

PLASTIC MOLDED PIN PHOTODIODE

— NEPOC SERIES —

DESCRIPTION

PH302C is a photodiode with PIN structure. It has a wide photo-receiving area and high speed response enabling applications for various remote controlling equipments. The resin material itself used for the package has filter effect to pass only infrared.

FEATURES

- Ultra high speed response. ($t_r, t_f = 50 \text{ ns TYP.}$)
- Coincidence of the wavelength of maximum sensitivity with that of an infrared LED. ($\lambda_{MAX.} = 990 \text{ nm TYP.}$)
- High sensitivity. ($I_L = 5 \mu\text{A TYP. @ } V_R = 5 \text{ V, } H = 0.1 \text{ mW/cm}^2$)
- Wide dynamic range.

QUALITY GRADE

Standard

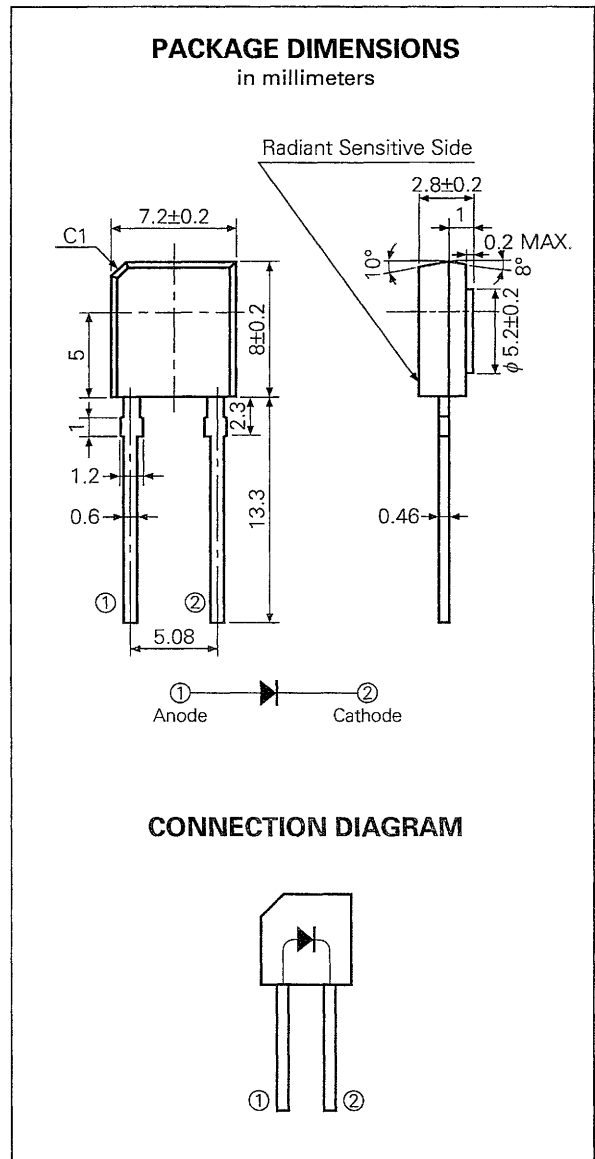
Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

APPLICATIONS

- Photo Sensors for TV remote control.

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

Reverse Voltage	V_R	32	V
Power Dissipation	P_D	150	mW
Storage Temperature	T_{stg}	-40 to +80	$^\circ\text{C}$

