COMMUNICATE *fast as light*

V2

U·L·M PHOTONICS

850 nm multimode 1 x n, 10 Gbps VCSEL for high speed data trans

- **High speed up to 10 Gb/s**
- **High reliability**
- **Low current and voltage**
- **Lowest power consumption**
- **Single devices and linear arrays**

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

Preliminary

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		1.5	2.5	T = 20°C
Threshold current variation	ΔI_{TH}	mA			1.0	T = 0 .. 70°C
Threshold voltage	U_{TH}	V	1.5	1.8	2.0	
Laser current	I_{OP}	mA	6	8.0		P_{opt} = 3 mW [1]
Laser voltage	U_{OP}	V		2.0		P_{opt} = 3 mW [1]
Wallplug efficiency	η_{WP}	%		20		P_{opt} = 3 mW [1]
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	25	50	100	P_{opt} = 3 mW [1]
3dB modulation bandwidth	ν_{3dB}	GHz		8		P_{opt} = 3 mW [1]
Rise and fall time	t_R/t_F	ps			40/60	10%..90%; P_{off}=0.5mW, P_{on}=3.0mW [1]
Relative intensity noise	RIN	dB/Hz$^{-0.5}$		-130	-120	P_{opt} = 3 mW @ 1 GHz
Wavelength tuning over current		nm/mA	0.15	0.20		
Wavelength tuning over temp.		nm/K		0.07		
Thermal resistance	$R_{THERMAL}$	K/mW			2	
Beam divergence	θ	°	15	25	35	P_{opt} = 3 mW [1], full width 1/e²
Spectral bandwidth	Δλ	nm			2	rms

[1] for chip only

ABSOLUTE MAXIMUM RATINGS

Storage temperature	-40 .. 85°C
Operating temperature	0 .. 70°C
Electrical power dissipation	30 mW
Continous forward current	12 mA
Reverse voltage	8V @ I = 10 µA
Soldering temperature	270°C

GEOMETRICAL SPECIFICATIONS

Chip area	250x250 µm²
Chip thickness	150 +/- 20 µm
Emission area centered on chip	Φ < 15µm
Substrate side metallization	VCSEL cathode
Top side metallization	VCSEL anode

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

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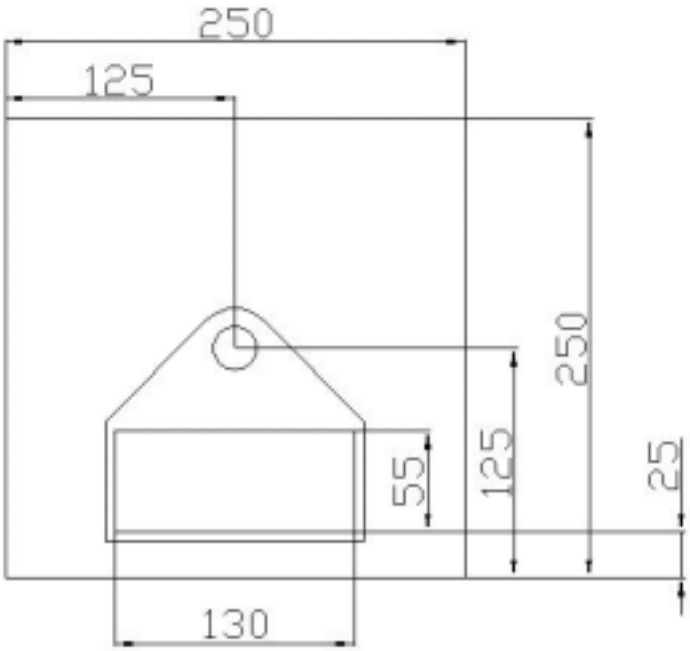
Diagram:
Chip layout after dice (µm)



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