



HLJ Technology Co., Ltd.

Specification

Project Code :

Product : CH 940nm 06 CHIP 9999-
H00001S031-V03

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Specification

The specification applies to GaAs infrared chip for 940nm wavelength range.

The CH 940nm 06 CHIP 9999-H00001S031-V03 is a 940nm 06 mil Vertical Cavity Surface Emitting Laser (VCSEL) chip. The product characterized by the visible light wavelength and unique oxide-confined process of VCSELs.

Part Number : 8ACHSHB1A

Features

- GaAs infrared chip
- 940nm center optical wavelength
- 6mW VCSEL (@9mA)
- Multi-mode beam profile
- Other configurations available on request

Applications

- Sensor light source
- Consumer electronics

Electrical Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Threshold Current	I_{th}	1	2	2.5	mA	
Forward Voltage	V_f	1.7	1.9	2.1	V	$I_f = 9mA$
Slope Efficiency (S.E.)	η_s	0.6	0.8	1	W/A	$I_f = 9mA$
Output Power	P_o	5	6	7	mW	$I_f = 9mA$
Center Wavelength	λ_c	930	940	950	nm	$I_f = 9mA$
Beam Divergence at 6mA	θ	-	15	20	degree	Full Width $1/e^2$
Beam Divergence at 9mA	θ	-	18	22	degree	Full Width $1/e^2$

Note:

- The any quality management (include final quality control, outgoing quality control, etc.) will $I_f = 9mA$, $T_a = 25^\circ C$, CW as the criterion, unless specified otherwise.
- Forward Voltage (V_f) measurement allowance is $\pm 0.1V$.
- Center Wavelength (λ_c) measurement allowance is $\pm 1.5nm$.
- Others measurement allowance is $\pm 5\%$.



Absolute Maximum Rating

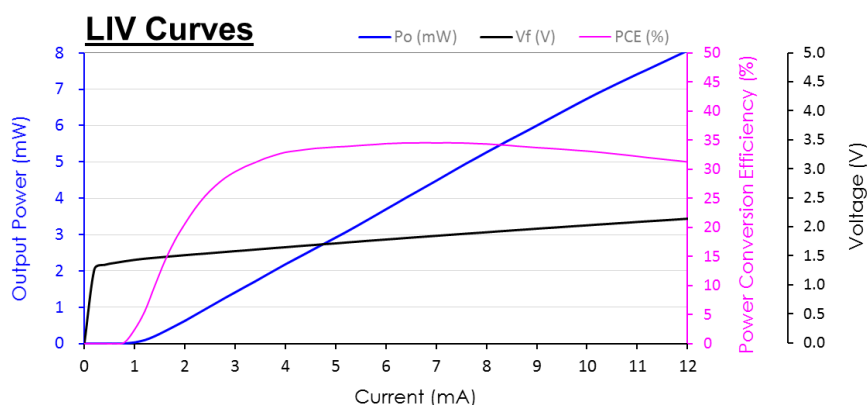
Parameter	Symbol	Range	Notes
Storage Temperature	T_{stg}	-40°C to 150°C	
Operating Temperature (VCSEL)	T_{op}	-20°C to 85°C	
Maximum CW Current	-	12mA	
Laser reverse voltage	-	5V	
Human-Body Model	-	200V	JESD22-A114
Machine Model	-	25V	JESD22-A115
Maximum Package SMT Solder Reflow Temperature	-	260°C, 10 seconds	

Note:

- The VCSEL chip any test and quality management all mounted on TO-can package (TO-46).
- The maximum CW laser current in the Absolute Maximum Ratings is valid for the operating temperature noted at the table above. VCSELs is very sensitive to temperature, if stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device.
- These are stress ratings only, functional operation of the device at these or any other conditions beyond those indicated under “Recommended Operating Conditions” is not implied. Exposure to absolute-maximum-rating conditions for extended periods may affect device reliability. Electrical parameters are guaranteed only over the recommended operating temperature range.
- VCSEL is very sensitive to ESD and excessive ESD could damage the VCSEL chip and result in performance degradation and reliability failure, please make sure during the whole usage and installation process that no ESD exist to affect the VCSEL.

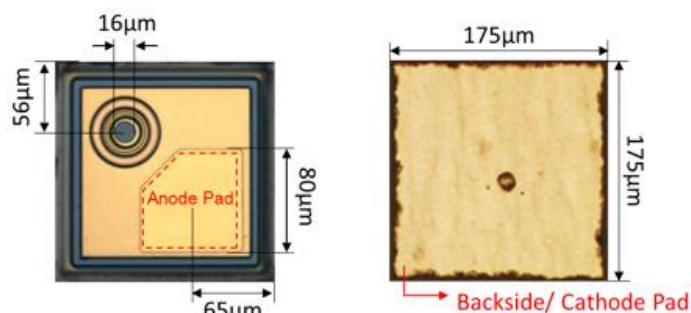
Typical Performance Curves

- Typical Electrical-Optical Characteristics ($T_a = 25^\circ\text{C}$)





Dimensions



Specification	Unit	Min.	Typ.	Max.	Condition
Number of emitters	ea	1			-
Length(X), Width(Y)	µm	160	175	190	-
Thickness	µm	90	100	110	-
Emitter surface area diameter	µm	-	16	-	-
Anode pad size (Bond pad)	µm	77	80	83	Emitter side
Cathode pad size	µm	160	175	190	Backside

Note:

- Dimensions in micrometer.
- Dimension tolerance $\pm 3\mu\text{m}$ unless specified otherwise.

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: (by product to modify)

8K ea/Die sheet, 8 Die sheet/Antistatic bag, 6 Antistatic bag/Box, 6 Box/Carton 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.



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Revision History

Revision	Description	Author	Release Date
1	Establish a Datasheet	Bo-Ting,Lin	2020/11/06
2	<ul style="list-style-type: none">• Format revision• Add Revision History	Bo-Ting,Lin	2022/10/06

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