



HLJ Technology Co., Ltd.

Preliminary Specification

Project Code :2S501

Product :1135nm 6mil-1E

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Specification

The specification applies to GaAs infrared chip for [1135nm](#) wavelength range.

The [2S501](#) is a [1135nm](#) [6](#) mil Vertical Cavity Surface Emitting Laser (VCSEL) chip. The product characterized by the visible light wavelength and unique oxide-confined process of VCSELs.

Features

- Wavelength: 1135nm
- Chip size: $175 \times 175 \pm 15 \mu\text{m}$
- Chip thickness : $150 \pm 15 \mu\text{m}$
- Drive current : 9mA
- Output power : 2.5mW
- Electrode side : Gold alloy on both anode P(emission side) and cathode N(backside)
- Other configurations available on request

Applications

- Moving sensor/ Gesture
- Optical encoders
- 3D sensing
- Health or medical product
- Mobile and consumer

Electrical Optical Characteristics

T_A = 25°C unless otherwise noted

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Operating Current	I _{op}	-	9	-	mA	
Threshold Current	I _{th}	-	0.5	-	mA	
Forward Voltage	V _f	1.7	2.0	2.3	V	I _f = 9mA
Output Power	P _o	-	3.5	-	mW	I _f = 9mA
Center Wavelength	λ _c	1125	1135	1145	nm	I _f = 9mA
Beam Divergence	θ	18	22	26	degree	Full Width 1/e ²
Slope Efficiency	η _s	0.3	0.4	-	W/A	
Differential Resistance	R _s	45	60	75	Ω	
Reverse-Leakage Current	I _r	-	-	0.5	μA	V _r = -5V

Note:

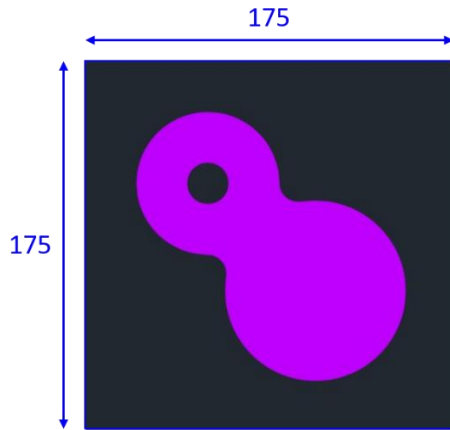
- Any quality management (final quality control, outgoing quality control, etc.) used I_f = 9mA, T_a = 25°C, CW as the testing conditions, unless specified otherwise.
- Forward Voltage (V_f) measurement allowance is ±0.1V.
- Center Wavelength (λ_c) measurement allowance is ±1.5nm.



Other measurement allowances are $\pm 5\%$.

Note 5: Due to the low resistance of the power array VCSEL die, so the Electrical Optical Characteristics measurement (I-V, PCE, etc.) should ideally be a 4-wire measurement. If 2-wire I-V measurement, the voltage must be corrected for these parasitic resistances.

Dimensions



Specification	Min	Typ	Max
Chip width	160	175	190
Chip length	160	175	190
Chip thickness	135	150	165
Bond pad width	-	90	-

Unit: μm

Other Information

RoHS Compliance:

HLJ committed to environment protection and sustainable development, this part complies with EU 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment) and the relevant of held as part of our controlled documentation.

Packaging Q'ty:

500 ea/ die sheet, 8 die sheet/ pack, 6 pack/ box, 6 box/ cargo box

ESD Protection:

VCSEL is very sensitive to Electrostatic discharge (ESD) and Electrical over stress (EOS), excessive ESD have damage the chip and result in performance degradation. Make sure during the whole usage and installation process that no ESD exist and electrical circuits are equipped with surge protection.

Important Notice:

The data provided in this data sheet shall be typical. In accordance with the HLJ policy of continuous improvement, specifications may change without notice.

Revision History



Revision	Description	Author	Release Date
0.1	Establish a Datasheet	Yi-Fang,Chen	2023/03/24

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