SPECIFICATION FOR APPROVAL

Description	655nm 4mW VCSEL Laser Diode
Part No	DRS655-0004-08-2835E
Date	2025-06-30

Producer	**Engineering Dept.**	**Business department**	**Approval**
Zhang Jun	Tan Shangjun	Xu Yunpeng	Chen Mingxiang

Customer acknowledges Results		

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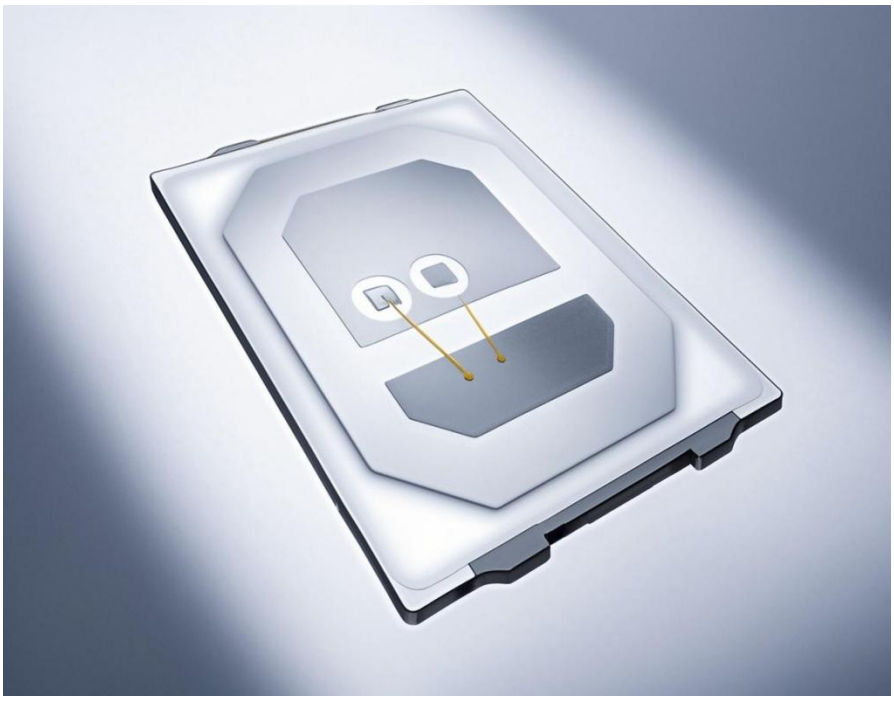
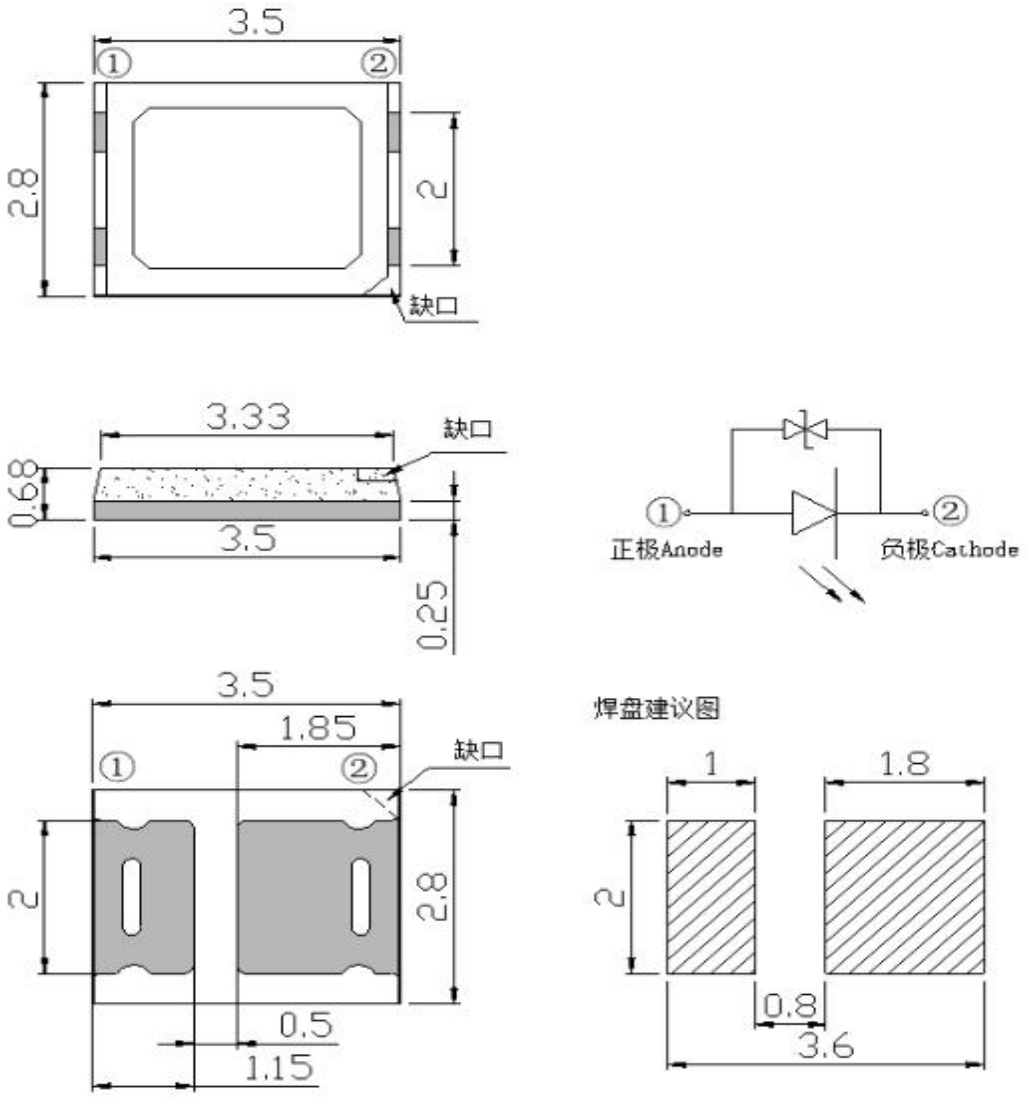
Exterior



