850nm Polarization Locked Single Mode VCSEL Chip

Bookham's single mode VCSELs are designed to meet stringent specifications for a broad range of optical sensing applications. This product offers polarization stable single mode emission with a symmetrical Gaussian beam profile and output powers of typically 1mW. Bias currents range from 3 to 6mA.

Features

- Single transverse and longitudinal mode
- Polarization stable emission
- Low power consumption
- Gaussian beam profile
- High reliability and long term stability
- RoHS compliant

Applications

- Laser mouse
- Optical sensor applications
- Optical encoder

Product Code	Description
APA8101010012	850nm polarization locked SM VCSEL chip

Electro-optical Characteristics

Operating conditions: T_{op}=5° - 45°C; I_{op}=const., set at 25°C so that P_{op}=0.7mW

Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Threshold Current	I_{th}	T=25°C	1	2.5	5	mA
Slope Efficiency	η	T=25°C, I=I_{th} + 1mA	0.15	0.35	0.55	mW/mA
Operating Current	I_{op}	T=25°C, P_{op} =0.7mW	2		7	mA
Operating Voltage	U_{op}	Operating conditions			2.3	V
Single Mode Optical Output Power	P_{SM}	T=25°C	0.8			mW
Side Mode Suppression Ratio	SMSR	T=25°C, P ≤ 0.8mW	10			dB
Emission Wavelength	λ	Operating conditions	840	850	860	nm
Beam Divergence	Θ	Full width 1/e^2, T=25°C, P_{op}=0.7mW	13	17	21	°
Differential Resistance	R_{diff}	P_{op}=0.7mW	20		90	Ω
Optical Power Variation Over Temperature	P(T)-P_{op}	I=I_{op}, T=5..45°C	-200		+200	µW

Polarization

- Laser operates with stable linear polarization
- No polarization flips in the operating range

Absolute Maximum Ratings

Parameter	Min	Max	Unit	Condition
Continuous Operating Current		8	mA	
Continuous Reverse Voltage		8	V	
PCB Solder or Reflow Temperature		260	°C	max. 10 seconds

Mechanical Dimensions

Parameter	Min	Typ	Max	Unit
Die length	260	280	300	µm
Die width	210	230	250	µm
Die height	135	150	165	µm

RoHS Compliance

Bookham 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	Description
APA8101010012	850nm polarization locked SM VCSEL chip

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