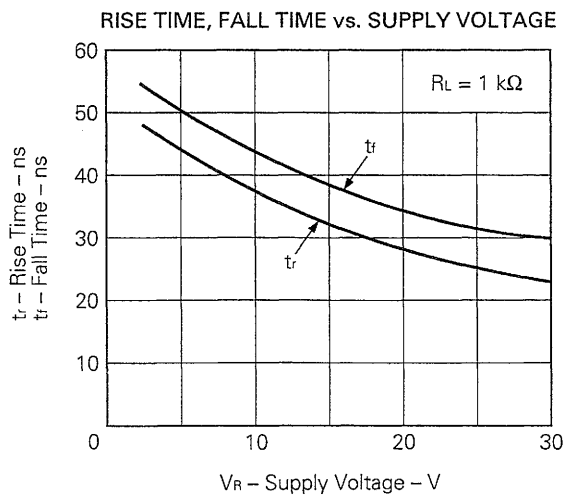
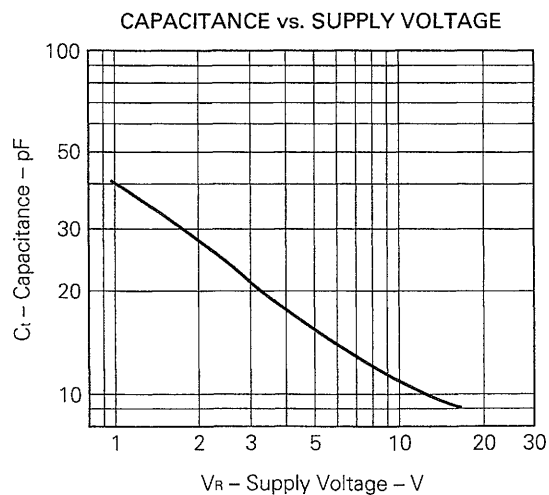
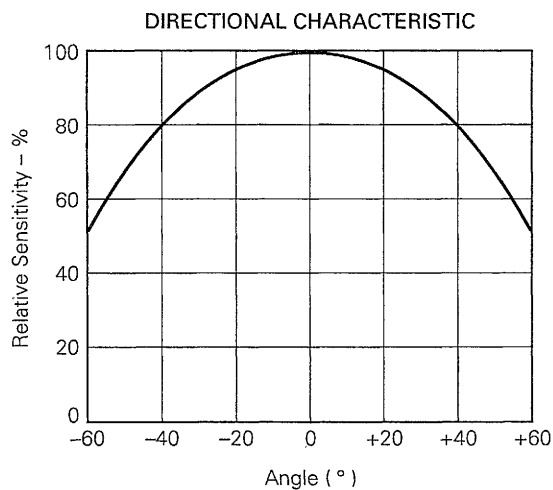
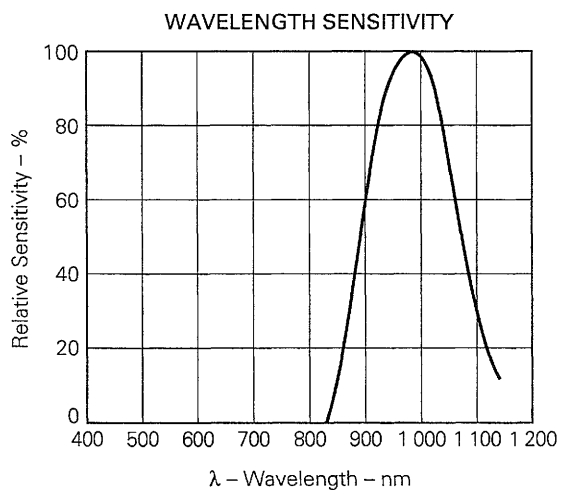


ELECTRO-OPTICAL CHARACTERISTICS (T_a = 25 °C)

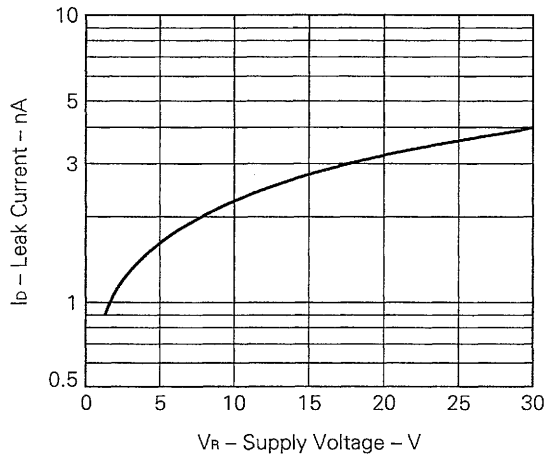
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Dark Current	I _R			30	nA	V _R = 10 V
Wavelength of the max. sensitivity	λ _{S MAX.}		990		nm	
Quantum yield (Electron per photon)	η		0.88			λ = 940 nm
Spectral sensitivity	S	25	32		nA/lx	V _R = 5 V
Spectral sensitivity	S _{IR}		5.0		μA	V _R = 5 V, H = 0.1 mW/cm ² *
Spectral sensitivity	S		0.6		A/W	λ = 940 nm
Rise Time	t _r , t _f		125		ns	R _L = 1 kΩ, V _R = 0 V, λ = 940 nm
Fall Time			50		ns	R _L = 1 kΩ, V _R = 5 V, λ = 940 nm
Capacitance	C _t		14		pF	V _R = 5 V, f = 1 MHz
Radiant sensitive area	A		9		mm ²	

