

NEC

1000 to 1600 nm OPTICAL FIBER COMMUNICATIONS $\phi 50 \mu\text{m}$ InGaAs PIN PHOTO DIODE MODULE

NDL5421P SERIES

FEATURES

- **SMALL DARK CURRENT:**
 $I_D = 0.1 \text{ nA}$
- **HIGH QUANTUM EFFICIENCY:**
 $\eta = 86\%$ at $\lambda = 1300 \text{ nm}$
 $\eta = 75\%$ at $\lambda = 1550 \text{ nm}$
- **DETECTING AREA SIZE:**
 $\phi 50 \mu\text{m}$
- **LOW OPERATING VOLTAGE:**
 $V_R = 5 \text{ V}$
- **LOW TERMINAL CAPACITANCE:**
 $C_t = 0.7 \text{ pF}$ at $f = 1.0 \text{ MHz}$, $V_R = 5 \text{ V}$
- **COAXIAL MODULE WITH MULTIMODE FIBER OR
OPTIONAL SINGLEMODE FIBER:**
GI-50/125, SM-9/125
- **HIGH SPEED RESPONSE:**
 $f_c = 2.5 \text{ GHz MIN}$

DESCRIPTION

The NDL5421P Series is an InGaAs PIN photo diode module with multimode fiber. It is designed for 2.5 Gb/s optical fiber communication systems and covers the wavelength range between 1000 and 1600 with high efficiency.

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

PART NUMBER PACKAGE OUTLINE			NDL5421P Series		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
I_D	Dark Current, $V_R = 5 \text{ V}$	nA		0.1	1.0
C_t	Terminal Capacitance, $V_R = 5 \text{ V}$, $f = 1 \text{ MHz}$	pF		0.7	0.9
η	Quantum Efficiency, $\lambda = 1300 \text{ nm}$ $\lambda = 1550 \text{ nm}$	%	75 64	86 75	
S	Responsivity, $\lambda = 1300 \text{ nm}$ $\lambda = 1550 \text{ nm}$	A/W	0.78 0.80	0.89 0.94	
f_c	Cut-off Frequency, $V_R = 5 \text{ V}$, $\lambda = 1300 \text{ nm}$, $R_L = 50 \Omega$	GHz	2.5		

NDL5421P SERIES

ABSOLUTE MAXIMUM RATINGS¹

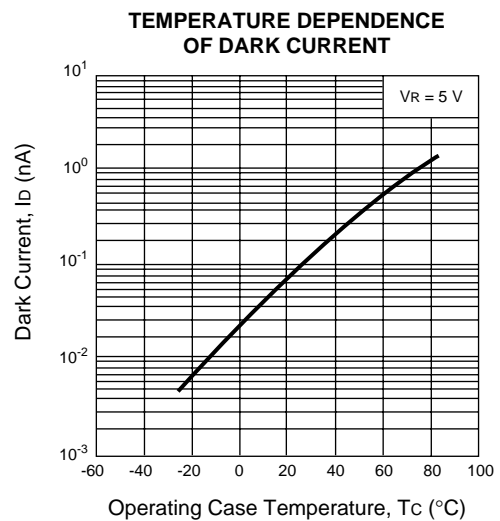
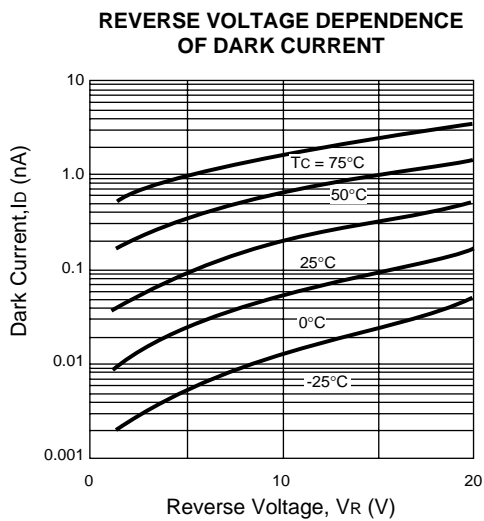
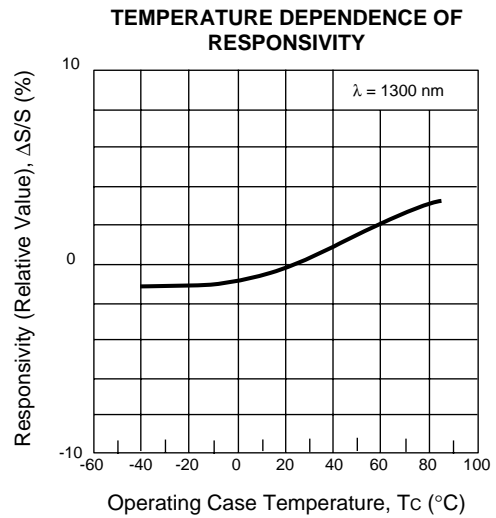
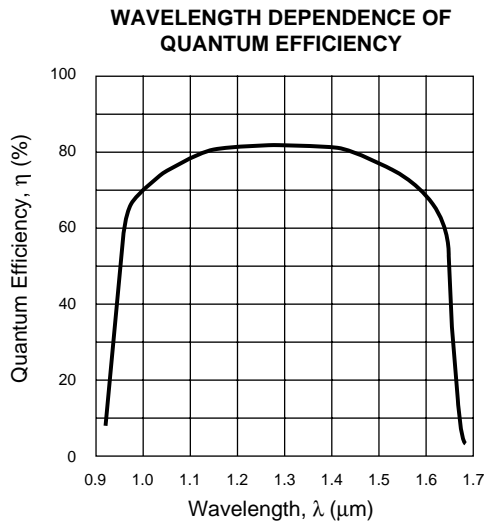
(T_c = 25°C, unless otherwise specified)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V _R	Reverse Voltage	V	20
I _F	Forward Current	mA	10
P _{IN}	Optical Input Power	mW	8
T _c	Operating Case Temp.	°C	-40 to +85
T _{STG}	Storage Temperature	°C	-40 to +85

