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HIGH-SPEED GERMANIUM DETECTOR - DET3-GE

DESCRIPTION

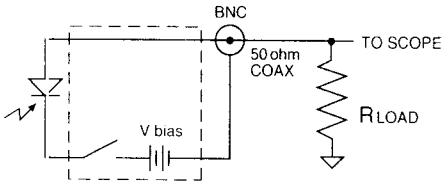
Thorlab's DET3-GE is a ready-to-use high-speed photo detector. The unit comes complete with a photo diode and internal 7.2V, bias battery enclosed in a ruggedized aluminum housing. An 8-32 tapped hole is provided on the base of the housing to mount the detector directly to a Thorlabs positioning device (1/2" post holder, mounting plates, etc.). The DET series of detectors covers a spectral range of 190 to 1800nm with rise times below 1ns.

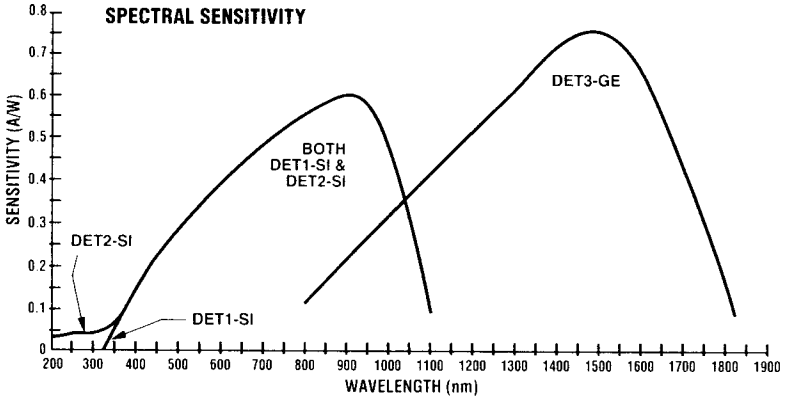
SPECIFICATIONS:

Detector: Germanium PIN
Spectral Response: 600-1900nm
Peak Wavelength: 1550nm
Rise/Fall Time[1]: ≤ 3.5ns
NEP: 5×10^{-12} W / √Hz
Dark Current: 2.5nA
Active Area: 0.2mm^2(round)
Linearity Limit: 1mW

Housing: Black Anodized Aluminum
Size: 0.75" x 1.3" x 2"
Output: BNC, DC-Coupled
Bias: 7.2V, 2 x 3.6V, 1/2AA Battery
Mounting: 8-32 Tapped Hole
Diode Socket: TO-5, Anode Marked
Damage Threshold: 50mW CW
0.5 J / cm^2 (10 ns pulse)

Notes:
1. 50Ω Terminating Resistor





Thorlab's DET series are ideal for measuring both pulsed and CW light sources. Each DET includes a reverse-biased PIN photo diode, bias battery, and an ON/OFF switch packaged in a ruggedized housing. The BNC output signal is the direct photocurrent out of the photo diode anode and is a function of the incident light power and wavelength. The responsivity, $\Re(\lambda)$, can be read from Figure 1 to estimate the amount of the photocurrent to expect. Most users will wish to convert this photocurrent to a voltage for viewing on an oscilloscope or DVM. This is accomplished by adding an external load resistance, R_{LOAD}. The output voltage is derived as:

$$V_0 = P * \Re(\lambda) * R_{LOAD}$$

The bandwidth, f_{BW}, and the rise-time response, T_R, are determined from the diode capacitance, C_J, and the load resistance, R_{LOAD}:

$$f_{BW} = 1 / (2\pi * R_{LOAD} * C_J), \; T_R = 0.35 / f_{BW}$$

For maximum bandwidth, we recommend using a 50Ω coax cable with a 50Ω terminating resistor at the end of the coax. This will also minimize ringing by matching the coax with its characteristic impedance. If bandwidth is not important, you can increase the amount of voltage for a given input light by increasing the R_{LOAD}. Note: the Germanium detector will respond to incident light outside the 02.mm^2 active area, however, the response time will be much slower (limited to the germanium diffusion time). For fastest response time, focus the light onto the active area only.

Also Available: Large Area Silicon detectors, (1ns, 10ns) (185-1100nm), and amplified detectors.

SALES: (201) 579-7227
FAX: (201) 383-8406
75 MILL ST. • P.O. BOX 366 • NEWTON, NJ 07860-1453
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