NEC

PLASTIC MOLDED PIN PHOTODIODE

PH302

FEATURES

- **ULTRA HIGH SPEED RESPONSE**
  t_r, t_f = 50 ns TYP
- **COINCIDENCE OF THE WAVELENGTH OF MAXIMUM SENSITIVITY WITH THAT OF AN INFRARED LED:** λ_{MAX} = 940 nm TYP
- **HIGH SENSITIVITY**
  I_L = 5 μA TYP @ V_R = 5 V, H = 0.1 mW/cm^2
- **WIDE DYNAMIC RANGE**

DESCRIPTION

The PH302 is a photodiode with PIN structure. It has a wide photo-receiving area and high speed response enabling applications for various remote controlling equipment. The resin material used for the package has a filter effect to pass only infrared rays.

APPLICATIONS

- **PHOTOSENSOR FOR TV REMOTE CONTROL**

ELECTRO-OPTICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER			PH302		
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
I_R	Dark Current, V_R = 10 V	nA			30
λ_{SMAX}	Wavelength of maximum sensitivity	nm		940	
η	Quantum yield (Electron per photon), λ = 940 nm			0.88	
S_{IR}	Spectral sensitivity, V_R = 5 V	nA/lx	35	50	
S	Spectral sensitivity, λ = 940 nm	A/W		0.6	
V_L	Open circuit voltage, Ev = 100 lx	mV		285	
V_L	Open circuit voltage, Ev = 1000 lx	mV		365	
t_r, t_f	Rise Time, Fall Time, R_L = 1 kΩ, V_R = 0 V, λ = 940 nm	ns		125	
t_r, t_f	Rise Time, Fall Time, R_L = 1 kΩ, V_R = 5 V, λ = 940 nm	ns		50	
C_t	Capacitance, V_R = 5 V, f = 1 MHz	pF		14	
A	Radiant sensitive area	mm^2		9	

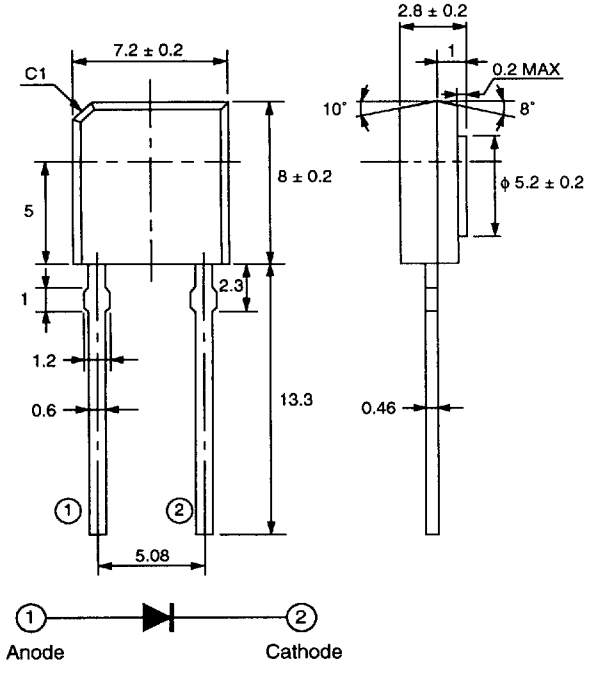
ABSOLUTE MAXIMUM RATINGS[1] (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_R	Reverse Voltage	V	32
P_D	Power Dissipation	mW	150
T_{STG}	Storage Temperature	°C	-40 to +80

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

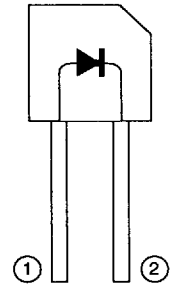
OUTLINE DIMENSIONS (Units in mm)

