



TELEDYNE
JUDSON TECHNOLOGIES
A Teledyne Technologies Company

Indium Gallium Arsenide Detectors

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General

The J22 and J23 series are high performance InGaAs detectors operating over the spectral range from 0.8 μm to 2.6 μm . These detectors provide fast rise time, uniformity of response, excellent sensitivity, and long term reliability for a wide range of applications. For enhanced performance or temperature stability of response near the cutoff wavelength, Teledyne Judson offers a variety of thermoelectrically cooled detector options.

Device Options

Teledyne Judson's standard InGaAs detectors, the J22 series, offers high reliability and performance in the spectral range from 0.8 μm to 1.7 μm . In addition, the J23 series extended InGaAs detectors are available in four cutoff options at 1.9 μm , 2.2 μm , 2.4 μm and 2.6 μm . Figure 1 shows the typical response for the J22 and J23 series at room temperature operation.

Package Options

The J22 and J23 series are available in standard TO packages, ceramic sub-mounts, and bare die. We also offer different window materials, lenses or optical filter options. Please refer to pages 6 and 7 for package drawing examples.

For more demanding applications, Teledyne Judson's team of engineers will provide custom design services. Please contact us with your special requirements

Accessories

For a complete system, Teledyne Judson offers low noise transimpedance amplifier modules, heat sink/preamp assemblies and temperature controllers. For further details, please visit our website.

Call us

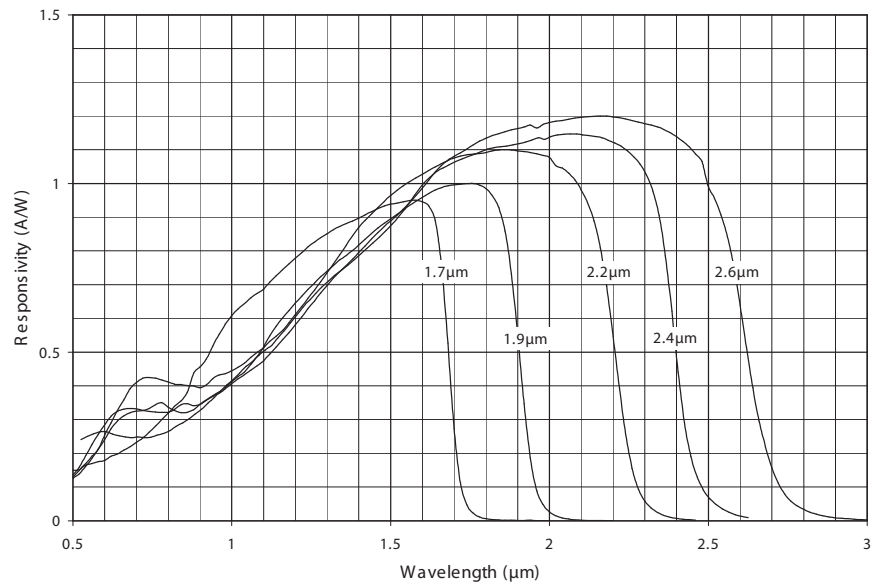
Let our team of application engineers assist you in selecting the best detector design for your application. Or visit our website for additional information on all of Teledyne Judson's products.



Applications

- Gas analysis
- NIR-FTIR
- Raman spectroscopy
- IR fluorescence
- Blood analysis
- Optical sorting
- Radiometry
- Chemical detection
- Optical communication
- Optical power monitoring
- Laser diode monitoring
- Laser burn-in

