CEL

PHOTO DIODE

NR6800 Series

ϕ 80 μm InGaAs AVALANCHE PHOTO DIODE FOR OTDR APPLICATIONS

DESCRIPTION

The NR6800 Series is an InGaAs avalanche photo diode, and can be used in OTDR systems.

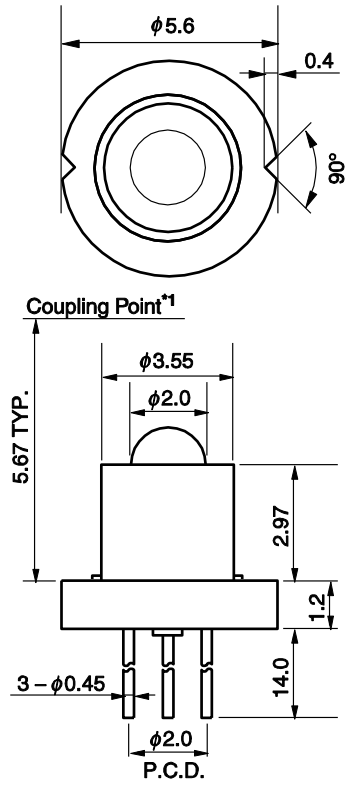
FEATURES

- Small dark current I_D = 5 nA
- Small terminal capacitance C_t = 0.50 pF @ 0.9 $V_{(BR)R}$
- High sensitivity S = 0.94 A/W @ λ = 1 310 nm, M = 1
- High speed response f_C = 1.0 GHz MIN. @ λ = 1 310 nm, M = 10
- Detecting area size ϕ80 μm

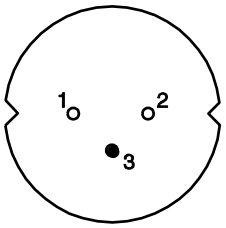
Document No. PL10786EJ01V0DS (1st edition)
Date Published December 2009 NS

PACKAGE DIMENSION (UNIT: mm)

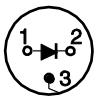
NR6800EZ



BOTTOM VIEW



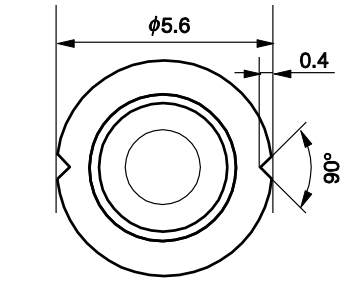
PIN CONNECTION



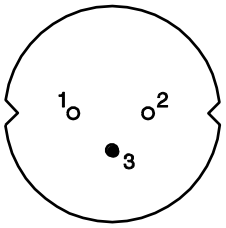
1. Anode (Negative)
2. Cathode (Positive)
3. Case

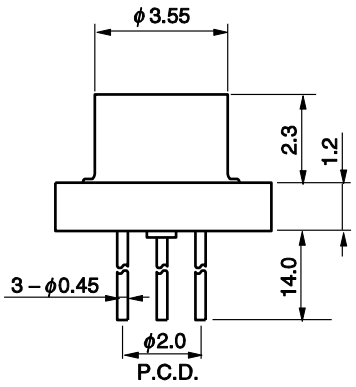
***1** Coupling Point: A focus point from fiber to APD.

NR6800SZ

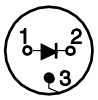


BOTTOM VIEW





PIN CONNECTION



1. Anode (Negative)
2. Cathode (Positive)
3. Case

ORDERING INFORMATION

Part Number	Package
NR6800EZ-AZ	3-pin CAN with ball lens cap
NR6800SZ-AZ	3-pin CAN with flat glass cap

Remarks 1. The color of ball lens cap might be observed differently.

2. The hermetic test will be performed as AQL 1.0%.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Forward Current	I_F	10	mA
Reverse Current	I_R	0.5	mA
Operating Case Temperature	T_C	−40 to +85	°C
Storage Temperature	T_{stg}	−40 to +85	°C
Lead Soldering Temperature	T_{sld}	350 (3 sec.)	°C
Relative Humidity (noncondensing)	RH	85	%

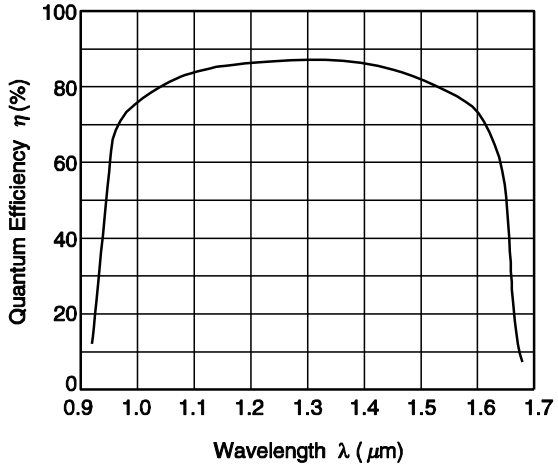
ELECTRO-OPTICAL CHARACTERISTICS (T_C = 25°C, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Reverse Breakdown Voltage	V_{BR}	I_D = 100 μA	50	70	100	V
Temperature Coefficient of Reverse Breakdown Voltage	δ *1			0.2		%/°C
Dark Current	I_D	$V_R = V_{BR} \times 0.9$		5	30	nA
Terminal Capacitance	C_t	$V_R = V_{BR} \times 0.9$, f = 1 MHz		0.50	0.75	pF
Cut-off Frequency	f_C	λ = 1 310 nm, M = 10	1.0			GHz
Sensitivity	S	λ = 1 310 nm, M = 1	0.80	0.94		A/W
Multiplication Factor	M	λ = 1 310 nm, I_{po} = 1.0 μA, V_R = V (@ I_D = 1 μA)	30	50		

