

25Gb/s 850 nm Multi-Mode VCSEL

S-VS25ST1-000 / S-VS25FT1-000



A TYPICAL WAFER PROBER TESTED VCSEL

FEATURES

- 850nm multi-mode top-emitter
- Data rates from DC to 25Gb/s
- Low threshold and operating currents
- Low electrical parasitic
- Top-anode and Top-cathode configuration
- Low spectral width
- Narrow beam divergence
- Single / 1x4 chips
- High humidity robustness compliant with GR468

APPLICATIONS

- DCI (Pluggable & AOC)
- Datacom 25Gb/s QSFP, 100GBE

ELECTRO OPTICAL CHARACTERISTICS

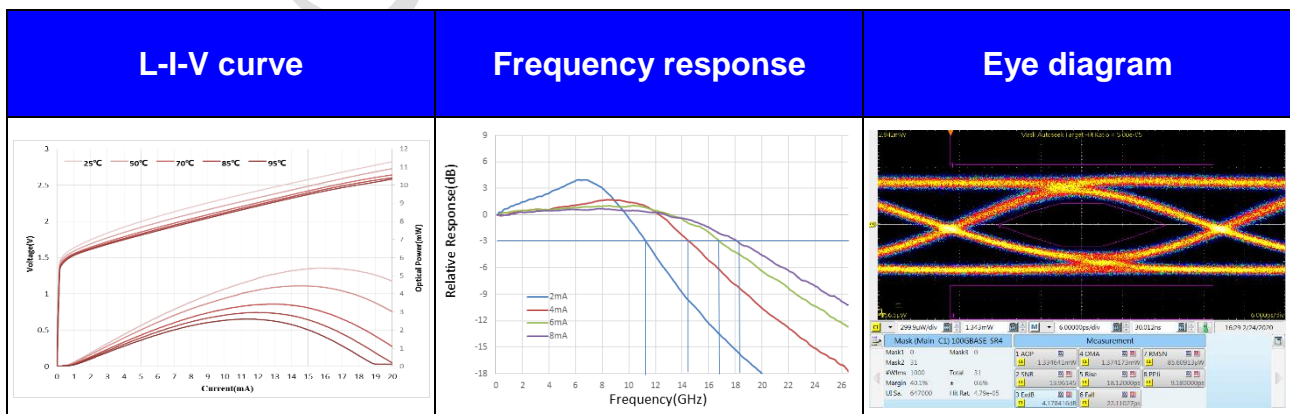
Parameters	Symbol	Conditions	Specification/Rating			Unit
			Min.	Typ.	Max.	
Threshold current	I_{th}	Intercept:0.5 – 1.5mW	0.35	0.7	1.5	mA
Operating voltage	V_{op}	$I_{op}=6.5mA$	1.7	2.2	2.5	V
Series resistance	R_s	Slope:4 – 8mA* @ $I_{op}=6.5mA$		65	80	Ω
Slope efficiency	η	Slope:4 – 8mA* @ $I_{op}=6.5mA$	0.3	0.45	0.6	W/A
Output power	LOP	$I_{op}=6.5mA$	1.5	2.6	3.5	mW
Beam divergence	$\theta_{FW1/e2}$ max	$I_{op}=6.5mA$	20	29	33	deg.
Spectral width	$\Delta\lambda_{RMS}$	$I_{op}=6.5mA$		0.4		nm
Emission wavelength	λ	$I_{op}=6.5mA$	840	850	860	nm
3dB Bandwidth	f_{-3dB}	$I_{op}=6.5mA$		16.5		GHz
Relative intensity noise	RIN_{OMA}	$I_{op}=6.5mA$, ER =5.0dB, 19GHz bandwidth		-130	-128	dB/Hz

Note: The testing condition is CW mode.

T= 0 to 85 °C unless otherwise notes.

*This region is calculated by linear regression or summarize.

LIV CHARACTERISTICS



THERMAL CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit
Wavelength tuning coefficient	$d\lambda/dT$		0.064		nm/°C
Threshold current variation (0-85 °C)	dI_{th}/dT		0.004		mA/°C
Slope efficiency variation (0-85 °C)*	$d\eta/\eta/dT$		-0.3		%/K

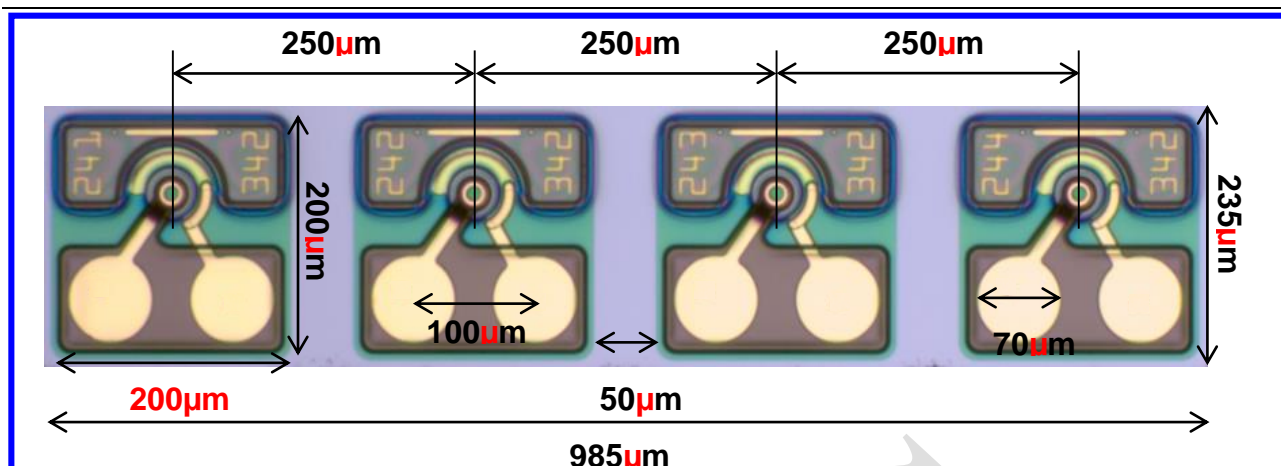
Note: *SE temperature variation is calculate by this formula of $d((\eta_{T1}-\eta_{T2})/\eta_{T2})/dT$.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Max.	Unit
Peak forward current (max. 10 sec)	I_{max}	15.0	mA
Optical output power	P_{max}	6.5	mW
Reverse Voltage	V_r	-9.0	V
Operating Temperature	T_{op}	0 to 85	°C
Storage Temperature	T_{st}	-40 to 100	°C
Mounting Temperature (max. 10 sec)	T_m	260	°C

VCSEL CHIP DIMENSIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit
Die Length (1x1)	L_{1x1}	225	235	245	μm
Die Length (1x4)	L_{1x4}	975	985	995	μm
Die Width	W	225	235	245	μm
Die Thickness	T	135	150	165	μm
Bonding pad width	W_{pad}		70		μm



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	Data Rate	Description
S-VS25ST1-000	25Gb/s (NRZ)	850 nm Multi-Mode VCSEL Chip (Single)
S-VS25FT1-000	100Gb/s (NRZ)	850 nm Multi-Mode VCSEL Chip (1x4 Array)

Customer Contact Information

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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.

Quality Certifications

- 50051180 QM15/3502(ISO9001:2019)
- CNGZ302503-UK(ISO14001:2015)