Figure 1. Responsivity vs. Wavelength for InGaAs @ 22°C



Typical Specification @ 22°C

| Detector Model Number | Active Size Diameter (mm) | 50% Cutoff Wavelength* (μm) | Peak Wavelength* (μm) | Peak Responsivity (A/W) min | Shunt Impedance (Ohm) | | Dark Current (A) @ Vr (max) | | Peak D* (cmHz ^{1/2} /W) @ 1KHz | | NEP (W/rt-Hz) @ peak wavelength | |
|-----------------------|---------------------------|-----------------------------|-----------------------|-----------------------------|-----------------------|---------|-----------------------------|---------|---|---------|---------------------------------|---------|
| | | | | | min | typ | typ | max | min | typ | max | typ |
| J22-18I-R40U | 0.040 | 1.7+/-0.1 | 1.65+/-0.10 | 0.90 | 4.0E+08 | 1.5E+09 | 3.0E-11 | 3.0E-10 | 5.0E+11 | 1.0E+12 | 7.1E-15 | 3.5E-15 |
| J22-18I-R75U | 0.075 | | | | 2.5E+08 | 1.0E+09 | 4.0E-11 | 4.0E-10 | 7.4E+11 | 1.5E+12 | 9.0E-15 | 4.5E-15 |
| J22-18I-R250U | 0.250 | | | | 1.5E+08 | 6.0E+08 | 1.0E-10 | 1.0E-09 | 1.9E+12 | 3.8E+12 | 1.2E-14 | 5.8E-15 |
| J22-18I-R500U | 0.500 | | | | 5.0E+07 | 2.0E+08 | 2.5E-10 | 2.5E-09 | 2.2E+12 | 4.4E+12 | 2.0E-14 | 1.0E-14 |
| J22-18I-R01M | 1.000 | | | | 1.5E+07 | 6.0E+07 | 1.0E-09 | 1.0E-08 | 2.4E+12 | 4.8E+12 | 3.7E-14 | 1.8E-14 |
| J22-5I-R02M | 2.000 | | | | 4.0E+06 | 1.6E+07 | 4.0E-09 | 4.0E-08 | 2.5E+12 | 5.0E+12 | 7.1E-14 | 3.5E-14 |
| J23-18I-R250U-1.9 | 0.25 | 1.9+/-0.1 | 1.75+/-0.10 | 1.00 | 8.0E+06 | 1.6E+07 | 1.0E-08 | 1.0E-07 | 4.9E+11 | 6.9E+11 | 4.5E-14 | 3.2E-14 |
| J23-18I-R500U-1.9 | 0.50 | | | | 2.6E+06 | 5.2E+06 | 3.0E-08 | 3.0E-07 | 5.6E+11 | 7.9E+11 | 7.9E-14 | 5.6E-14 |
| J23-18I-R01M-1.9 | 1.00 | | | | 8.0E+05 | 1.6E+06 | 1.0E-07 | 1.0E-06 | 6.2E+11 | 8.8E+11 | 1.4E-13 | 1.0E-13 |
| J23-5I-R02M-1.9 | 2.00 | | | | 1.5E+05 | 3.0E+05 | 4.0E-07 | 4.0E-06 | 5.4E+11 | 7.6E+11 | 3.3E-13 | 2.3E-13 |
| J23-5I-R03M-1.9 | 3.00 | | | | 4.5E+04 | 9.0E+04 | 1.0E-06 | 1.0E-05 | 4.4E+11 | 6.3E+11 | 6.0E-13 | 4.3E-13 |
| J23-18I-R250U-2.2 | 0.25 | 2.2+/-0.1 | 1.90+/-0.10 | 1.10 | 5.0E+05 | 1.0E+06 | 1.0E-07 | 1.0E-06 | 1.4E+11 | 1.9E+11 | 1.6E-13 | 1.2E-13 |
| J23-18I-R500U-2.2 | 0.50 | | | | 1.7E+05 | 3.4E+05 | 3.0E-07 | 3.0E-06 | 1.6E+11 | 2.2E+11 | 2.8E-13 | 2.0E-13 |
| J23-18I-R01M-2.2 | 1.00 | | | | 5.0E+04 | 1.0E+05 | 1.0E-06 | 1.0E-05 | 1.7E+11 | 2.4E+11 | 5.2E-13 | 3.7E-13 |
| J23-5I-R02M-2.2 | 2.00 | | | | 1.0E+04 | 2.0E+04 | 4.0E-06 | 4.0E-05 | 1.5E+11 | 2.2E+11 | 1.2E-12 | 8.2E-13 |
| J23-5I-R03M-2.2 | 3.00 | | | | 3.0E+03 | 6.0E+03 | 1.0E-05 | 1.0E-04 | 1.3E+11 | 1.8E+11 | 2.1E-12 | 1.5E-12 |
| J23-18I-R250U-2.4 | 0.25 | 2.4+/-0.1 | 2.15+/-0.10 | 1.15 | 1.0E+05 | 2.0E+05 | 3.5E-07 | 3.5E-06 | 6.3E+10 | 8.9E+10 | 3.5E-13 | 2.5E-13 |
| J23-18I-R500U-2.4 | 0.50 | | | | 3.3E+04 | 6.6E+04 | 1.0E-06 | 1.0E-05 | 7.3E+10 | 1.0E+11 | 6.1E-13 | 4.3E-13 |
| J23-18I-R01M-2.4 | 1.00 | | | | 1.0E+04 | 2.0E+04 | 3.5E-06 | 3.5E-05 | 8.0E+10 | 1.1E+11 | 1.1E-12 | 7.8E-13 |
| J23-5I-R02M-2.4 | 2.00 | | | 2.0E+03 | 4.0E+03 | 1.5E-05 | 1.5E-04 | 7.1E+10 | 1.0E+11 | 2.5E-12 | 1.8E-12 | |
| J23-5I-R03M-2.4 | 3.00 | | | 6.5E+02 | 1.3E+03 | 3.5E-05 | 3.5E-04 | 5.8E+10 | 8.3E+10 | 4.6E-12 | 3.2E-12 | |
| J23-18I-R250U-2.6 | 0.25 | 2.6+/-0.1 | 2.25+/-0.10 | 1.20 | 2.5E+04 | 5.0E+04 | 1.0E-06 | 1.0E-05 | 3.3E+10 | 4.7E+10 | 6.7E-13 | 4.8E-13 |
| J23-18I-R500U-2.6 | 0.50 | | | | 8.0E+03 | 1.6E+04 | 3.0E-06 | 3.0E-05 | 3.7E+10 | 5.3E+10 | 1.2E-12 | 8.4E-13 |
| J23-18I-R01M-2.6 | 1.00 | | | | 2.5E+03 | 5.0E+03 | 1.0E-05 | 1.0E-04 | 4.2E+10 | 5.9E+10 | 2.1E-12 | 1.5E-12 |
| J23-5I-R02M-2.6 | 2.00 | | | 5.0E+02 | 1.0E+03 | 4.0E-05 | 4.0E-04 | 3.7E+10 | 5.3E+10 | 4.8E-12 | 3.4E-12 | |
| J23-5I-R03M-2.6 | 3.00 | | | 1.6E+02 | 3.2E+02 | 1.0E-04 | 1.0E-03 | 2.9E+10 | 4.1E+10 | 9.2E-12 | 6.5E-12 | |

* Tighter tolerance for cutoff and peak wavelengths may be available upon customer request. All specifications are for detector operation at 0V bias and 22C unless otherwise specified.

