

# NDL5471R Series

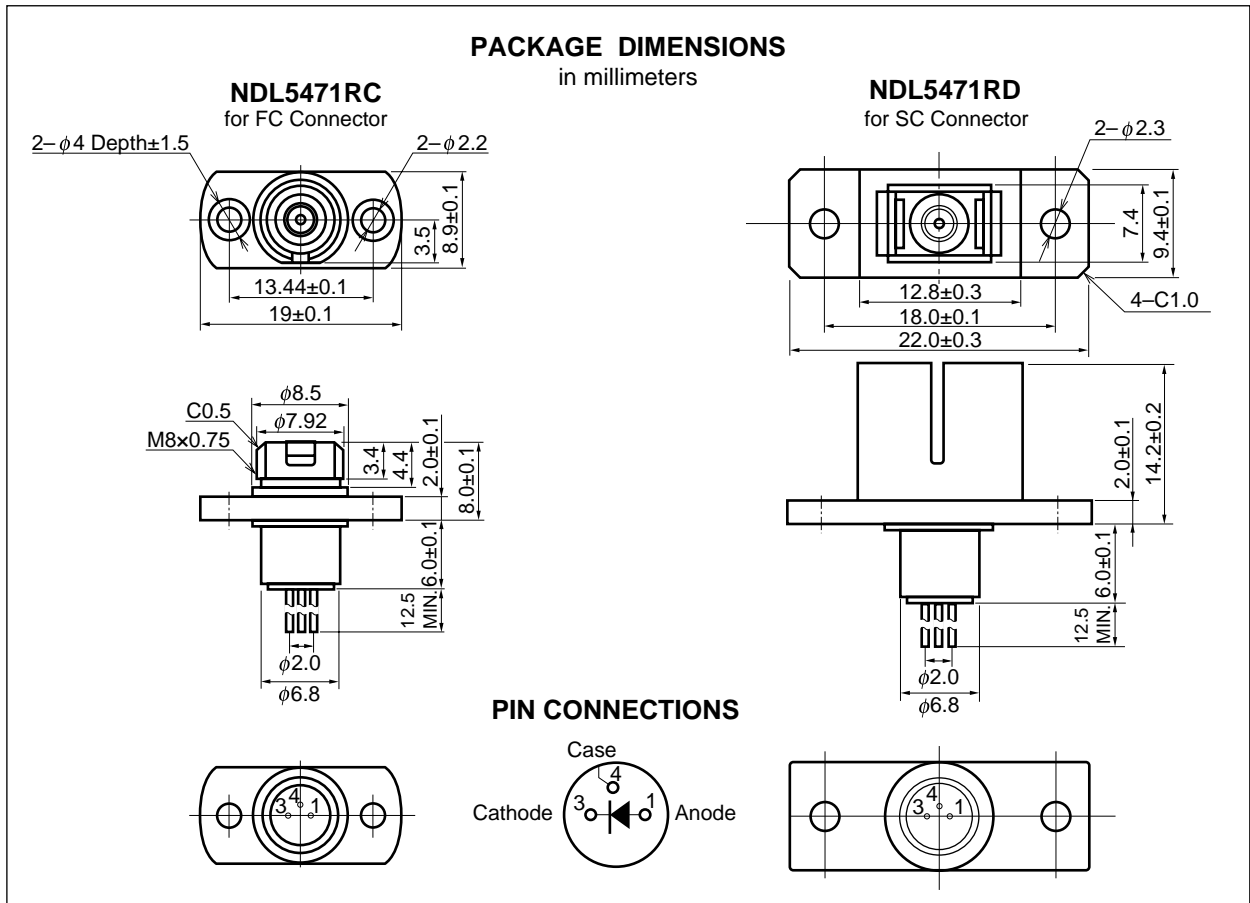
## 1 000 to 1 600 nm OPTICAL FIBER COMMUNICATIONS $\phi 120 \mu\text{m}$ InGaAs PIN PHOTO DIODE RECEPTACLE MODULE

### DESCRIPTION

The NDL5471R Series is an InGaAs PIN photo diode receptacle module especially designed for a detector of long wavelength optical fiber communications systems. It covers the wavelength range between 1 000 and 1 600 nm with high efficiency.