PH302



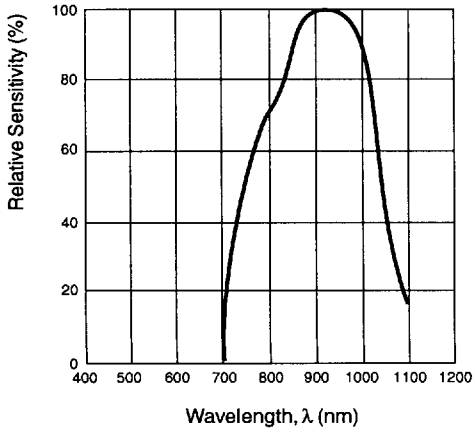
CONNECTION DIAGRAM

PH302

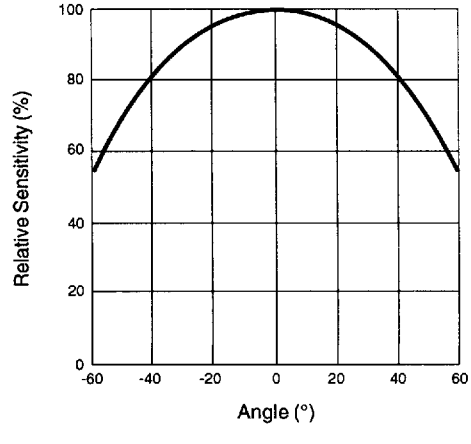


TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

WAVELENGTH SENSITIVITY

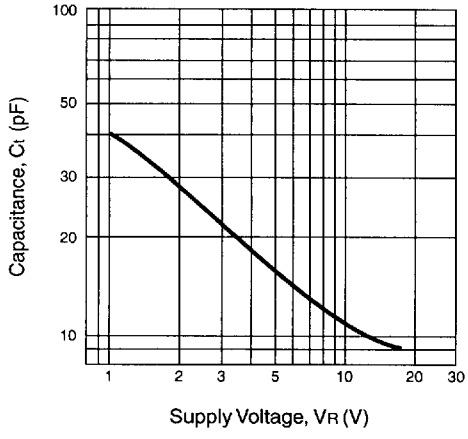


DIRECTIONAL CHARACTERISTIC

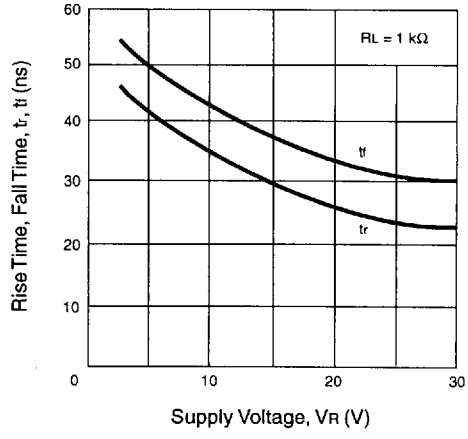


TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

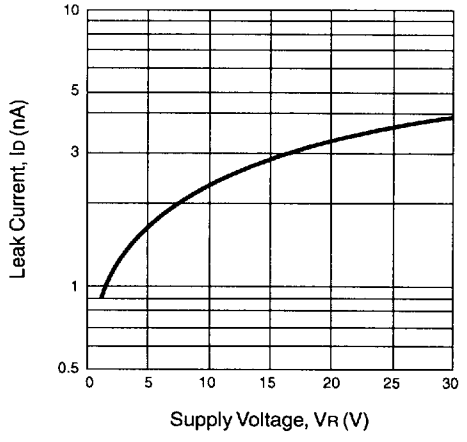
CAPACITANCE vs. SUPPLY VOLTAGE



RISE TIME, FALL TIME vs. SUPPLY VOLTAGE



LEAK CURRENT vs. SUPPLY VOLTAGE



LEAK CURRENT vs. AMBIENT TEMPERATURE

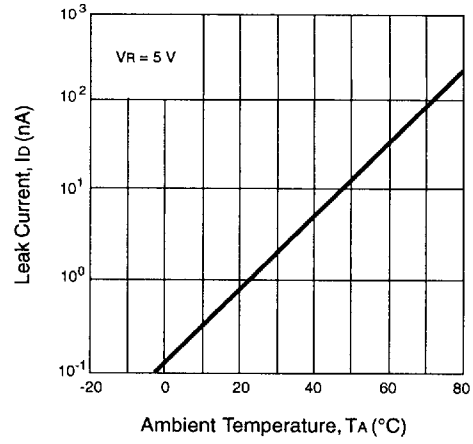