1.7μm Cutoff Thermoelectrically Cooled InGaAs Detectors

| Detector Model Number | Active Size Diameter (mm) | Operating Temp. (°C) | 50% Cutoff Wavelength (μm) | Responsivity @ 1.55μm (A/W) min | Shunt Impedance (Ohm) | | Peak D* (Jones) | | NEP (W/rt-Hz) @ peak wavelength | | Capacitance (pF) @ 0V typ |
|-----------------------|---------------------------|----------------------|----------------------------|---------------------------------|-----------------------|---------|-----------------|---------|---------------------------------|---------|---------------------------|
| | | | | | min | typical | min | typ | max | typ | |
| J22TE 1-66C-R01M | 1 | -20 | 1.63 | 0.9 | 7.5E+08 | 3.0E+09 | 1.8E+13 | 3.7E+13 | 4.8E-15 | 2.4E-15 | 125 |
| J22TE 1-66C-R02M | 2 | -20 | 1.63 | 0.9 | 1.8E+08 | 7.2E+08 | 1.8E+13 | 3.6E+13 | 9.8E-15 | 4.9E-15 | 500 |
| J22TE 1-66C-R03M | 3 | -20 | 1.63 | 0.9 | 6.5E+07 | 2.6E+08 | 1.6E+13 | 3.3E+13 | 1.6E-14 | 8.1E-15 | 1200 |
| J22TE 1-66C-R05M | 5 | -20 | 1.63 | 0.9 | 2.0E+07 | 8.0E+07 | 1.5E+13 | 3.0E+13 | 2.9E-14 | 1.5E-14 | 3200 |
| J22TE 2-66C-R01M | 1 | -40 | 1.62 | 0.9 | 5.0E+09 | 2.0E+10 | 5.0E+13 | 9.9E+13 | 1.8E-15 | 8.9E-16 | 125 |
| J22TE 2-66C-R02M | 2 | -40 | 1.62 | 0.9 | 1.1E+09 | 4.4E+09 | 4.7E+13 | 9.3E+13 | 3.8E-15 | 1.9E-15 | 500 |
| J22TE 2-66C-R03M | 3 | -40 | 1.62 | 0.9 | 4.0E+08 | 1.6E+09 | 4.2E+13 | 8.4E+13 | 6.3E-15 | 3.2E-15 | 1200 |
| J22TE 2-66C-R05M | 5 | -40 | 1.62 | 0.9 | 1.2E+08 | 4.8E+08 | 3.9E+13 | 7.7E+13 | 1.2E-14 | 5.8E-15 | 3200 |

All specifications are for detector operation at 0V bias and 22C unless otherwise specified.