### FEATURES

- Small dark current  $I_D = 0.1 \text{ nA}$
- High quantum efficiency  $\eta = 86 \% @ \lambda = 1\,300 \text{ nm}$   
 $\eta = 80 \% @ \lambda = 1\,550 \text{ nm}$
- Cut-off frequency  $f_c = 1.5 \text{ GHz MIN.}$
- Detecting area size  $\phi 120 \mu\text{m}$
- Low operating voltage



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 Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

**ORDERING INFORMATION**

Part Number	Device Type
NDL5471RC	FC type receptacle module
NDL5471RD	SC type receptacle module

**ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25 °C, unless otherwise specified)**

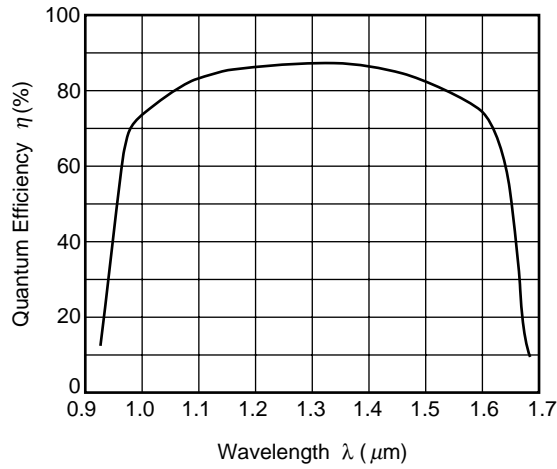
Parameter	Symbol	Ratings	Unit
Reverse Voltage	V <sub>R</sub>	20	V
Forward Current	I <sub>F</sub>	10	mA
Reverse Current	I <sub>R</sub>	0.5	mA
Optical Input Power	P <sub>in</sub>	8	mW
Operating Case Temperature	T <sub>C</sub>	-40 to +85	°C
Storage Temperature	T <sub>stg</sub>	-40 to +85	°C

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

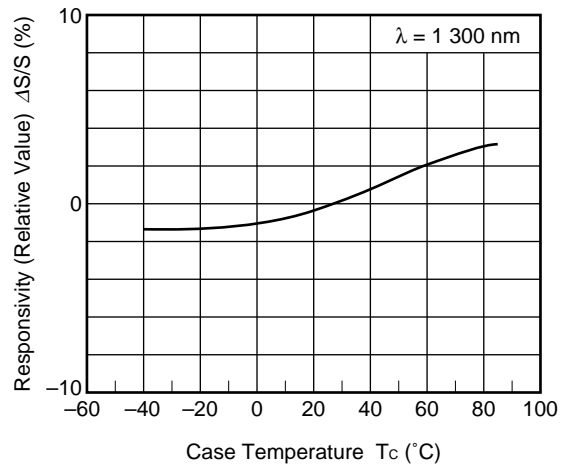
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Dark Current	I <sub>D</sub>	V <sub>R</sub> = 5 V		0.1	1.0	nA
Terminal Capacitance	C <sub>t</sub>	V <sub>R</sub> = 5 V, f = 1.0 MHz		1.1	1.5	pF
Quantum Efficiency	η	λ = 1 300 nm, V <sub>R</sub> = 5 V	75	86		%
		λ = 1 550 nm, V <sub>R</sub> = 5 V		80		
Responsivity	S	λ = 1 300 nm, V <sub>R</sub> = 5 V	0.78	0.89		A/W
		λ = 1 550 nm, V <sub>R</sub> = 5 V		1.0		
Cut-off Frequency	f <sub>c</sub>	V <sub>R</sub> = 5 V, R <sub>L</sub> = 50 Ω, -3dB	1.5			GHz

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

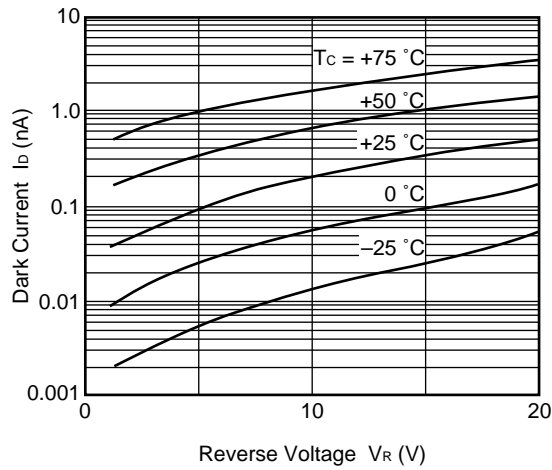
WAVELENGTH DEPENDENCE OF QUANTUM EFFICIENCY