Product conformation：

- ■ Packaging glou: 2835 encapsulation
- ■ Luminous color: red wavelength 655nm
- ■ Chip specification:8mil*8mil
- ■ Luminous Angle: 18 degrees
- ■ Electrostatic sensitive material

Package outline dimensions



Note：

1. **Dimensions are in millimeters.**
2. **Tolerances unless mentioned are ± 0.1mm.**

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Optical Characteristics

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note.
Threshold Current	Ith	mA	-	2.6	-	--
Forward Voltage	VF	V	-	2.5	-	If=10mA
Output Power	Pop	mW	3	4	5	If=10mA
Wavelength	λop	nm	650	655	660	--

25℃，QCW Model

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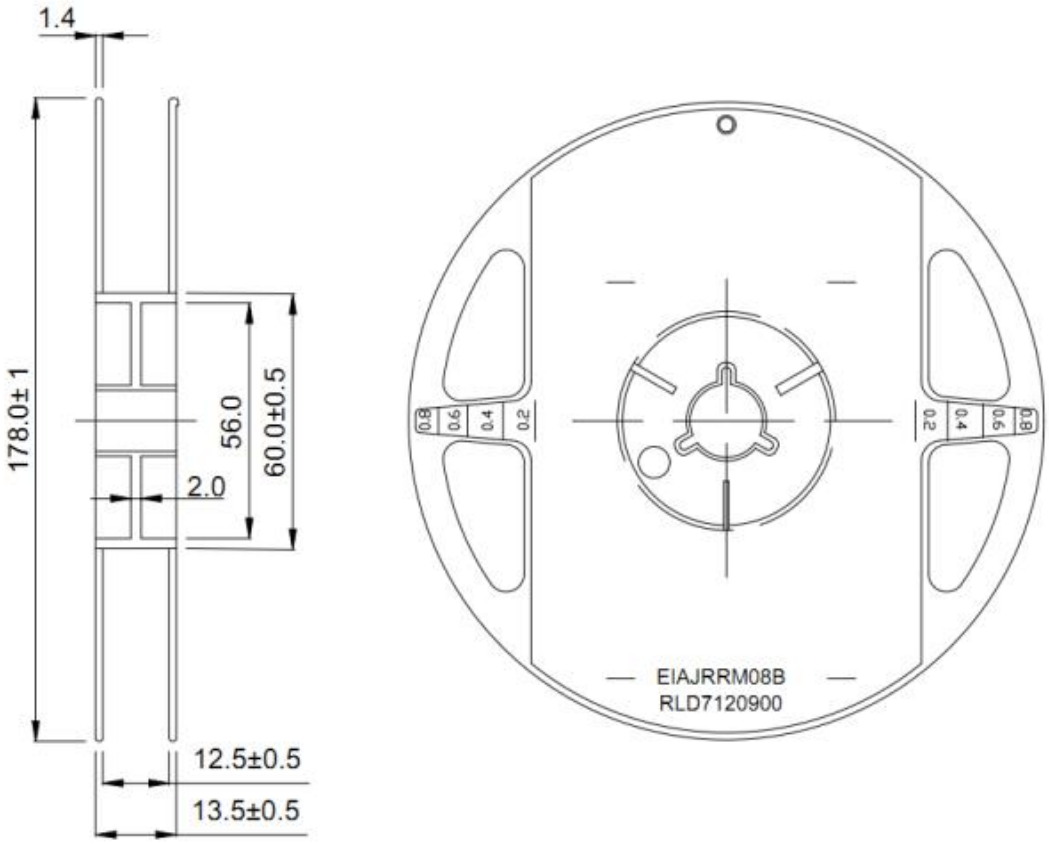
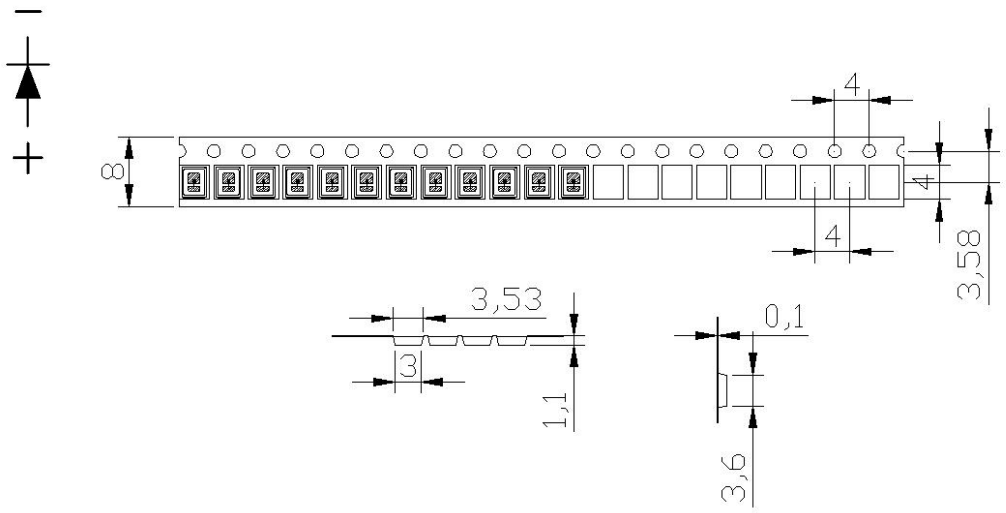
Reel Dimensions



Progressive direction and Dimensions:

Loaded quantity 4000PCS per reel



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Application precautions

Preservation and use

1. Before opening the package, it should be stored at 30℃/60%RH or less.After opening the package, it should be placed in an environment of 20-30℃/30%RH or less.
2. To avoid the impact of the environment, it is recommended to dehumidify after unpacking at 80℃/24H. All the VCSELs are needed to be vacuumed to avoid failure
3. If the desiccant faded or expired use, dry baking: 80±5℃/24 hours.
4. VCSEL Glue surface easy to dust, need to do the relevant dust prevention measures.

Pick and place

When taking the VCSEL, you should only touch the bracket. Tools such as tweezers should not put pressure on the lens.Don't stab or push the lens.

Heat treatment

When driven by excessive current, the Tj (node temperature) of VCSEL will exceed the period limit value, which leads to a serious shortening of VCSEL life. Thermal treatment measures should effectively reduce the thermal resistance of application products.Common practice: install VCSEL packages on metal matrix PCB boards.1W VCSEL products require the surface heat dissipation area of the metal substrate to be at least 30cm squared (over 80cm squared is recommended for 3W products), and its thermal conductivity is higher than 2.0w /mK.VCSEL and gold substrate are combined by thermal conductive adhesive with good thermal conductivity. The thermal conductivity coefficient is required to be higher than 1.0w /mK and the thickness is less than 100um.

Clean

If you need to clean, use a clean, soft cloth dipped in alcohol to gently remove foreign matter. Do not use a cleaner such as acetone to avoid possible corrosion damage.

