


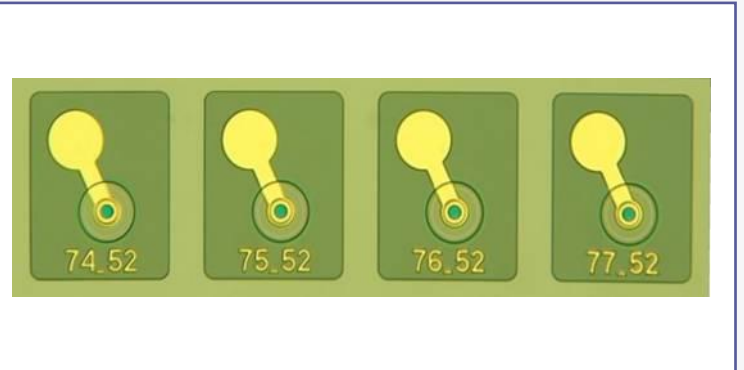
## 850nm 10Gb/s Multimode VCSEL Chip Array

### Features:

- 850nm multimode emission
- Low threshold and operation current
- High reliability
- Low electrical parasitics
- Data rates from DC to 10 Gb/s
- Backside common cathode and topside anode configuration
- Available as 4 and 12 channel array chip
- RoHS compliant 

### Applications:

- Parallel fiber optical communication links
- Smart cables, HDMI



Oclaro's high speed 850nm multimode VCSEL array is designed to meet stringent specifications for high speed data communications. The high performance, high reliability device is engineered with low electrical parasitics for data rates up to 10Gb/s. The VCSEL operates in multiple transverse and single longitudinal modes and emits a circular symmetric beam with low divergence that can be efficiently coupled into 50/125 and 62.5/125 $\mu$ m multimode fibers. The common cathode chip is available in 4 and 12 channel configuration with a pitch of 250 microns between individual channels.

## Electro – Optical Characteristics\*

Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Threshold current	$I_{th}$			0.8	1.2	mA
Slope efficiency	$\eta$	$I = I_{th} + 1\text{mA}$	0.3	0.5	0.7	mW/mA
Optical output power	$P_{out}$	$I_{op} = 6.0\text{mA}$		2.5		mW
Operating voltage	$U_{op}$	$I_{op} = 6.0\text{mA}$		2.0		V
Differential resistance	$R_d$	$I_{op} = 6.0\text{mA}$		60	85	$\Omega$
Emission wavelength	$\lambda$	$I_{op} = 6.0\text{mA}$ , $T = -10^\circ\text{C} - 85^\circ\text{C}$	840	850	860	nm
Spectral width, RMS	$\Delta\lambda$	$I_{op} = 6.0\text{mA}$			0.65	nm
Beam divergence	$\Theta$	$I_{op} = 6.0\text{mA}$ , Full width $1/e^2$		26	32	$^\circ$
Capacitance	C	$I_{op} = 6.0\text{mA}$		0.3	0.5	pF
Modulation bandwidth	$f_{3dB}$	$I_{op} = 6.0\text{mA}$	9			GHz
Rise/fall time	$t_r$	$I_{op} = 6.0\text{mA}$ , ER=5dB, 20% - 80%		30	35	ps
	$t_f$			40	45	ps
Relative intensity noise	$RIN_{12(OMA)}$	$I_{op} = 6.0\text{mA}$ , ER=5dB, 7.73GHz BW			-128	dB/Hz
Threshold uniformity	$\Delta I_{th}$				0.2	mA
Slope efficiency uniformity	$\Delta\eta$				0.05	mW/mA

## Thermal Characteristics

Parameter	Symbol	Ratings			Unit
		Min	Typ	Max	
Wavelength tuning coefficient	$\delta\lambda/\delta T$		0.06		nm/K
Threshold current variation -10°C - 85°C	$\Delta I_{th,T}$			1.2	mA
Slope efficiency variation -10°C - 85°C	$\Delta\eta_T$		-0.4		%/K
Thermal impedance	$Z_{th}$		2.5		K/mW

\*T=25°C unless otherwise noted

## Absolute Maximum Ratings

Parameter	Rating	Unit
Optical output power	6	mW
Peak forward current	12	mA
VCSEL reverse voltage	5	V
Operating temperature	-10 to +85	$^\circ\text{C}$
Storage temperature	-40 to +100	$^\circ\text{C}$
Mounting temperature (max. 1h)	165	$^\circ\text{C}$

## Chip Dimensions

Parameter	Min	Typ	Max	Unit
Die length, APA7301040000	960	980	1000	µm
Die length, APA7301120000	2960	2980	3000	µm
Die width	260	280	300	µm
Die height	135	150	165	µm

**RoHS Compliance**



Oclaro 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
APA7301040000	10Gb/s	850nm 10G MM 1x4 VCSEL array
APA7301120000	10Gb/s	850nm 10G MM 1x12 VCSEL array

**Contact Information**

[www.oclaro.com](http://www.oclaro.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 Oclaro before they become applicable to any particular order or contract. In accordance with the Oclaro policy of continuous improvement specifications may change without notice. Further details are available from any Oclaro 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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