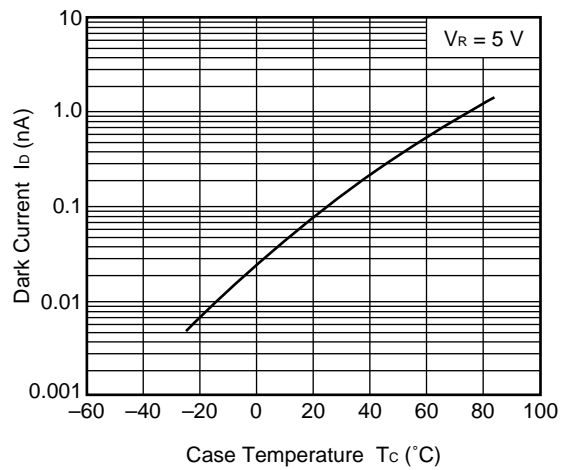
TEMPERATURE DEPENDENCE OF RESPONSIVITY



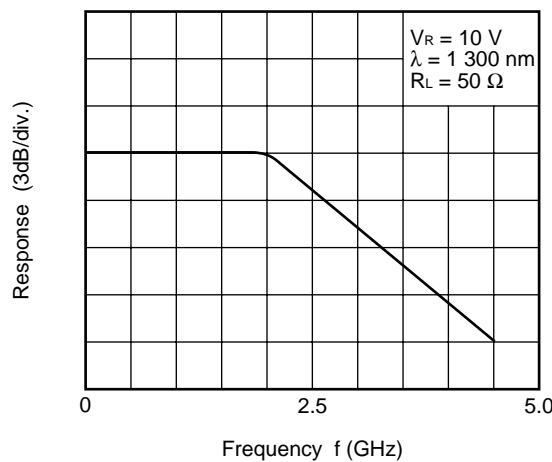
REVERSE VOLTAGE DEPENDENCE OF DARK CURRENT



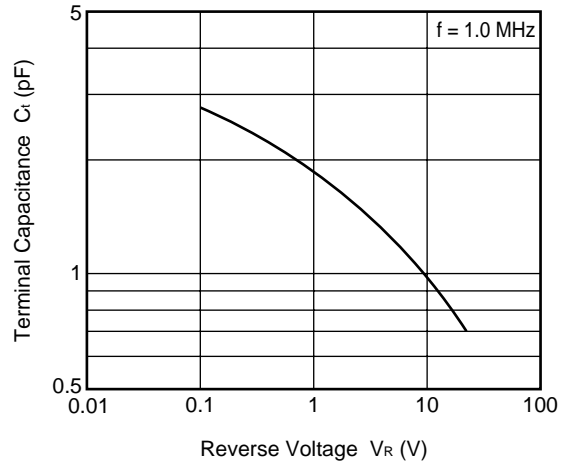
TEMPERATURE DEPENDENCE OF DARK CURRENT



FREQUENCY RESPONSE



REVERSE VOLTAGE DEPENDENCE OF TERMINAL CAPACITANCE



**Remark** The graphs indicate nominal characteristics.

★ InGaAs PIN-PD

Part number	Absolute maximum ratings			Typical characteristics (T <sub>c</sub> = 25°C)								Package
	P <sub>in</sub> (mW)	T <sub>c</sub> (°C)	T <sub>stg</sub> (°C)	Detecting area size (μm)	I <sub>b</sub> (nA)		C <sub>t</sub> (pF)		S (A/W)		f <sub>c</sub> (GHz) MIN.	
					VR (V)	TYP.	VR (V)	TYP.	λ (nm)	TYP.		
NDL5421P/P1/P2	8	-40 to +85	-40 to +85	φ 50	5	0.1	5	0.7	1300	0.89	2.5	Coaxial
									1550	0.94		
NDL5422P	-	-40 to +70	-40 to +85	φ 50	5	0.1	-	-	1300	0.89	2.5	Butterfly with AMP
									1550	1.00		
NDL5461P/P1/P2	8	-40 to +85	-40 to +85	φ 80	5	0.1	5	1.0	1300	0.89	2.5	Coaxial
									1550	0.94		
NDL5471RC/RD	8	-40 to +85	-40 to +85	φ 120	5	0.1	5	1.1	1300	0.89	1.5	Receptacle
									1550	1.00		
NDL5481P/P1/P2	8	-40 to +85	-40 to +85	φ 80	10	0.1	10	0.7	1300	0.85	2.5	Coaxial

★ **REFERENCE**

Document Name	Document No.
NEC semiconductor device reliability/quality control system	C11159E
Quality grades on NEC semiconductor devices	C11531E
Semiconductor device mounting technology manual	C10535E
Semiconductor selection guide	X10679E

[MEMO]

[MEMO]

## CAUTION

**Within this device there exists GaAs (Gallium Arsenide) material which is a harmful substance if ingested. Please do not under any circumstances break the hermetic seal.**

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