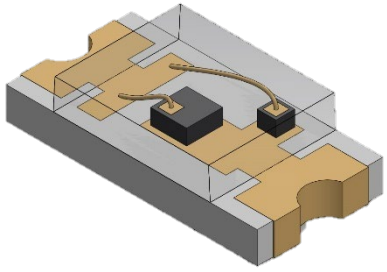
Part Number	1608V-940-02
Revision	E

Chance More Electronics Technology Co., LTD

Product Specifications of CME 1608V-940-02

Infra-red SMD VCSEL
PLCC 1.6x0.8x0.4mm
Emitting Color : Infra-red 940nm
Encapsulation : Epoxy



Features

1. High luminous intensity using MOCVD technology
2. High reliability package using epoxy encapsulation
3. Narrow viewing angle down to Typ. 30 °
4. Compatible with Lead-free reflow soldering process
5. JEDEC MSL 2a

Applications

1. Sensor light source in compact devices

Element Appearance

Model No.	Material	Lighting Color	Lens Color
CME 1608V-940-02	AlGaAs/InGaAs	Non-Visible	Water Clear

Absolute Maximum Ratings At Ta=25℃

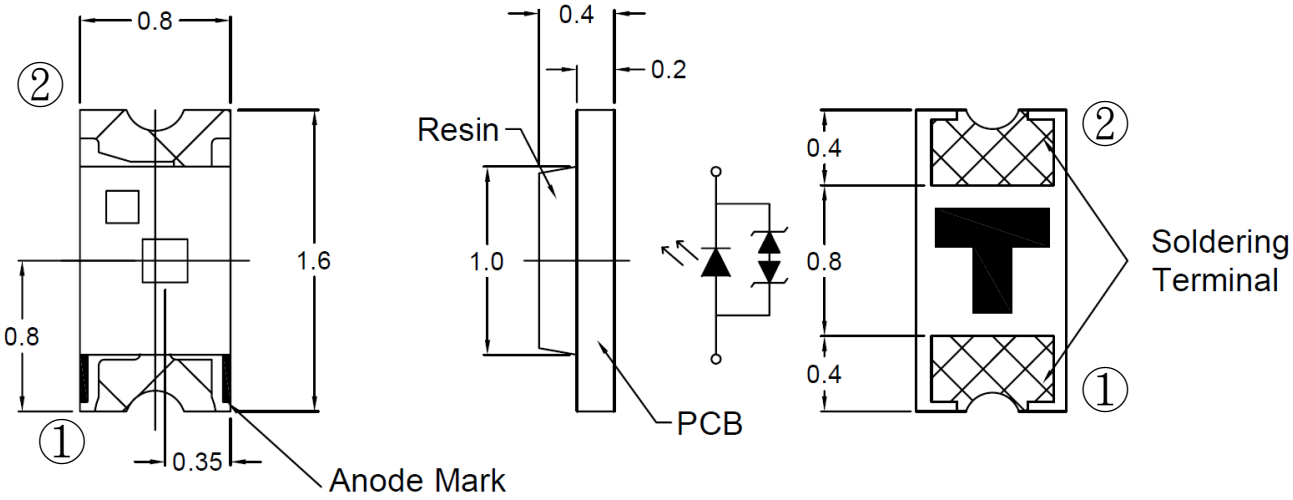
Characteristic	Symbol	Rating	Unit
Forward direct current	IFM	Refer to the following table	mA
Reverse voltage	VRM	5	V
Operating temperature	Topr	-25 to +65	℃
Storage temperature	Tstg	-40 to +100	℃

Electro-optical Specifications:

Item	Symbol	Condition	Min	Typ.	Max	Unit
Threshold Current	I_{th}			15	25	mA
Optical Power	P_{op}	0.1ms/10% @ I_F=100mA		85		mW
Forward Voltage	V_F	0.1ms/10% @ I_F=100mA		1.9		V
Reverse Current	IR	VR=5V			1	μA
Peak Wavelength	λp	0.1ms/10% @ I_F=100mA	930	940	950	nm
Viewing Angle	2θ 1/2	0.1ms/10% @ I_F=100mA		30		Deg
Max. DC Forward Current	I_F (max)	Ta=25℃			30	mA
Max. Pulse Forward Current	Ipeak	1/2 duty cycle @ 1kHz (Tj ≦65℃)			100	mA
		1/100 duty cycle @ 1kHz (Tj ≦65℃)			300	mA
Max. Junction Temperature	T_{max}	-	-	-	65	℃

