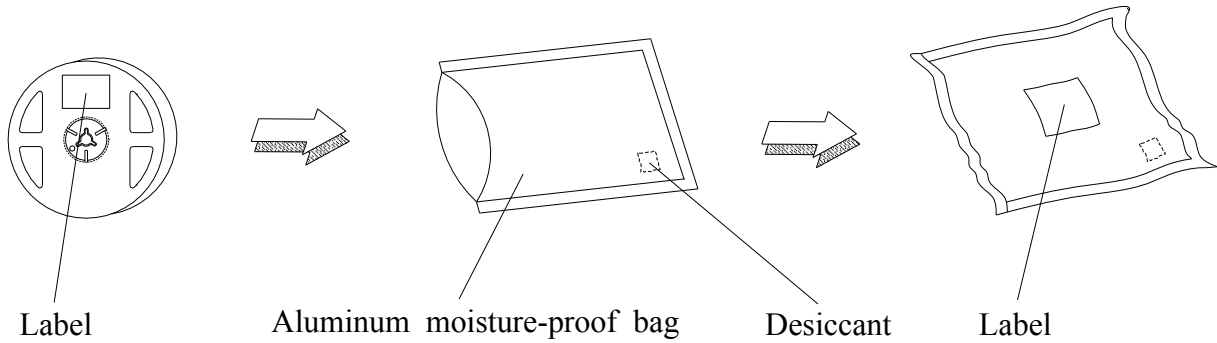
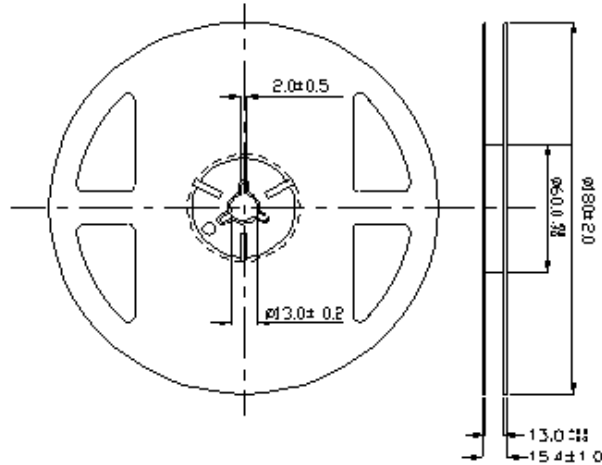
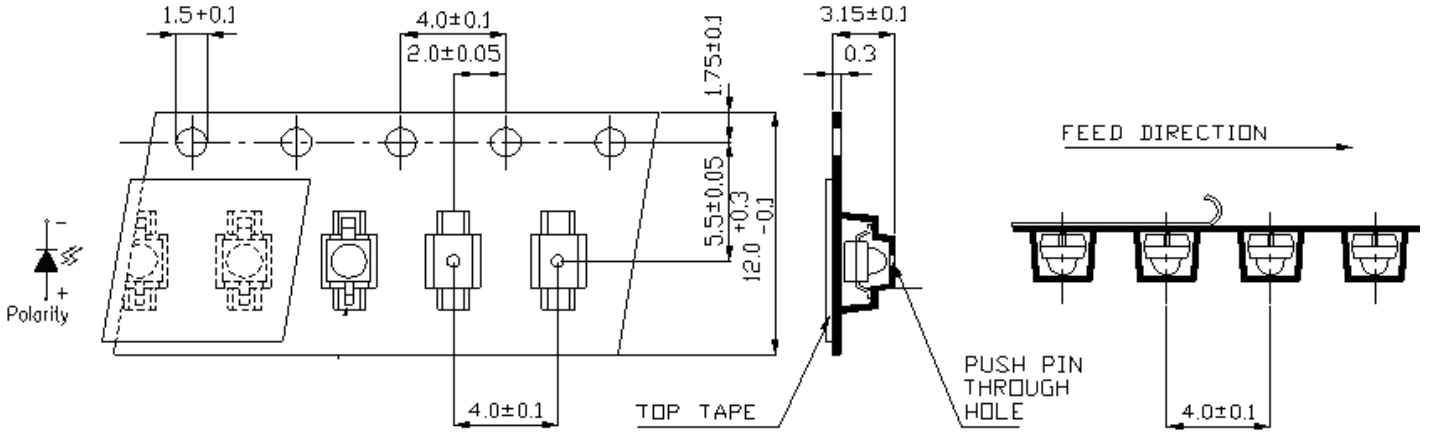
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## OPTICAL CHARACTERISTIC CURVES

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## PACKAGING SPECIFICATION



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## SOLDERING CONDITIONS

### 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

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package: The LEDs should be kept at 30°C or less and 90%RH or less.

2.3 After opening the package: The LED's floor life is 72 hours under 30°C or less and 60% RH or less.

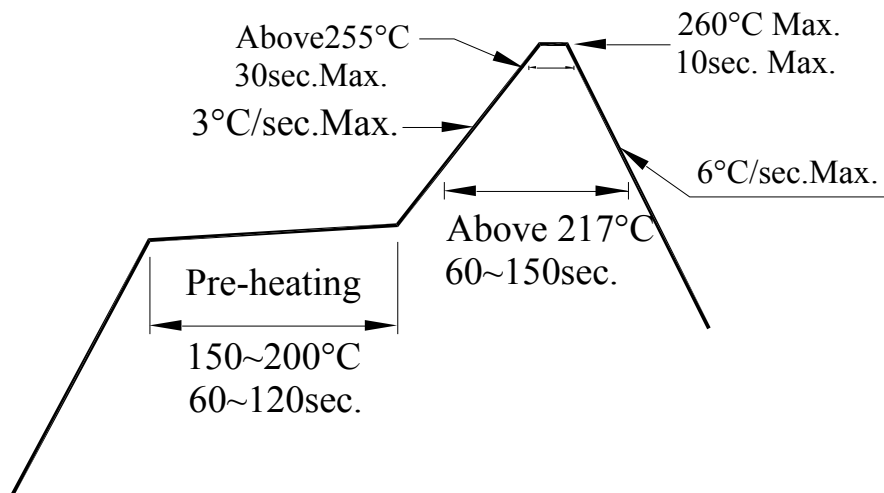
If unused LEDs remain, it should be stored in moisture proof packages.

2.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

Baking treatment : 60±5°C for 24 hours.

#### 3. Soldering Condition

##### 3.1 Pb-free solder temperature profile



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