

940nm 4W VCSEL Chip VC-0940I-004W-46-0A0

FEATURES

- 940nm single wavelength
- Low wavelength drift
- Oxide isolation technology
- Low threshold current
- Small emission area
- Easy to collimate

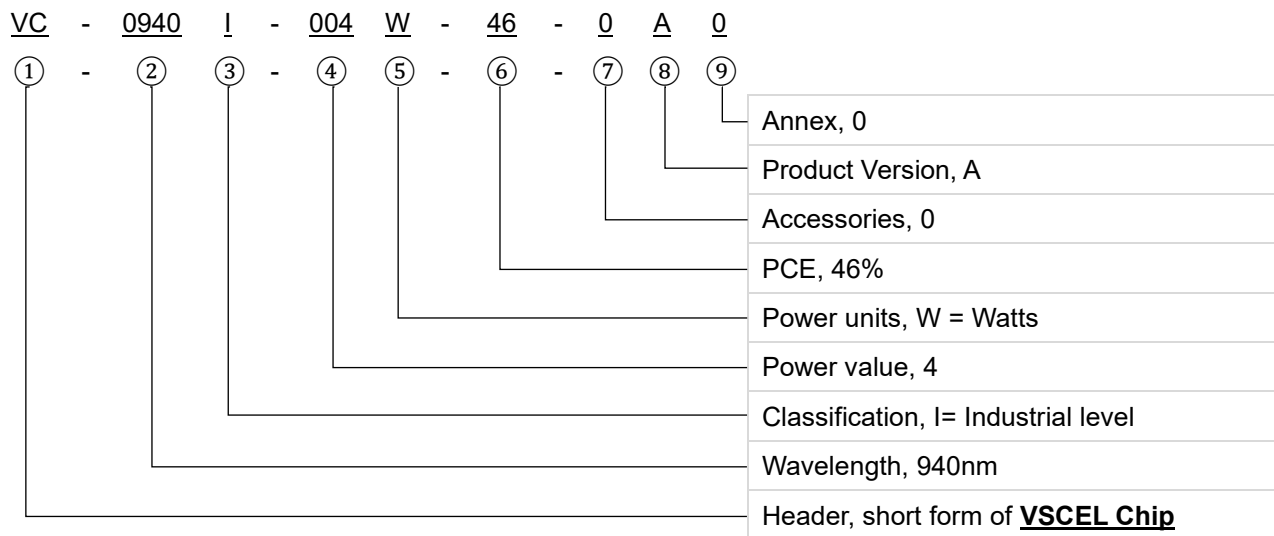
APPLICATIONS

- 3D sensors
- Lidars
- IR illuminations
- Medical applications
- Proximity sensors
- Industrial application

Part Number	Description
VC-0940I-004W-46-0A0	940nm 4W VCSEL Chip

PRODUCT IDENTIFY

Code Rules



I. Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Case Operating Temperature	T_{op}	-40 to +85	°C
Storage Temperature	T_{sto}	-40 to +105	°C
Reflow Soldering Temperature	T_{sdr}	320°C (10s)	\
Reverse Voltage	V_r	5	V
Maximum Continuous Current	I_{max}	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.

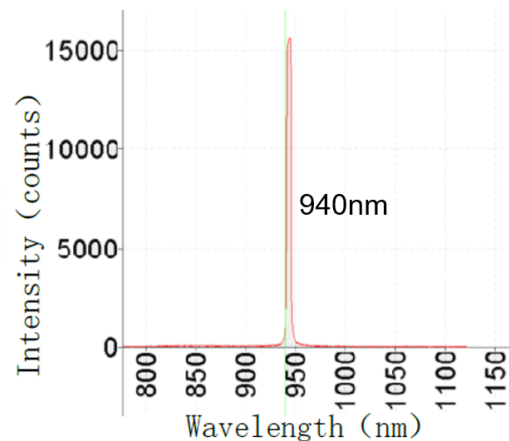
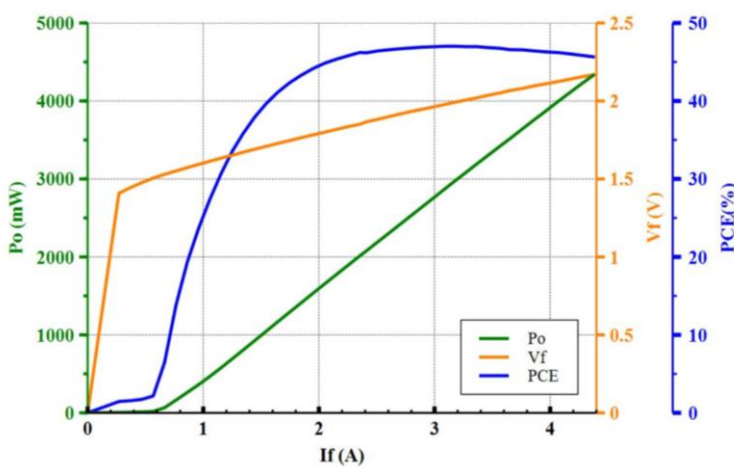
2. In its maximum rating diode laser operation could damage its performance or cause potential safety hazard such as equipment failure.
3. Electrostatic discharge is the main reason for the laser fault of the diode. Take effective precautions against ESD. When dealing with laser diodes, use the wrist strap, grounding work surface and strict antistatic technology.