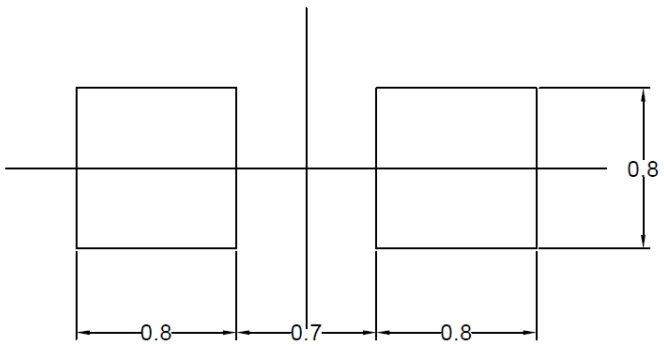
※Radiant Intensity Intensity Measurement allowance is ±15 %
※Forward voltage Measurement allowance is ±0.1V
※Peak emission wavelength Measurement allowance is ±1nm

Package Outline Dimensions:



Unit: mm, Tolerance: ± 0.1 mm

Recommended Soldering Pad Pattern:



Typical Electrical / Optical Characteristics Curves：

Fig.1 Forwad Current vs. Forward Voltage

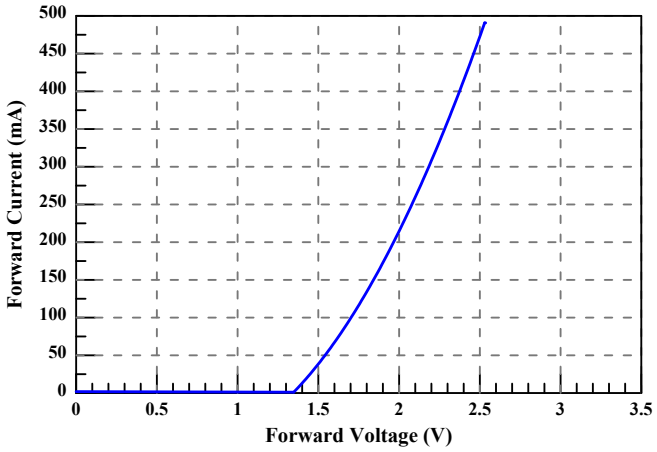


Fig.2 Forwad Current vs. Output Power

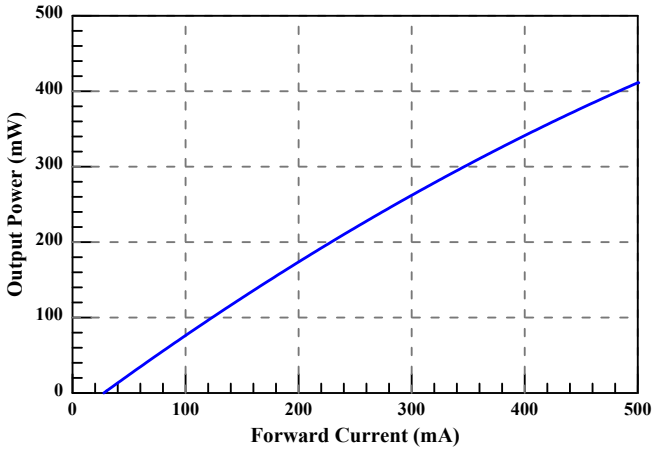
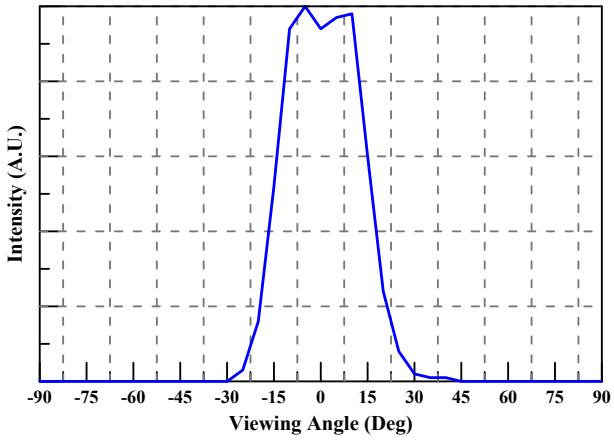


Fig.3 Relative Luminosity vs. Radiation Angle



Limitations to Soldering:

- **Hand Soldering**

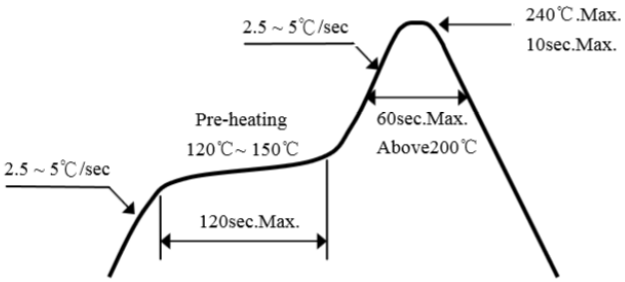
Soldering temperature	350℃	One time only
Soldering time	3 sec	

