

General

J18 Series detectors are high quality extended wavelength Indium Gallium Arsenide photodiodes for use in the wavelength range from 800 to 2600 nanometers. The J18 Series detectors can be used over wide operating temperatures (-55°C to +60°C). The photodiodes have high responsivity, excellent linearity, fast response times, uniform response and excellent long term stability.

Device Options

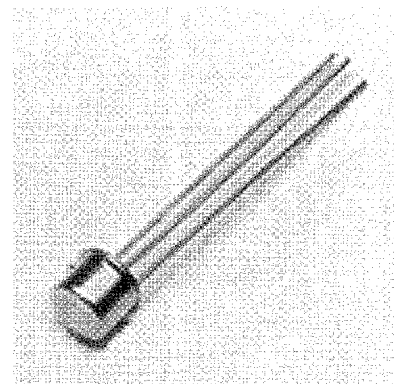
The J18 Series includes three cutoff wavelength options: 1900nm, 2200nm and 2600nm. Figure 11-1 shows typical detectivity for each wavelength option. Except for the difference in cutoff wavelength, the responsivity of each option is similar over the NIR wavelength band as shown in Figure 11-2. Dark currents and noise are a strong function of the detector cutoff wavelength, with the 1.9 μm option having the highest shunt resistance and the lowest noise.

Package Options

Three different active sizes are available for each wavelength option: 0.25mm, 1.0mm and 2.0mm diameters. For the two smaller active areas, devices are packaged in an isolated TO18 header with glass window (see 18I package). The 2mm diameter active size is packaged in a TO5 isolated style (see 5I package).

Custom

These devices are also available in a variety of custom configurations and packages.


Applications:

- NIR-FTIR
- Food and plastic sorting
- Blood analyzers
- Environmental monitoring
- Lead-Salt (PbS) replacement

Key Features:

- Stable response vs. temp.
- Wide dynamic range
- High linearity
- No bias or cooling required

Typical Specification @ 22°C

Model Number	Part Number	Active Size (Dia.) (mm)	Cutoff Wavelength (50%) λ_{co} (μm)	Peak Wavelength λ_{peak} (μm)	Responsivity R_p @ λ_{peak} (A/W)	Shunt Resistance R_D @ $V_R = 10\text{mV}$ (Ω)		Dark Current I_D $V_R = 0.5\text{V}$ (μA)		Typical NEP @ λ_{peak} and 1KHz (pW/Hz ^{1/2})	Capacitance C_D @ $V_R = 0\text{V}$ (pf)
						Min.	Typ.	Typ.	Max.		
J18 Series (1.9μm Cutoff)											
J18-18I-R250U-1.9		0.25	1.9	1.75	1.0	10M	20M	0.01	0.1	0.03	80
J18-18I-R01M-1.9		1.00				1M	2M	0.1	1	0.1	800
J18-5I-R02M-1.9		2.00				250K	500	0.4	4	0.2	3200
J18 Series (2.2μm Cutoff)											
J18-18I-R250U-2.2		0.25	2.2	1.90	1.1	500	1M	0.1	1	0.1	80
J18-18I-R01M-2.2		1.00				50	100	1	10	0.35	800
J18-5I-R02M-2.2		2.00				12.5	25	4	40	0.7	3200
J18 Series (2.6μm Cutoff)											
J18-18I-R250U-2.6		0.25	2.6	2.25	1.2	15	30	1	10	0.65	80
J18-18I-R01M-2.6		1.00				1.5	3	10	100	2	800
J18-5I-R02M-2.6		2.00				0.4	0.75	40	400	4	3200

