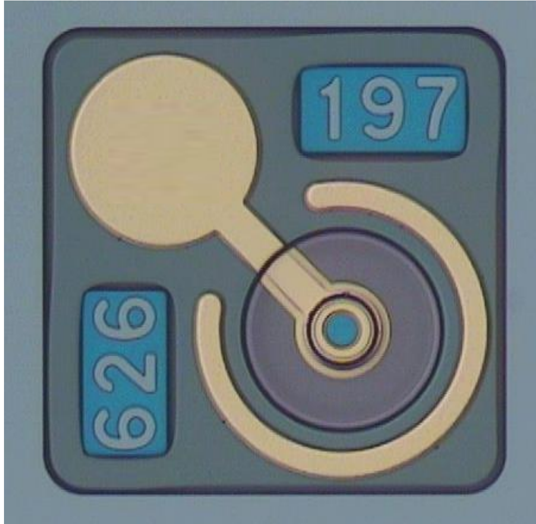
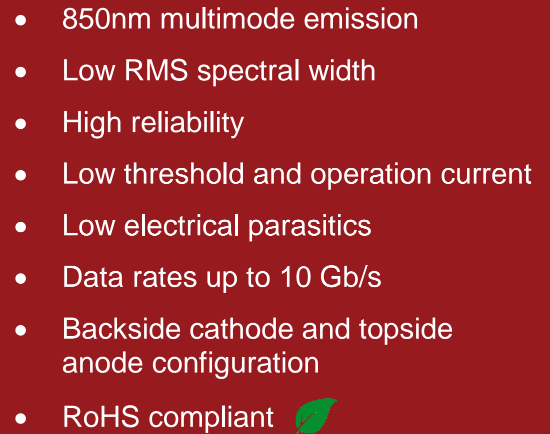
850nm 10Gb/s Multimode VCSEL Chip

APA7501010009





Features:

- 850nm multimode emission
- Low RMS spectral width
- High reliability
- Low threshold and operation current
- Low electrical parasitics
- Data rates up to 10 Gb/s
- Backside cathode and topside anode configuration
- RoHS compliant

Applications

- Fiber optical communication links up to 10 Gb/s
- Gigabit Ethernet and storage area networks

Shipment packaging options:

- Diced wafer on UV tape on metal lead frame
- Grip ring
- Gel-Pak

Electro-Optical Characteristics

T=25°C unless otherwise noted

Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Threshold current	I_{th}			0.7	1.0	mA
Operating current	I_{op}		5.0		6.0	mA
Slope efficiency	η	$I = I_{th}$+1mA	0.35	0.44	0.53	mW/mA
Optical output power	P_{out}	I_{op}=6mA	1.7	2.2	2.7	mW
Operating voltage	U_{op}	I_{op}		1.9		V
Differential resistance	R_d	I_{op}	45	60	75	Ω
Emission wavelength	λ	I_{op}, T=-5°C - 90°C	840	850	860	nm
Spectral width, RMS	$\Delta\lambda$	I_{op}, T=-5°C - 90°C		0.25	0.35	nm
Beam divergence	Θ	I_{op}, Full width 1/e2		24	30	°
Capacitance	C	I_{op}		0.25	0.35	pF
Modulation bandwidth	f_{3dB}	I_{op}	9			GHz
Rise time	t_r	I_{op}, ER=5dB, 20% - 80%		30	40	ps
Fall time	t_f	I_{op}, ER=5dB, 20% - 80%		40	45	ps
Relative Intensity Noise	RIN(OMA)	I_{op}, ER=5dB, 7.7GHz bandwidth			-128	dB/Hz