* λ = 940 nm

TYPICAL CHARACTERISTICS (T_a = 25 °C)



LEAK CURRENT vs. SUPPLY VOLTAGE



LEAK CURRENT vs. AMBIENT TEMPERATURE

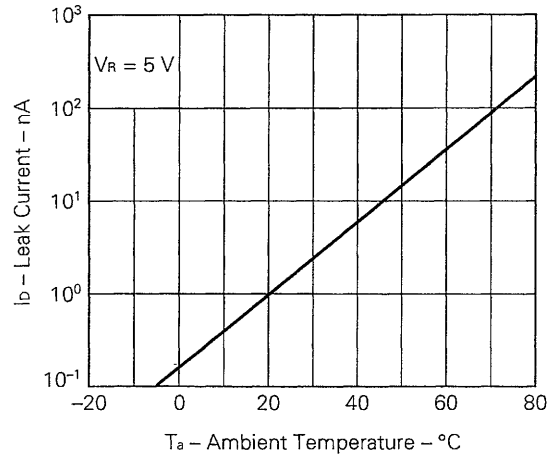
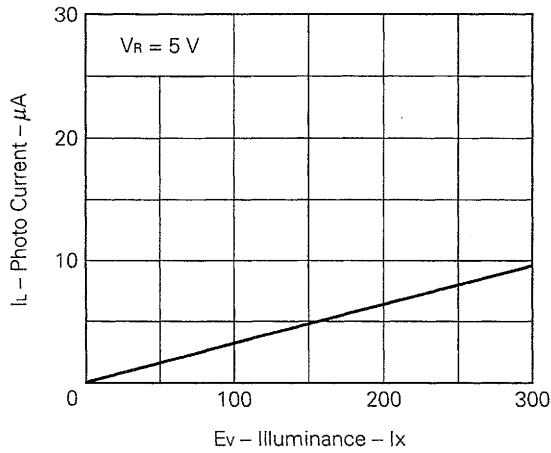


