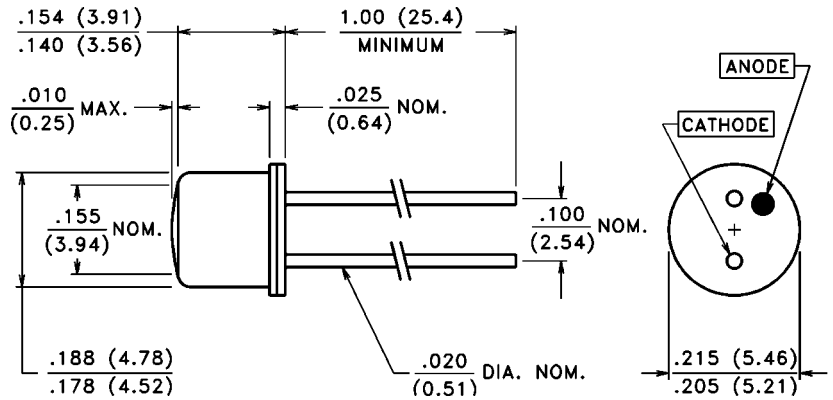




## PACKAGE DIMENSIONS inch (mm)



CASE 17 TO-46 HERMETIC  
CHIP ACTIVE AREA: .0025 in<sup>2</sup> (1.6 mm<sup>2</sup>)

## PRODUCT DESCRIPTION

Small area planar silicon photodiode in a "flat" window TO-46 package. Cathode is common to the case. These diodes exhibit low dark current under reverse bias and fast speed of response.

## ABSOLUTE MAXIMUM RATINGS

Storage Temperature: -40°C to 110°C  
Operating Temperature: -40°C to 110°C

## ELECTRO-OPTICAL CHARACTERISTICS @ 25°C (See also VTP curves, pages 45-46)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VTP1012			UNITS
			Min.	Typ.	Max.	
I <sub>SC</sub>	Short Circuit Current	H = 100 fc, 2850 K	10	17		μA
TC I <sub>SC</sub>	I <sub>SC</sub> Temperature Coefficient	2850 K		.20		%/°C
V <sub>OC</sub>	Open Circuit Voltage	H = 100 fc, 2850 K		350		mV
TC V <sub>OC</sub>	V <sub>OC</sub> Temperature Coefficient	2850 K		-2.0		mV/°C
I <sub>D</sub>	Dark Current	H = 0, V <sub>R</sub> = 50 V			7	nA
R <sub>SH</sub>	Shunt Resistance	H = 0, V = 10 mV		.5		GΩ
C <sub>J</sub>	Junction Capacitance	H = 0, V = 15 V			6	pF
Re	Responsivity	940 nm		.011		A/(W/cm <sup>2</sup> )
S <sub>R</sub>	Sensitivity	@ Peak		.55		A/W
λ <sub>range</sub>	Spectral Application Range		400		1150	nm
λ <sub>p</sub>	Spectral Response - Peak			925		nm
V <sub>BR</sub>	Breakdown Voltage		50	140		V
θ <sub>1/2</sub>	Angular Resp. - 50% Resp. Pt.			±35		Degrees
NEP	Noise Equivalent Power			8.7 x 10 <sup>-14</sup> (Typ.)		W/√Hz
D*	Specific Detectivity			1.5 x 10 <sup>12</sup> (Typ.)		cm√Hz/W

# VTP Process Photodiodes

## VTP PROCESS FAST RESPONSE, HIGH DARK RESISTANCE

### FEATURES

- Visible to enhanced IR spectral range
- Integral visible rejection filters available
- Response @ 940 nm, 0.55 A/W, typical
- 1 to 2% linearity over 7 to 9 decades
- Low dark currents
- High shunt resistance
- High reverse voltage rating
- Low capacitance

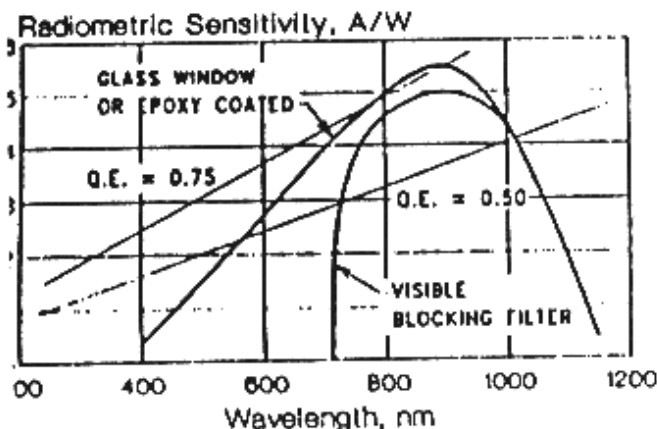
### PRODUCT DESCRIPTION

Photodiodes in this series have been designed for low junction capacitance. The lower the capacitance, the faster the response of the diode. Also, speed can be further increased by reverse biasing the diodes which lowers the capacitance even more.

