

# 850NM PIN PIN DIODE ARRAYS

## HFD81XX-102

### FEATURES:

- High Bandwidth
- Large Active Area
- Low Capacitance
- 4 and 12 channel arrays

The HFD8104-102 and HFD8112-102 are high performance GaAs PIN detector arrays ideal for use in manufacturing transceivers for parallel optical interconnects. The arrays are available in both 4 and 12 channel configurations.

The PIN detector arrays are designed to convert optical power into electrical current. As the optical power increases, the current increases proportionally.

The products are designed to be used with sources emitting in the 700-870nm region, and are ideally suited to be matched with the HFE80xx-102 VCSEL arrays.

The PIN diodes have a large diameter active region (78 $\mu$ m) and are designed to interface with 50/125 and 62.5/125  $\mu$ m multimode fiber.

The top (anode) contact is a minimum 1 $\mu$ m Au for ease of wire bonding. Wire bonding should be done with minimal pressure to ensure the PIN structure is not damaged. The backside common PIN cathode is also a minimum of 1 $\mu$ m Au metallurgy. The die must be mounted using thermally and electrical conductive media.

The arrays are shipped on industry standard low tack tape in 6 inch expansion rings.



Part Number	Description
HFD8104-102	4 channel PIN diode array
HFD8112-102	12 channel PIN diode array

## ABSOLUTE MAXIMUM RATINGS

Parameter	Rating
Storage temperature	-40°C to +125°C
Operating temperature	0 to +85°C
Solder temperature	260°C, 10 seconds
Supply Voltage	0.5 to -5.5 V
Average optical power	+3 dBm
Peak Optical Power	+4 dBm

**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.

## ELECTRICAL-OPTICAL CHARACTERISTICS

Parameters	Test Condition	Symbol	Min.	Typ.	Max.	Unif	Units	Notes
Responsivity	P=200-500 $\mu$ W	R	0.5	0.6		0.05	mA/mW	1
Capacitance	F=100kHz	C	0.2	0.35	0.45	0.1	pF	2
Wavelength Response		$\lambda_{RESP}$	700		870		nm	
Dark Current	$V_R=5V$	$I_{DARK}$			50		$\mu$ A	
Bandwidth		BW	5			0.5	GHz	3
Rise/Fall Time	P=0.1mW p-p	$T_{R}, T_F$		50	100	10	ps	4
Maximum Optical Power	$\lambda=850nm$	$P_{MAX}$	2				mW	
Active Diameter				78		2	$\mu$ m	
Bond Pad diameter				90			$\mu$ m	

ELECTRO-OPTICAL CHARACTERISTICS ( $T_A=25\text{ }^{\circ}\text{C}$  unless otherwise stated)

Uniformity is defined as the maximum value minus the minimum value measured on each array.