PHOTO CURRENT vs. ILLUMINANCE



RELATIVE PHOTO CURRENT vs. AMBIENT TEMPERATURE

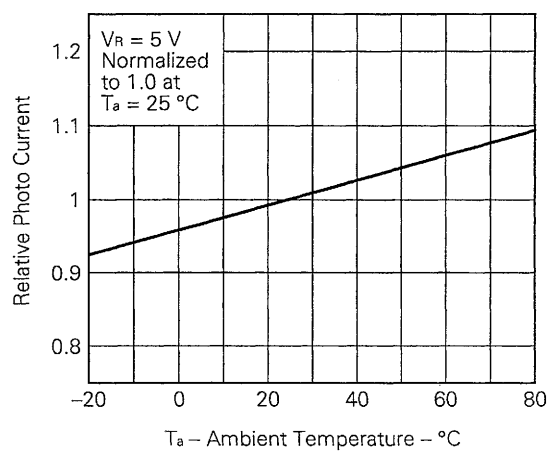


PHOTO CURRENT vs. SUPPLY VOLTAGE

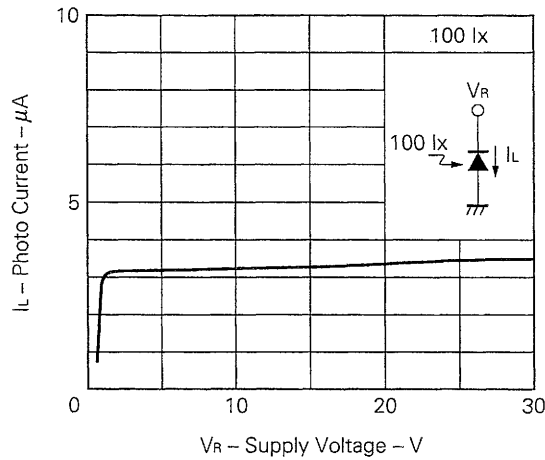
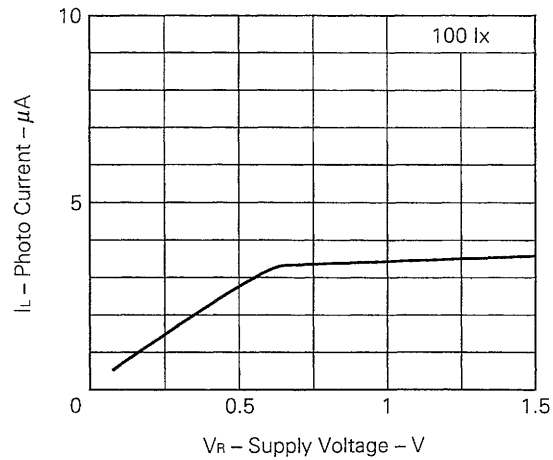


PHOTO CURRENT vs. SUPPLY VOLTAGE



POWER DISSIPATION vs. AMBIENT TEMPERATURE

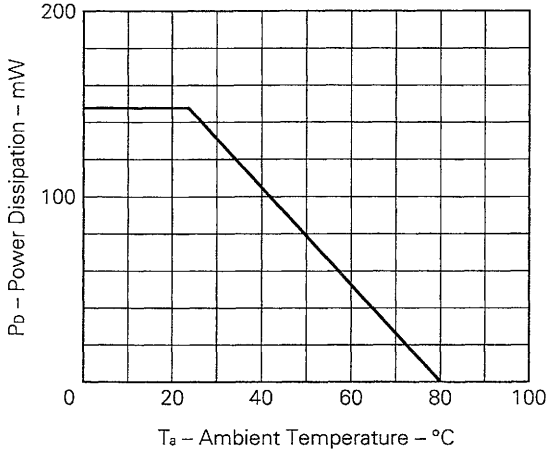
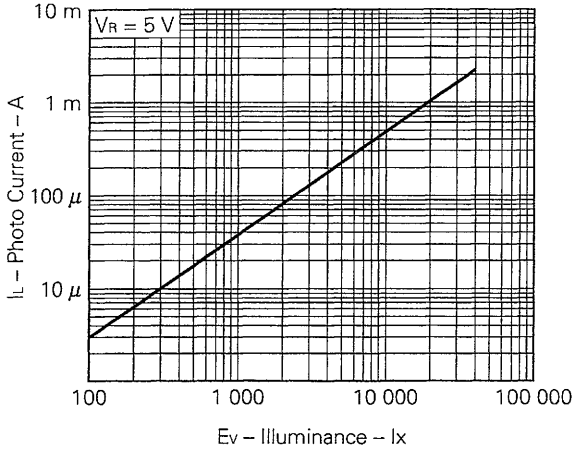


PHOTO CURRENT vs. ILLUMINANCE



HANDLING PRECAUTIONS:

1. The full resin-molded PH302C has generally a little less mechanical and thermal strength than other resin-molded semiconductor devices as they have less additives. Therefore please note on the following points.
 - (a) Soldering of leads should be made at the point 3 mm or more from the root of the leads at 260 °C and within 5 s.
 - (b) If the temperature of the molded portion rises in addition to the residual stress between the leads, the possibility that open or short circuit occurs due to the deformation or destruction of the resin will increase.

2. On cleaning the device:
 - (a) Cleaning with unsuitable solvent may impair the resin if the package and the following solvents should be used at the temperature of less than 45 °C and for less than 3 minutes of immersion time.
 - Freon TE, Freon TF, Ethanol, Methanol
 - Difron-solvent, Isopropyl-alcohol
 - (b) Ultrasonic cleaning will add some stress on devices. The degree of the stress differs depending on the oscillation output power, the size of the PCB and the mounting methods of the devices, therefore it should be confirmed by making an experiment at actual conditions that the cleaning does not have any problem on the devices.

[MEMO]

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Application examples recommended by NEC Corporation.

Standard: Computer, Office equipment, Communication equipment, Test and Measurement equipment, Machine tools, Industrial robots, Audio and Visual equipment, Other consumer products, etc.

Special: Automotive and Transportation equipment, Traffic control systems, Antidisaster systems, Anticrime systems, etc.