CL-SFD3030IR-940

Features

- Size(mm): 3. 00×3. 00 ×2.49 mm.
- Half angle:±30deg.
- High reliability.
- Low forward voltage.
- Peak wavelength λp=940nm .
- 940nmfree of red.
- Pb-free reflow soldering application.
- RoHScompliant.
- Package:3000 pcs/ reel.
- MoistureSensitiveLevel:Level1.

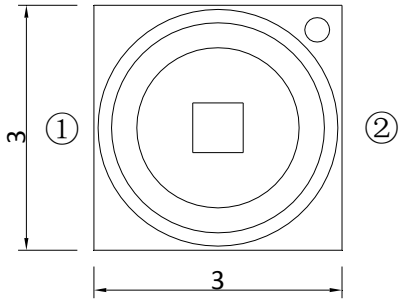
Description

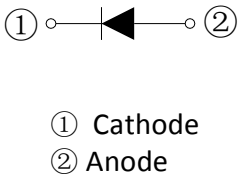
This product uses the EMC Molding package, it has a high reliability. it also be widely application for security monitoring and sensor, Such as Surveillance systems ,Infrared Illumination for cameras and Machine vision systems.

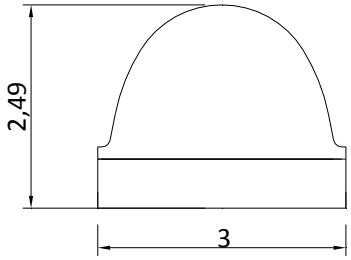
Applications

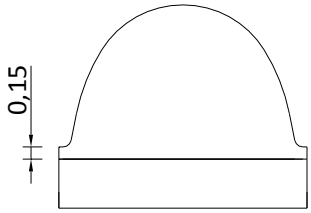
- Surveillance systems.
- Infrared Illumination for cameras.
- Machine vision systems.

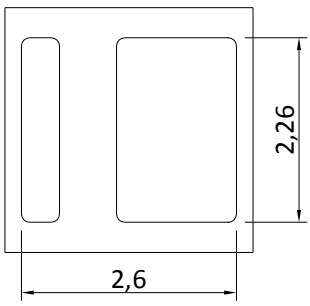
Package Dimension

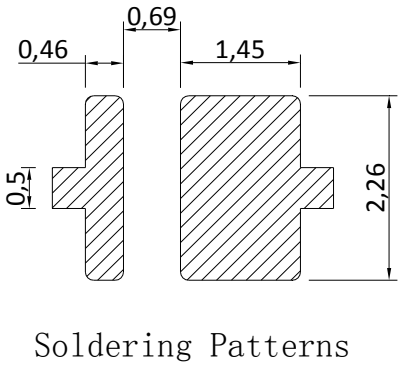












Note:

1. All dimensions units are mm.

2. All dimensions tolerances are ±0.2mm unless otherwise noted.

Electrical / Optical Characteristics at T s=25°C

Parameter	Symbol	Condition	Value			Unit
			Min	Typ	Max	
Reverse Current	IR	VR = 5V	---	---	10	μA
Forward Voltage	VF	IF = 500mA	1.3	1.5	---	V
Peak Wavelength	λp	IF = 500mA	930	940	---	nm
Spectrum Radiation Bandwidth	Δ λ	IF = 500mA	---	40	---	nm
Total radiant flux	Φe	IF = 500mA	280	350	---	mW
Radiant Intensity	I max	IF = 500mA	320	480	---	mW/sr
Half Angle	φ	IF = 500mA	±30			deg
Thermal resistance	Rth(j-s)	IF = 500mA	14			℃/W

Absolute M aximum R atings at T s=25°C

Parameter	Symbol	Absolute Maximum Rating	Unit
Forward Current	IF	500	mA
Reverse Voltage	VR	5	V
Operating Temperature	Topr	-40 ~ +85	℃
Storage Temperature	Tstg	-40 ~ +100	℃
Power Dissipation	PD	0.7	W
Electrostatic Discharge (HBM)	ESD	2000	V
Junction temperature	Tj	115	℃

Note:

1. The above forward voltage measurement allowance tolerance is ±0.1V

.

