850nm 10Gb/s Multi-Mode VCSEL Chip

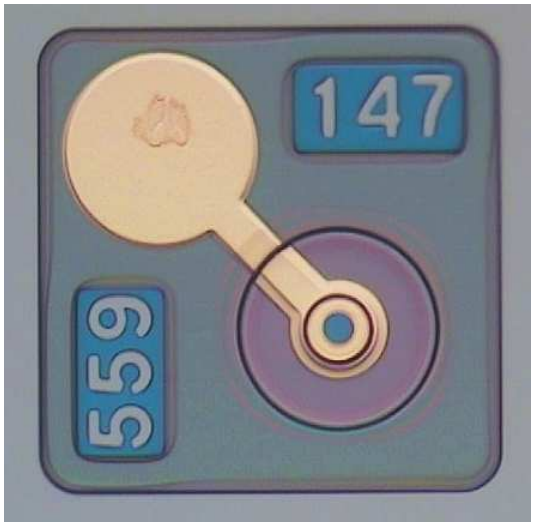
(Preliminary)

Features:

- 850nm multi-mode emission
- Low threshold and operation current
- High reliability
- Low electrical parasitics
- Data rates from DC to 10 Gb/s
- Backside cathode and topside anode configuration

Applications:

- Fiber optical communication links
- Smart cables, HDMI, consumer applications



Bookham's high speed 850nm multi-mode VCSEL chip is designed to meet stringent specifications for high speed fiber optical communication links. The high performance, high reliability device is engineered with low electrical parasitics for data rates up to 10Gbps. The VCSEL operates in multiple transverse and single longitudinal modes and emits a circular symmetric beam with low divergence that can be efficiently coupled into 50/125 and 62.5/125µm multi-mode fibers. The VCSEL has the cathode contact on the bottom side and the anode contact on the top side of the chip.

Electro – Optical Characteristics*

Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Threshold current	I_{th}			0.8	1.2	mA
Optical output power	P_{out}	I_{op} = 6mA		2.5		mW
Slope efficiency	η	$I=I_{th}+1mA$	0.3	0.5	0.7	mW/mA
Operating voltage	U_{op}	I_{op} = 6mA		1.9		V
Differential resistance	R_d	I_{op} = 6mA		50	80	Ω
Emission wavelength	λ	I_{op} = 6mA, T=0°C - 70°C	830	850	860	nm
Spectral bandwidth, RMS	$\Delta\lambda$	I_{op} = 6mA			0.65	nm
Beam divergence	Θ	I_{op} = 6mA, Full width 1/e²		25	30	°
Capacitance	C	I_{op} = 6mA		0.35	0.5	pF
Modulation bandwidth	f_{3dB}	I_{op} = 6mA	8			GHz
Rise time	t_r	I_{op} = 6mA, ER=5dB, 20% - 80%		30	40	ps
Fall time	t_f	I_{op} = 6mA, ER=5dB, 20% - 80%		40	45	ps
Relative Intensity Noise	RIN(OMA)	I_{op} = 6mA, ER=5dB, 7.7GHz bandwidth			-128	dB/Hz

Thermal Characteristics

Parameter	Symbol	Ratings			Unit
		Min	Typ	Max	
Wavelength tuning co-efficient	$\delta I/\delta T$		0.06		nm/K
Threshold current variation 0 to +70°C	ΔI_{th}			1.0	mA
Slope efficiency variation 0 to +70°C	$\Delta\eta_T$		-0.35		%/K
Thermal impedance	Z_{th}		2.0		K/mW

*T=25°C unless otherwise noted

Absolute Maximum Ratings

Parameter	Rating	Unit
Optical output power	8	mW
Peak forward current	12	mA
VCSEL reverse voltage	5	V
Operating temperature	0 to +70	°C
Storage temperature	-40 to +100	°C
Mounting temperature (max. 1h)	165	°C

Chip Dimensions

Parameter	Ratings			Unit
	Min	Typ	Max	
Die length	170	190	210	µm
Die width	170	190	210	µm
Die height	135	150	165	µm

RoHS Compliance

Oclaro 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	Package
APA7501010000	10 Gb/s	850nm MM single VCSEL chip

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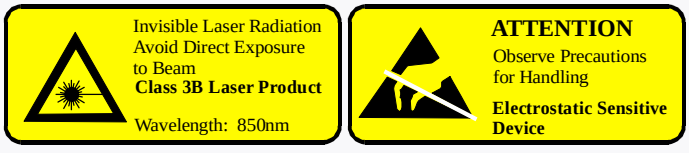
Safety Labels



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