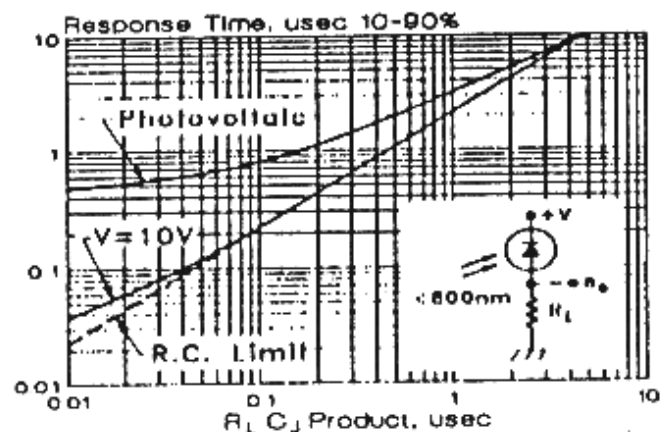
These diodes have excellent response in the IR region and are well matched to IR LEDs. Responsivity is categorized at 940 nm (GaAs LED). Some diodes are available in packages which incorporate a visible rejection filter effectively blocking any light below 700 nm.

Diodes made with the VTP process are suitable for operation under reverse bias conditions but may be used in the photovoltaic mode. Typical reverse breakdown voltages are around 140 V. Low dark currents under reverse bias are also a feature of this series.

### ABSOLUTE SPECTRAL RESPONSE

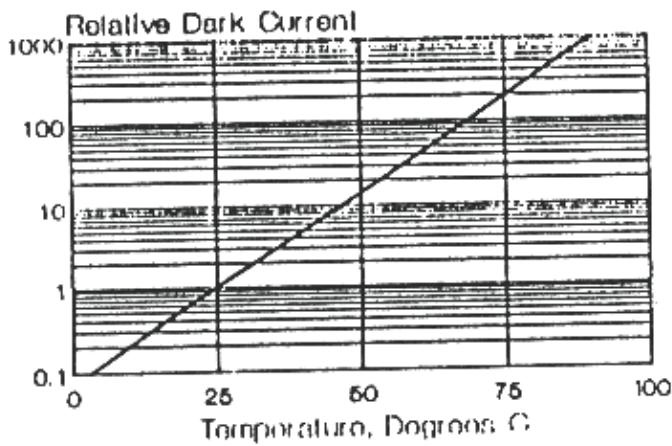


### RISE/FALL TIMES - NON SATURATED

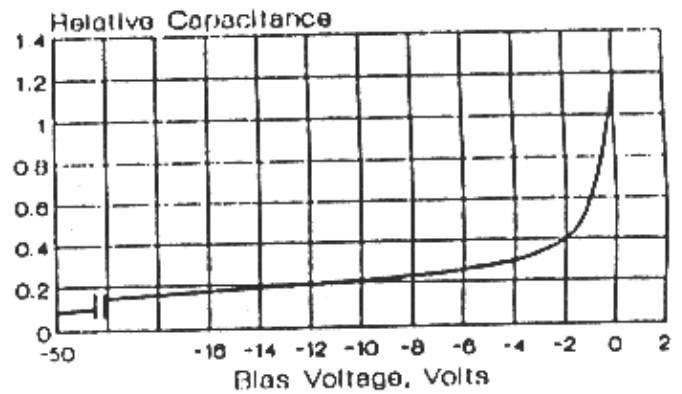


# VTP Process Photodiodes

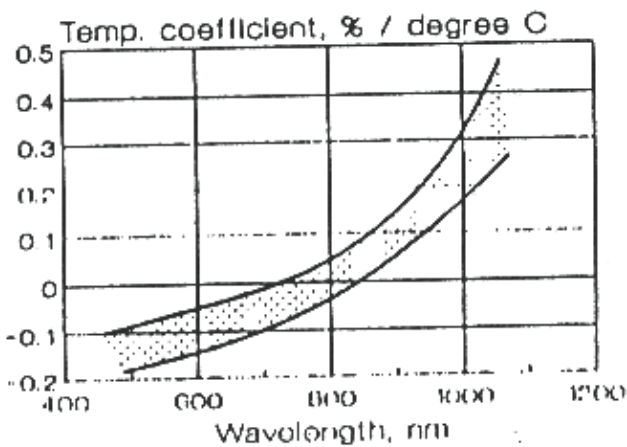
**RELATIVE DARK CURRENT VS TEMPERATURE**



**RELATIVE JUNCTION CAPACITANCE VS BIAS VOLTAGE (REFERRED TO ZERO BIAS)**



**TEMPERATURE COEFFICIENT OF LIGHT CURRENT VS WAVELENGTH**



**RELATIVE SHORT CIRCUIT CURRENT VS ILLUMINATION**