1.9µm Cutoff Thermoelectrically Cooled Extended InGaAs Detectors

| Detector Model Number | Active Size Diameter (mm) | Operating Temp. (°C) | 50% Cutoff Wavelength* (µm) | Peak Responsivity (A/W) min | Shunt Impedance (Ohm) | | Peak D* (cmHz ^{1/2} /W) @ 1KHz | | NEP (W/rt-Hz) @ peak wavelength | | Capacitance (pF) @ 0V typ |
|-----------------------|---------------------------|----------------------|-----------------------------|-----------------------------|-----------------------|---------|---|---------|---------------------------------|---------|---------------------------|
| | | | | | min | typ | min | typ | max | typ | |
| J23TE1-66C-R250U-1.9 | 0.25 | -20 | 1.85+/-0.10 | 1.0 | 2.8E+08 | 5.6E+08 | 3.1E+12 | 4.4E+12 | 7.1E-15 | 5.0E-15 | 75 |
| J23TE1-66C-R500U-1.9 | 0.50 | | | | 1.0E+08 | 2.0E+08 | 3.7E+12 | 5.3E+12 | 1.2E-14 | 8.4E-15 | 250 |
| J23TE1-66C-R01M-1.9 | 1.00 | | | | 3.0E+07 | 6.0E+07 | 4.1E+12 | 5.8E+12 | 2.2E-14 | 1.5E-14 | 1000 |
| J23TE1-66C-R02M-1.9 | 2.00 | | | | 5.5E+06 | 1.1E+07 | 3.5E+12 | 5.0E+12 | 5.0E-14 | 3.6E-14 | 4000 |
| J23TE1-66C-R03M-1.9 | 3.00 | | | | 1.5E+06 | 3.0E+06 | 2.8E+12 | 3.9E+12 | 9.6E-14 | 6.8E-14 | 9000 |
| J23TE2-66C-R250U-1.9 | 0.25 | -40 | 1.83+/-0.10 | 1.0 | 1.4E+09 | 2.8E+09 | 7.3E+12 | 1.0E+13 | 3.0E-15 | 2.1E-15 | 75 |
| J23TE2-66C-R500U-1.9 | 0.50 | | | | 5.2E+08 | 1.0E+09 | 8.9E+12 | 1.3E+13 | 5.0E-15 | 3.5E-15 | 250 |
| J23TE2-66C-R01M-1.9 | 1.00 | | | | 1.6E+08 | 3.2E+08 | 9.9E+12 | 1.4E+13 | 9.0E-15 | 6.3E-15 | 1000 |
| J23TE2-66C-R02M-1.9 | 2.00 | | | | 2.6E+07 | 5.2E+07 | 8.0E+12 | 1.1E+13 | 2.2E-14 | 1.6E-14 | 4000 |
| J23TE2-66C-R03M-1.9 | 3.00 | | | | 7.5E+06 | 1.5E+07 | 6.4E+12 | 9.1E+12 | 4.1E-14 | 2.9E-14 | 9000 |
| J23TE3-66C-R250U-1.9 | 0.25 | -65 | 1.82+/-0.10 | 1.0 | 8.0E+09 | 1.6E+10 | 1.8E+13 | 2.6E+13 | 1.2E-15 | 8.5E-16 | 75 |
| J23TE3-66C-R500U-1.9 | 0.50 | | | | 3.5E+09 | 7.0E+09 | 2.4E+13 | 3.5E+13 | 1.8E-15 | 1.3E-15 | 250 |
| J23TE3-66C-R01M-1.9 | 1.00 | | | | 1.2E+09 | 2.4E+09 | 2.9E+13 | 4.1E+13 | 3.1E-15 | 2.2E-15 | 1000 |
| J23TE3-66C-R02M-1.9 | 2.00 | | | | 1.7E+08 | 3.4E+08 | 2.2E+13 | 3.1E+13 | 8.2E-15 | 5.8E-15 | 4000 |
| J23TE3-66C-R03M-1.9 | 3.00 | | | | 4.0E+07 | 8.0E+07 | 1.6E+13 | 2.2E+13 | 1.7E-14 | 1.2E-14 | 9000 |
| J23TE4-3CN-R250U-1.9 | 0.25 | -85 | 1.81+/-0.10 | 1.0 | 3.2E+10 | 6.4E+10 | 3.9E+13 | 5.5E+13 | 5.7E-16 | 4.0E-16 | 75 |
| J23TE4-3CN-R500U-1.9 | 0.50 | | | | 1.6E+10 | 3.2E+10 | 5.5E+13 | 7.8E+13 | 8.1E-16 | 5.7E-16 | 250 |
| J23TE4-3CN-R01M-1.9 | 1.00 | | | | 6.0E+09 | 1.2E+10 | 6.7E+13 | 9.5E+13 | 1.3E-15 | 9.3E-16 | 1000 |
| J23TE4-3CN-R02M-1.9 | 2.00 | | | | 7.0E+08 | 1.4E+09 | 4.6E+13 | 6.5E+13 | 3.9E-15 | 2.7E-15 | 4000 |
| J23TE4-3CN-R03M-1.9 | 3.00 | | | | 1.5E+08 | 3.0E+08 | 3.2E+13 | 4.5E+13 | 8.3E-15 | 5.9E-15 | 9000 |

*Tighter tolerance for cutoff and peak wavelengths may be available upon customer request. All specifications are for detector operation at 0V bias and 22C unless otherwise specified.