II. Optical-electrical characteristics @25°C , pulse width 0.2ms, duty cycle 1%

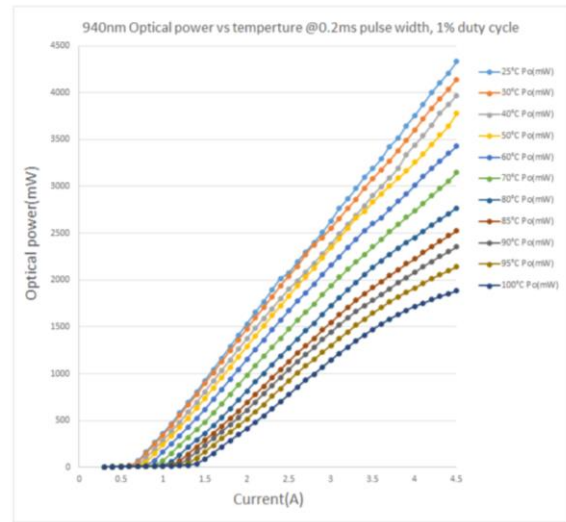
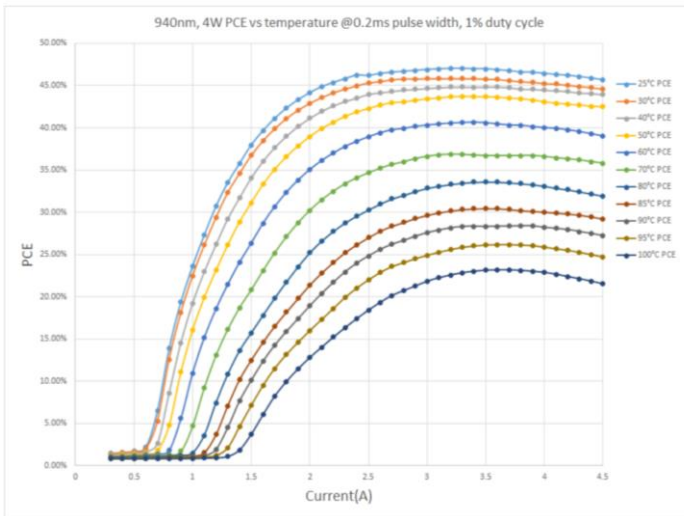
Parameters	Symbol	Condition	Min.	Typ.	Max.	Unit
Threshold Current	I_{th}		-	0.6	-	A
Forward Current	I_F		-	4.07	-	A
Optical Power	P_o	$I_F=4.07A$	-	4	-	W
Laser Forward Voltage	V_f	$I_F=4.07A$	-	2.13	-	V
Power conversion efficiency	η	$I_F=4.07A$	-	46.2	-	%
Slope efficiency	SE	$P_o=4W$	-	1.13	-	W/A
Series Resistance	R	$I_F=4.07A$	-	0.14	-	Ω
Peak Wavelength	-	$I_F=4.07A$	930	940	950	nm
Wavelength-Temp. Drift	$\Delta\lambda/\Delta T$	$I_F=4.07A$	-	-	0.07	nm/°C
Beam divergence	$FWHM_B$		-	20	-	deg
Emission area			-	846x811	-	μm^2
No. of Emission Aperture			-	598	-	

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

III. Typical Performance LIV curve and Spectral Width



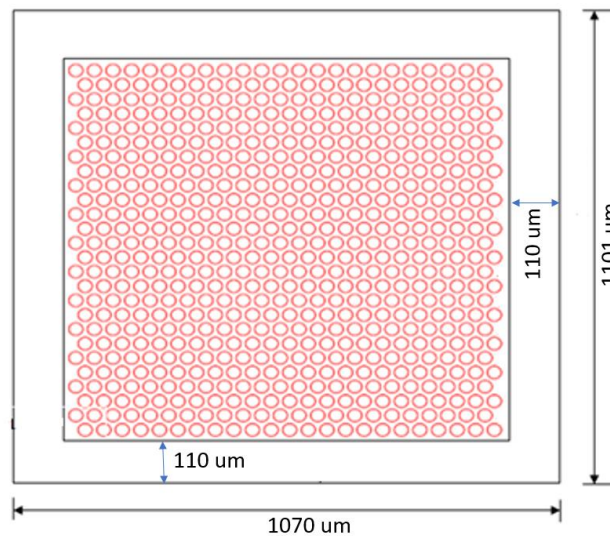
High temperature testing 25°C to 100°C



IV. Mechanical Schematics (unit : um)

VC-0940I-004W-46-0A0 with No. of Emission Aperture [598]

Device 598 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 inquires please contact us.

V. 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.

VI. 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°C.

VII. Revision History

Revision	Date	Description
Spec V.01	2020/06/23	The first official edition [0005C3 _H ,0005C4 _H]

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