

#### FEATURES

- **ULTRA HIGH SPEED RESPONSE**  
tr, tf = 50 ns TYP
- **COINCIDENCE OF THE WAVELENGTH OF MAXIMUM SENSITIVITY WITH THAT OF AN INFRARED LED:  $\lambda_{MAX} = 990$  nm**
- **HIGH SENSITIVITY**  
IL = 5  $\mu$ A TYP @ VR = 5 V, H = 0.1 mW/cm<sup>2</sup>
- **WIDE DYNAMIC RANGE**

#### DESCRIPTION

The PH302C 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 (TA = 25°C)

PART NUMBER			PH302C		
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
IR	Dark Current, VR = 10 V	nA			30
$\lambda_{SMAX}$	Wavelength of maximum sensitivity	nm		990	
$\eta$	Quantum yield (Electron per photon), $\lambda = 940$ nm			0.88	
S	Spectral sensitivity, VR = 5 V	nA/lx	25	32	
S	Spectral sensitivity, VR = 5 V, H = 1.0 mW/cm <sup>2</sup> *	$\mu$ A		5.0	
S	Spectral sensitivity, $\lambda = 940$ nm	A/W		0.6	
tr, tf	Rise Time, Fall Time, RL = 1 k $\Omega$ , VR = 0 V, $\lambda = 940$ nm	ns		125	
tr, tf	Rise Time, Fall Time, RL = 1 k $\Omega$ , VR = 5 V, $\lambda = 940$ nm	ns		50	
Ct	Capacitance, VR = 5 V, f = 1 MHz	pF		14	
A	Radiant sensitive area	mm <sup>2</sup>		9	

\*  $\lambda = 940$  nm

**ABSOLUTE MAXIMUM RATINGS<sup>1</sup>** (T<sub>A</sub> = 25°C)

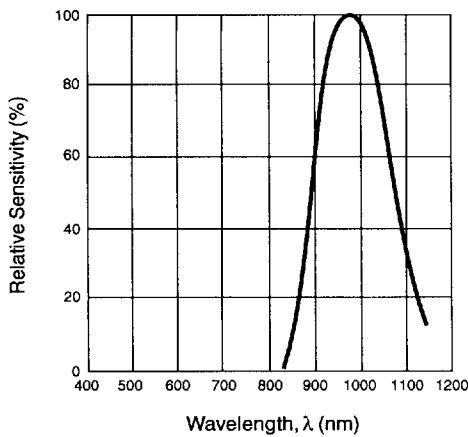
SYMBOLS	PARAMETERS	UNITS	RATINGS
V <sub>R</sub>	Reverse Voltage	V	32
P <sub>D</sub>	Power Dissipation	mW	150
T <sub>STG</sub>	Storage Temperature	°C	-40 to +80

Notes:

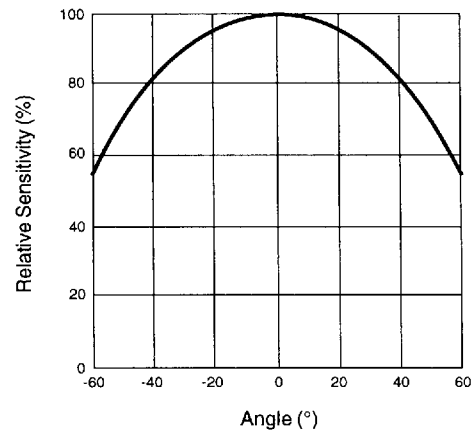
1. Operation in excess of any one of these parameters may result in permanent damage.