- **Reflow Soldering**

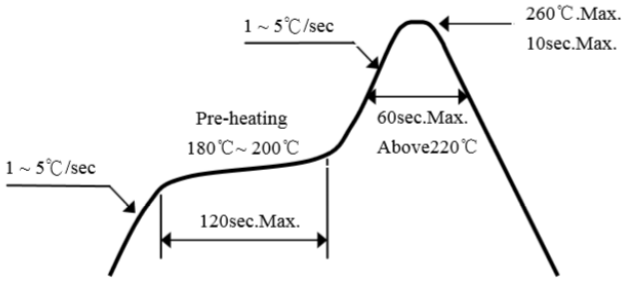
Reflow Soldering		
	Lead Solder	Lead-free Solder
Pre-heat	120~150℃	180~200℃
Pre-heat time	120sec.Max.	120sec.Max.
Peak	240℃ Max	260℃ Max
Temperature Soldering time Condition	10sec.Max. refer to Temperature-profile A	10sec.Max.refer to Temperature-profile B (N_2 reflow is recommended)

Recommended Soldering Profiles:

A: Lead Solder



B: Lead-free Solder

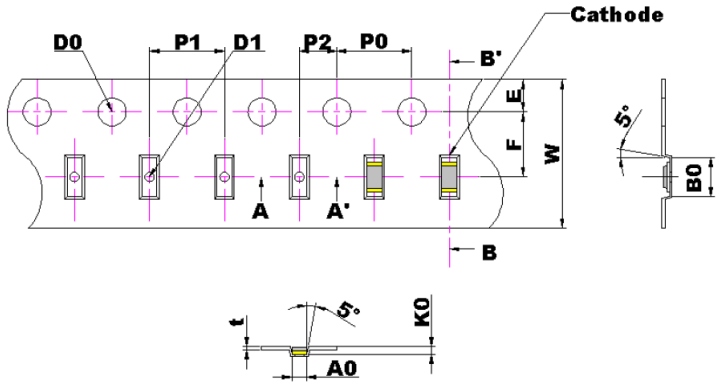


*All temperatures refer to solder Pad.

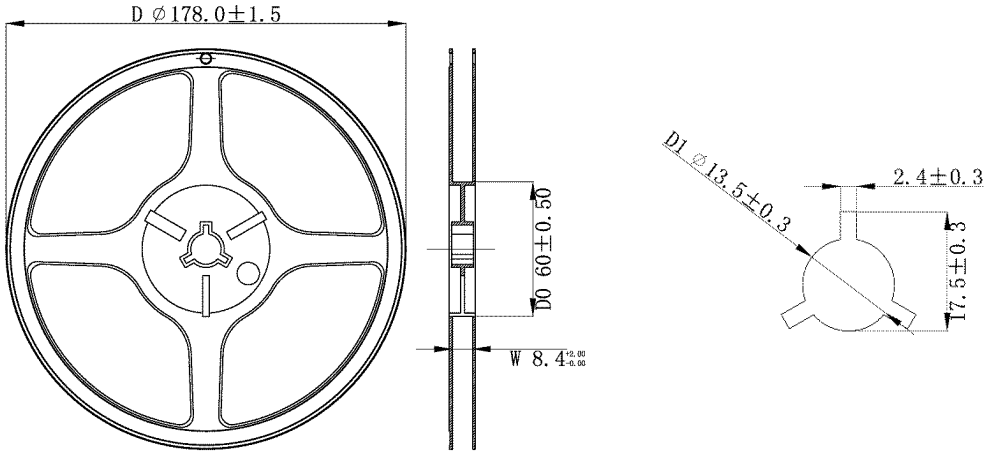
Part Number	1608V-940-02
Revision	E

Chance More Electronics Technology Co., LTD

Tape and Reel :

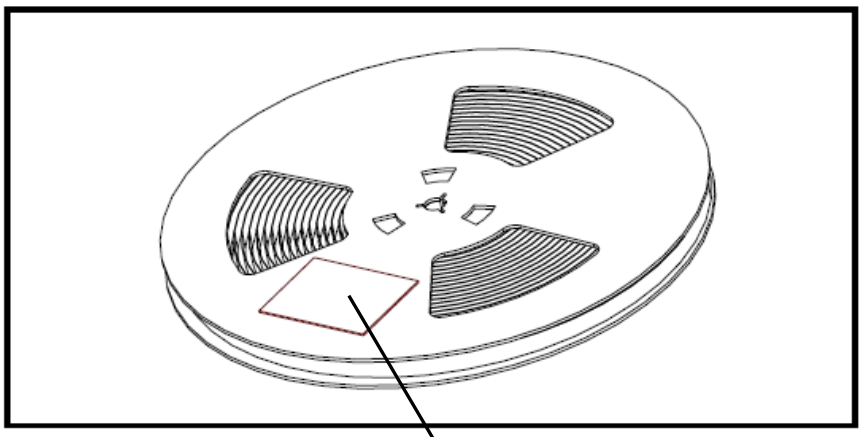


Item	Spec.	Tolerance(mm)	Item	Spec.	Tolerance(mm)
W	8.00	±0.20	P2	2.00	±0.05
E	1.75	±0.10	t	0.20	±0.05
F	3.50	±0.05	A0	0.95	±0.05
D0	1.50	±0.10	B0	1.85	±0.05
D1	0.50	±0.08	K0	0.50	±0.05
P0	4.00	±0.1			
P1	4.00	±0.1			



