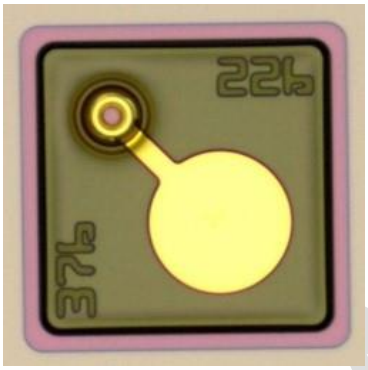
14Gb/s 850 nm Multi-Mode VCSEL

S-VS14SD1-001

[Draft version]



A TYPICAL WAFER PROBER TESTED VCSEL

FEATURES

- 850 nm multi-mode top-emitter
- Data rates from DC to 14Gb/s
- Low threshold and operating currents
- Low electrical parasitic
- Top-anode and Bottom-cathode configuration
- Low spectral width
- Narrow beam divergence
- Single chips

APPLICATIONS

- Fiber optic communication links and AOC
- HDMI
- Datacom 10Gb/s SFP+

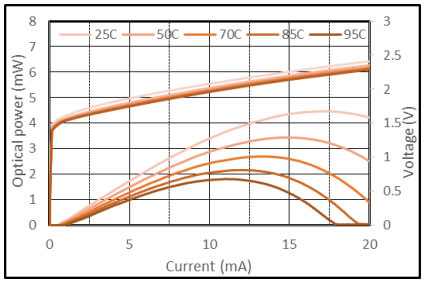
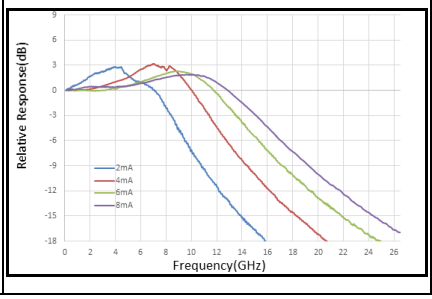
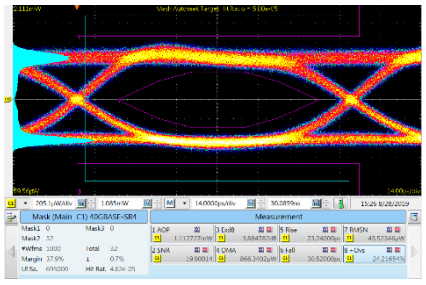
SAC

ELECTRO OPTICAL CHARACTERISTICS

Parameters	Symbol	Conditions	Specification/Rating			Unit
			Min.	Typ.	Max.	
Threshold current	I_{th}	T=25 °C			0.9	mA
Operating voltage	V_{op}	T=25 °C, I_{op} =6.0mA		2.0		V
Series resistance	R_s	T=25 °C, Slpoe:4 – 8mA*		50		Ω
Slope efficiency	η	T=25 °C, Slope:4 – 8mA*	0.3		0.55	W/A
Output power	LOP	T=25 °C, I_{op}=6.0mA	1.5	2.1	3.6	mW
Beam divergence	$\theta_{FW1/e2}$ max	T=25 °C, I_{op}=6.0mA		29		deg.
Spectral width	$\Delta\lambda_{RMS}$	T=25-85 °C, I_{op}=6.0mA			0.60	nm
Emission wavelength	λ	T=25-85 °C, I_{op}=6.0mA	840	850	860	nm
3dB Bandwidth	f_{-3dB}	T=25 °C, I_{op}=6.0mA	10			GHz
		T=85 °C, I=7.0mA	10			
Rise time	T_r	T=25°C, I_{op}=6.0mA, 20-80% *			45	Ps
Fall time	T_f				45	Ps
Relative intensity noise	RIN_{OMA}	I_{op}=6.0mA, ER =5.0dB, 7.7GHz bandwidth			-128	dB/Hz

Note：The testing condition is CW mode.
*This region is calculated by linear regression or summarize.

LIV CHARACTERISTICS

L-I-V curve	Frequency response	Eye diagram
		

THERMAL CHARACTERISTICS

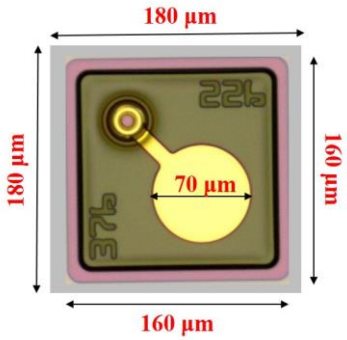
Parameter	Symbol	Min.	Typ.	Max.	Unit
Wavelength tuning coefficient	dλ/dT		0.07		nm/ºC
Threshold current variation (0-85 ºC)	dI_{th}/dT		0.005		mA/ºC
Slope efficiency variation (0-85 ºC)	dη/dT		-0.002		W/A-ºC

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Max.	unit
Peak forward current	I_{max}	15.0	mA
Optical output power	P_{max}	4.0	mW
Reverse Voltage	V_r	-9.0	V
Operating Temperature	T_{op}	0 to 85	ºC
Storage Temperature	T_{st}	-40 to 100	ºC
Mounting Temperature (max. 10 sec)	T_m	260	ºC

VCSEL CHIP DIMENSIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit
Die Length	*L*	170	180	190	μm
Die Width	*W*	170	180	190	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-VS14SD1-001	14Gb/s (NRZ)	850 nm Multi-Mode VCSEL Chip (Singlet)

Customer Contact Information

Website： http://www.sanan-ic.com/

Email： Sales-od@sanan-ic.com

TEL： 86-592-6300505

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

- 0016Q35695R0M/3502(ISO9001:2015)
- 00217E31547R0M(ISO14001:2015)

Safety Labels