10Gbps 850nm Photodiode	PRELIMINARY Revision Date 1/3/2008
GaAs PIN Arrays	P850-2124-001, P850-2125-001

Key Features:

- ***High Bandwidth***
- ***Large Active Area***
- **Low Capacitance**
- **4 and 12 channel arrays**
- **Isolated anode and cathode contacts for each element**

The P850-212x-001 is a high performance GaAs PIN detector die array ideal for use in manufacturing transceivers for parallel optical interconnects. The array is available in both 4 and 12 channel configurations.

The PIN detectors are designed to convert optical power into electrical current. As the optical power increases, the current increases proportionally. They are intended to be used with sources emitting in the 700-870nm region, and are ideally suited to be matched with the V850-2106-001 VCSEL arrays.

The detectors have a large diameter active region (70μm) and are designed to interface with 50/125 and 62.5/125 μm multimode fiber.

The dual top side contacts provide a minimum 1μm Au for ease of wire bonding. Wire bonding should be done with minimal pressure to ensure the PIN structure is not damaged. The die must be mounted using thermally conductive media.

The PIN detector arrays are shipped in industry blue tape or Gel packs.

ABSOLUTE MAXIMUM RATINGS

Parameter	Rating
Storage Temperature	-40 to +125°C
Operating Temperature	-40 to +85°C
Maximum Die Exposure	320°C, 30 sec.
Reverse Bias Voltage	20V
Forward Bias Voltage	1.5V
Average optical power	0 dBm
Peak Optical Power	+4 dBm
Maximum ESD exposure (HBM)	250V

NOTICE

Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operations section for extended periods of time may affect reliability.

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ELECTRO-OPTICAL CHARACTERISTICS (T_A=25 °C unless otherwise stated)

Parameters	Test Condition	Symbol	Min.	Typ.	Max.	Units	Notes
Responsivity	P=200-500µW, λ=850nm	R	0.5	0.6		mA/mW	1
Responsivity Variation	P=200-500µW, λ=850nm	ΔR			3	%	
Capacitance	F=100kHz	C	0.2	0.24	0.26	pF	2
Wavelength Response		λ_{RESP}	700		870	nm	3
Dark Current	V_R=5V	I_{DARK}			50	nA	
Bandwidth		BW	9			GHz	4
Rise/Fall Time	P=0.1mW p-p, 20-80%	T_R,T_F		30	40	ps	5
Maximum Optical Power	λ=850nm	P_{MAX}	2			mW	
Reflectivity	λ=850nm	REFL		<1		%	
Forward Voltage		V_F	0.9		1.5	V	
Differential Resistance		R_{DIFF}	20		60	Ω	
Reverse Breakdown		V_{BR}	20			V	
Channel to Channel Crosstalk	P_{IN} = -3dBm, V_{BIAS} = 1.6V	XT		-50		dB	
Active Diameter				70		µm	
Bond Pad diameter				75		µm	

Notes:

1. Responsivity is measured at 850nm and with illumination spot entirely within the active region.
2. Capacitance is measured at 5V reverse bias. The PIN structure is fully depleted at less than 2V reverse bias.
3. Photodiode may respond to wavelengths outside this range, but is not guaranteed to do so.
4. Bandwidth is measured using small signal analysis. The detector is terminated with 50 Ohms..
5. The rise and fall times are measured using a laser source with transition times less than 30ps (20-80%), and an average power of 0.5mW. Rise Times are corrected for the source. The detector is terminated into 50 Ohms.

ORDER GUIDE:

Catalog Listing	Description
P850-2124-001	4 channel PIN die array
P850-2125-001	12 channel PIN die array

