


850nm Polarization Locked Single Mode VCSEL Chip with Low Operation Power

APA8601010001



II-VI Laser Enterprise'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
- High reliability
- Gaussian beam profile
- RoHS compliant 

Applications

- Laser mouse
- Optical sensor applications
- Optical encoder

Electro-Optical Characteristics

Operating conditions: $T_{op}=5^{\circ} - 45^{\circ}\text{C}$; $I_{op}=\text{const.}$, set at 25°C so that $P_{op}=0.3\text{mW}$

Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Threshold Current	I_{th}	$T=25^{\circ}\text{C}$		1.5	2.7	mA
Slope Efficiency	η	$T=25^{\circ}\text{C}, I=I_{th} + 1\text{mA}$	0.25	0.55	1.0	mW/mA
Operating Current	I_{op}	$T=25^{\circ}\text{C}, P_{op}=0.4\text{mW}$		2.2	3.2	mA
Operating Voltage	U_{op}	Operating conditions			2.15	V
Single Mode Optical Output Power	P_{SM}	$T=25^{\circ}\text{C}$	0.45			mW
Side Mode Suppression Ratio	SMSR	$T=25^{\circ}\text{C}, P_{op}=0.5\text{mW}$	10			dB
Operating Wavelength	λ_{peak}	$T=25^{\circ}\text{C}, P_{op}=0.5\text{mW}$	840	850	860	nm
Beam Divergence	$\theta_{FW1/e2}$	$T=25^{\circ}\text{C}, P_{op}=0.5\text{mW}$	14	16.5	19	$^{\circ}$
Optical Power Variation Over Temperature	$P(T)-P_{op}$	$I_{op}, T=5..45^{\circ}\text{C}$	-170		+170	μW
Optical Power Variation Over Time	$P(t)-P_{op}$	$I_{op}, T=35^{\circ}\text{C}, t=0...10\text{hrs}$	-35		+80	μW

SM= single mode; FW1/e2 = full width 1/e2

Polarization

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

Absolute Maximum Ratings

Parameter	Rating	Unit
Continuous Operating Current	6	mA
Continuous Reverse Voltage	6	V
PCB Solder or Reflow Temperature	260	$^{\circ}\text{C}$

Data Sheet

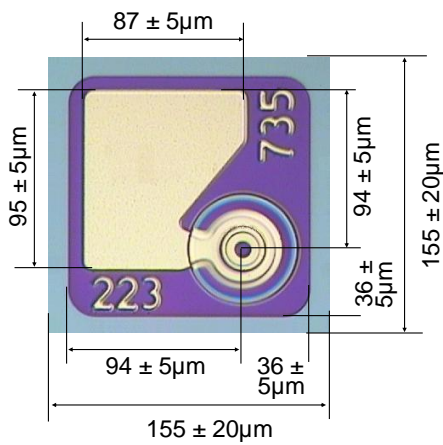
Environmental Exposure Ratings

Parameter	Min	Max	Unit	Condition
Operating Environment				
Operating Temperature	5	45	°C	
Operating Humidity	0	80	%rH	non-condensing
Storage and Transport Environment				
Storage & Transport Temperature	-40	100	°C	
Storage & Transport Humidity	0	80	%rH	non-condensing

Packaging and Supply

- Sawn wafer on adhesive tape
- Wafer map files describing positions of good dice

Chip Dimensions



Chip thickness: $150 \pm 15 \mu\text{m}$

RoHS Compliance



II-VI Laser Enterprise 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
APA8601010001	850nm Polarization Locked SM VCSEL Chip with Low Operation Power

Contact Information

www.laserenterprise.com

Important Notice

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by II-VI Laser Enterprise before they become applicable to any particular order or contract. In accordance with the II-VI Laser Enterprise policy of continuous improvement specifications may change without notice. Further details are available from any II-VI Laser Enterprise sales representative.



Caution - use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

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