940 nm High Power VCSEL Array

Product Overview

SAIC's S-V940S30-002 is a 940 nm multi-mode top-emitting vertical cavity surface emitting laser chip using in industry heating, IR illumination and sensing field. The chip features include low threshold current, top-anode, bottom-cathode and non-hermetic design.

Key Features:

- 940nm multi-mode top-emitter
- Low threshold and operating currents
- Top-anode and Bottom-cathode configuration
- Non hermetic design

Applications

- IR illumination
- Sensing
- Industry Heating

Electro-optical Characteristics

Parameters	Symbol	Conditions	Specification/Rating			Unit
			Min.	Typ.	Max.	
Threshold current	I_{th}	T=50°C		0.45		A
Operating voltage	V_{op}	T=50 °C, I_{op} =3.5 A	1.75	2.0	2.4	V
Series resistance	R_s	T=50 °C, I_{op} =3.5 A		0.19		Ω
Slope efficiency	η	T=50 °C, I_{op} =3.5 A		0.9		W/A
Output power	Lop	T=50 °C, I_{op} =3.5 A	2.45	2.7		W
Beam divergence	θ_{D86}	T=50 °C, I_{op} =3.5 A		23		deg.
Emission wavelength	λ	T=50 °C, I_{op} =3.5 A	930	940	950	nm
Wavelength shift	dλ/dT	T=25 °C~85 °C		0.07		nm/ °C
Conversion efficiency	PCE	T=50 °C		37		%

Note: The testing condition is 0.3ms-pulse/1%-Duty.

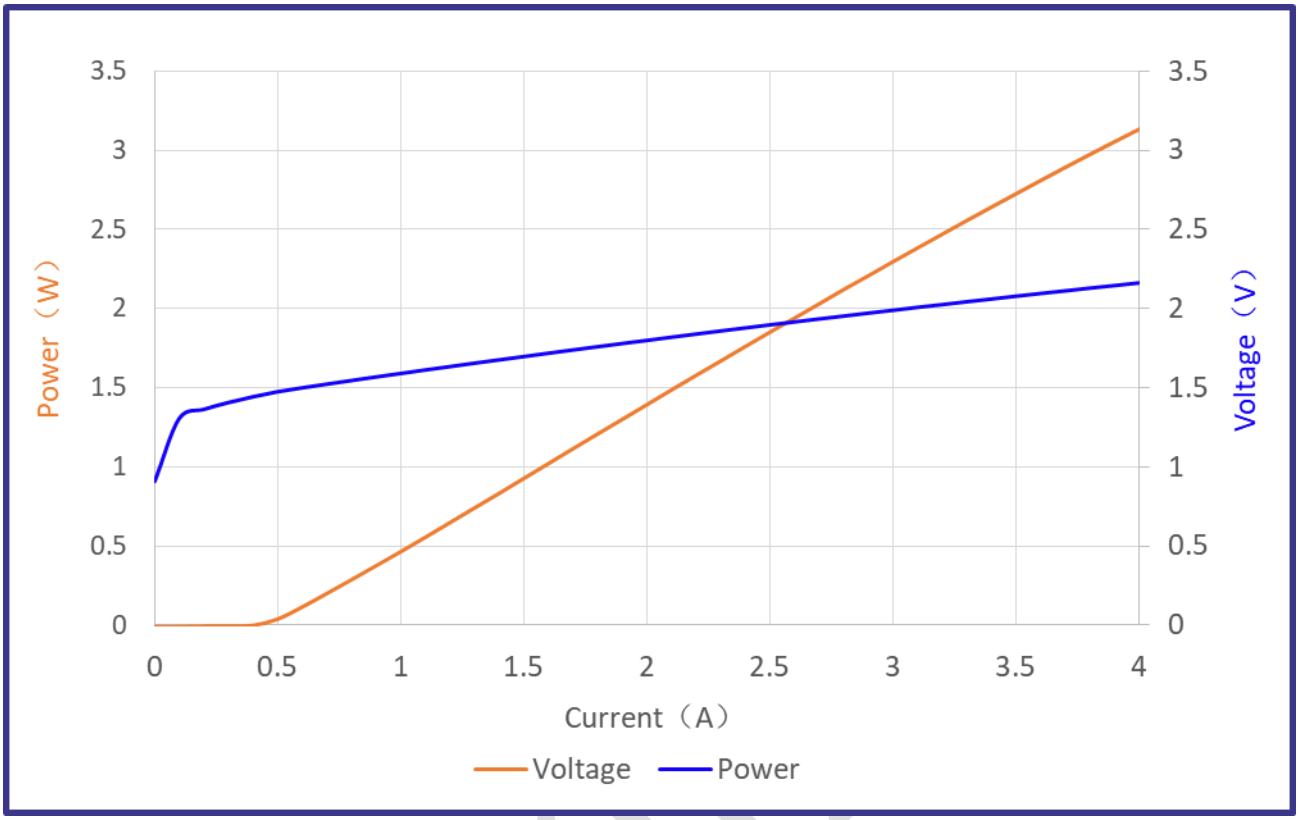
Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_r	5	V
Operating Temperature	T_{op}	-20~85	°C
Storage Temperature	T_{st}	-40~100	°C
Mounting Temperature (max. 10 sec)	T_m	260	°C

