



HLJ Technology Co., Ltd.

Specification

Project Code : 3H501-V01

Product : 1135nm 32mil-552E

Confidential

Confidential and Proprietary – HLJ Technology Co., Ltd.

NO PUBLIC DISCLOSURE PERMITTED

Restricted Distribution: Not to be distributed to anyone who is not an employee of either HLJ or its subsidiaries without the express approval of HLJ's Configuration Management. Not to be used, copied, reproduced, or modified in whole or in part, nor its contents revealed in any manner to others without the express written permission of HLJ Technology Co., Ltd. This technical data may be subject to Taiwan and international export, re-export, or transfer ("export") laws. Diversion contrary to Taiwan and international law is strictly prohibited.



Specification

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

The [3H501-V01](#) is a [1135nm](#) [32](#) mil Vertical Cavity Surface Emitting Laser (VCSEL) chip. The product characterized by the IR light wavelength and unique oxide-confined process of VCSELs.

Features

- Wavelength: 1135nm
- Chip size: $835 \times 835 \pm 15 \mu\text{m}$
- Chip thickness : $150 \pm 15 \mu\text{m}$
- Drive current : 5A
- Output power : 2.8W @ pulse width 10 μs , Duty 1% @ 5A
- 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
- D-TOF

Electrical Optical Characteristics (Pulse Width:10 μs , Duty: 1%)

T_A = 25°C unless otherwise noted

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Threshold Current	I _{th}	300	500	800	mA	I _f = 5A
Output Power	P _o	2600	2800	-	mW	I _f = 5A
Forward Voltage	V _f	2.5	2.7	2.9	V	I _f = 5A
Slope Efficiency (S.E.)	η_s	0.60	0.65	0.70	W/A	I _f = 5A
Center Wavelength	λ_c	1125	1135	1145	nm	I _f = 5A
Power Conversion Efficiency	PCE	20	-	-	%	I _f = 5A
Wavelength Shift	$\Delta\lambda/\Delta T$	-	0.07	-	nm/°C	I _f = 5A
Beam Divergence	θ	18	22	26	deg.	Full Width 1/e ²

Note 1: Forward Voltage (V_f) measurement allowance is $\pm 0.1\text{V}$.

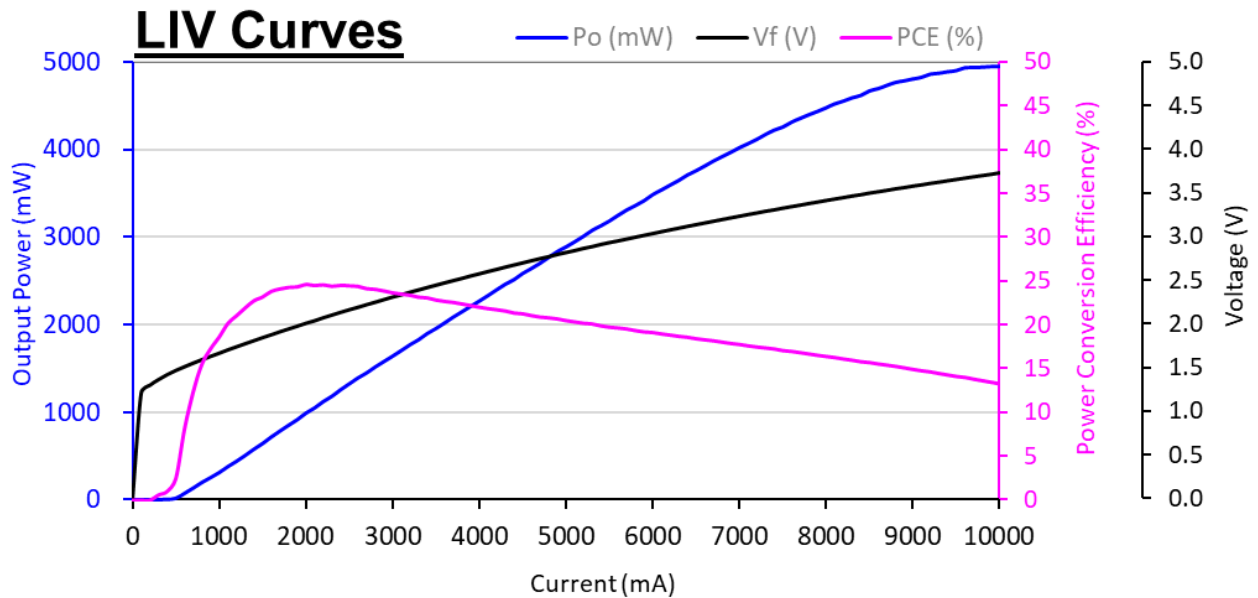
Note 2: Center Wavelength (λ_c) measurement allowance is $\pm 2.0\text{nm}$.

