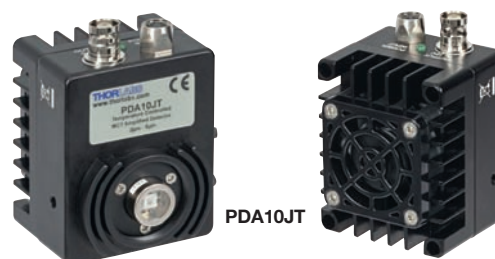


## 2.0 – 5.4 $\mu\text{m}$ HgCdTe TE-Cooled Amplified Photodetector

### Features

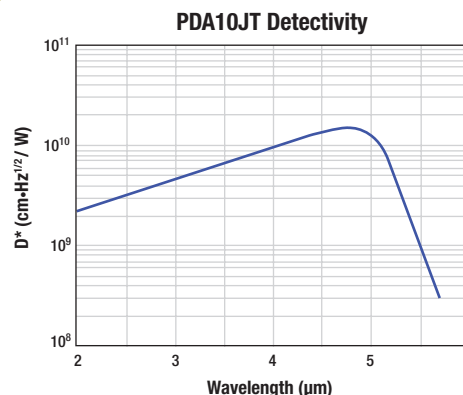
- Mid to Far IR Operation (2.0 – 5.4  $\mu\text{m}$ )
- Built-in TEC Controller
- Variable Gain Amplifier (0.8 to 100 V/V)
- Variable Lowpass Filter (1.25 to 160 kHz)
- Internal SM1 (1.035"–40) Threading



The PDA10JT uses an HgCdTe detector, making it suitable for detection of light in the 2.0  $\mu\text{m}$  – 5.4  $\mu\text{m}$  spectral range. The detector includes a built-in TEC element and thermistor, which stabilizes the temperature at  $-30^\circ\text{C}$ . The detector's  $D^*$  (detectivity), spectral response, and noise characteristics are temperature sensitive; therefore, cooling and temperature stabilization can allow for significantly larger gains and lower DC offsets.

The PDA10JT has an eight-position gain switch, allowing the user to set the gain from 0.8 V/V to 100 V/V; an additional eight-position switch adjusts the circuit bandwidth from 1.25 kHz to 160 kHz (40 dB) for improved noise performance. A constant 2.5 mA bias current is provided to the detector via a Howland current pump for improved stability and low noise operation.

The PDA10JT offers many of the same features as our switchable-gain PDA Series detectors featured on page 1572, including an aperture compatible with our SM1 lens tubes, mounting holes for 8-32 (M4) posts, and 50  $\Omega$  drive capability using a BNC output.



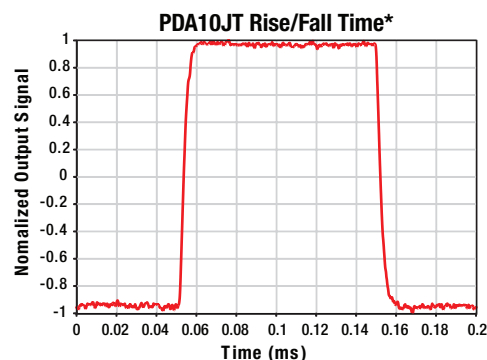
### Specifications

- **Detector Material:** HgCdTe
- **Active Diameter:** 1 mm<sup>2</sup>
- **Wavelength Range:** 2.0 – 5.4  $\mu\text{m}$
- **Peak Responsivity:** 300 V/W
- **Rise Time:** 4.5  $\mu\text{s}$
- **Fall Time:** 5.1  $\mu\text{s}$
- **Number of Gain Steps:** 8
- **Gain Range:** 40 dB or 0.8 V/V to 100 V/V
- **Lowpass Filter Bandwidth Range:** 1.25 kHz to 160 kHz
- **Output Voltage:** 0 – 5 V at 50  $\Omega$ , 0 – 10 V at Hi-Z
- **Output Impedance:** 50  $\Omega$
- **Output Current:** 100 mA
- **Output Offset:** 20 mV Typical, 45 mV Max @ 10 dB Gain
- **Detector Temperature:**  $-30^\circ\text{C}$
- **TEC Current:** 0.6 A Typical (1 A Max)
- **Thermistor:** 10 k $\Omega$

GAIN AND LOWPASS FILTER SPECIFICATIONS

Gain (Hi-Z)*		Lowpass Filter Bandwidth		NEP Values (@ 160 kHz, 50 $\Omega$ )	
0 dB	0.8 V/V	160 k	160 kHz	0 dB	$1.90 \times 10^{-9} \text{ W/Hz}^{1/2}$
4 dB	1.6 V/V	80 k	80 kHz	4 dB	$1.19 \times 10^{-9} \text{ W/Hz}^{1/2}$
10 dB	3.2 V/V	40 k	40 kHz	10 dB	$5.94 \times 10^{-10} \text{ W/Hz}^{1/2}$
16 dB	6.3 V/V	20 k	20 kHz	16 dB	$3.02 \times 10^{-10} \text{ W/Hz}^{1/2}$
22 dB	12.6 V/V	10 k	10 kHz	22 dB	$1.51 \times 10^{-10} \text{ W/Hz}^{1/2}$
28 dB	25.2 V/V	5 k	5 kHz	28 dB	$7.61 \times 10^{-11} \text{ W/Hz}^{1/2}$
34 dB	50.1 V/V	2.5 k	2.5 kHz	34 dB	$3.86 \times 10^{-11} \text{ W/Hz}^{1/2}$
40 dB	100 V/V	1.25 k	1.25 kHz	40 dB	$2.08 \times 10^{-11} \text{ W/Hz}^{1/2}$

\*Gain with a 50  $\Omega$  load is one-half the Hi-Z gain.



\*0 dB Gain and 1 MHz Filter Settings

ITEM #	METRIC ITEM #	\$	£	€	RMB	DESCRIPTION
PDA10JT	PDA10JT-EC	\$ 3,897.00	£ 2,805.84	€ 3,390.39	¥ 31,059.09	HgCdTe Amplified Photodetector with Temperature Controller