Thermal Characteristics

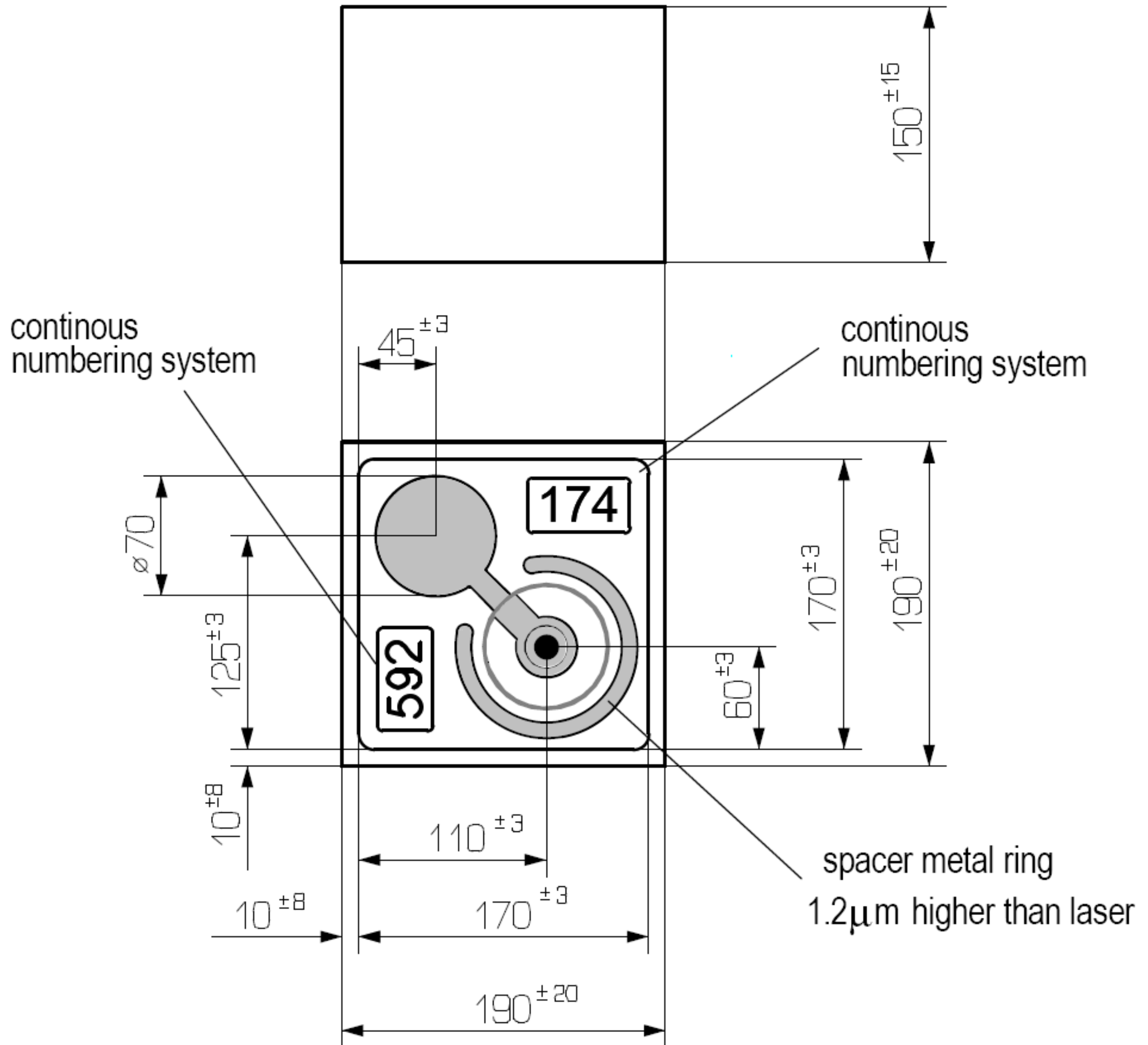
Parameter	Symbol	Ratings			Unit
		Min	Typ	Max	
Wavelength tuning coefficient	$\delta\lambda/\delta T$		0.06		nm/K
Slope efficiency variation 25°C - 85°C	$\Delta\eta_T$	-0.5	-0.3	-0.1	%/K
Thermal impedance	Z_{th}		3.0		K/mW

Absolute Maximum Ratings

Parameter	Rating	Unit
Optical output power	8	mW
Peak forward current (max. 10sec)	12	mA
VCSEL reverse voltage	5	V
Operating temperature	-5 to +90	°C
Storage temperature	-40 to +100	°C
Mounting temperature (max. 10sec)	260	°C

Chip Dimensions

Parameter	Min	Typ	Max	Unit
Die length	170	190	210	µm
Die width	170	190	210	µm
Die height	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	Data Rate	Description	Shipment Packaging
APA7501010009	10Gb/s	850nm 10G MM single VCSEL chip	Diced wafer on metal lead frame (1)
APA7501010109	10Gb/s	850nm 10G MM single VCSEL chip	Grip ring (2)
APA7501010209	10Gb/s	850nm 10G MM single VCSEL chip	Gel-Pak (3)

(1) Full diced 3'' wafer on UV tape on metal lead frame Ø 230mm, electronic wafermap provided (standard high volume)
(2) Known Good Dies on UV tape on grip ring Ø 150mm (medium volume)
(3) Known Good Dies in 2'' Gel-Pak (low volume)

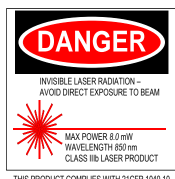
Contact Information

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.

Safety Labels



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

Issue 04

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