2.2µm Cutoff Thermoelectrically Cooled Extended InGaAs Detectors

| Detector Model Number | Active Size Diameter (mm) | Operating Temp. (°C) | 50% Cutoff Wavelength* (µm) | Peak Responsivity (A/W) min | Shunt Impedance (Ohm) | | Peak D* (cmHz ^{1/2} /W) @ 1KHz | | NEP (W/rt-Hz) @ peak wavelength | | Capacitance (pF) @ 0V typ |
|-----------------------|---------------------------|----------------------|-----------------------------|-----------------------------|-----------------------|---------|---|---------|---------------------------------|---------|---------------------------|
| | | | | | min | typ | min | typ | max | typ | |
| J23TE1-66C-R250U-2.2 | 0.25 | -20 | 2.14+/-0.10 | 1.1 | 1.1E+07 | 2.2E+07 | 6.8E+11 | 9.7E+11 | 3.2E-14 | 2.3E-14 | 75 |
| J23TE1-66C-R500U-2.2 | 0.50 | | | | 4.0E+06 | 8.0E+06 | 8.2E+11 | 1.2E+12 | 5.4E-14 | 3.8E-14 | 250 |
| J23TE1-66C-R01M-2.2 | 1.00 | | | | 1.2E+06 | 2.4E+06 | 9.0E+11 | 1.3E+12 | 9.8E-14 | 6.9E-14 | 1000 |
| J23TE1-66C-R02M-2.2 | 2.00 | | | | 2.2E+05 | 4.4E+05 | 7.7E+11 | 1.1E+12 | 2.3E-13 | 1.6E-13 | 4000 |
| J23TE1-66C-R03M-2.2 | 3.00 | | | | 6.2E+04 | 1.2E+05 | 6.2E+11 | 8.7E+11 | 4.3E-13 | 3.1E-13 | 9000 |
| J23TE2-66C-R250U-2.2 | 0.25 | -40 | 2.11+/-0.10 | 1.1 | 4.8E+07 | 9.6E+07 | 1.5E+12 | 2.1E+12 | 1.5E-14 | 1.1E-14 | 75 |
| J23TE2-66C-R500U-2.2 | 0.50 | | | | 1.8E+07 | 3.6E+07 | 1.8E+12 | 2.6E+12 | 2.4E-14 | 1.7E-14 | 250 |
| J23TE2-66C-R01M-2.2 | 1.00 | | | | 5.5E+06 | 1.1E+07 | 2.0E+12 | 2.9E+12 | 4.4E-14 | 3.1E-14 | 1000 |
| J23TE2-66C-R02M-2.2 | 2.00 | | | | 9.5E+05 | 1.9E+06 | 1.7E+12 | 2.4E+12 | 1.1E-13 | 7.5E-14 | 4000 |
| J23TE2-66C-R03M-2.2 | 3.00 | | | | 2.6E+05 | 5.2E+05 | 1.3E+12 | 1.9E+12 | 2.0E-13 | 1.4E-13 | 9000 |
| J23TE3-66C-R250U-2.2 | 0.25 | -65 | 2.09+/-0.10 | 1.1 | 2.6E+08 | 5.2E+08 | 3.7E+12 | 5.2E+12 | 6.0E-15 | 4.3E-15 | 75 |
| J23TE3-66C-R500U-2.2 | 0.50 | | | | 1.1E+08 | 2.2E+08 | 4.8E+12 | 6.7E+12 | 9.3E-15 | 6.6E-15 | 250 |
| J23TE3-66C-R01M-2.2 | 1.00 | | | | 3.5E+07 | 7.0E+07 | 5.4E+12 | 7.6E+12 | 1.6E-14 | 1.4E-14 | 1000 |
| J23TE3-66C-R02M-2.2 | 2.00 | | | | 5.5E+06 | 1.1E+07 | 4.3E+12 | 6.0E+12 | 4.2E-14 | 2.9E-14 | 4000 |
| J23TE3-66C-R03M-2.2 | 3.00 | | | | 1.3E+06 | 2.6E+06 | 3.1E+12 | 4.4E+12 | 8.5E-14 | 6.0E-14 | 9000 |
| J23TE4-3CN-R250U-2.2 | 0.25 | -85 | 2.07+/-0.10 | 1.1 | 9.5E+08 | 1.9E+09 | 7.4E+12 | 1.0E+13 | 3.0E-15 | 2.1E-15 | 75 |
| J23TE4-3CN-R500U-2.2 | 0.50 | | | | 4.5E+08 | 9.0E+08 | 1.0E+13 | 1.4E+13 | 4.4E-15 | 3.1E-15 | 250 |
| J23TE4-3CN-R01M-2.2 | 1.00 | | | | 1.5E+08 | 3.0E+08 | 1.2E+13 | 1.7E+13 | 7.6E-14 | 5.3E-15 | 1000 |
| J23TE4-3CN-R02M-2.2 | 2.00 | | | | 2.1E+07 | 4.2E+07 | 8.8E+12 | 1.2E+13 | 2.0E-14 | 1.4E-14 | 4000 |
| J23TE4-3CN-R03M-2.2 | 3.00 | | | | 4.5E+06 | 9.0E+06 | 6.1E+12 | 8.6E+12 | 4.4E-14 | 3.1E-14 | 9000 |

*Tighter tolerance for cutoff and peak wavelengths may be available upon customer request. All specifications are for detector operation at 0V bias and 22C unless otherwise specified.

