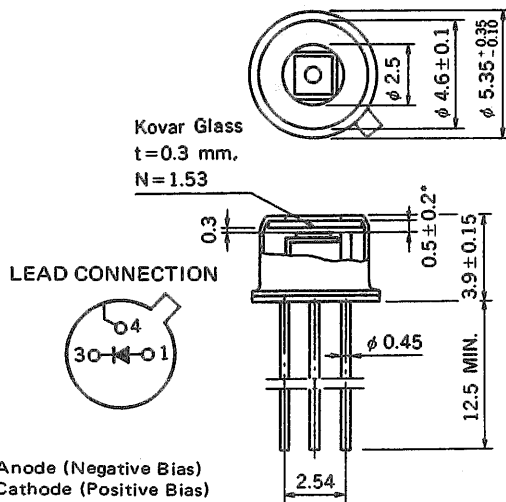


**1 000 to 1 600 nm OPTICAL FIBER COMMUNICATIONS**  
**270×330 μm InGaAs PIN PHOTO DIODE**

**DESCRIPTION**

NDL5406 is a 270 μm x 330 μm InGaAs PIN photo diode for a light detector. It covers the wavelength range between 1 000 and 1 600 nm with high sensitivity.

**PACKAGE DIMENSIONS**  
in millimeters



- 1. Anode (Negative Bias)
- 3. Cathode (Positive Bias)
- 4. Case

\* Optical length

**FEATURES**

- High quantum efficiency.  $\eta = 85\%$  @1 300 nm  
 $\eta = 80\%$  @1 550 nm
- Small dark current.  $I_D = 0.5$  nA
- Low operating voltage.
- Detecting area size. 270 μm x 330 μm

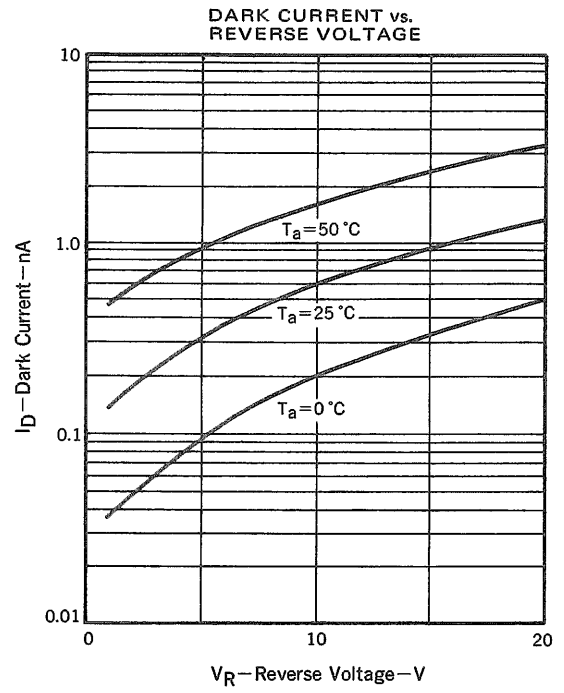
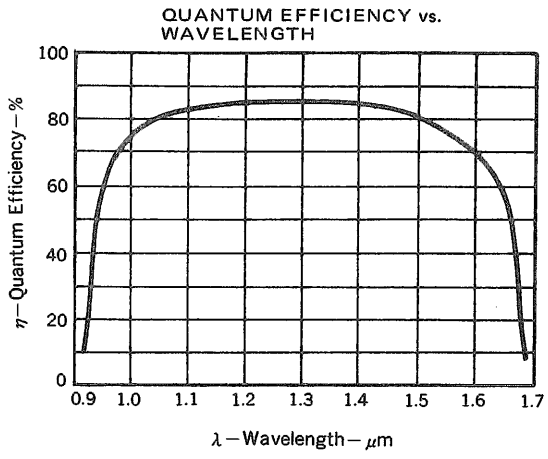
**ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )**

Reverse Voltage	$V_R$	20	V
Forward Current	$I_F$	10	mA
Reverse Current	$I_R$	5	mA
Operating Temperature	$T_C$	-40 to +85	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Dark Current	$I_D$		0.5	7.0	nA	$V_R = 5$ V
Terminal Capacitance	$C_t$		4.0	7.5	pF	$V_R = 5$ V, $f = 1.0$ MHz
Quantum Efficiency	$\eta$	70	85		%	$\lambda = 1$ 300 nm
			80			$\lambda = 1$ 550 nm
Sensitivity	S	0.73	0.89		A/W	$\lambda = 1$ 300 nm
			1.00			$\lambda = 1$ 550 nm
Rise, Fall Time	$t_r, t_f$		4		ns	$V_R = 5$ V, $\lambda = 1$ 300 nm, $R_L = 50$ $\Omega$ , 10-90 %

TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )



## InGaAs APD/PD FAMILY

FEATURES		APD		PIN-PD		REMARKS	
		$\phi$ 50 $\mu$ m	$\phi$ 80 $\mu$ m	$\phi$ 80 $\mu$ m	270 $\mu$ m x 330 $\mu$ m		
PACKAGES							
TO-18 TYPE CAN		NDL5500	NDL5510	NDL5405	NDL5406	3 PIN	
TO-18 TYPE CAN WITH MICRO LENS		—————	—————	NDL5405L	—————	3 PIN	
CHIP ON CARRIER		NDL5500C	NDL5510C	NDL5405C	NDL5406C		
COAXIAL MODULE WITH MULTI MODE FIBER (MMF)		NDL5500P*	—————	NDL5405P*	—————	3 PIN	
MAIN CHARACTERISTICS (T <sub>a</sub> = 25 °C)						UNIT	CONDITIONS
BREAKDOWN VOLTAGE	V <sub>(BR)R</sub>	70	75	—————	—————	V	I <sub>D</sub> = 100 $\mu$ A
QUANTUM EFFICIENCY	$\eta$	85	85	85	85	%	$\lambda$ = 1 300 nm
		80	80	80	80		$\lambda$ = 1 550 nm
DARK CURRENT	I <sub>D</sub>	20	60	0.1	0.5	nA	V = V <sub>op</sub>
RISE TIME	t <sub>r</sub>	f <sub>c</sub> = 1.0 GHz MIN.		0.3	4.0	ns	10–90 %
FALL TIME	t <sub>f</sub>	f <sub>c</sub> = 700 MHz MIN.		0.3	4.0	ns	90–10 %

\* A module with flange is also available.

[MEMO]

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