

850 nm multimode VCSEL

2,5 / 3,125 / 5 Gbps

for high speed data transmission

- High speed up to 5 Gb/s
- Lowest threshold current
- Lowest power consumption

Warning:
Laser radiation, avoid
exposure to beam.
Class 3B laser product,
potential eye hazard.

ELECTRO-OPTICAL-CHARACTERISTICS, (VCSEL CHIP)

PARAMETER	SYMBOL	UNITS	MIN	TYP	MAX	TEST CONDITIONS
Emission wavelength	λ_R	nm	835	850	860	T = 20°C
Threshold current	I_{TH}	mA	0.8	1.5	2.0	T = 20°C
Threshold current variation	ΔI_{TH}	mA			0.7	T = 0 .. 70°C
Threshold voltage	U_{TH}	V	1.5	1.8	2.0	
Laser current	I_{OP}	mA	2.3	3.0	5.0	$P_{opt} = 1 \text{ mW}$
Laser voltage	U_{OP}	V	1.6	2.0	2.3	$P_{opt} = 1 \text{ mW}$
Wallplug efficiency	η_{WP}	%	10	17	30	$P_{opt} = 1 \text{ mW}$
Slope efficiency		W/A	0.2	0.5	0.7	T = 0 .. 70°C
Variation of slope efficiency		W/A			0.2	T = 0 .. 70°C
Differential series resistance	R_S	Ω	30	70	100	$P_{opt} = 1 \text{ mW}$
3dB modulation bandwidth	ν_{3dB}	GHz	3	6		$P_{opt} = 1 \text{ mW}$
Rise and fall time	t_R/t_F	ps		90	150	10%..90%; $P_{off}=0.1\text{mW}, P_{on}=1.0\text{mW}$
Relative intensity noise	RIN	$\text{dB/Hz}^{-0.5}$		-130	-120	$P_{opt} = 1 \text{ mW @ } 1 \text{ GHz}$
Wavelength tuning over current		nm/mA	0.15	0.20		
Wavelength tuning over temp.		nm/K		0.07		
Thermal resistance	$R_{THERMAL}$	K/W			2	
Beam divergence	θ	°	6	14	20	$P_{opt} = 1 \text{ mW}$, full width 1/e ²
Spectral bandwidth	$\Delta\lambda$	nm			1	rms

ABSOLUTE MAXIMUM RATINGS

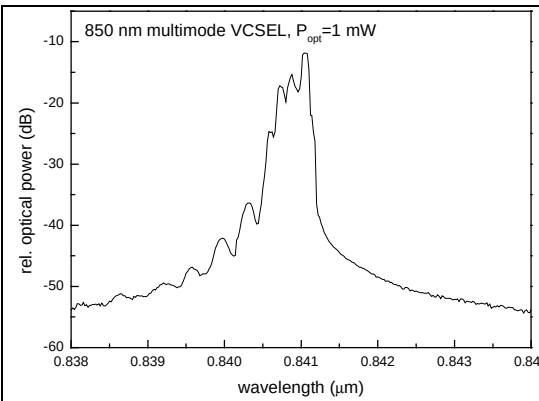
Storage temperature	-40 .. 85°C
Operating temperature	0 .. 70°C
Electrical power dissipation	30 mW
Continuous forward current	12 mA
Reverse voltage	8V @ I = 10 μ A
Soldering temperature	330°C



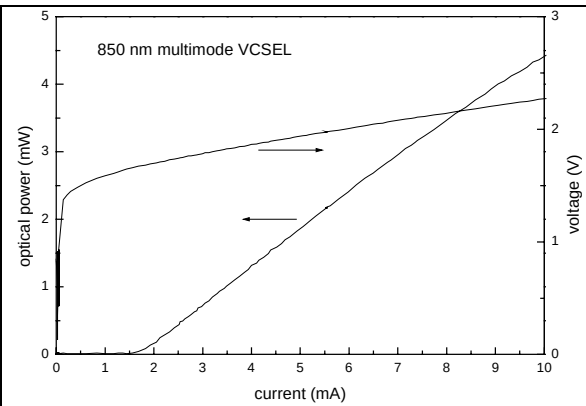
GEOMETRICAL SPECIFICATIONS

Chip area	250x250 μm^2
Chip thickness	150 +/- 20 μm
Emission area centered on chip	
Substrate side metallization	VCSEL cathode
Top side metallization	VCSEL anode

