新亮激光
BRIGHTLASER

940nm 1W VCSEL Chip
VC-0940P-001W-44-3A0

Features

- Single wavelength
- Low wavelength drift
- Oxide isolation technology
- Low threshold current
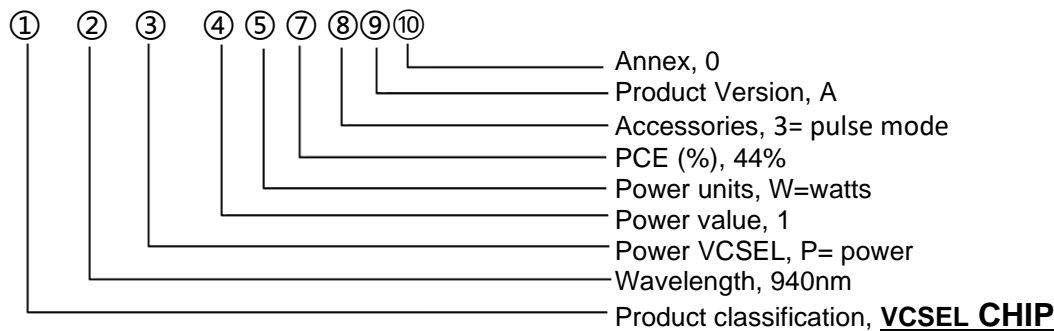- High reliability
- Easy to collimate

Applications

- 3D sensors
- Lidars
- IR illuminations
- Medical applications
- Proximity sensors
- Military applications

PRODUCT IDENTIFY

Part Number	Description
VC-0940P-001W-44-3A0	940nm 1W VCSEL Chip

CODE RULES

VC – 0940 P – 001W- 44 –3 A 0

① ② ③ ④ ⑤ ⑦ ⑧⑨⑩

- Annex, 0
- Product Version, A
- Accessories, 3= pulse mode
- PCE (%), 44%
- Power units, W=watts
- Power value, 1
- Power VCSEL, P= power
- Wavelength, 940nm
- Product classification, **VCSEL CHIP**

I. Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Operating Temperture	Top	-40 to 85	℃
Storage Temperture	Tsto	-40 to 105	℃
Reflow Soldering Temperature	Tsdr	320℃(<10s)	℃
Reverse Voltage	Vr	5	V
Maximum Continuous Current	Imax	1.5	A
ESD exposure (Human body) model	ESD	2K	V

Note：

1. Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or other conditions above those indicated in the operations section for extended periods of time may affect reliability.
2. In its maximum rating diode laser operation could damage its performance or cause potential safety hazard such as equipment failure.
3. Electrostatic discharge is the main reason for the laser fault of the diode. Take effective

Tel: +852 2325 1078
Fax: +852 2325 1869
Email: info@brightlaser.com.hk
Website: www.brightlaser.com.hk

precautions against ESD. When dealing with laser diodes, use the wrist strap, grounding work surface and strict antistatic technology.

II. Optical-electrical characteristics @25℃ (pulsewidth 0.1ms, 1% duty cycle)

Parameters	Symbol	Conditions	Min.	Typ.	Max.	Unit
Optical Power	P_o	I_F=1.02A	-	1	-	W
Threshold Current	I_{TH}	-	-	0.1	-	A
Forward Current	-	-	-	1.0	1.05	A
Power Conversion Efficiency	η	I_F=1.02A	-	44	46.5	%
Slope Efficiency	-	-	-	1.1	-	W/A
Peak Wavelength	-	P_o=1W	930	940	950	nm
Laser Forward Voltage	V_F	I_F=1.02A	2.1	2.2	2.3	V
Beam Angle	-	I_F=1.02A	17	20	23	Degrees
Differential resistance	Ω	I_F=1.02A	0.59	0.62	0.64	R
Wavelength Temp. Drift	-	I_F=1.02A	-	0.07	-	nm/℃
Rise time/Fall time	-	-	-	300	-	ps
Soldering Temperature	-	-	-	-	320(10s)	℃

