DATA SHEET

10GBPS 850NM PIN PIN ARRAYS

HFD81XX-103

FEATURES:

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

The HFD81xx-103 are high performance GaAs PIN detector die arrays ideal for use in manufacturing transceivers for parallel optical interconnects. The arrays are available in either 4 or 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 HFE80xx-103 VCSEL arrays.

The detectors have a large diameter active region (40μm) and are designed to interface with 50/125 and 62.5/125 μm multimode fiber.

The top (anode) contact, is 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 backside common PIN cathode is also a minimum of 1μm Au metallurgy. The die must be mounted using electrically and thermally conductive media.

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

Part Number	Description
HFD8104-103	4 channel PIN diode array
HFD8112-103	12 channel PIN diode array

Finisar®
Advanced Optical Components Division

ABSOLUTE MAXIMUM RATINGS

Parameter	Rating
Storage temperature	-40^{O}C to +125^{O}C
Operating temperature	0 to +70^{O}C
Solder temperature	260^{O}C, 10 seconds
Supply Voltage	0.5 to –5.5 V
Average optical power	0 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=200-500µW	R	0.5	0.6		0.05	mA/mW	1
Capacitance	F=100kHz	C	0.12	0.18	0.25	0.05	pF	2
Wavelength Response		λ_{RESP}	700		870		nm	3
Dark Current	V_R=5V	I_{DARK}			40		nA	
Bandwidth		BW	9				GHz	4
Rise/Fall Time	P=0.1mW p-p	T_R,T_F		30	40	10	ps	5
Maximum Optical Power	λ=850nm	P_{MAX}	2				mW	
Active Diameter				40		2	µm	
Bond Pad diameter				90			µm	

ELECTRO-OPTICAL CHARACTERISTICS (T_A=25 ^{O}C unless otherwise stated)

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

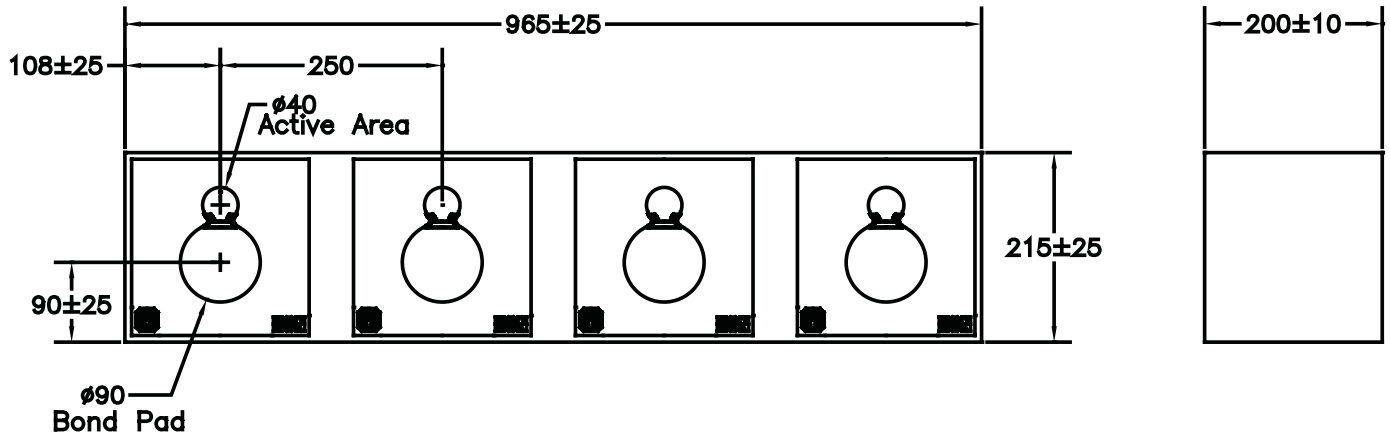
NOTES

1. Responsivity is measured at 850nm 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.
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.

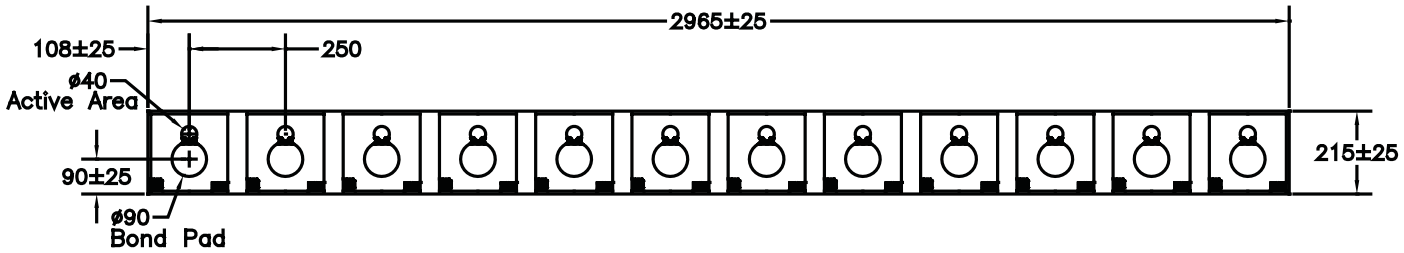
DIE DIMENSIONS (FOR REFERENCE ONLY): (μM)

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

4-CHANNEL ARRAY



12-CHANNEL ARRAY



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 Fabrey-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, chipscale packages, etc.
- Custom packaging options

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