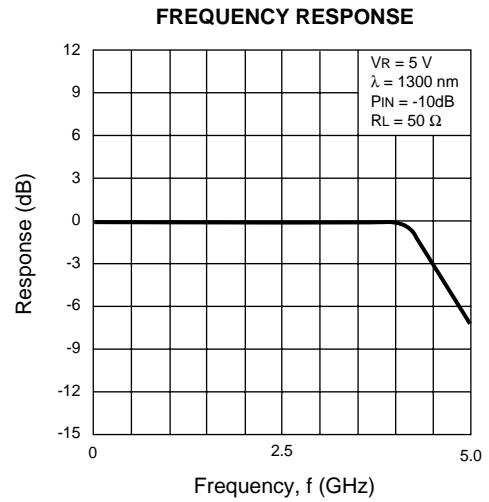
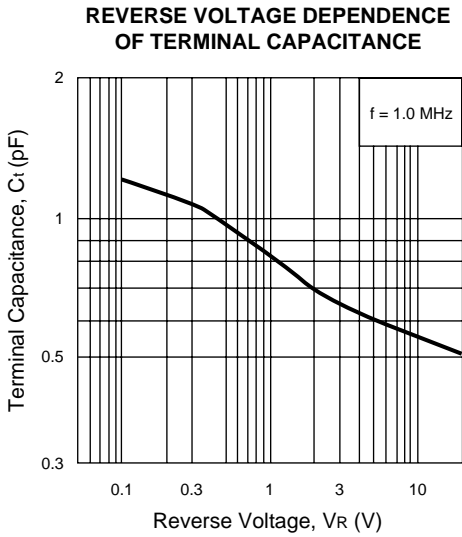
Note:

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

TYPICAL PERFORMANCE CURVES (T_c = 25°C, unless otherwise specified)



TYPICAL PERFORMANCE CURVES ($T_c = 25^\circ\text{C}$, unless otherwise specified)



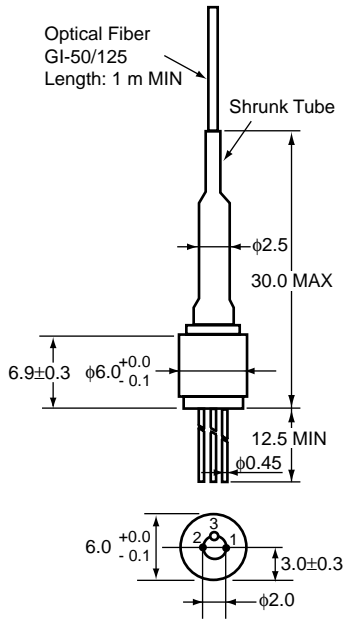
ORDERING INFORMATION

PART NUMBER	AVAILABLE CONNECTOR	DESCRIPTION	
NDL5421P	Without Connector	GI-50/125	No Flange
NDL5421PC	With FC-PC Connector		
NDL5421PD	With SC-PC Connector		
NDL5421PS	Without Connector	SM-9/125	Flat Mount Flange
NDL5421PSC	With FC-PC Connector		
NDL5421PSD	With SC-PC Connector		
NDL5421P1	Without Connector	GI-50/125	Vertical Flange
NDL5421P1C	With FC-PC Connector		
NDL5421P1D	With SC-PC Connector		
NDL5421PS1	Without Connector	SM-9/125	Vertical Flange
NDL5421P1SC	With FC-PC Connector		
NDL5421P1SD	With SC-PC Connector		
NDL5421P2	Without Connector	GI-50/125	Vertical Flange
NDL5421P2C	With FC-PC Connector		
NDL5421P2D	With SC-PC Connector		
NDL5421PS2	Without Connector	SM-9/125	Vertical Flange
NDL5421P2SC	With FC-PC Connector		
NDL5421P2SD	With SC-PC Connector		

