



## 10 Gb/s Avalanche Photodiode Bare Die

The 10 Gb/s avalanche photodiode chip incorporates an integrated offset lens and can achieve a gain bandwidth product of > 100 GHz. Target applications include SONET OC-192, SDH STM-64, 10 Gigabit Ethernet, 10G Fibre Channel, and fiber optic sensors.

### Applications

- 10GBASE-L Ethernet
- SONET OC-192
- SDH STM-64
- 10G Fibre Channel
- Fiber Optic Sensors

### Features

- > 100 GHz Gain Bandwidth Product
- Integrated Offset Lens

### Performance Highlights

	Min	Typical	Max	Units
Responsivity $\lambda = 1550$ nm, $M = 1$	0.65	0.75	-	A/W
Breakdown Voltage $I_d = 10$ $\mu$ A	25	34	40	V
Dark Current, $M = 9$	-	20	100	nA
Operating Temperature	0	-	85	°C
APD Capacitance $M = 9, f = 1$ MHz	-	0.18	0.22	pF
High Frequency Cutoff, $M = 4, M = 9$	8.0	10.0	-	GHz
Active Diameter, $M = 9$	-	28	-	$\mu$ m
Integrated Lens Radius	65	80	95	$\mu$ m
Contact Pad Diameter	-	50	-	$\mu$ m
Temperature Coefficient of $V_{br}$	-	0.07	0.11	V/°C

Chip Temperature = +25°C, End-of-Life (EOL), unless otherwise noted.

**For more information on this and other products:**

Contact Sales at EMCORE 505-332-5000, or visit [www.emcore.com](http://www.emcore.com).

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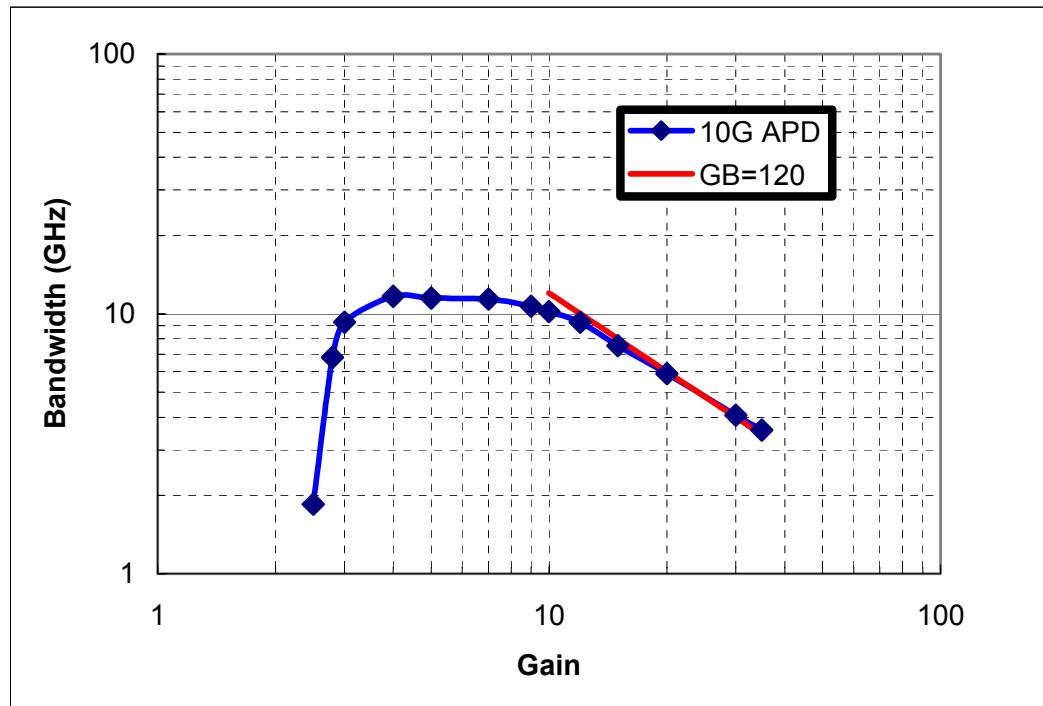
## Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Minimum	Maximum	Unit
Operating temperature	$T_{op}$	0	85	°C
Storage temperature	$T_{stg}$	-40	85	°C
Optical input power, with $V_{PD} = V_{BR}$ <sup>1</sup>	$P_i$	-	3	dBm
ESD-susceptibility <sup>2</sup>	-	-	500	V

