

AVAP-850SM

Premium
850 nm Singlemode
VCSEL Chip
(Large Oxide Aperture)



July 2004
Preliminary Datasheet

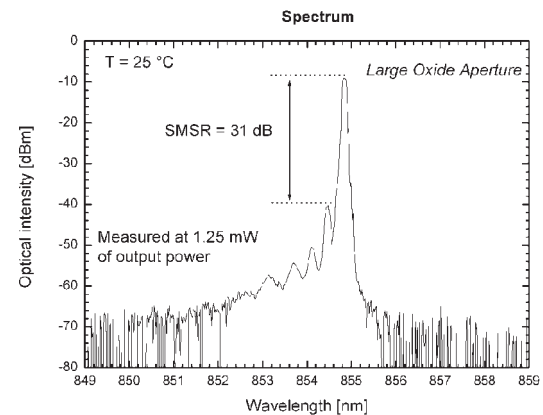
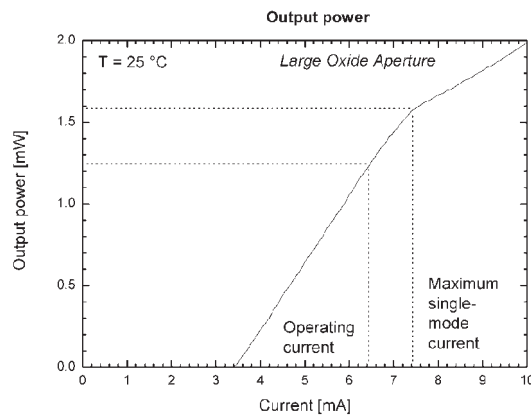
Features

- Single transverse and longitudinal mode
- No mode partition noise
- No polarisation flips
- Low power consumption
- High reliability
- Low ESD sensitivity
- No astigmatism
- Gaussian beam profile
- Small beam divergence

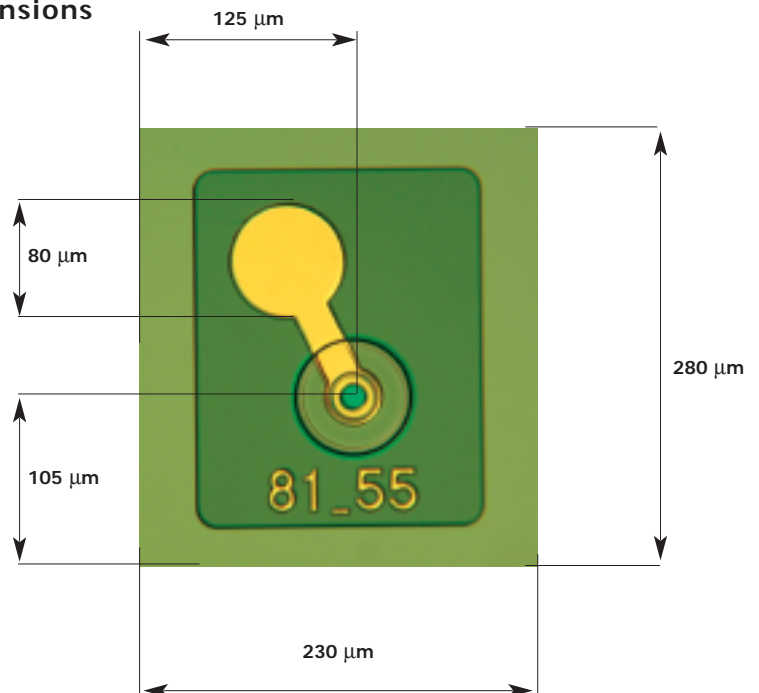
Ordering information

Part Number	Description
AP-A53-0101-0001	Premium 850nm SM VCSEL Chip (large oxide aperture)

Typical curves



Chip dimensions



Premium
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VCSEL Chip
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Electro-optical characteristics

Parameter*	Symbol	Conditions	Ratings			Units
			Min	Typ	Max	
VCSEL						
Threshold current	I_{th}		2.3	3.4	4.5	mA
Threshold voltage	V_{th}		1.8	1.9	2.2	V
Operating current	I_{op}	$P_{out} = 1.25$ mW	5.4	6.8	8.2	mA
Operating voltage	V_{op}	$P_{op} = 1.25$ mW	1.9	2.15	2.3	V
Differential resistance	R_{op}	$P_{op} = 1.25$ mW	30	46	60	Ω
Max SM current	I_{sm}	SMSR ≥ 20 dB	6.4	8.2	10.0	mA
Optical output power (max SM)	P_{sm}	SMSR ≥ 20 dB	1.3	1.6	1.9	mW
Slope efficiency	η	$P_{op} = 1.25$ mW	0.30	0.37	0.50	mW/mA
Emission wavelength	λ	$P_{op} = 1.25$ mW	840	850	860	nm
Beam divergence	θ	FWHM		10		$^\circ$
Linewidth	$\Delta\nu$	$P_{op} = 1.25$ mW			30	MHz

SM = singlemode; MM = multimode; SMSR = side mode suppression ratio; FWHM = full-width half-maximum

Thermal characteristics

Parameter	Symbol	Ratings			Units
		Min	Typ	Max	
Temperature tuning coefficient	$\delta\lambda/\delta T$		0.06		nm/K
Threshold current variation: 0 to +70 °C	ΔI_{th}		0.70		mA
Current tuning coefficient	$\delta\lambda/\delta I$		0.39		nm/mA

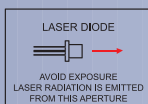
Absolute maximum ratings

Parameter*	Symbol	Rating		Units
		Min	Max	
Optical output power	P_{max}		1.8	mW
Peak forward current	I_{max}		10	mA
Electrical power dissipation	P_{tot}		20	mW
Operating temperature	T_{op}	0	+70	$^\circ$ C
Storage temperature	T_{stg}	-40	+100	$^\circ$ C

*(T=25°C unless otherwise noted)

Note: All dice are tested and are guaranteed to comply with all datasheet limits. Packing or assembly of the dice may impact their performance. Avalon Photonics has no control of third party procedures in the sawing, handling, packing or assembly of the dice. Accordingly, Avalon Photonics assumes no liability for device functionality or performance of the dice or system after third party handling, packing or assembly of the dice.

The above specifications are subject to change without notice



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