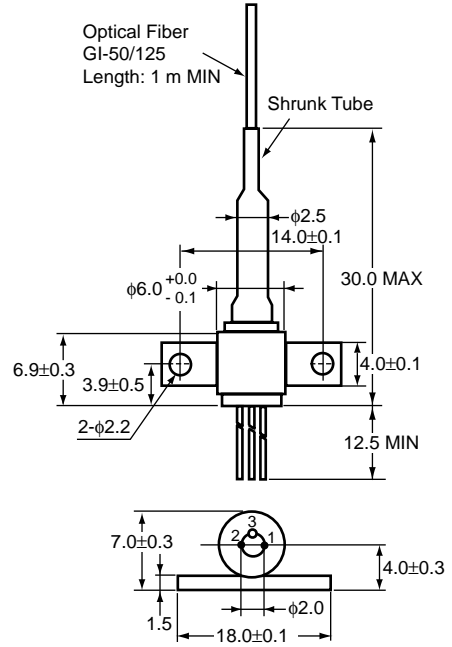
NDL5421P SERIES

OUTLINE DIMENSIONS (Units in mm)

NDL5421P



NDL5421P1

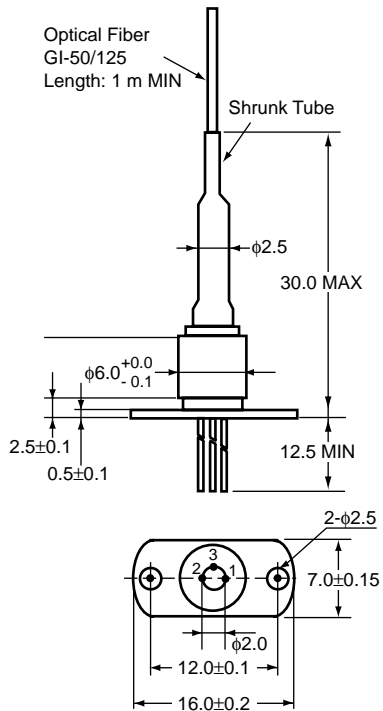


PIN CONNECTIONS

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



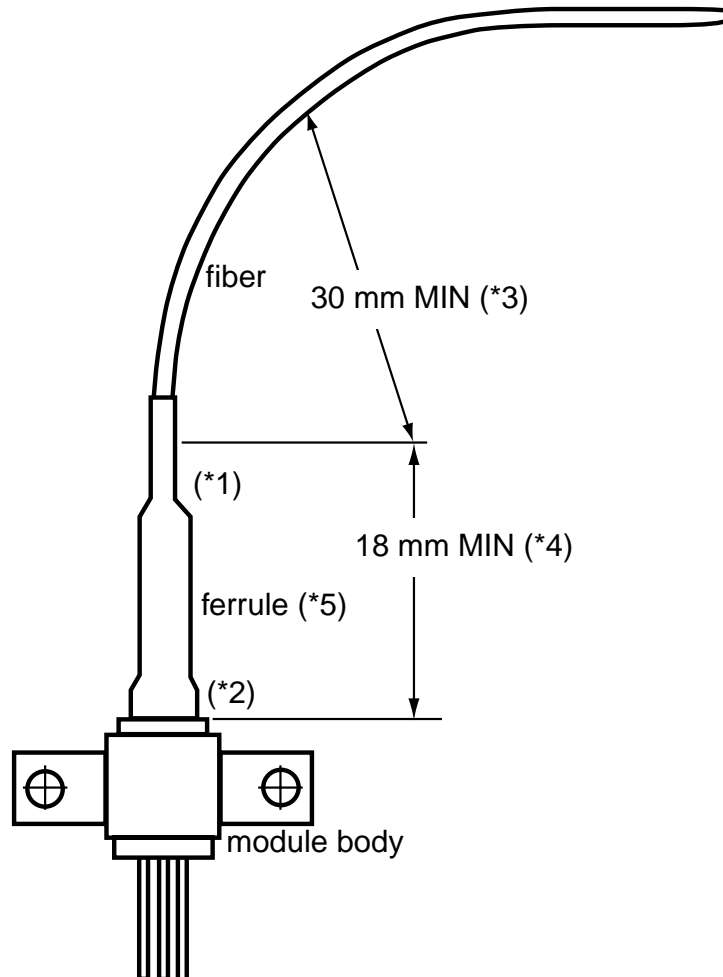
NDL5421P2



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).



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