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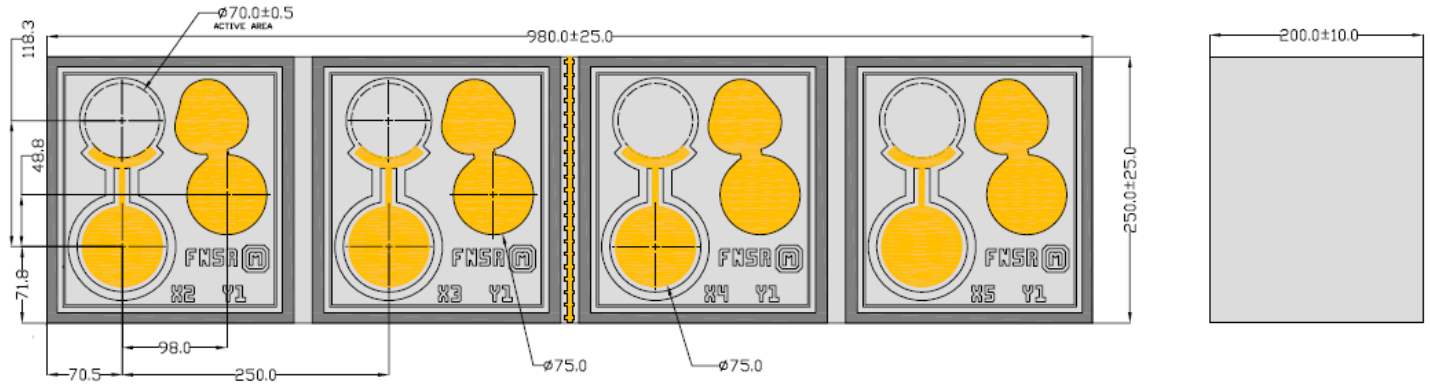
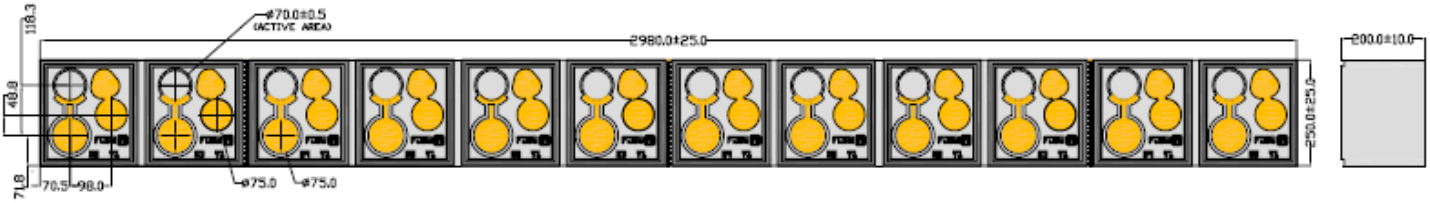
DIE DIMENSIONS: (μm)

Dimension	4-Channel	12-Channel
Length	980 ± 25	2980 ± 25
Width	250 ± 25	250 ± 25
Height	200 ± 15	200 ± 15

4-CHANNEL ARRAY



12-CHANNEL ARRAY



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WARRANTY/REMEDY

ADVANCED OPTICAL COMPONENTS warrants goods of its manufacture as being free of defective materials and faulty workmanship. Commencing with the date of shipment, and ending in 18 months. If warranted goods are returned to ADVANCED OPTICAL COMPONENTS during that period of coverage, ADVANCED OPTICAL COMPONENTS will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and is **in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.** While we provide application assistance, personally and through our literature, it is up to the customer to determine the suitability of the product in the application.

Specifications may change at any time without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use. Please refer to www.finisar.com/aoc.php for current datasheets.

ADVANCED OPTICAL COMPONENTS CAPABILITIES

ADVANCED OPTICAL COMPONENTS was formed through strategic acquisition of key optical component suppliers. The company has led the industry in high volume Vertical Cavity Surface Emitting Laser (VCSEL) and associated detector technology since 1996. VCSELs have become the primary laser source for optical data communication, and are rapidly expanding into a wide variety of sensor applications. VCSELs' superior reliability, low drive current, high coupled power, narrow and circularly symmetric beam and versatile packaging options (including arrays) are enabling solutions not possible with other optical technologies. ADVANCED OPTICAL COMPONENTS is also a key supplier of Fabry-Perot (FP) and Distributed Feedback (DFB) Lasers, and Optical Isolators (OI) for use in single mode fiber data and telecommunications networks.

ADVANCED OPTICAL COMPONENTS' advanced capabilities include

- 1, 2, 4, 8, and 10Gbps serial VCSEL solutions
- 1, 2, 4, 8, and 10Gbps serial SW DETECTOR solutions
- VCSEL and detector arrays
- 1, 2, 4, 8, and 10Gbps FP and DFB solutions at 1310 and 1550nm
- 1, 2, 4, 8, and 10Gbps serial LW DETECTOR solutions
- Optical Isolators from 1260 to 1600nm range
- Laser packaging in TO46, TO56, and Optical subassemblies with SC, LC, and MU interfaces for communication networks
- VCSELs operating at 670nm, 780nm, 980nm, and 1310nm in development
- Sensor packages include surface mount, various plastics, chip on board, chipscale packages, etc.
- Custom packaging options

LOCATIONS

Allen, TX - Business unit headquarters, VCSEL wafer growth, wafer fabrication and TO package assembly.
Fremont, CA – Wafer growth and fabrication of 1310 to 1550nm FP and DFB lasers.
Shanghai, PRC – Optical passives assembly, including optical isolators and splitters.

SALES AND SERVICE

ADVANCED OPTICAL COMPONENTS, a division of Finisar Corp. serves its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact a nearby sales office or call:

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