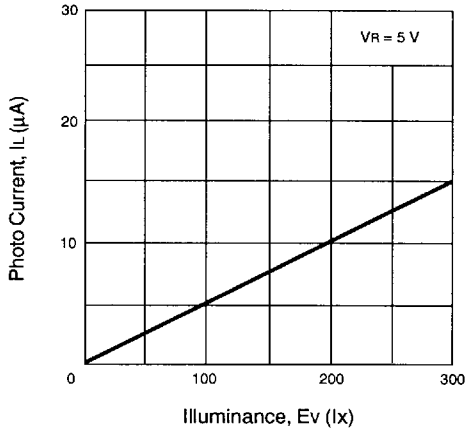
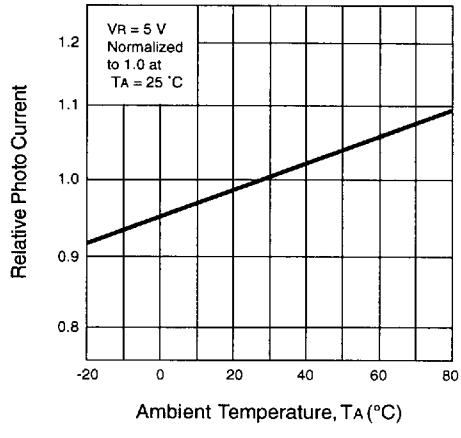


PHOTO CURRENT vs. ILLUMINANCE



RELATIVE PHOTO CURRENT vs. AMBIENT TEMPERATURE



TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

PHOTO CURRENT vs. SUPPLY VOLTAGE

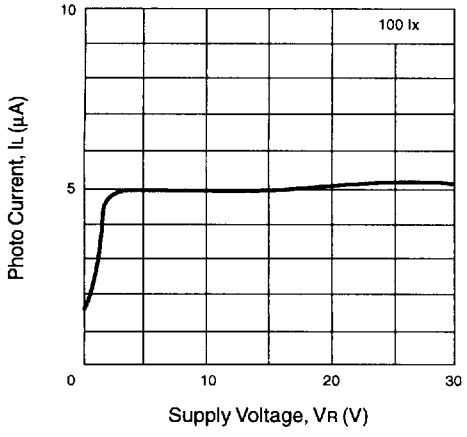
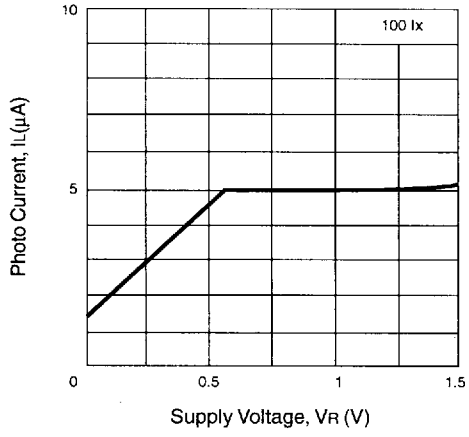


PHOTO CURRENT vs. SUPPLY VOLTAGE



POWER DISSIPATION vs. AMBIENT TEMPERATURE

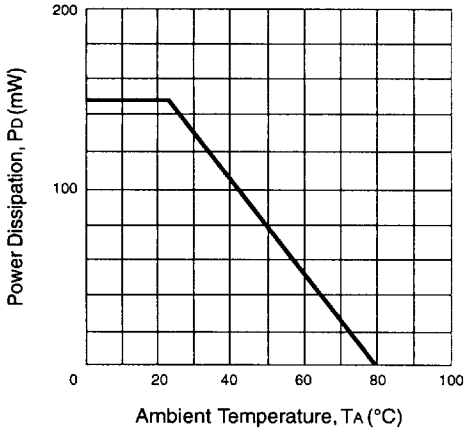
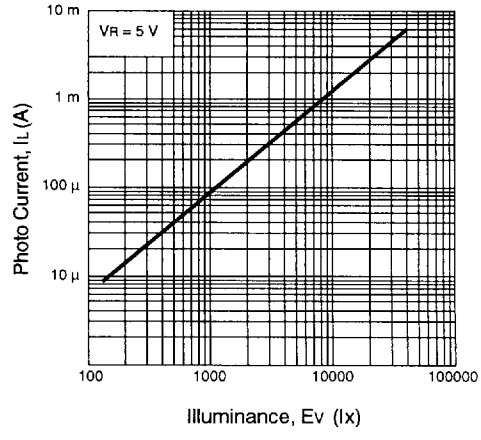


PHOTO CURRENT vs. ILLUMINANCE



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