**TYPICAL PERFORMANCE CURVES** (T<sub>A</sub> = 25 °C)

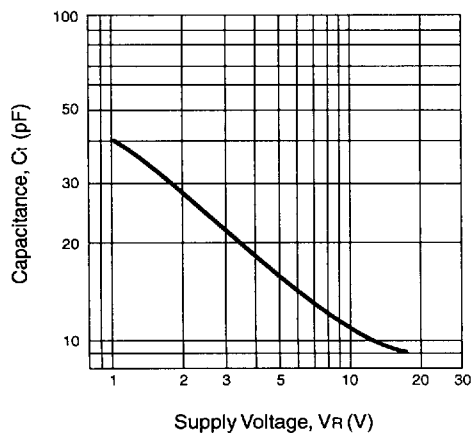
**WAVELENGTH SENSITIVITY**



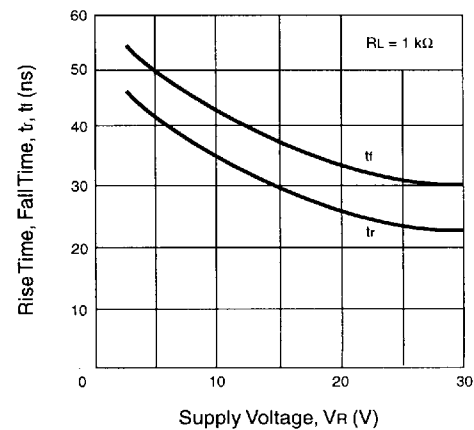
**DIRECTIONAL CHARACTERISTIC**



**CAPACITANCE vs. SUPPLY VOLTAGE**

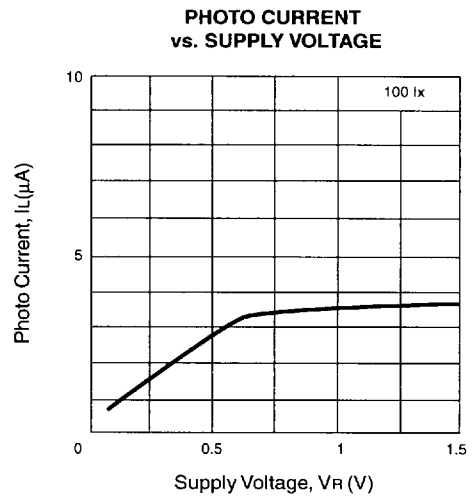
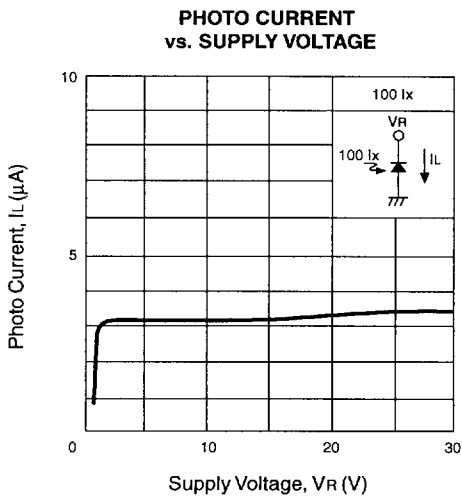
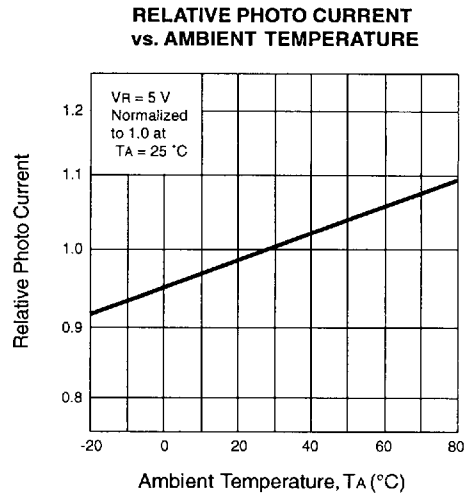
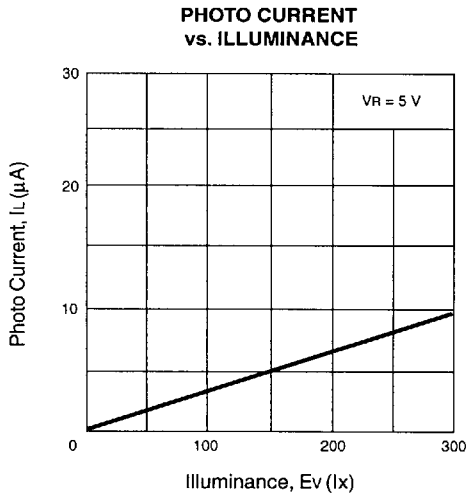
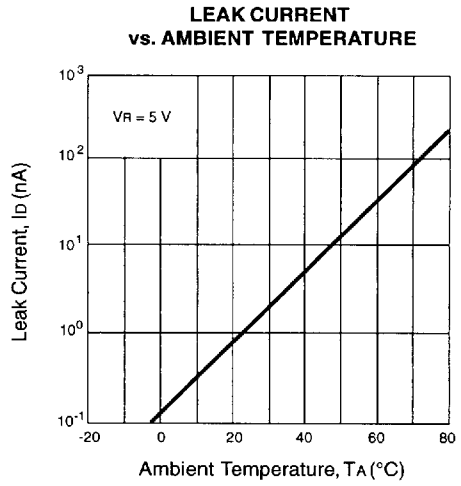
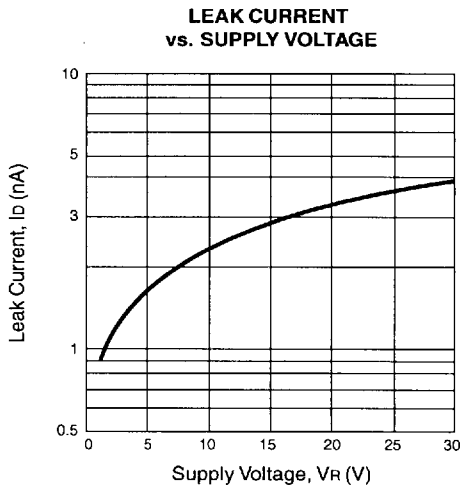