2. Tolerance of measurement of Total radiant flux/ Radiant Intensity: ±10%.

3. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.

4. When the LEDs are in operation the maximum current should be decided after measuring the package temperature, junction temperature should not exceed the maximum rate.

T y pical Optical Characteristics Cur v es

Fig.1-Forward Voltage Vs. Forward Current

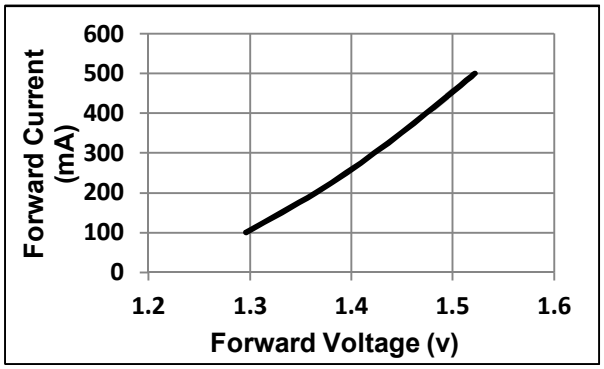


Fig.2-Forward Current Vs. Relative Intensity

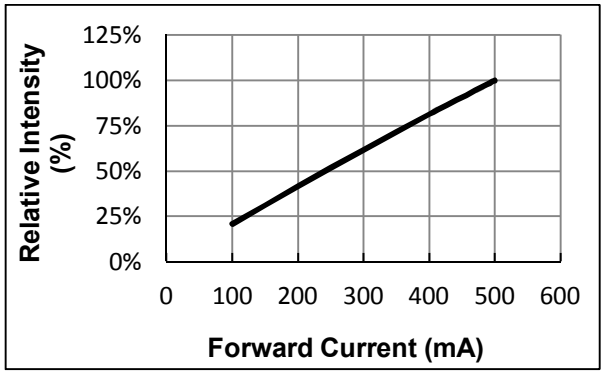


Fig.3-Ts Temperature Vs. Relative Intensity

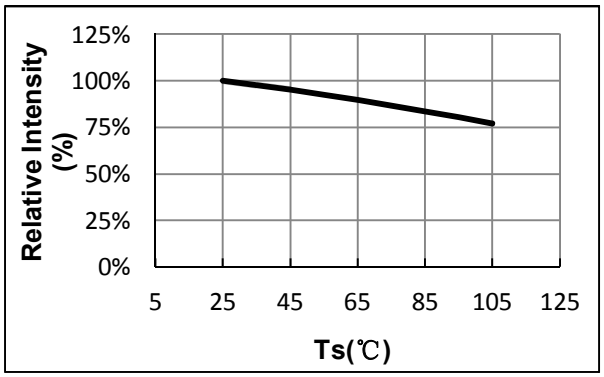


Fig.4- Spectrum Distribution

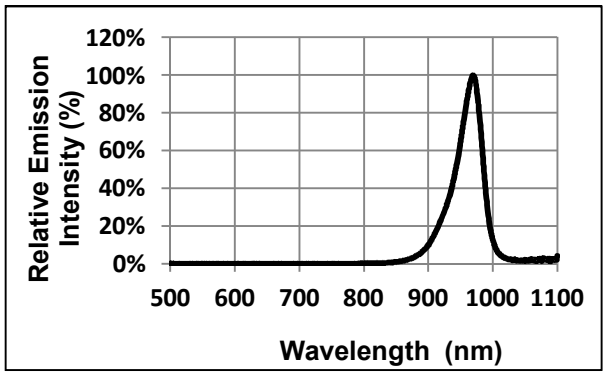


Fig.5- Radiation diagram

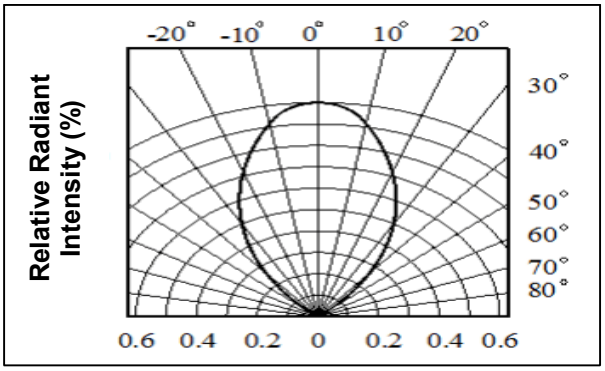
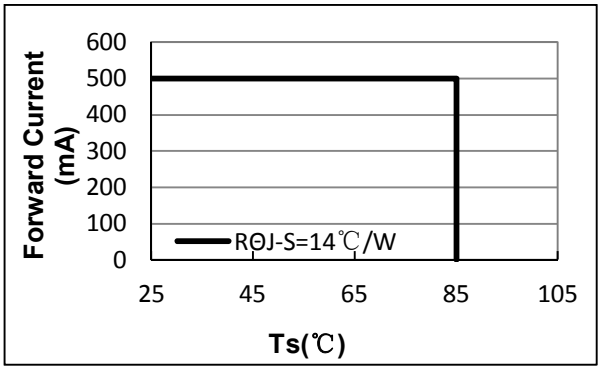
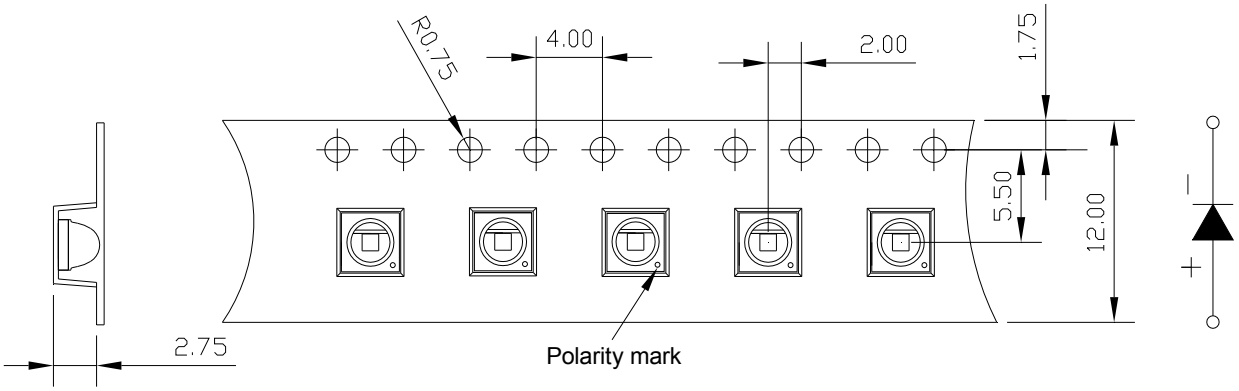


