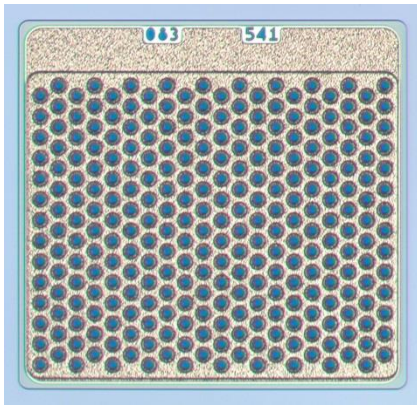


940nm Multi Mode High Power VCSEL Array

APS6401010002



II-VI Laser Enterprise's multimode high power VCSEL arrays are designed to meet stringent specifications for a broad range of optical 3D sensing applications. This product offers output powers of typically 2.5W with high efficiency and a rotation symmetrical beam profile. It is optimized for high volume consumer applications.

Features:

- Optical output power of 2.5W (QCW) at 940nm
- High efficiency and reliability
- Multi transverse mode emission
- Doughnut shaped, symmetrical farfield
- Non-hermetic operation
- Surface mountable

Applications

- High volume time-of-flight (ToF) 3D sensing
- Illumination
- Industrial

Electro-Optical Characteristics

All Electro-Optical parameters are specified at 25°C, pulsed (pulse length 0.5ms, 22% Duty Cycle), unless otherwise noted.

Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Threshold Current	I_{th}			0.6		A
Operating Current	I_{op}	$P_{op} = 2.5W$		3	3.5	A
Power at 60°C	$P_{op,60°C}$	$I = I_{op}$	2	2.2		W
Operating Voltage	U_{op}	$I = I_{op}$	2.0	2.2	2.5	V
Differential Efficiency ¹	η_{diff}	$I = I_{op}$		0.75		W/A
Power Conversion Efficiency	PCE_{op}	$I = I_{op}$	33	38		%
Center Wavelength	λ_{center}	$I = I_{op}$	930	940	950	nm
Beam Divergence ²	$\theta_{FW1/e2}$	$I = I_{op}$		25	30	°
Rise / Fall Time	$t_{rise, fall}$	$I = I_{op}$			1	ns

¹ Defined as slope around operating current

² FW1/e2 = Full Width 1/e²

Absolute Maximum Ratings

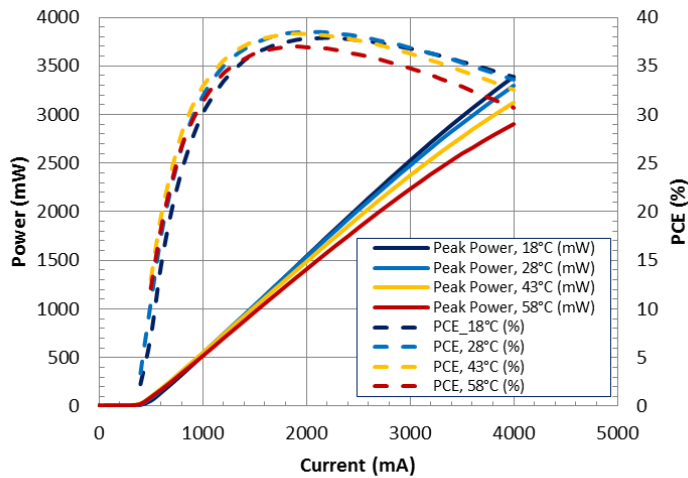
Parameter	Ratings	Unit	Condition
Continuous Operating Current	4	A	max 10 seconds
Continuous Reverse Voltage	5	V	max 10 seconds
PCB Solder or Reflow Temperature	260	°C	max 10 seconds

Environmental Exposure Ratings

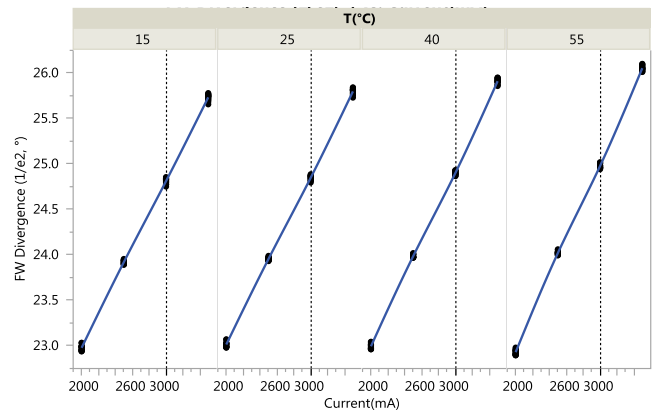
Parameter	Min	Max	Unit	Condition
Operating Environment				
Operating Temperature	0	60	°C	
Operating Humidity	0	80	%rH	non-condensing
Storage and Transport Environment				
Storage & Transport Temperature	-40	100	°C	
Storage & Transport Humidity	0	80	%rH	non-condensing

Electro-Optical Characterization

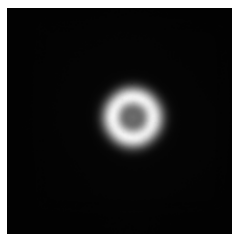
All measurements are performed with the chips soldered on AlN surmounts. Those measurements are indicative of performance only. The specification table details what performance can be expected.



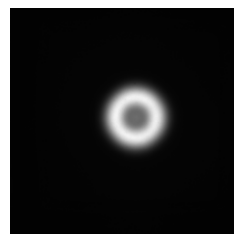
Power vs. Current (solid lines) and Power Conversion Efficiency (dashed line) vs. Current measured at 0.5ms pulse length, 2.2ms pulse period



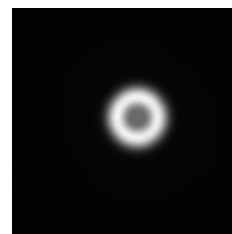
Full Width Far Field at 1/e² (in °) measured versus current and temperature (0.5ms pulse length, 10ms pulse period)



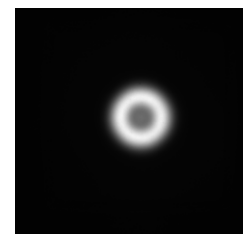
2A



2.5A



3A



3.5A

Far Field profile measured at 0.5ms pulse length, 10ms period, 25°C

Packaging and Supply

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

Chip Dimensions

Parameter	Min	Typ	Max	Unit
Chip width	735	755	775	μm
Chip length	770	790	810	μm
Chip thickness	135	150	165	μm

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

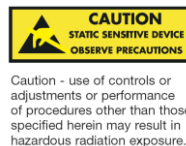
Product Code	Description
APS6401010002	940nm Multi Mode High Power VCSEL Array

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.



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