

To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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NDL5471R Series

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

DESCRIPTION

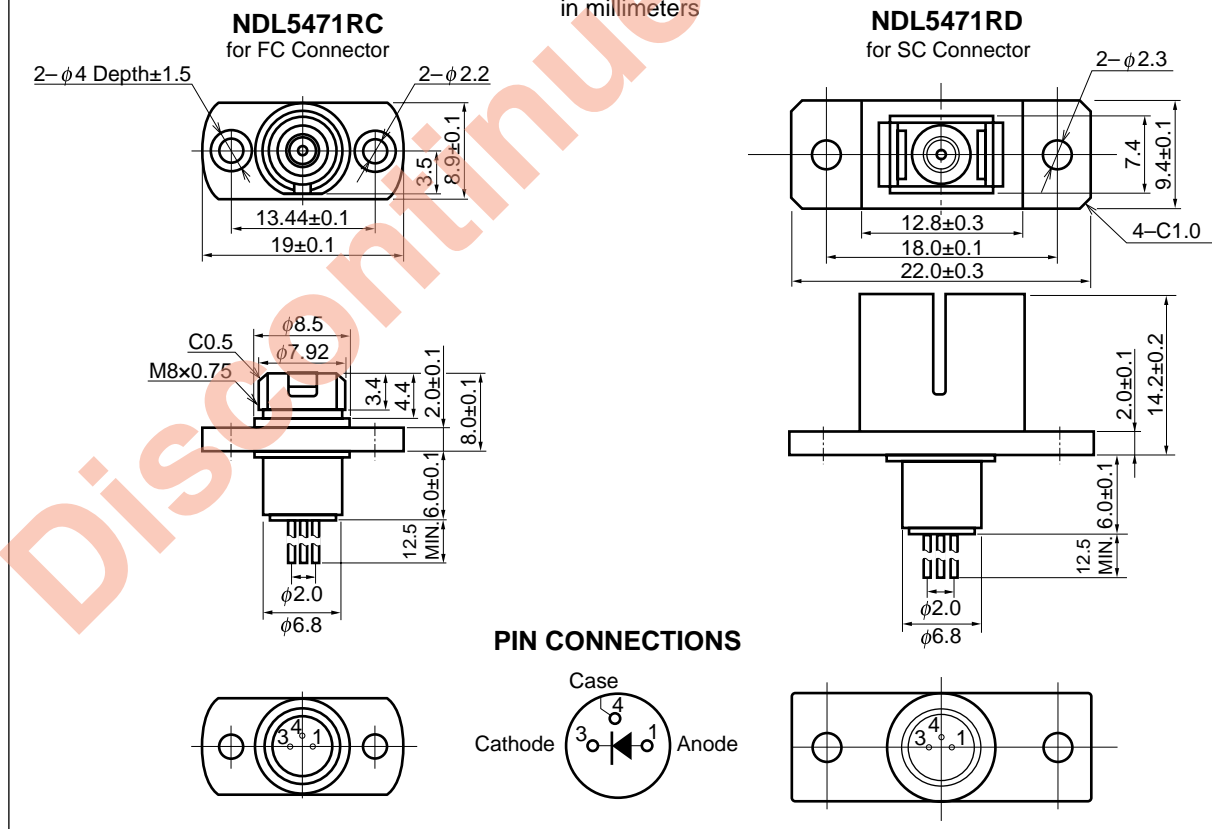
The NDL5471R Series is an InGaAs PIN photo diode receptacle module especially designed for a detector of long wavelength optical fiber communications systems. It covers the wavelength range between 1 000 and 1 600 nm with high efficiency.

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

PACKAGE DIMENSIONS

in millimeters



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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