Fig.6- Ts Temperature Vs. Forward Current

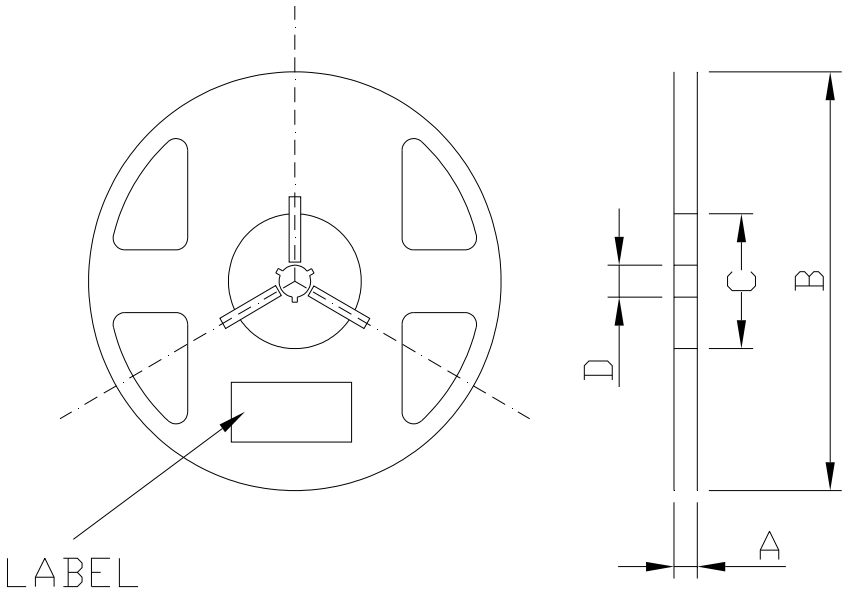


Packaging Specifications

■ Carrier T ape Dimensions



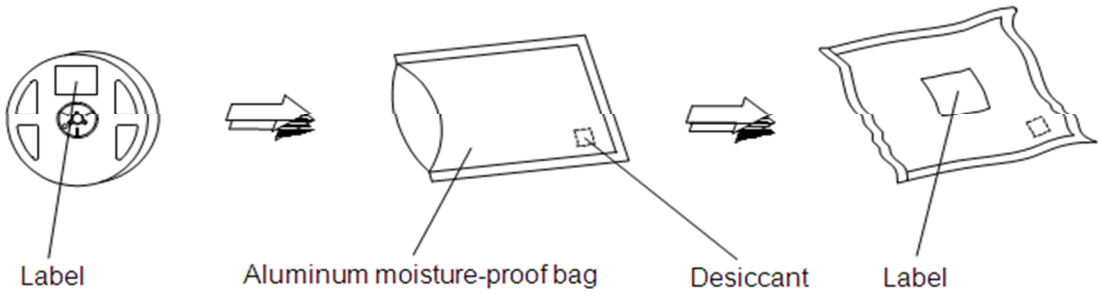
■ Reel Dimension



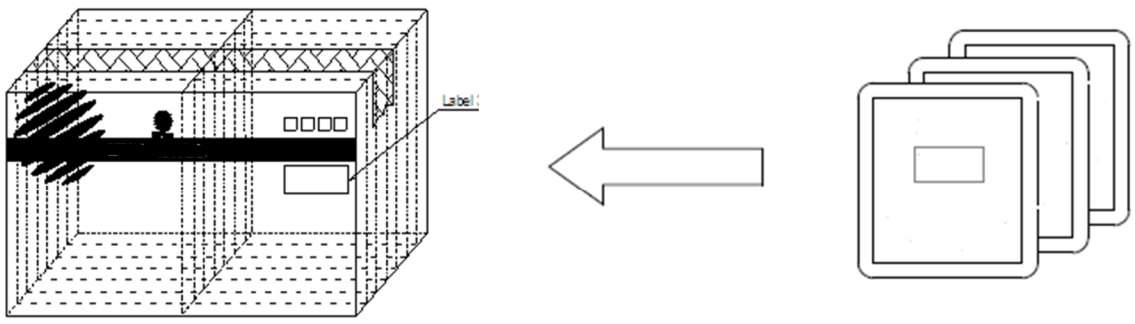
Note:

The tolerances unless mentioned ±0.1 mm. Unit : mm

■ Moisture Resistant Packing Process



■ Cardboard Box



Reliabilit y Test Items And Conditions

Test Items	Ref.Standard	Test Condition	Time	Quantity	Ac/Re
Reflow	JESD22-B106	Temp:260°C max T=10 sec	3times.	11Pcs.	0/1
Temperature Cycle	JESD22-A104	100°C 30 min. ↑↓5 min -40°C 30 min.	300 Cycles	11Pcs.	0/1
Thermal Shock	JESD22-A104	-40°C 15min ↑↓10sec 100°C 15min	300 Cycles	11Pcs.	0/1
High Temperature Storage	JESD22-A103	Temp.:100°C	1000Hrs	11Pcs.	0/1
Low Temperature Storage	JESD22-A119	Temp.:-40°C	1000Hrs	11Pcs.	0/1
Life Test	JESD22-A108	Ta=25°C IF=500mA	1000Hrs	11Pcs.	0/1
High Temperature High Humidity Life Test	JESD22-A101	60°C / 90%RH IF=500mA	1000Hrs	11Pcs.	0/1