Electrical precautions

1. VCSEL Reverse drive is not allowed
2. Current limiting measures are necessary, otherwise slight voltage changes will lead to large current changes, which may lead to VCSEL failure.
3. Under the premise that the luminous quantity meets the requirements, it is recommended to use the drive current lower than the rated current, which is conducive to improving the reliability of the product.

Anti-static precautions

VCSEL is electrostatic sensitive devices, in the process of preservation, use to take anti-static measures.Static electricity and surge can lead to changes in product characteristics, such as forward voltage reduction, which can be serious and even damage the product.So for the whole process (production, testing, packaging, etc.) and VCSEL direct contact staff should do a good job to prevent and eliminate electrostatic measures.All related equipment and machinery should be properly grounded.The grounding ac resistance is less than 1.0 ohm, the table mat with surface resistance of 106-109 ohm is needed on the work table.Ion fans must also be installed in electrostatic environments and equipment.During the operation, the operator should use anti-static bracelet, anti-static mat, anti-static overalls, working shoes, gloves, anti-static capacity.

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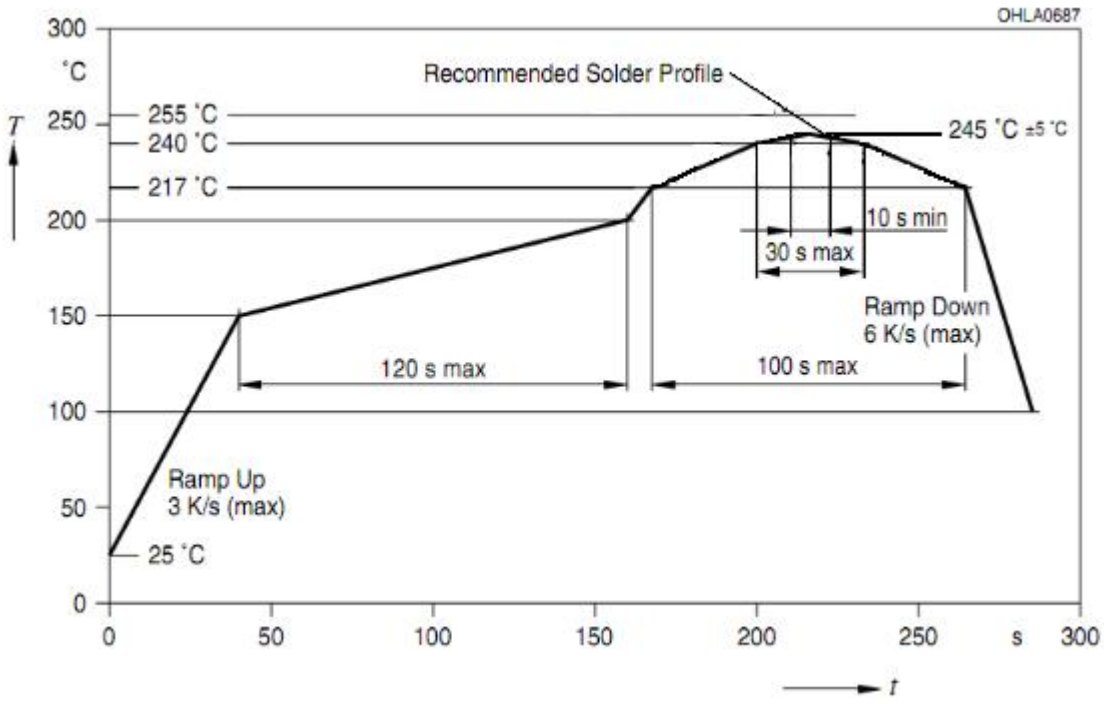
An electric soldering iron

It is recommended to use anti-static electric soldering iron, the temperature at the tip does not exceed 350℃, less than 3 seconds for each soldering.The power of the soldering iron should be less than 60W.Weld two electrode pins more than 2 seconds after each welding.Do not force the lens during welding.Problems with VCSELs usually begin when they are soldered.So you must work carefully as required.

Reflow instructions



Precautions

1. Reflow soldering is only allowed once.
2. Do not apply pressure to the lamp body during reflow
3. After reflow welding is completed, do not press the heat dissipation plate, do not press to the colloidal part.
4. If there is a lower melting point of solder paste, TP can be appropriately reduced.