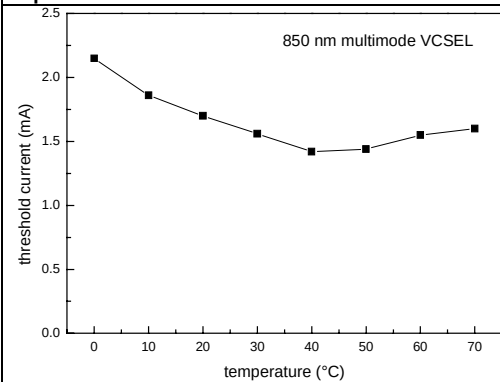
Available on chip level,
array formats
or in TO18/46 can



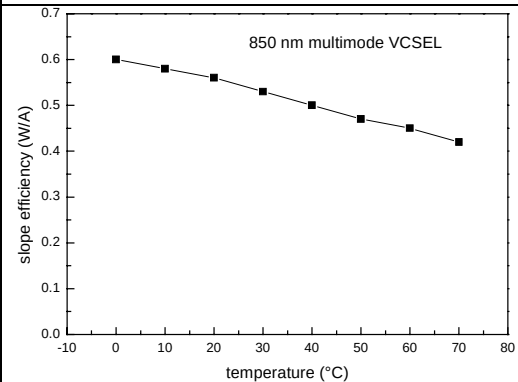
Spectral bandwidth



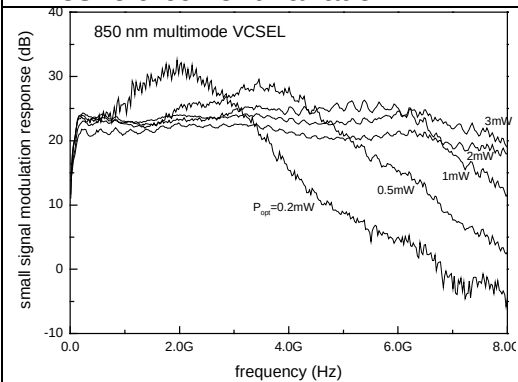
Threshold



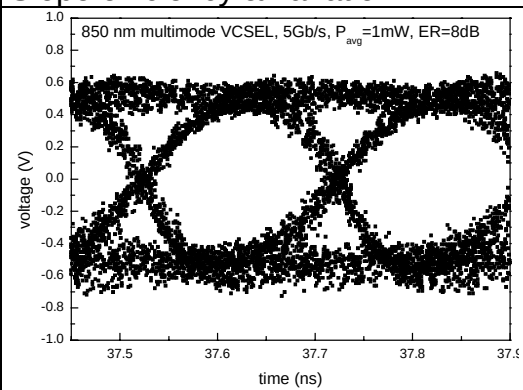
Threshold current variation



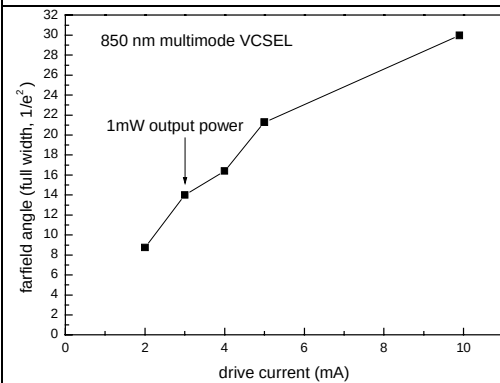
Slope efficiency & variation



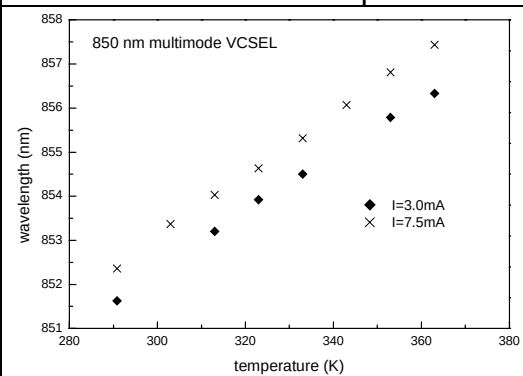
3dB modulation bandwidth



Rise and fall time at 5Gbps



Beam divergence



Wavelength tuning over temperature