

### PRELIMINARY DATASHEET | DECEMBER 30, 2005



# 2.5 Gb/s Avalanche Photodiode Bare Die

The 2.5 Gb/s avalanche photodiode device features high responsivity, low dark current, and facilitates designs that can achieve -34 dBm receiver sensitivity. Target applications include SONET OC-48, SDH STM-16, Gigabit Ethernet, and fiber optic sensors.

The APD device is RoHS compliant.

### **Performance Highlights**

	Min	Typical	Max	Units
Responsivity, $\lambda = 1310$ nm, M = 1	0.75	0.9	-	A/W
$\lambda$ = 1550 nm, M = 1	0.9	1.0		
Breakdown Voltage	40	50	60	V
$I_d = 10 \ \mu A$	40			
Dark Current		15	100	nA
$V_{rev} = 0.9 V_{br}$	-			
Operating Temperature	-40	-	85	°C
APD Capacitance		0.25	0.5	pF
$V_{rev}=0.9V_{br},f=1~MHz$	-	0.35		
High Frequency Cutoff	2.0	2.5	-	GHz
M = 10	2.0			
Temperature Coefficient of Vbr	-	0.08	0.16	V/°C
Active Diameter	-	50	-	μ <b>m</b>
Bond Pad Diameter	-	50	-	μm

Chip Temperature =  $+25^{\circ}$ C, End-of-Life (EOL), unless otherwise noted.

#### Applications

- Gigabit Ethernet
- SONET OC-48
- SDH STM-16
- Fiber Optic Sensors

#### **Features**

- High Responsivity
- Low Dark Current
- Facilitates -34 dBm Receiver Sensitivity
- RoHS Compliance

For more information on this and other products:

Contact Sales at EMCORE 505-332-5000, or visit www.emcore.com.

### **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 <sub>op</sub>	-40	85	°C
Storage temperature	T <sub>stg</sub>	-40	85	°C
Optical input power, with $V_{PD} = V_{BR}^{1}$	Pi	-	-	mW
ESD-susceptibility <sup>2</sup>	-	-	300	V

 $V_{BR}$  = breakdown voltage, defined at  $I_{DARK}$  = 10  $\mu$ A.

Based on human-body model of R=1500  $\Omega$  and C= 100 pF. In general, ESD precautions should be taken to avoid damage to the device.

### Bandwidth vs. Gain



# **Outline Diagram**



P Side (front)

## **Ordering Information**

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

### **Ordering Code Definition**

1013-402 2.5 Gb/s Avalanche Photodiode Bare Die

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EMCORE Corporation 10420 Research Road SE Albuquerque, New Mexico 87123 Phone: 505-332-5000 Fax: 505 332-5038 www.emcore.com