Note：Electro-Optical Characteristic with a package or diffuser would require further evaluation. Values are based on limited sample size and estimated values.
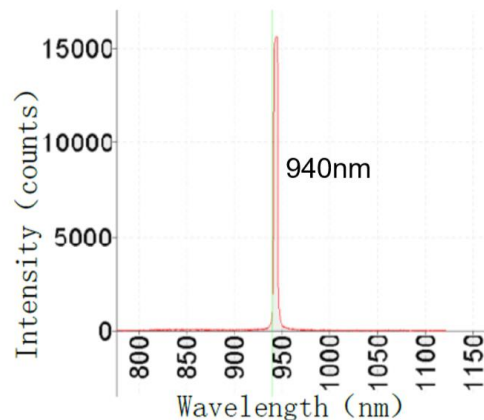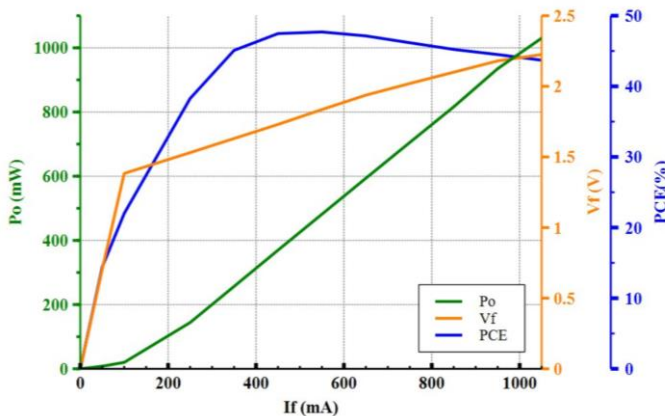
Note:

1. Forward Voltage (VF) measurement allowance is ±0.1 V.

2. Peak Wavelength (λP) measurement allowance is ±1.5 nm.
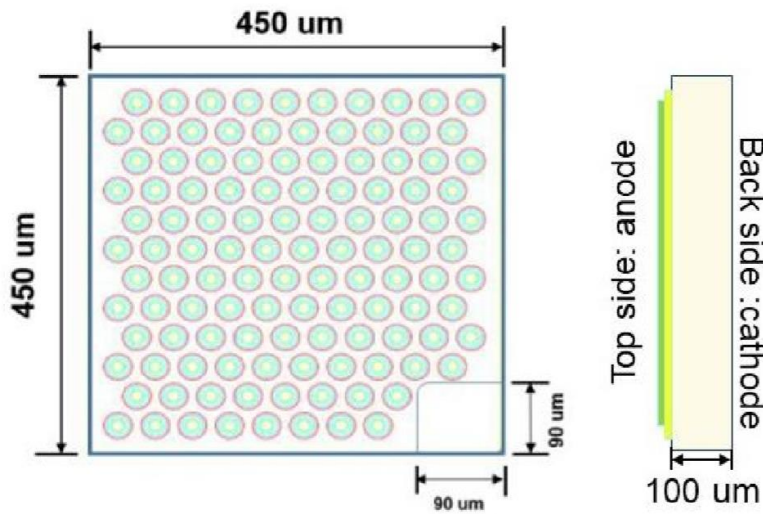
3. Others measurement allowance is ±10%.

III. Environmental Specifications

Parameter	Symbol	Min.	Typ.	Max.	Units	Ref.
Operating Temp	Top	-40	25	85	℃	-
Storage Temp	Tsto	-40	25	105	℃	-

IV. LIV Graph and Wavelength

Tel: +852 2325 1078
Fax: +852 2325 1869
Email: info@brightlaser.com.hk
Website: www.brightlaser.com.hk

V. Mechanical Schematics (116 apertures)

Note：There may be some changes between sample and drawing，thus，the actual spec please refer to the sample that you received. And if any question please contact us.

VI. Packaging Suggestion

For packaging, the user should use high thermal conductive substrate with AlN or copper; the user also attaches die onto the substrate using high thermal conductive materials such as nanosilver gel or AuSn.

The user should have the equipments such as die attachment, wire bonder etc., which should be located in 1000 class clean room. For further assistance in need, please feel free to contact Brightintelligence! We would work with you to solve your issues.

VII. Treatment and protection measures

Soldering precautions

The operator should examine grounding of machines before die attachment; and operator should wear electrostatic bracelet to prevent die from damaging caused by electrostatic discharging.

Storage precautions

VCSEL bare dies must be stored in Nitrogen gas cabinet with >99% concentration at 20℃.

VIII. Revision history

Revision	Date	Description
V.01	2020/2/13	The first official edition (0005C1, 0005C5)
V.02	2020/4/7	Update part no.

**Brightlaser reserves the right to make modification at any time due to improved design from time to time, the merit behind is in order to supply the best product possible.