HALT Test Items Condition HALT

Test Items	Test Conditions	Time	Quantity	Criterion
Low Te mperature Step Stress Test	20°C →60°C/min, -5°C/Step, 10 min/ Step→ -70°C ,IF=500mA	1 times	32	0/32
High Temperature Step Stress Test	30°C →60°C/min, +5°C/Step, 10 min/ Step→ 90°C ,IF=500mA	1 times		
Rapid Thermal Transition Stress Test	-65°C←40°C/min, 10 min/ Step→85°C ,IF=500mA	10cycles		
Vibration Step Stress Test	Ta=25°C, 5Grms←5Grms/step, 10 min/ Step→85°C ,IF=500mA	1 times		
Combined Thermal Transition Cycling &Vibration Stress Test	5Grms←5Grms/step→85°C -65°C←30°C/min, 10 min/ Step→85°C, IF=500mA	9 cycles		

Note:

The HALT test is continuous, the order of test project is from top to bottom.

Criteria For Judging Damage

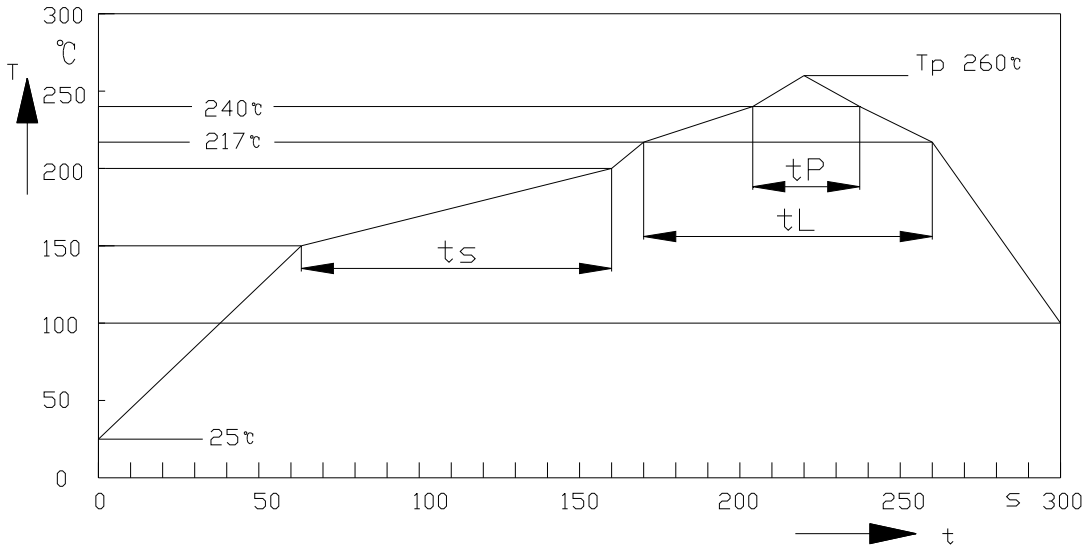
Test Items	Symbol	Test Conditions	Criteria for Acceptance	
			Min.	Max.
Forward Voltage	VF	IF =500mA	-	U.S.L*)x1.1
Reverse Current	IR	VR=5V	-	U.S.L*)x2.0
Total radiant flux	Φe	IF=500mA	L.S.L*)x0.7	-

Note:

1. The technical information shown in the data sheets are limited to the typical characteristics and ci rcuit

examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.

SMT Reflow Soldering Instructions



Profile Feature	Symbol	Pb-Free(SnAgCu)Assembly			Unit
		Min	Tpy	Max	
Ramp-up rate topreheat (25 ℃ to 150 ℃)			2	3	℃/s
Time ts (Tsmin to Tsmax)	ts	60	100	120	s
Ramp-up rate to peak (Tsmax to Tp)			2		℃/s
Liquidus temperature	TL	217	℃		℃
Time above liquidus temperature	tL		80	100	s
Peak temperature	Tp		245	260	℃/s
Time within 5℃ of the specified peak temperature Tp-5℃	tP	10	20	30	s
Ramp-down rate（Tp to 100℃）			3	6	℃/s
Time（25 ℃toTp）				480	s

Note:

1. Reflow soldering should not be done more than two times. In the case of more than 24 hours passed soldering after first, LEDs will be damaged.

2. When soldering , do not put stress on the LEDs during heating.

■ **Soldering Iron**

1. When hand soldering, keep the temperature of iron below less 300℃ less than 3 seconds.
2. The hand solder should be done only one time.

