

MITSUBISHI LASER DIODES  
**PD8XX2 SERIES**

InGaAs AVALANCHE PHOTO DIODES

TYPE  
 NAME

**PD8042,PD8932**

**DISCRIPTION**

PD8XX2 is an InGaAs avalanche photodiode suitable for receiving the light having low noise, a wavelength band of 1000 to 1600nm. This photodiode features low noise, a high quantum efficiency and a very small dark current and is suitable for the light receiving elements for long-distance optical communications.

**FEATURES**

- Active diameter 50μm
- Low noise
- High speed response
- Very small dark current
- High quantum efficiency

**APPLICATION**

Receiver for long-distance fiber - optic communication systems

**ABSOLUTE MAXIMUM RATINGS**

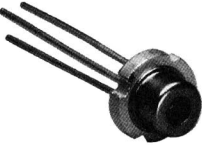
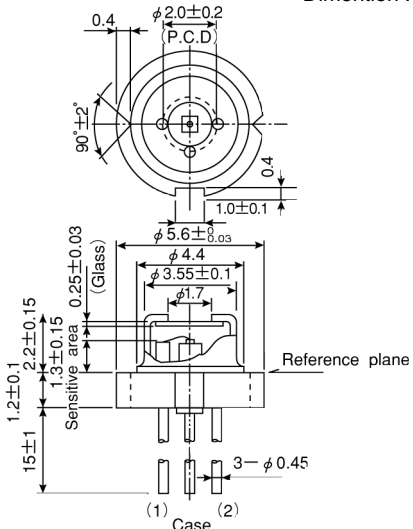

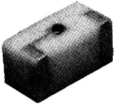
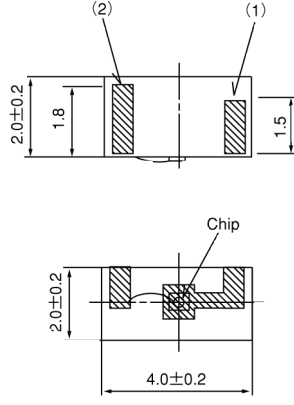

Symbol	Parameter	Conditions	Ratings	Unit
I <sub>R</sub>	Reverse current	-	500	μA
I <sub>F</sub>	Forward current	-	2	mA
T <sub>C</sub>	Case temperature	-	-40~+85	°C
T <sub>stg</sub>	Storage temperature	-	-40~+100	°C

**ELECTRICAL/OPTICAL CHARACTERISTICS (T<sub>C</sub> = 25°C)**

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V <sub>(BR)R</sub>	Breakdown voltage	I <sub>R</sub> = 100 μA	40	60	90	V
C <sub>t</sub>	Capacitance	V <sub>R</sub> = 0.9V (BR) R, f = 1MHz	-	0.7*	0.9	pF
I <sub>D</sub>	Dark current	V <sub>R</sub> = 0.9V (BR) R	-	60	100	nA
η	Quantum efficiency	M = 1, λ = 1300nm	-	80	-	%
f <sub>c</sub>	Cutoff frequency (-3dB)	M = 10, R <sub>L</sub> = 50 Ω, -3dB	1	2.5	-	GHz

\*: C<sub>t</sub>=0.6F (typ.) for PD8932

**OUTLINE DRAWING**

<p style="text-align: center; font-size: 24pt;"><b>PD8042</b></p> 	<p style="text-align: right;">Dimension : mm</p>  <p>Technical drawing of the PD8042 photo diode showing top and side views with dimensions. Dimensions include: top diameter <math>\phi 2.0 \pm 0.2</math> (P.C.D.), top lead diameter <math>\phi 0.4</math>, top lead length <math>1.0 \pm 0.1</math>, side diameter <math>\phi 5.6 \pm 0.03</math>, side lead diameter <math>\phi 0.45</math> (3 leads), side lead length <math>1.2 \pm 0.1</math>, sensitive area diameter <math>\phi 3.55 \pm 0.1</math>, sensitive area diameter <math>\phi 4.4</math>, sensitive area diameter <math>\phi 1.7</math>, sensitive area depth <math>0.25 \pm 0.03</math> (Glass), and reference plane.</p>	
<p style="text-align: center; font-size: 24pt;"><b>PD8932</b></p> 	<p style="text-align: right;">Dimension : mm</p>  <p>Technical drawing of the PD8932 photo diode showing side and top views with dimensions. Dimensions include: side view height <math>2.0 \pm 0.2</math>, side view width <math>1.8</math>, side view depth <math>1.5</math>, top view width <math>4.0 \pm 0.2</math>, and top view height <math>2.0 \pm 0.2</math>. A chip is shown mounted on the top surface.</p>	