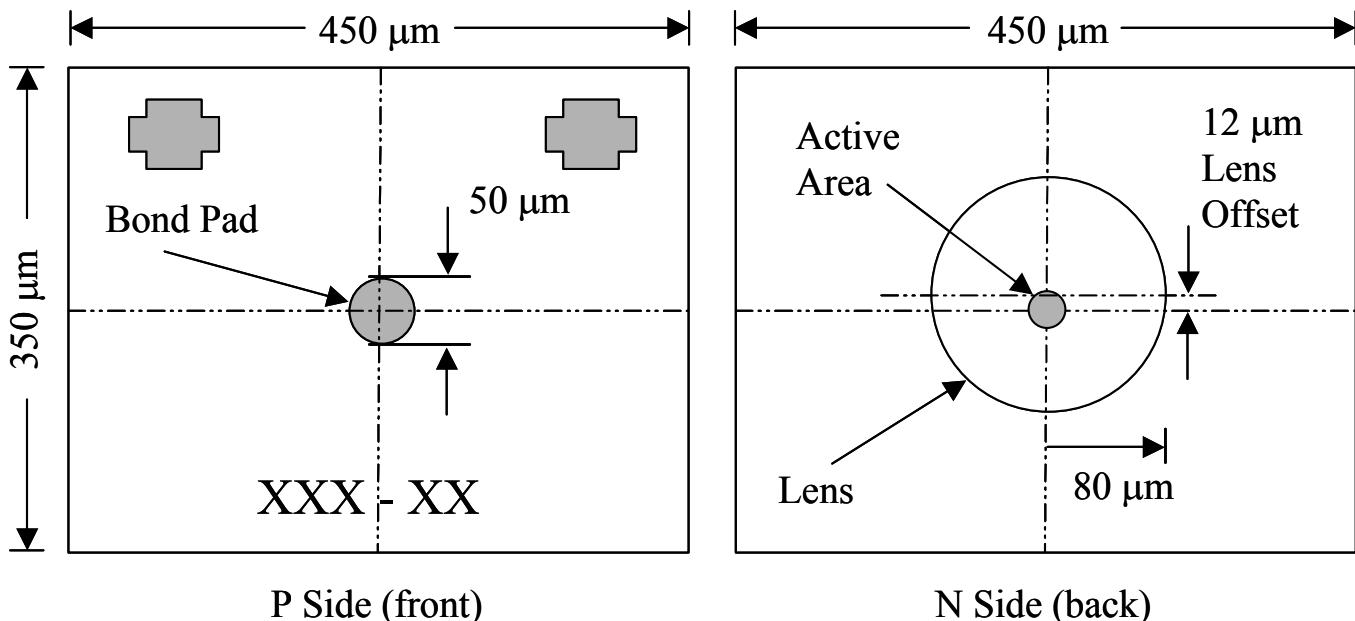
1.  $V_{BR}$  = breakdown voltage, defined at  $I_{DARK} = 10 \mu A$ .
2. Based on human-body model of  $R=1500 \Omega$  and  $C=100 \text{ pF}$ . In general, ESD precautions should be taken to avoid damage to the device.

## Bandwidth vs. Gain



## Outline Diagram

Thickness = 130  $\mu\text{m}$



## Ordering Information

Contact Ortel, a Division of Emcore, for ordering information at 626-293-3400.

## Ordering Code Definition

1013-401 10 Gb/s Avalanche Photodiode Bare Die

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