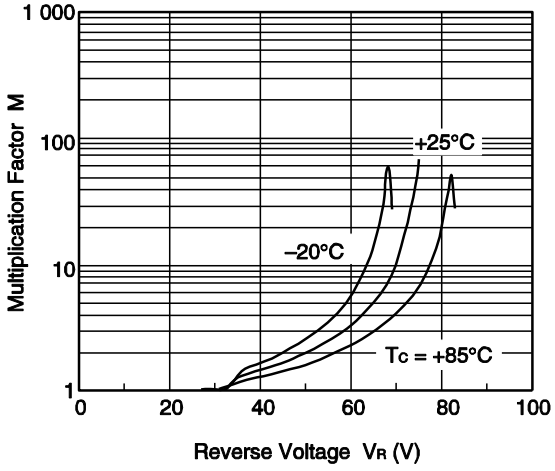
***1** $$\delta = \frac{V_{BR}(25°C + \Delta T°C) - V_{BR}(25°C)}{\Delta T°C \cdot V_{BR}(25°C)}$$

TYPICAL CHARACTERISTICS (T_C = 25°C, unless otherwise specified)

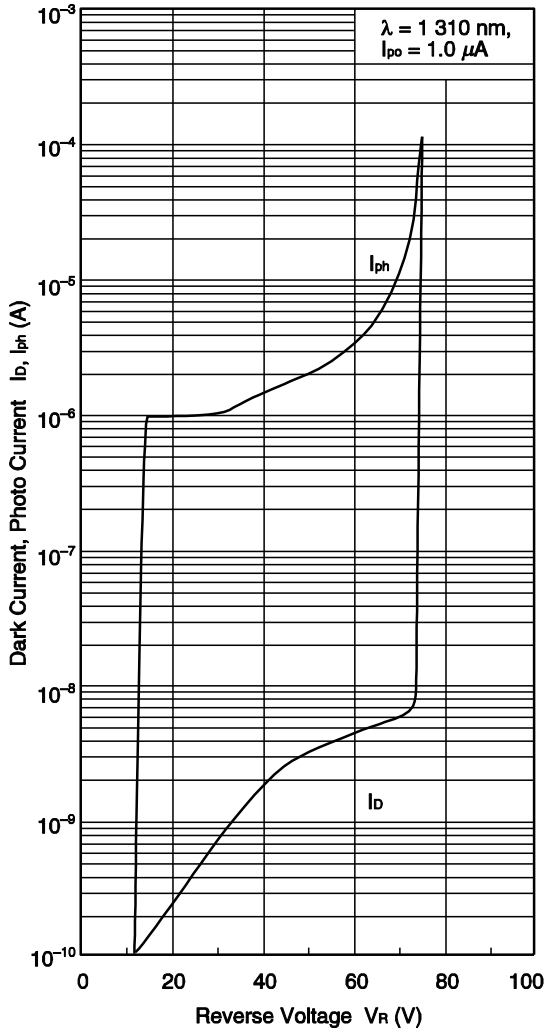
WAVELENGTH DEPENDENCE OF QUANTUM EFFICIENCY



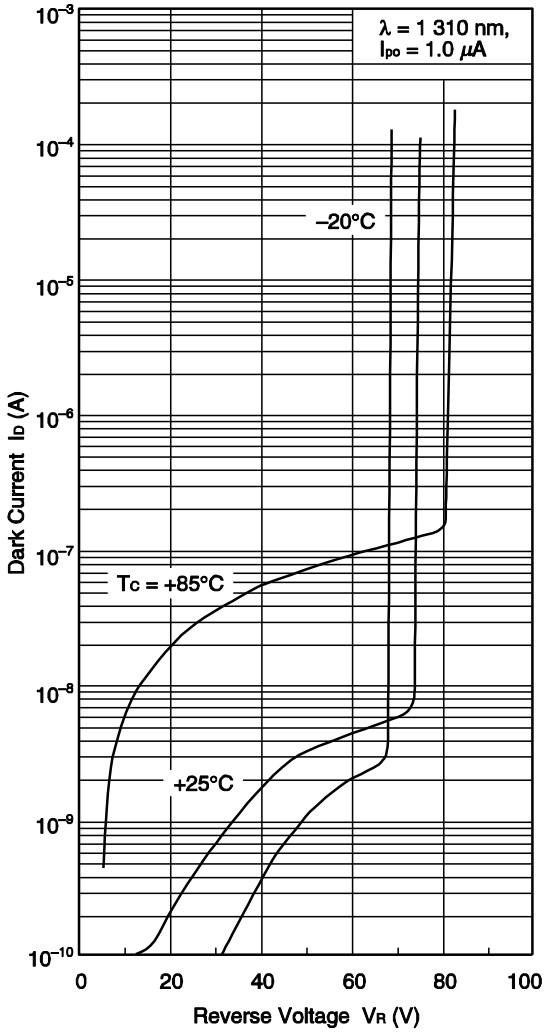
MULTIPLICATION FACTOR vs. REVERSE VOLTAGE



DARK CURRENT AND PHOTO CURRENT vs. REVERSE VOLTAGE



DARK CURRENT vs. REVERSE VOLTAGE



Remark The graphs indicate nominal characteristics.

REFERENCE

Document Name	Document No.
Opto-Electronics Devices Pamphlet	PX10160E

SAFETY INFORMATION ON THIS PRODUCT

Caution GaAs Products	This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points. • Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below. 1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials. 2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal. • Do not burn, destroy, cut, crush, or chemically dissolve the product. • Do not lick the product or in any way allow it to enter the mouth.
Caution Optical Fiber	A glass-fiber is attached on the product. Handle with care. • When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.