DET40 Bias Photodetector

1. Overview

The DET40 is a ready-to-use, high-speed photodetector for free-space optical systems. The unit consists of a circuit board, detector and RF connector in a compact aluminum housing. An SMA connector is used at the output to reduce size and maximize frequency response with a maximum bandwidth of 5 GHz.The detector is available in two spectral ranges, 320-1000 nm and 1000-1700 nm.

2. Features

- Five models cover the wavelength range 320-1700nm
- Bandwidth from 100MHz to 5GHz
- Rise times from 3.5ns to 350ps
- Compact size

3. Applications

- Analog Microwave
- Laser Pulse Width Measurement

4. Specifications

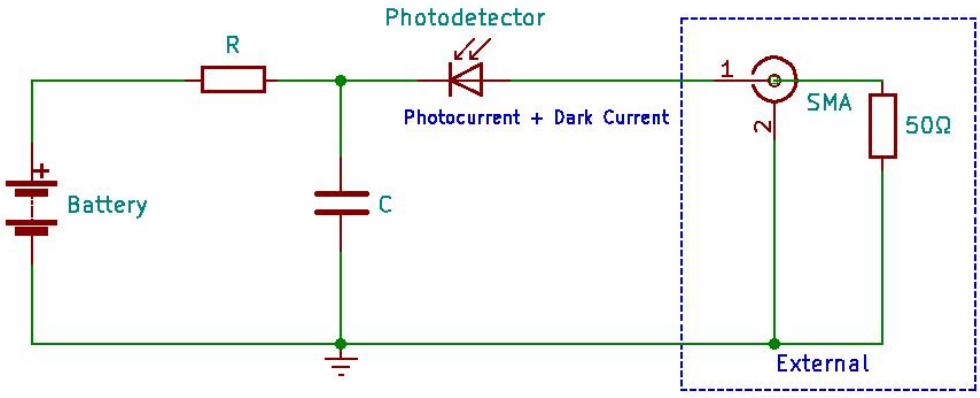
Items	DET40A-100M	DET40A-500M	DET40A-1G	DET40C-2G	DET40C-5G
Materials	Si			InGaAs	
Wavelength	320-1000nm			1000-1700nm	
Photosensitive diameter	1.2mm	0.8mm	0.4mm	70um	40um
Responsivity	0.64A/W @920nm	0.57A/W @800nm	0.52A/W @760nm	0.90A/W @1550nm	
Bandwidth[a]	DC-100MHz	DC-500MHz	DC-1GHz	DC-2GHz	DC-5GHz
Rise time[a]	3.5ns	0.8ns	350ps	180ps	80ps
Damage threshold	15mW	15mW	15mW	5mW	4mW
Bias voltage	10V	10V	3.3V	5V	5V
Output Impedance	50Ω				
Output coupling mode	DC				
output connector	SMA female				

Operating voltage	12VDC
Operating temperature	-20~65℃
Storage temperature	-40~85℃

Remarks:

a For 50Ω load

5. Schematic Block Diagram



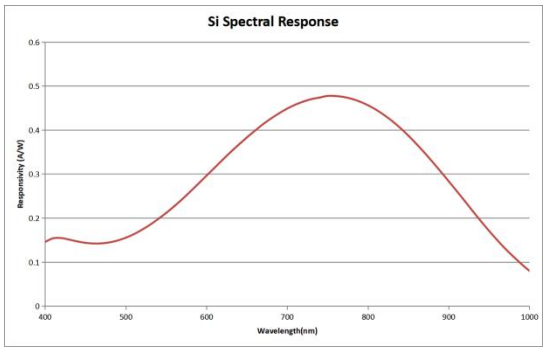
6. Operating Procedures

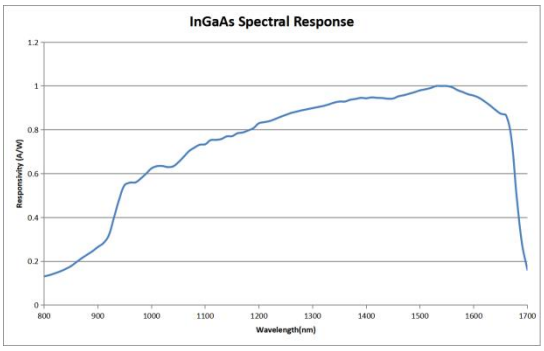
- Adjust the voltage grid of the oscilloscope to 10mV/div and set the input impedance of the oscilloscope to 50Ω;
- Connect the output of the detector to the input of the oscilloscope with a coaxial cable;
- Ensure that the power received by the detector is within the saturation power, and then turn on the light source to be measured and align it with the photosensitive area;
- Observe the waveform of the oscilloscope.

Note: We use a load resistor R to convert the photocurrent I to a voltage V for viewing on an oscilloscope: V = I x R

Load resistance affects response speed, and for maximum bandwidth we recommend using a 50 ohm coaxial cable with a 50 ohm terminating resistor at the other end of the cable for impedance matching. If bandwidth is not important, the amount of voltage in a given light can be increased by gaining the load resistor. The length of the coaxial cable can have a profound effect on the response, so it is recommended to keep the cable as short as possible.

7. Response curve





Note: Response curves are typical values for reference only.

8. Mechanical dimensions

41x30x14mm（Without connectors）

9. Shipping list

Item	Name of material	num	unit	note
1	photodetector	1	pcs	
2	SMA to BNC RF Cable	2	pcs	