Note 3: Others measurement allowance is $\pm 10\%$.

Note 4: Wafer on probe system test and chip mounted on Cu star board, and measured with operating bias current (I_f) @ 5A @ Pulse Width (PW):10 μs , Duty Cycle (DC): 1%.

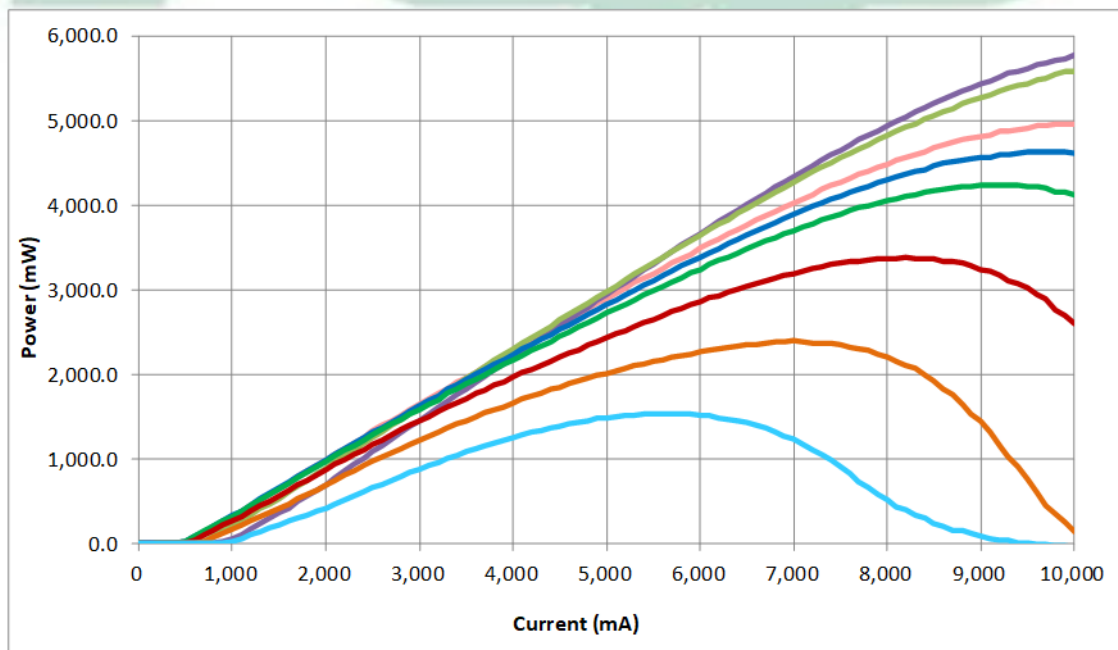
Typical Performance Curves

- Typical Electrical-Optical Characteristics ($T_a = 25^\circ\text{C}$, pulse width: 10 μs , Duty 1%)