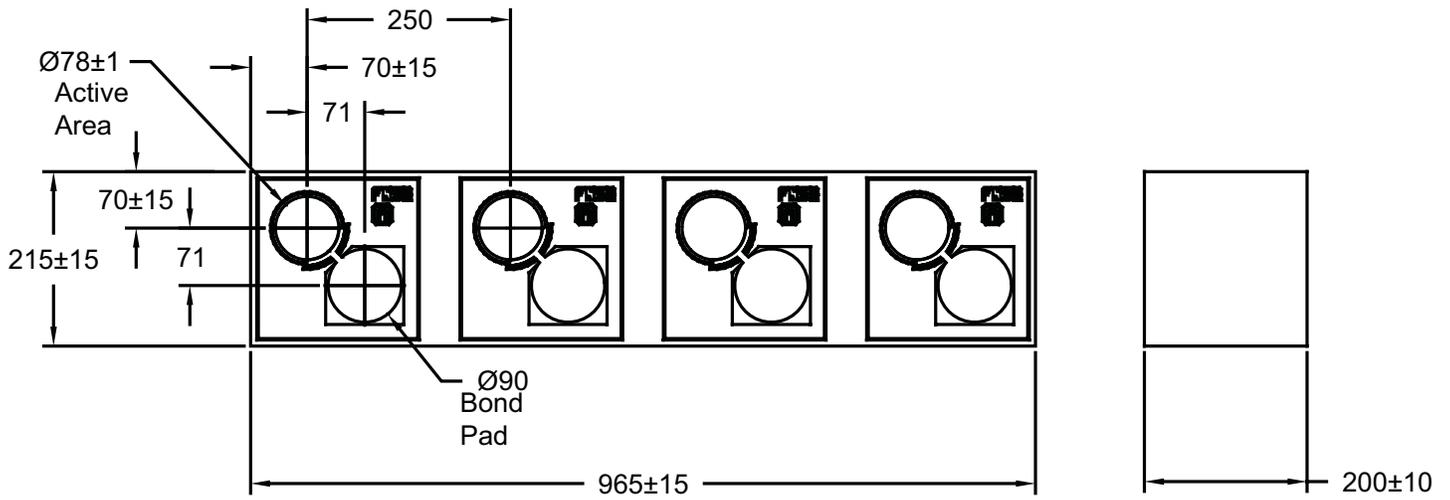
## NOTES

1. Responsivity is measured at 850nm.
2. Capacitance is measured at 5V reverse bias. The PIN structure is fully depleted at less than 2V reverse bias.
3. Bandwidth is measured using small signal analysis.
4. The rise and fall times are measured using a laser source with transition times less than 50ps (20-80%), and an average power of 0.5mW.

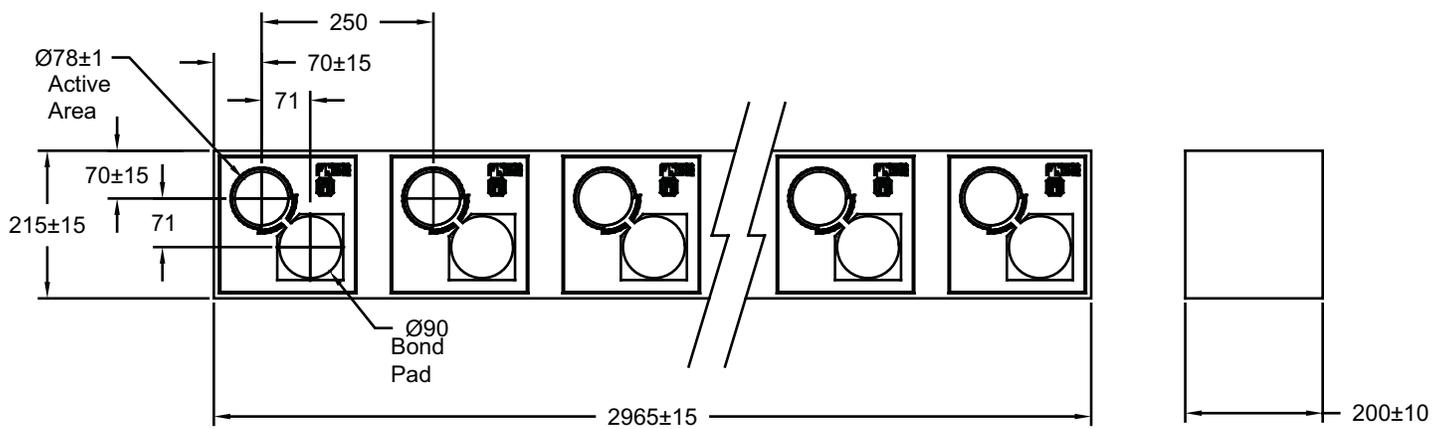
ARRAY DIMENSIONS: ( $\mu\text{M}$ )

Dimension	4 Channel	12 Channel
Length	965	2965
Width	215	215
Height	200	200

HFD8104-102



HFD8112-102



## ADVANCED OPTICAL COMPONENTS

Finisar's ADVANCED OPTICAL COMPONENTS division 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

## LOCATION

- 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

Finisar's ADVANCED OPTICAL COMPONENTS division 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 the number listed below.

## AOC CAPABILITIES

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, chip scale packages, etc.
- Custom packaging options

**Finisar**<sup>®</sup>

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