**TYPICAL CHARACTERISTICS**

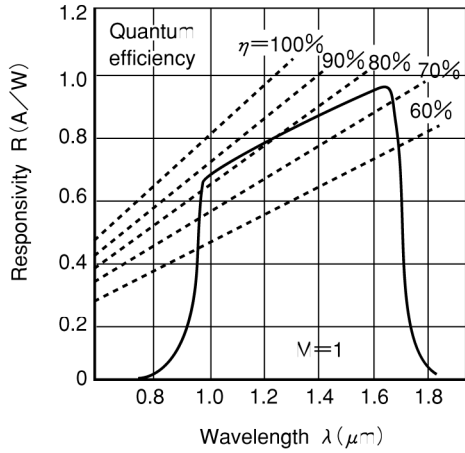


Fig.1 Spectral response

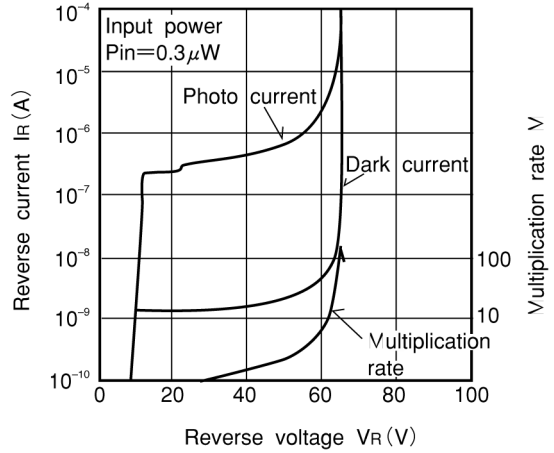


Fig.2 Dark current, photo current and multiplication rate vs. reverse voltage

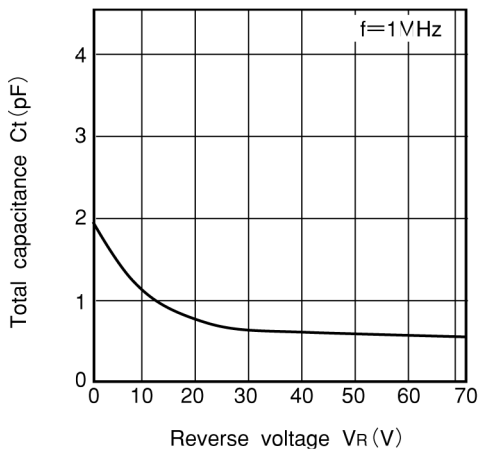


Fig.3 Total capacitance vs. reverse voltage

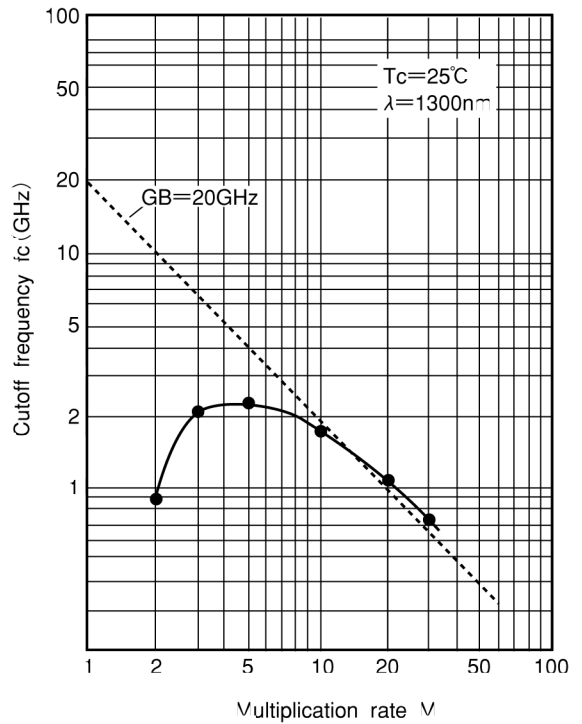


Fig.5 Multiplication rate dependence of cutoff frequency

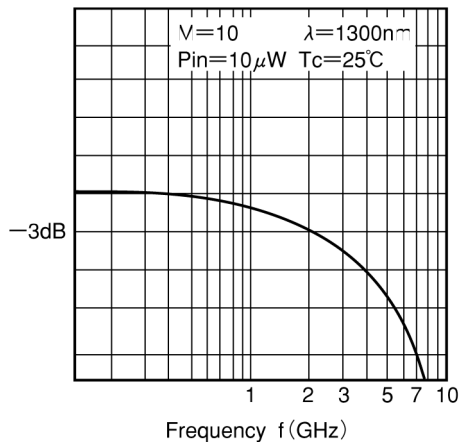


fig.4 Frequency response