Figure 11-1
Typical D^* vs Wavelength

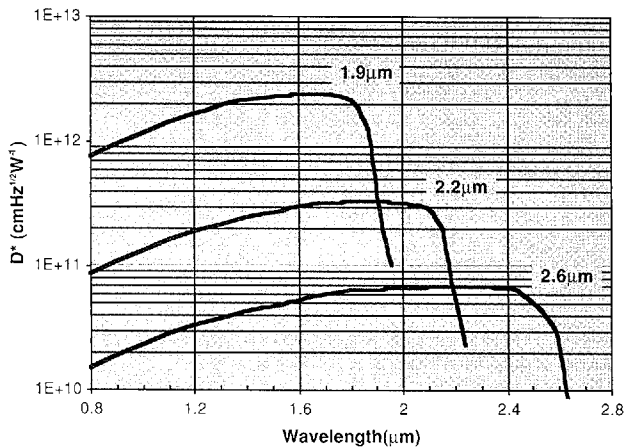


Figure 11-2
Typical Response vs Wavelength

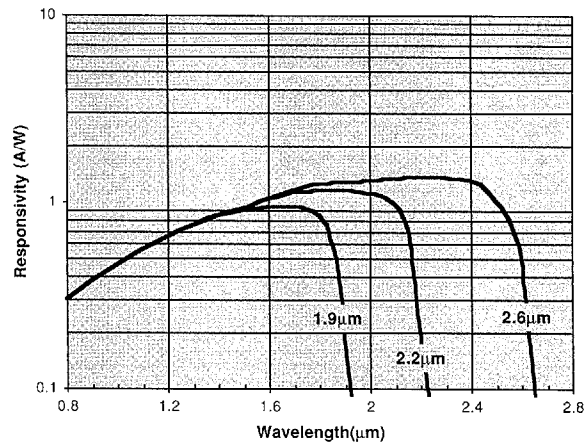
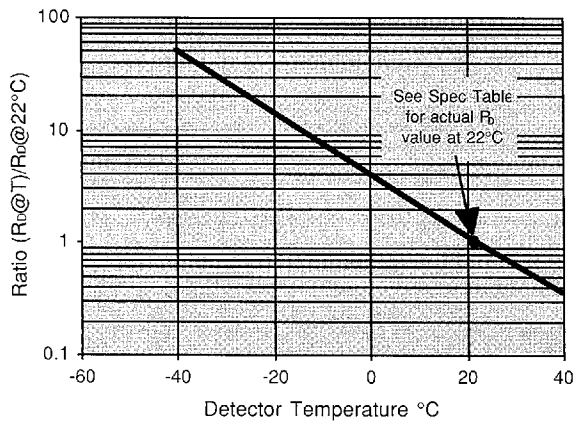
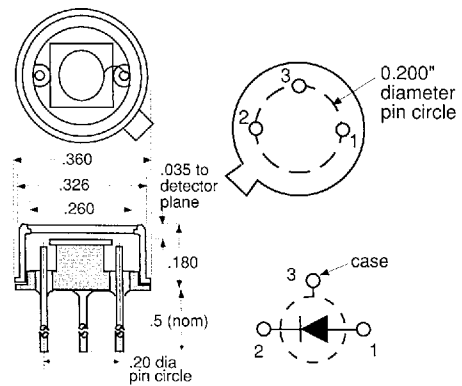


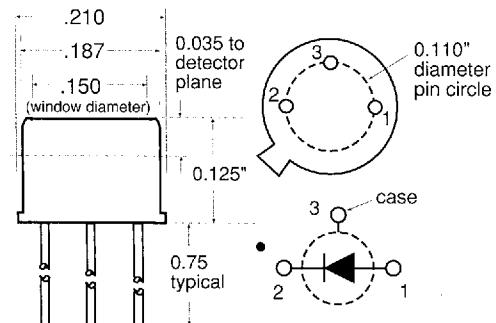
Figure 11-3
Typical Change in Shunt Resistance vs Temperature



• 5I Package



• 18I Package



Parameter	Min	Max	Units
Uniformity of Response @ Peak over Area (25°C)		±2	%
Storage Temperature	-55	+80	°C
Operating Temperature	-55	+60	°C