HLJ Technology Co., Ltd.

Specification

Project Code :

Product : CH 940nm 06 CHIP 9999-H00001S017

Specification

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

The **CH 940nm 06 CHIP 9999-H00001S017** (hereinafter called JOJI) is 940nm multi-mode Vertical Cavity Surface Emitting Laser (VCSEL) chip, JOJI was the same EPI structure and E/O characteristics as CH 940nm 06 CHIP 9999-H00001S017 series.

Part Number : 8ACHSHB17

Features

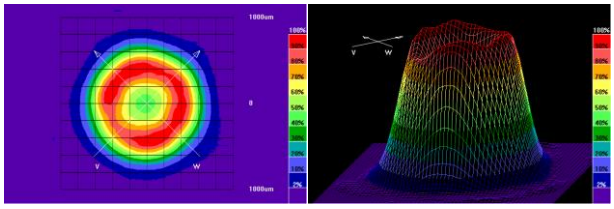
- GaAs infrared chip
- 940nm center optical wavelength
- 4.7mW VCSEL (@9mA)
- Multi-mode beam profile
- Other configurations available on request

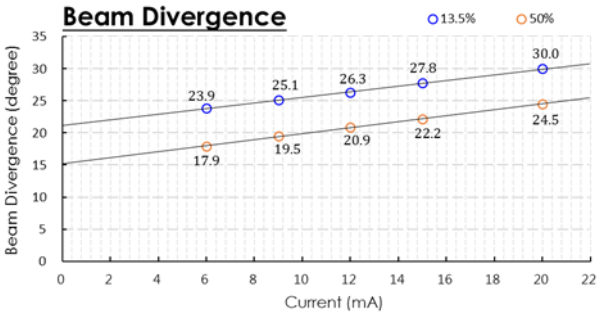
Applications

- Sensor light source
- Consumer electronics

Beam Divergence

- Measurement Current of 9mA.





Full Width 1/ e^2 ： 25° (Average)

Note:

- Test package sample: VCSEL on a TO-can package (TO-46).
- Full angle of 13.5%(≒1/e2) peak intensity.
- Full width at half maximum (FWHM) of 50% peak intensity.

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Electrical Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Threshold Current	I_{th}	1	2	3	mA	
Forward Voltage	V_f	1.7	1.9	2.1	V	I_f = 9mA
Slope Efficiency	ηs	0.5	0.67	0.9	W/A	
Output Power	P_o	4.0	4.7	5.4	mW	I_f = 9mA
Center Wavelength	λ_c	930	940	950	nm	I_f = 9mA
Beam Divergence	θ	22	25	28	degree	I_f = 9mA, Full Width $1/e^2$

Note:

- Any quality management (final quality control, outgoing quality control, etc.) used I_f = 9mA, T_a = 25℃ as the testing conditions, unless specified otherwise.
- Forward Voltage (Vf) measurement allowance is ±0.1V.
- Center Wavelength (λc) measurement allowance is ±1.5nm.
- Other measurement allowances are ±5%.

Absolute Maximum Rating

Parameter	Symbol	Range	Notes
Storage Temperature	T_{stg}	-40℃ to 150℃	
Operating Temperature (VCSEL)	T_{op}	-20℃ to 85℃	
Maximum CW Current	-	15mA	
Human-Body Model	-	300V	JESD22-A114
Machine Model	-	50V	JESD22-A115
Maximum Package SMT Solder Reflow Temperature	-	260℃, 10 seconds	

Note:

- Any test and quality management was mounted on TO-can package (TO-46), different package type and condition will affect the Absolute Maximum Rating.
- 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. Different package type and condition or 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 exists to affect the VCSEL.

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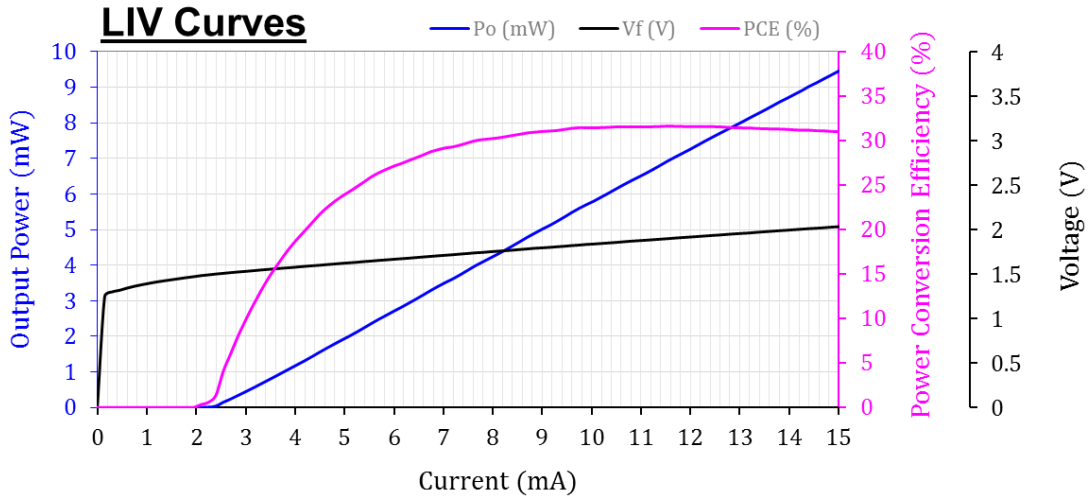
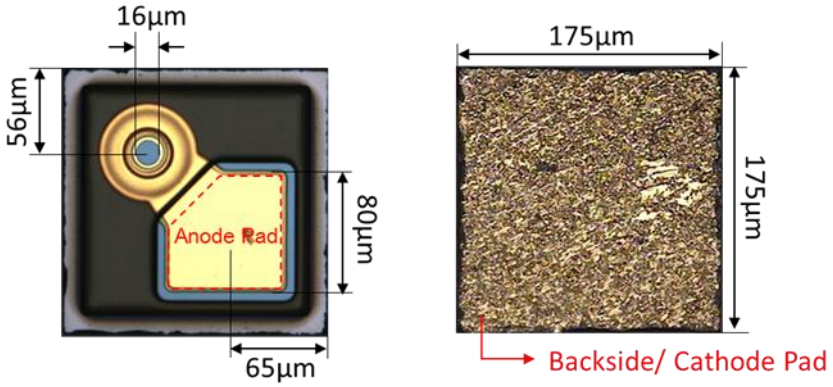
Typical Performance Curves

- Typical Electrical-Optical Characteristics (Ta = 25℃)



Dimensions



Specification	Unit	Min.	Typ.	Max.	Condition
Number of emitters	ea		1		-
Length(X), Width(Y)	µm	160	175	190	-
Thickness	µm	135	150	165	-
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:

- Dimension unit is in micrometer.
- Dimension tolerance is ± 3µm unless specified otherwise.

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Other Information

- **RoHs Compliance:**
  HLJ committed to environment protection and sustainable development, this part is compliant 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:**
  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 or EOS have damage the chip and result in performance degradation. Please make sure during the whole usage and installation process does not exist to affect the VCSEL (take normal ESD precautions when handling this product) and VCSEL can also be damaged by electrical surge, please make sure any driving electrical circuits are equipped with surge protection.
- **Important Notice:**
  The datasheet provided in this data sheet are typical. In accordance with the HLJ policy of continuous improvement specifications may change without notice.

Revision History

Revision	Description	Author	Release Date
1	Establish a Datasheet	BoTing,Lin	2020/11/18
2	Product name and format change	BoTing,Lin	2022/09/20

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