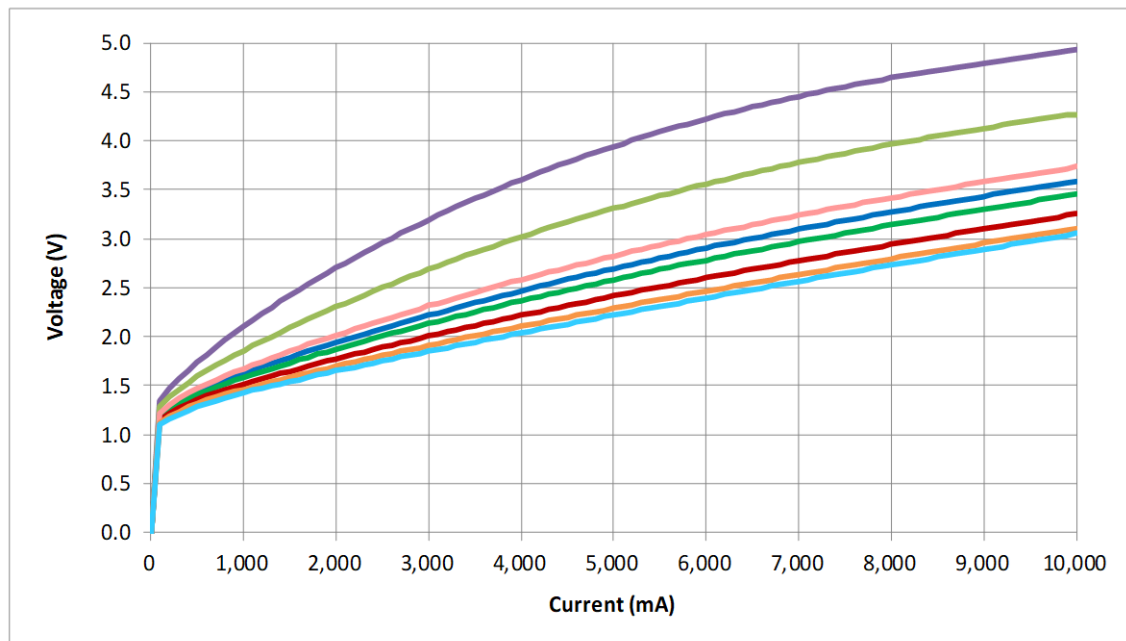
- Typical Electrical-Optical Characteristics ($T_a = -20\sim 105^\circ\text{C}$)

552E Pulse Mode at -20°C , 0°C , 25°C , 35°C , 45°C , 65°C , 85°C , 105°C

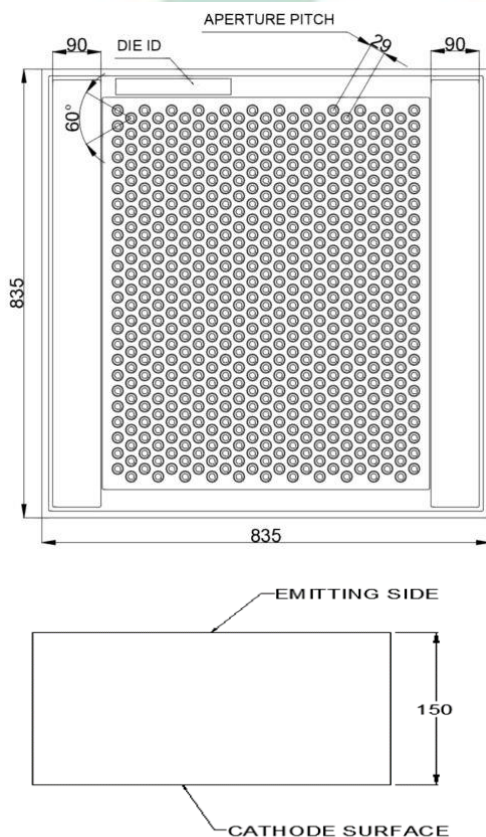




552E Pulse Mode at -20°C, 0°C, 25°C, 35°C, 45°C, 65°C, 85°C, 105°C



Dimensions



Specification	Min.	Typ.	Max.
Chip width	820	835	850
Chip length	820	835	850
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
1.0	Establish a Datasheet	Jerry	2023/11/19
1.1	Establish a Datasheet	Jerry	2024/3/12
1.2	Spec. Table adjunction (lth. SE. PCE)	Jerry	2024/3/21

Confidential