2.4µm Cutoff Thermoelectrically Cooled Extended InGaAs Detectors

| Detector Model Number | Active Size Diameter (mm) | Operating Temp. (°C) | 50% Cutoff Wavelength* (µm) | Peak Responsivity (A/W) min | Shunt Impedance (Ohm) | | Peak D* (cmHz ^{1/2} /W) @ 1KHz | | NEP (W/rt-Hz) @ peak wavelength | | Capacitance (pF) @ 0V typ |
|-----------------------|---------------------------|----------------------|-----------------------------|-----------------------------|-----------------------|---------|---|---------|---------------------------------|---------|---------------------------|
| | | | | | min | typ | min | typ | max | typ | |
| J23TE1-66C-R250U-2.4 | 0.25 | -20 | 2.34+/-0.10 | 1.15 | 2.7E+06 | 5.4E+06 | 3.5E+11 | 5.0E+11 | 6.3E-14 | 4.4E-14 | 75 |
| J23TE1-66C-R500U-2.4 | 0.50 | | | | 1.0E+06 | 2.0E+06 | 4.3E+11 | 6.1E+11 | 1.0E-13 | 7.3E-14 | 250 |
| J23TE1-66C-R01M-2.4 | 1.00 | | | | 3.0E+05 | 6.0E+05 | 4.7E+11 | 6.7E+11 | 1.9E-13 | 1.3E-13 | 1000 |
| J23TE1-66C-R02M-2.4 | 2.00 | | | | 5.0E+04 | 1.0E+05 | 3.9E+11 | 5.5E+11 | 4.6E-13 | 3.2E-13 | 4000 |
| J23TE1-66C-R03M-2.4 | 3.00 | | | | 1.5E+04 | 3.0E+04 | 3.2E+11 | 4.5E+11 | 8.4E-13 | 5.9E-13 | 9000 |
| J23TE2-66C-R250U-2.4 | 0.25 | -40 | 2.31+/-0.10 | 1.15 | 1.2E+07 | 2.4E+07 | 7.8E+11 | 1.1E+12 | 2.8E-14 | 2.0E-14 | 75 |
| J23TE2-66C-R500U-2.4 | 0.50 | | | | 4.5E+06 | 9.0E+06 | 9.5E+11 | 1.3E+12 | 4.6E-14 | 3.3E-14 | 250 |
| J23TE2-66C-R01M-2.4 | 1.00 | | | | 1.5E+06 | 3.0E+06 | 1.1E+12 | 1.6E+12 | 8.1E-14 | 5.7E-14 | 1000 |
| J23TE2-66C-R02M-2.4 | 2.00 | | | | 2.3E+05 | 4.6E+05 | 8.6E+11 | 1.2E+12 | 2.1E-13 | 1.5E-13 | 4000 |
| J23TE2-66C-R03M-2.4 | 3.00 | | | | 6.3E+04 | 1.3E+05 | 6.8E+11 | 9.6E+11 | 3.9E-13 | 2.8E-13 | 9000 |
| J23TE3-66C-R250U-2.4 | 0.25 | -65 | 2.29+/-0.10 | 1.15 | 4.8E+07 | 9.6E+07 | 1.6E+12 | 2.3E+12 | 1.3E-14 | 9.5E-15 | 75 |
| J23TE3-66C-R500U-2.4 | 0.50 | | | | 2.2E+07 | 4.4E+07 | 2.2E+12 | 3.2E+12 | 2.0E-14 | 1.4E-14 | 250 |
| J23TE3-66C-R01M-2.4 | 1.00 | | | | 7.5E+06 | 1.5E+07 | 2.6E+12 | 3.7E+12 | 3.4E-14 | 2.4E-14 | 1000 |
| J23TE3-66C-R02M-2.4 | 2.00 | | | | 1.0E+06 | 2.0E+06 | 1.9E+12 | 2.7E+12 | 9.3E-14 | 6.6E-14 | 4000 |
| J23TE3-66C-R03M-2.4 | 3.00 | | | | 2.5E+05 | 5.0E+05 | 1.4E+12 | 2.0E+12 | 1.9E-13 | 1.3E-13 | 9000 |
| J23TE4-3CN-R250U-2.4 | 0.25 | -85 | 2.27+/-0.10 | 1.15 | 1.5E+08 | 3.0E+08 | 3.1E+12 | 4.3E+12 | 7.2E-15 | 5.1E-15 | 75 |
| J23TE4-3CN-R500U-2.4 | 0.50 | | | | 6.6E+07 | 1.3E+08 | 4.1E+12 | 5.7E+12 | 1.1E-14 | 7.7E-15 | 250 |
| J23TE4-3CN-R01M-2.4 | 1.00 | | | | 2.5E+07 | 5.0E+07 | 5.0E+12 | 7.1E+12 | 1.8E-14 | 1.3E-14 | 1000 |
| J23TE4-3CN-R02M-2.4 | 2.00 | | | | 3.1E+06 | 6.2E+06 | 3.5E+12 | 5.0E+12 | 5.0E-14 | 3.6E-14 | 4000 |
| J23TE4-3CN-R03M-2.4 | 3.00 | | | | 8.0E+05 | 1.6E+06 | 2.7E+12 | 3.8E+12 | 9.9E-14 | 7.0E-14 | 9000 |

* Tighter tolerance for cutoff and peak wavelengths may be available upon customer request. All specifications are for detector operation at 0V bias and 22C unless otherwise specified.

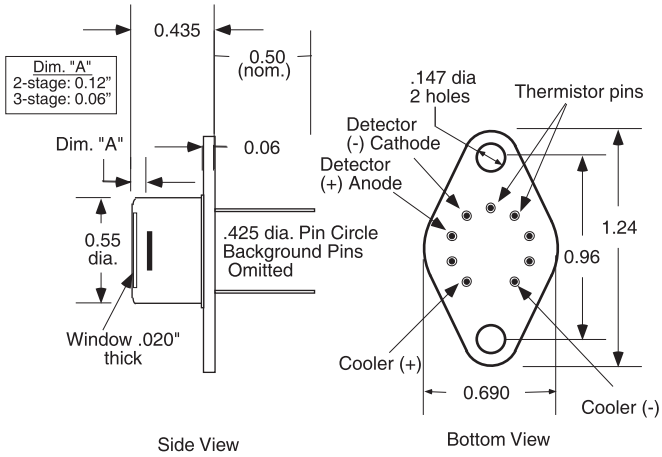
2.6µm Cutoff Thermoelectrically Cooled Extended InGaAs Detectors