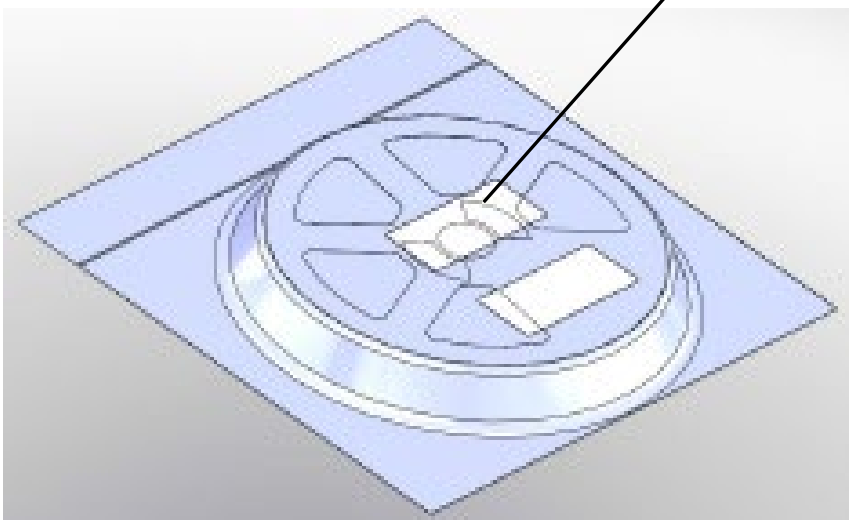
Packing:

Unpackaged Reel



Label with Quantity、P/N 、Lot Number 、Work No. 、Date Code

Packaged Reel



Precaution for Use

(1) During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be used to pierce the sealing compound.

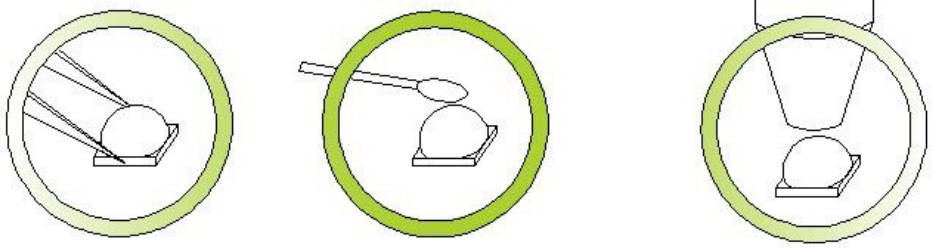
Do not poke the Led Lens with sharp object

Do not stack assembled PCB

Do not hold the Led with hand

Do not press or push the Led Lens

(2) In general, VCSELs should only be handled from the side. By the way, this also applies to VCSELs without a silicone sealant, since the surface can also become scratched.



(3) When populating boards in SMT production, there are basically no restrictions regarding the form of the pick and place nozzle, except that mechanical pressure on the surface of the resin must be prevented. This is assured by choosing a pick and place nozzle which is larger than the VCSEL's reflector area (Diameter >1.6mm).

Precaution for Use

(4) Silicone differs from materials conventionally used for the manufacturing of VCSELs. These conditions must be considered during the handling of such devices. Compared to standard encapsulants, silicone is generally softer, and the surface is more likely to attract dust.
As mentioned previously, the increased sensitivity to dust requires 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.

(5) CME 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 VCSEL.

(6) Please do not mold this product into another resin (epoxy, urethane, etc) and do not handle this. product with acid or sulfur material in sealed space.

(7) Storage
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%.

Precaution for Use

(8) Use Precaution after Opening the Packaging
Use proper SMT techniques when the VCSEL is to be soldered dipped as separation of the lens may affect the light output efficiency.
Pay attention to the following:
a. Recommend conditions after opening the package
- Sealing
- Temperature : 5 ~ 40℃ Humidity : less than RH30%

b. If the package has been opened more than 4 week or the color of the desiccant changes, components should be dried for 10-12hr at 60±5℃.

(9) Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering.

(10) Do not rapidly cool device after soldering.

(11) Components should not be mounted on warped (non coplanar) portion of PCB.