**RISE TIME, FALL TIME vs. SUPPLY VOLTAGE**



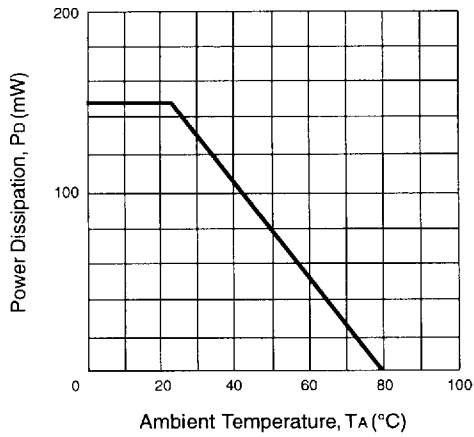
3

TYPICAL PERFORMANCE CURVES (T<sub>A</sub> = 25 °C)

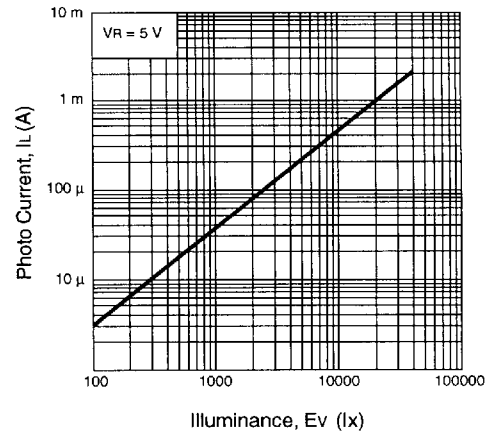


**TYPICAL PERFORMANCE CURVES** ( $T_A = 25^\circ\text{C}$ )

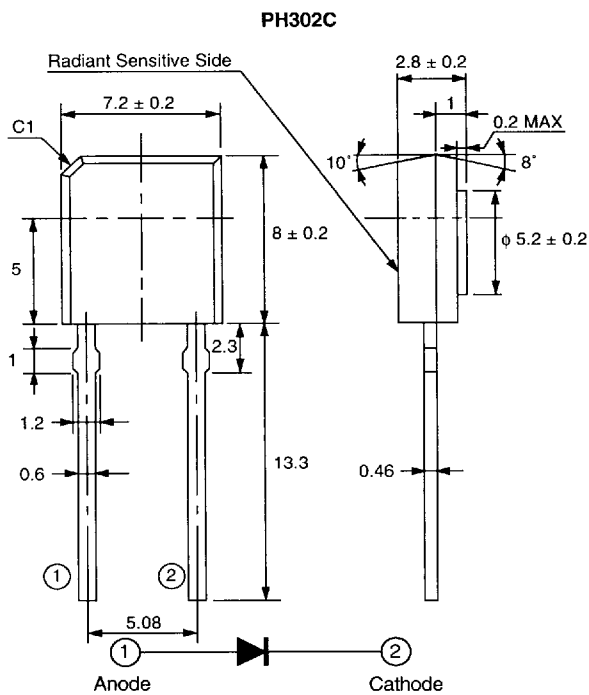
**POWER DISSIPATION vs. AMBIENT TEMPERATURE**



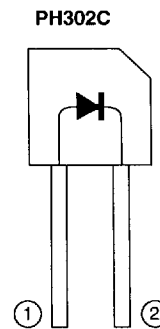
**PHOTO CURRENT vs. ILLUMINANCE**



**OUTLINE DIMENSIONS** (Units in mm)



**CONNECTION DIAGRAM**



3