| Detector Model Number | Active Size Diameter (mm) | Operating Temp. (°C) | 50% Cutoff Wavelength* (µm) | Peak Responsivity (A/W) min | Shunt Impedance (Ohm) | | Peak D* (cmHz ^{1/2} /W) @ 1KHz | | NEP (W/rt-Hz) @ peak wavelength | | Capacitance (pF) @ 0V typ |
|-----------------------|---------------------------|----------------------|-----------------------------|-----------------------------|-----------------------|---------|---|---------|---------------------------------|---------|---------------------------|
| | | | | | min | typ | min | typ | max | typ | |
| J23TE1-66C-R250U-2.6 | 0.25 | -20 | 2.52+/-0.10 | 1.2 | 7.0E+05 | 1.4E+06 | 1.9E+11 | 2.7E+11 | 1.2E-13 | 8.3E-14 | 75 |
| J23TE1-66C-R500U-2.6 | 0.50 | | | | 2.6E+05 | 5.2E+05 | 2.3E+11 | 3.2E+11 | 1.9E-13 | 1.4E-13 | 250 |
| J23TE1-66C-R01M-2.6 | 1.00 | | | | 8.0E+04 | 1.6E+05 | 2.5E+11 | 3.6E+11 | 3.5E-13 | 2.5E-13 | 1000 |
| J23TE1-66C-R02M-2.6 | 2.00 | | | | 1.3E+04 | 2.6E+04 | 2.1E+11 | 2.9E+11 | 8.6E-13 | 6.1E-13 | 4000 |
| J23TE1-66C-R03M-2.6 | 3.00 | | | | 3.5E+03 | 7.0E+03 | 1.6E+11 | 2.3E+11 | 1.7E-12 | 1.2E-12 | 9000 |
| J23TE2-66C-R250U-2.6 | 0.25 | -40 | 2.48+/-0.10 | 1.2 | 3.0E+06 | 6.0E+06 | 4.1E+11 | 5.7E+11 | 5.5E-14 | 3.9E-14 | 75 |
| J23TE2-66C-R500U-2.6 | 0.50 | | | | 1.3E+06 | 2.6E+06 | 5.3E+11 | 7.6E+11 | 8.3E-14 | 5.9E-14 | 250 |
| J23TE2-66C-R01M-2.6 | 1.00 | | | | 4.0E+05 | 8.0E+05 | 5.9E+11 | 8.4E+11 | 1.5E-13 | 1.1E-13 | 1000 |
| J23TE2-66C-R02M-2.6 | 2.00 | | | | 6.0E+04 | 1.2E+05 | 4.6E+11 | 6.5E+11 | 3.9E-13 | 2.7E-13 | 4000 |
| J23TE2-66C-R03M-2.6 | 3.00 | | | | 1.5E+04 | 3.0E+04 | 3.4E+11 | 4.9E+11 | 7.7E-13 | 5.5E-13 | 9000 |
| J23TE3-66C-R250U-2.6 | 0.25 | -65 | 2.45+/-0.10 | 1.2 | 1.4E+07 | 2.8E+07 | 9.3E+11 | 1.3E+12 | 2.4E-14 | 1.7E-14 | 75 |
| J23TE3-66C-R500U-2.6 | 0.50 | | | | 6.0E+06 | 1.2E+07 | 1.2E+12 | 1.7E+12 | 3.6E-14 | 2.6E-14 | 250 |
| J23TE3-66C-R01M-2.6 | 1.00 | | | | 2.0E+06 | 4.0E+06 | 1.4E+12 | 2.0E+12 | 6.3E-14 | 4.5E-14 | 1000 |
| J23TE3-66C-R02M-2.6 | 2.00 | | | | 2.9E+05 | 5.8E+05 | 1.1E+12 | 1.5E+12 | 1.7E-13 | 1.2E-13 | 4000 |
| J23TE3-66C-R03M-2.6 | 3.00 | | | | 7.0E+04 | 1.4E+05 | 7.9E+11 | 1.1E+12 | 3.4E-13 | 2.4E-13 | 9000 |
| J23TE4-3CN-R250U-2.6 | 0.25 | -85 | 2.43+/-0.10 | 1.2 | 4.0E+07 | 8.0E+07 | 1.7E+12 | 2.3E+12 | 1.3E-14 | 9.5E-15 | 75 |
| J23TE4-3CN-R500U-2.6 | 0.50 | | | | 1.8E+07 | 3.6E+07 | 2.2E+12 | 3.1E+12 | 2.0E-14 | 1.4E-14 | 250 |
| J23TE4-3CN-R01M-2.6 | 1.00 | | | | 6.0E+06 | 1.2E+07 | 2.6E+12 | 3.6E+12 | 3.5E-14 | 2.5E-14 | 1000 |
| J23TE4-3CN-R02M-2.6 | 2.00 | | | | 8.5E+05 | 1.7E+06 | 1.9E+12 | 2.7E+12 | 9.2E-14 | 6.5E-14 | 4000 |
| J23TE4-3CN-R03M-2.6 | 3.00 | | | | 2.0E+05 | 4.0E+05 | 1.4E+12 | 2.0E+12 | 1.9E-13 | 1.3E-13 | 9000 |

