

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 50  $\mu$ m
- 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	$\mu$ A
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)**


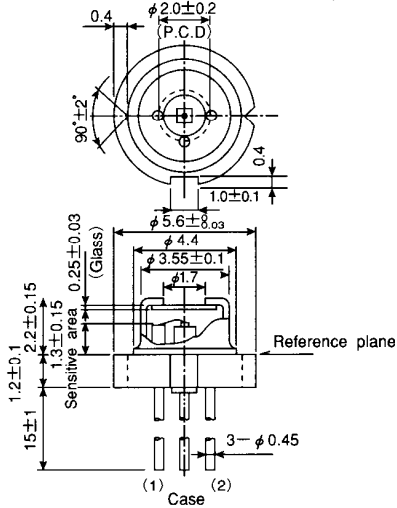


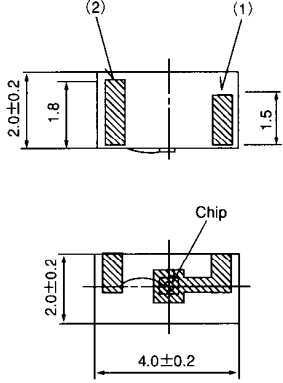

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V <sub>(BR)R</sub>	Breakdown voltage	I <sub>R</sub> = 100 $\mu$ A	40	60	80	V
C <sub>t</sub>	Capacitance	V <sub>R</sub> = 0.9V (BR) R, f = 1MHz	—	0.7*	0.9	pF
I <sub>D</sub>	Dark current	V <sub>R</sub> = 0.9V (BR) R	—	10	30	nA
$\eta$	Quantum efficiency	M = 1, $\lambda$ = 1300nm	—	80	—	%
f <sub>c</sub>	Cutoff frequency (-3dB)	M = 10, R <sub>L</sub> = 50 $\Omega$ , -3dB	1	2	—	GHz

\* : C<sub>t</sub>=0.5F (typ.) for PD8932

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OUTLINE DRAWING

<p><b>PD8042</b></p> 	<p>Dimension : mm</p> 	
<p><b>PD8932</b></p> 	<p>Dimension : mm</p> 	

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### TYPICAL CHARACTERISTICS

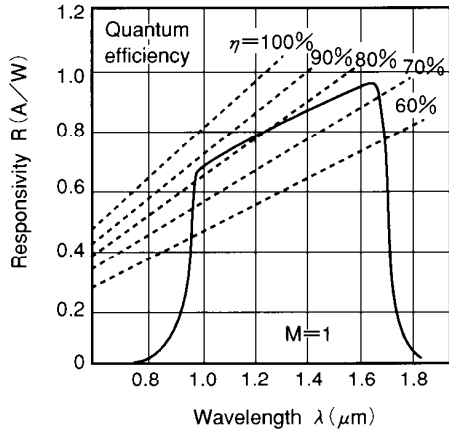


Fig.1 Spectral response

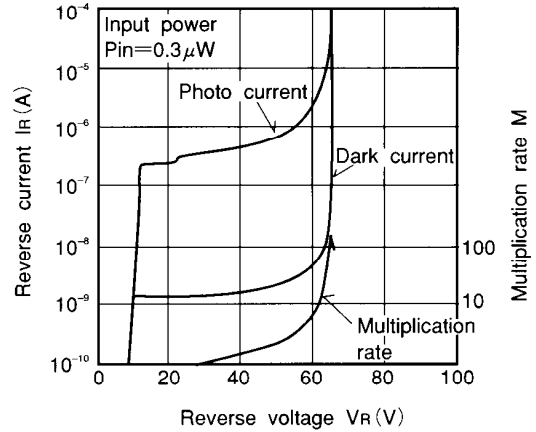


Fig.2 Dark current, photo current and multiplication rate vs. reverse voltage

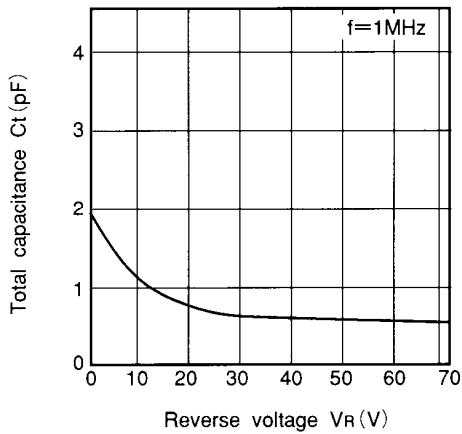


Fig.3 Total capacitance vs. reverse voltage

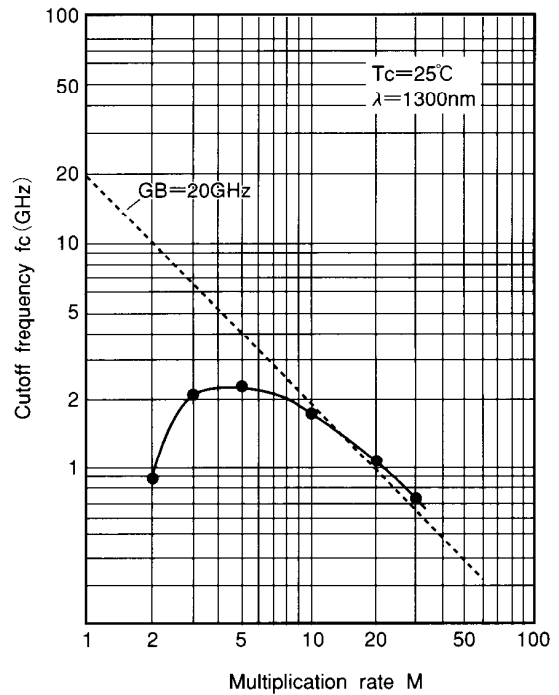


Fig.5 Multiplication rate dependence of cutoff frequency

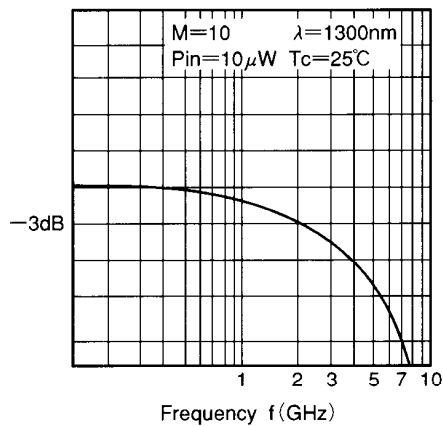


fig.4 Frequency response