

FEATURES

- **SMALL DARK CURRENT:**
 $I_D = 5 \text{ nA}$
- **HIGH QUANTUM EFFICIENCY:**
 $\eta = 90\%$ at $\lambda = 1300 \text{ nm}$, $M = 1$
 $\eta = 77\%$ at $\lambda = 1550 \text{ nm}$, $M = 1$
- **HIGH SPEED RESPONSE:**
 $f_c = 2.5 \text{ GHz}$ at $M = 10$
- **DETECTING AREA SIZE:**
 $\phi 50 \mu\text{m}$
- **COAXIAL MODULE WITH MULTIMODE FIBER**
(GI-50/125)
- **NDL5521P1 AND NDL5521P2 HAVE A FLANGE**

DESCRIPTION

The NDL5521P Series are InGaAs avalanche photo diode modules with multimode fiber. They are designed for 2.5 Gb/s optical fiber communication systems and cover the wavelength range between 1000 and 1600 nm with high efficiency. These modules are also available with FC-PC connector and SC-PC connector.

ELECTRO-OPTICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$)

PART NUMBER PACKAGE OUTLINE			NDL5521P Series		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
$V_{(BR)R}$	Reverse Breakdown Voltage, $I_D = 100 \mu\text{A}$	V	40	55	80
δ	Temperature Coefficient of Reverse Breakdown Voltage ¹	%/ $^\circ\text{C}$		0.20	
I_D	Dark Current, $V_R = V_{(BR)R} \times 0.9$	nA		5	30
I_{DM}	Multiplied Dark Current, $M = 2$ to 10	nA		0.50	5
C_t	Terminal Capacitance, $V_R = V_{(BR)R} \times 0.9$, $f = 1 \text{ MHz}$	pF		0.40	0.75
f_c	Cut-off Frequency, $M = 5$ $M = 10$ $M = 30$	GHz	2.5		
			2.5	3.0	
			1.0		
η	Quantum Efficiency, $\lambda = 1300 \text{ nm}$, $M = 1$ $\lambda = 1550 \text{ nm}$, $M = 1$	%	76	90	
			65	77	
S	Responsivity, $\lambda = 1300 \text{ nm}$, $M = 1$ $\lambda = 1550 \text{ nm}$, $M = 1$	A/W	0.80	0.94	
			0.81	0.96	
M	Multiplication Factor, $\lambda = 1550 \text{ nm}$, $I_{PO} = 1.0 \mu\text{A}$, $V_R = V$ (at $I_D = 1 \mu\text{A}$)	M	30	40	
X	Excess Noise Factor, $\lambda = 1300 \text{ nm}$, 1550 nm , $I_{PO} = 1.0 \mu\text{A}$, $M = 10$, $f = 35 \text{ MHz}$, $B = 1 \text{ MHz}$			0.7	
F				5	
ORL	Optical Return Loss	dB		30	

Note: $1. \delta = \frac{V_{(BR)R < 25^\circ\text{C} + \Delta T^\circ\text{C}} - V_{(BR)R < 25^\circ\text{C}}}{\Delta T^\circ\text{C} \cdot V_{(BR)R < 25^\circ\text{C}}}$

NDL5521P SERIES

ABSOLUTE MAXIMUM RATINGS¹

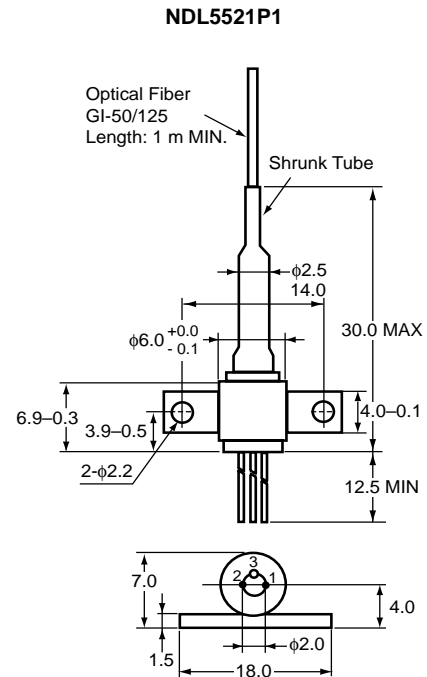
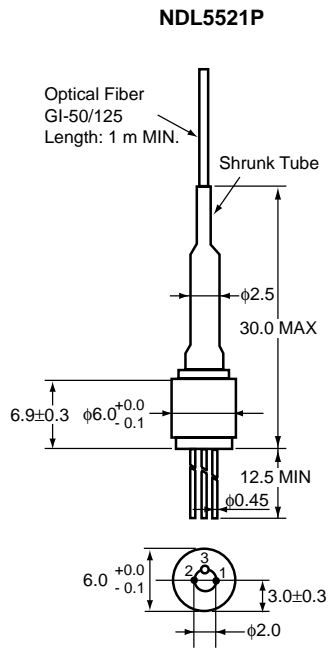
(T_C = 25°C, unless otherwise specified)

SYMBOLS	PARAMETERS	UNITS	RATINGS
I _F	Forward Current	mA	10
I _R	Reverse Current	mA	0.5
T _C	Operating Case Temp.	°C	-40 to +85
T _{STG}	Storage Temperature	°C	-40 to +85

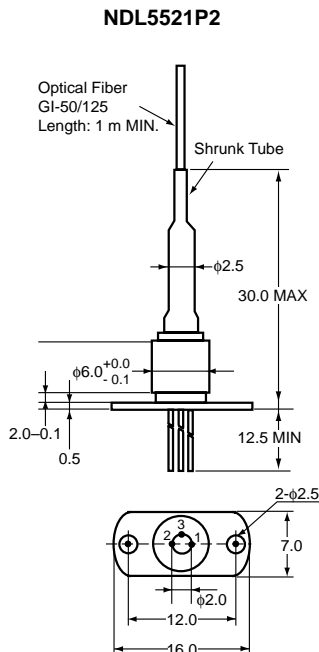
Note:

1. Operation in excess of any one of these parameters may result in permanent damage.

OUTLINE DIMENSIONS (Units in mm)



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



ORDERING INFORMATION

PART NUMBER	AVAILABLE CONNECTOR	DESCRIPTION
NDL5521P	Without Connector	No Flange
NDL5521PC	With FC-PC Connector	
NDL5521PD	With SC-PC Connector	
NDL5521P1	Without Connector	Flat Mount Flange
NDL5521P1C	With FC-PC Connector	
NDL5521P1D	With SC-PC Connector	
NDL5521P2	Without Connector	Vertical Flange
NDL5521P2C	With FC-PC Connector	
NDL5521P2D	With SC-PC Connector	

HANDLING PRECAUTION FOR PD/APD MODULE

The NEC PD/APD module has heat shrink tubing to protect the ferrule edge (*1) and the junction between the ferrule and the module body (*2). In order to avoid breaking the fiber and/or optical coupling degradation, NEC recommends the following handling precautions:

1. Do not make the fiber bend radius less than 30 mm (*3).
2. Do not bend the fiber within the 18 mm section from the module body (*4).
3. Do not stress the ferrule with a lateral force exceeding 500 g (*5).