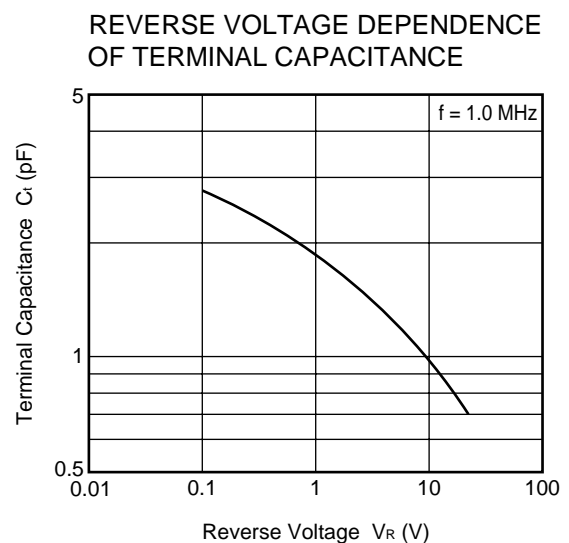
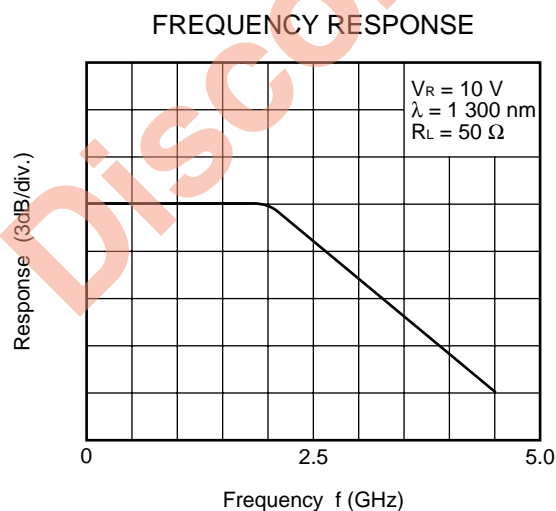
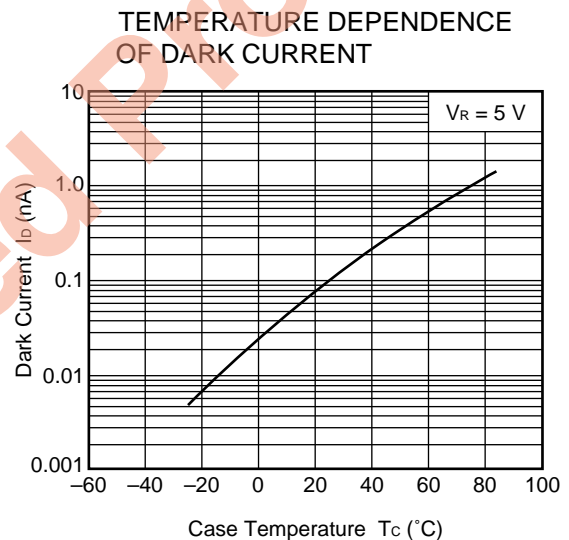
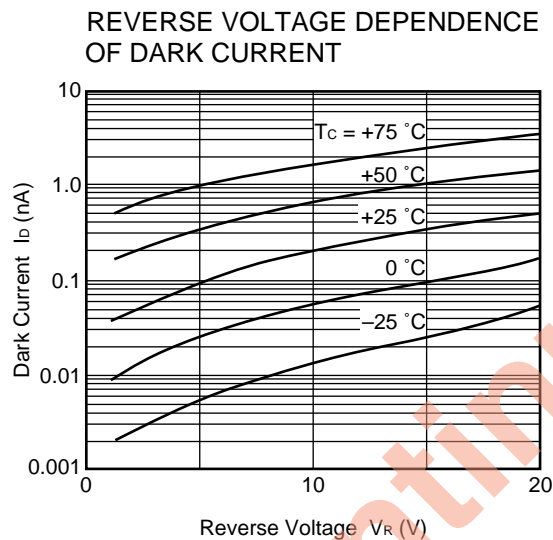
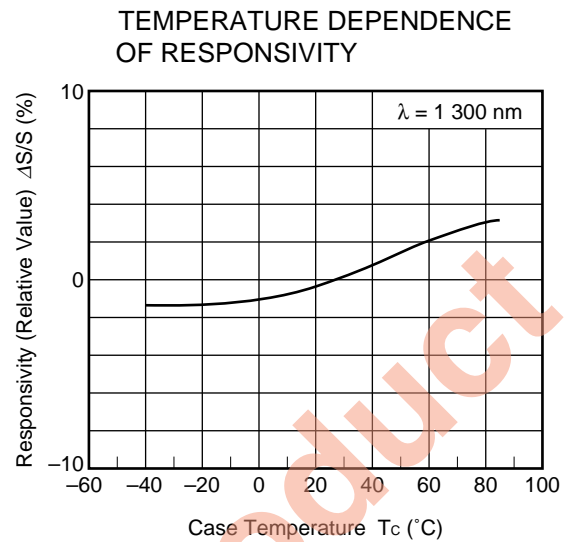
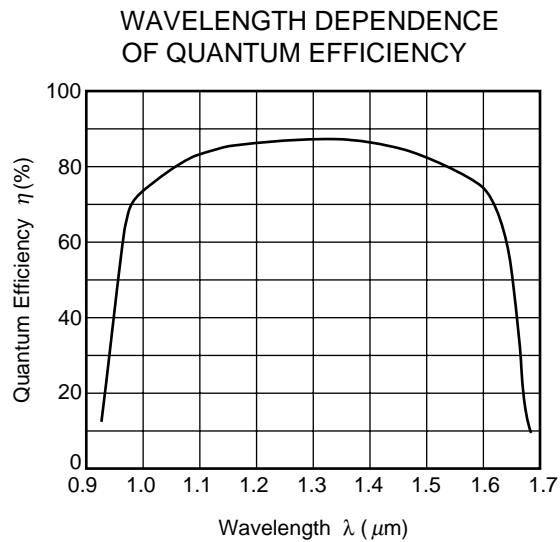
ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Reverse Voltage	V _R	20	V
Forward Current	I _F	10	mA
Reverse Current	I _R	0.5	mA
Optical Input Power	P _{in}	8	mW
Operating Case Temperature	T _C	−40 to +85	°C
Storage Temperature	T _{stg}	−40 to +85	°C

ELECTRO-OPTICAL CHARACTERISTICS (T_C = 25 °C)

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

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



Remark The graphs indicate nominal characteristics.

★ InGaAs PIN-PD

Part number	Absolute maximum ratings			Typical characteristics (T _C = 25°C)								Package
	P _{in} (mW)	T _C (°C)	T _{stg} (°C)	Detecting area size (μm)	I _b (nA)		C _t (pF)		S (A/W)		f _c (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

Discontinued Product

[MEMO]

Discontinued Product

[MEMO]

Discontinued Product

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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 - Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)
 - Specific: Aircraft, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.
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