■ **Repairing**

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed in advance whether the characteristics of LEDs will or will not be damaged by repairing.

■ **Cautions**

1. The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be influence to the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when use the picking up nozzle, the pressure on the silicone resin should be proper.

2. Components should not be mounted on warped (non coplanar) portion of PCB. After soldering, do not warp the circuit board.

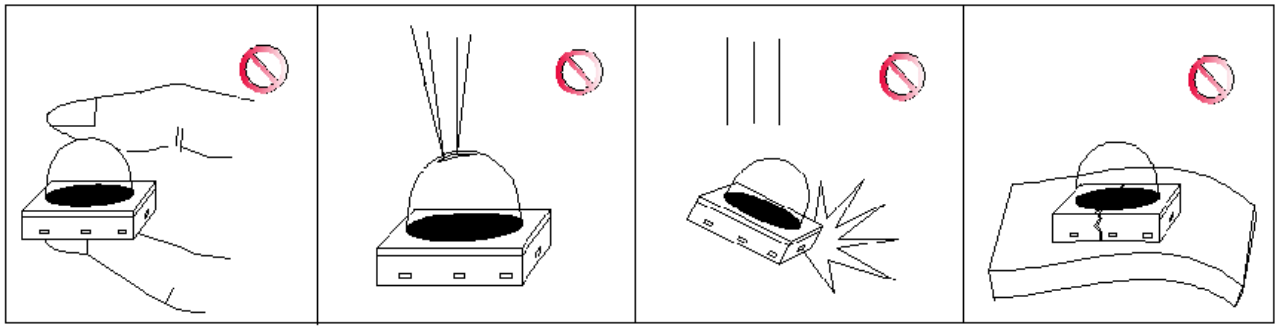
3. Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering. Do not rapidly cool device after soldering.

Handling Precautions

1. LED operating environment and sulfur element composition cannot be over 100 PPM in the LED mating usage material. This is provided for informational purposes only and is not a warranty or endorsement.

2. VOCs (Volatile organic compounds) emitted from materials used in the construction of fixtures can penetrate silicone encapsulants of LEDs and discolor when exposed to heat and photonic energy. The result can be a significant loss of light output from the fixture. Knowledge of the properties of the materials selected to be used in the construction of fixtures can help prevent these issues. Refond advises against the use of any chemicals or materials that have been found or are suspected to have an adverse affect on device performance or reliability. To verify compatibility, Refond recommends that all chemicals and materials be tested in the specific application and environment for which they are intended to be used. Attaching LEDs, do not use adhesives that outgas organic vapor.

3. Handle the component along the side surface by using forceps or appropriate tools; do not directly touch or Handle the silicone lens surface , it may damage the internal circuitry.



4. In designing a circuit,the current through each LED must be exceed the absolute maximum rating specified for each LED.In the meanwhile,resistors for protection should be applied ,otherwise slight voltage shift will cause big current change ,burn out may happen . The driving circuit must be designed to allow forward voltage on ly when it is ON or OFF.If the reverse voltage is applied to LED , migration can be generated resulting in LED damage .

5. Thermal Design is paramount importance because heat generation may result in the Characteristics decline , such as brightness decreased,Color change and so on.Please consider the heat generation of the LEDs when making the system design.

6. Compared to standard encapsulants, silicone is generally softer, and the surface is more likely to attract dust，requiring special care during processing. In cases where a minimal level of dirt and dust particles cannot be guaranteed, a suitable cleaning solution must be applied to the surface after the soldering of components. Refond suggests using isopropyl alcohol for cleaning. In case other solvents are used, it must be assured that these solvents do not dissolve the package or resin. Ultrasonic cleaning is not recommended. Ultrasonic cleaning may cause damage to the LED.

7. To avoid the moisture penetration, we recommend store in a dry box with a desiccant. The recommended storage temperature range is 5℃ to 30℃ and a maximum humidity of RH50%. If the color of the desiccant changes, components should be dried for 10-12hr at 60 ±5℃.

8. Similar to most Solid state devices; LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over

Stress (EOS).

9. There should be revalidated when there is any change on the use condition (like fixture type, raw material, Radiating change) after the approval.