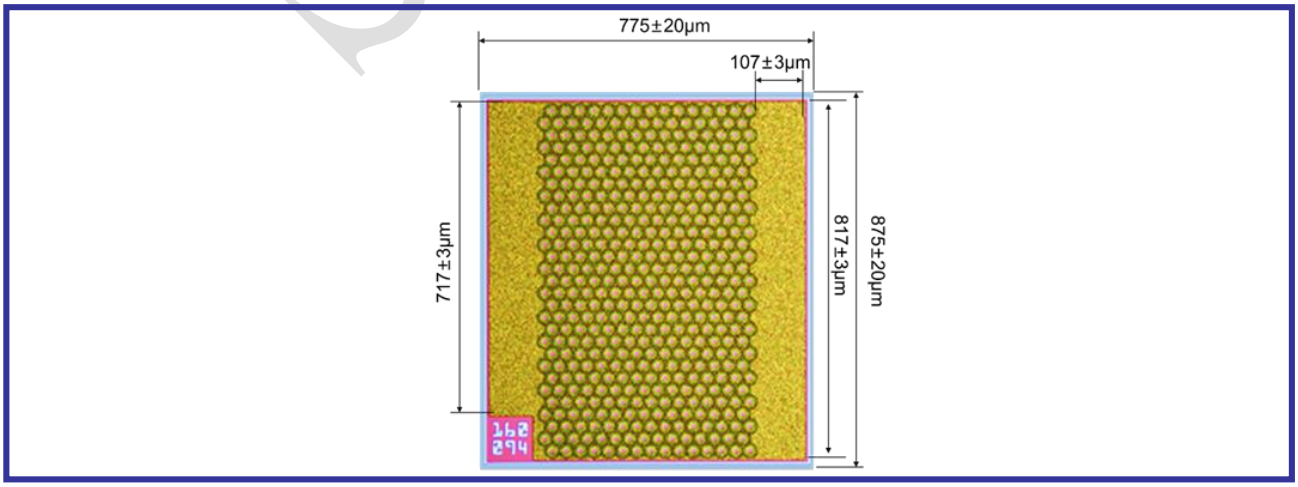
LIV Characteristics

Typical Performance Curves at 50 ºC



VCSEL Chip Dimensions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Die Length	*L*	755	775	795	um
Die Width	*W*	855	875	895	um
Die Thickness	*T*	85	100	115	um
Bonding pad diameter	D_{pad}	104	107	110	um
Emitter count	$\#._E$		435		ea



RoHS Compliance

Xiamen Sanan Integrated Circuit is fully committed to environment protection and sustainable development and has set in place a comprehensive program for removing polluting and hazardous substances from all of its products. The relevant evidence of RoHS compliance is held as part of our controlled documentation for each of our compliant products. RoHS compliance parts are available to order, please refer to the ordering information section for further details.

Ordering Information

Product Code	Power	Description
S-V940S30-002	2.7W	940 nm High Power VCSEL Array

Important Notice

Performance data, figures, tables, charts, and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing with Sanan before they become applicable to any particular order or contract. In accordance with the Sanan policy of continuous improvement specifications may change without notice. Further details are available from Sanan customer contact.