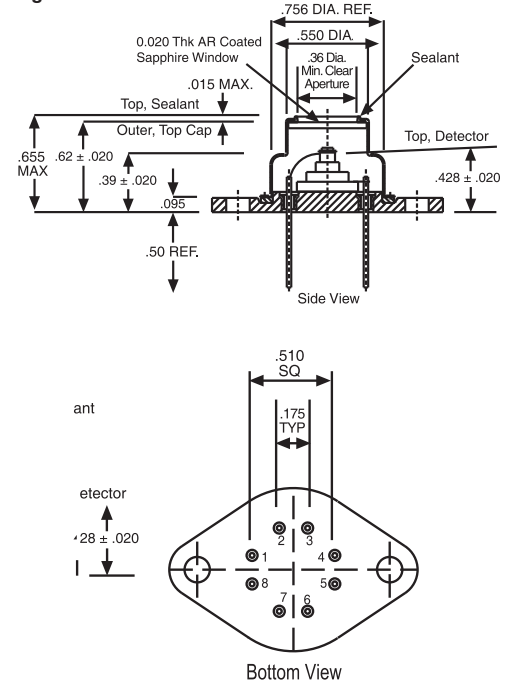
* Tighter tolerance for cutoff and peak wavelengths may be available upon customer request. All specifications are for detector operation at 0V bias and 22C unless otherwise specified.

Standard Packages

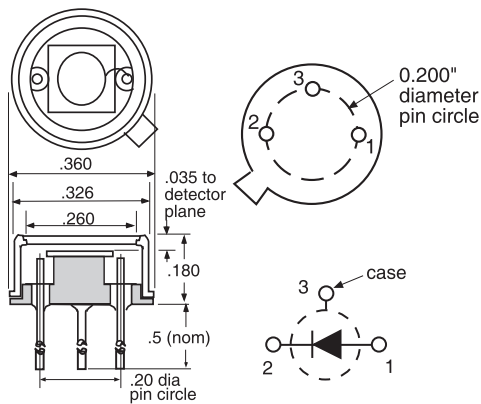
66C Package: AR coated sapphire window



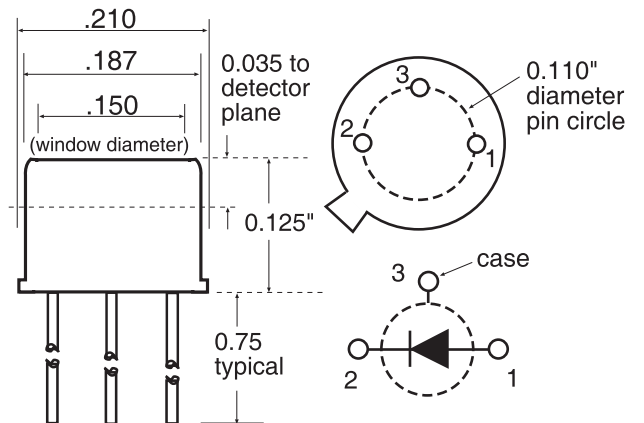
3CN Package



5I Package

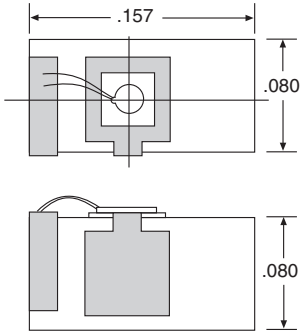


18I Package

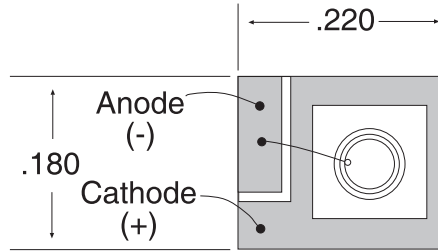


Optional Packages

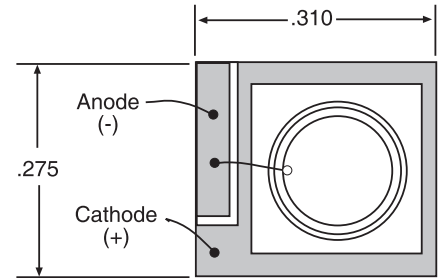
C02 Package



C11 Package

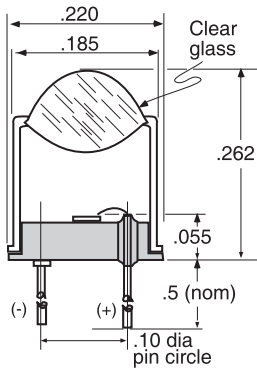


C12 Package



Note: .010 thick ceramic substrate used for both C11 and C12.

18D Package



LD, LD2 Packages

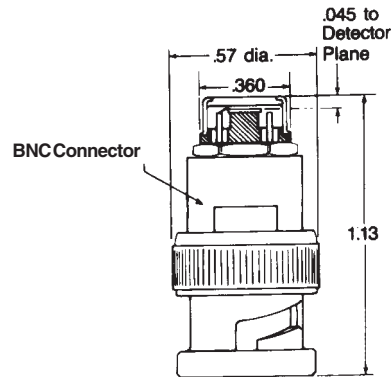
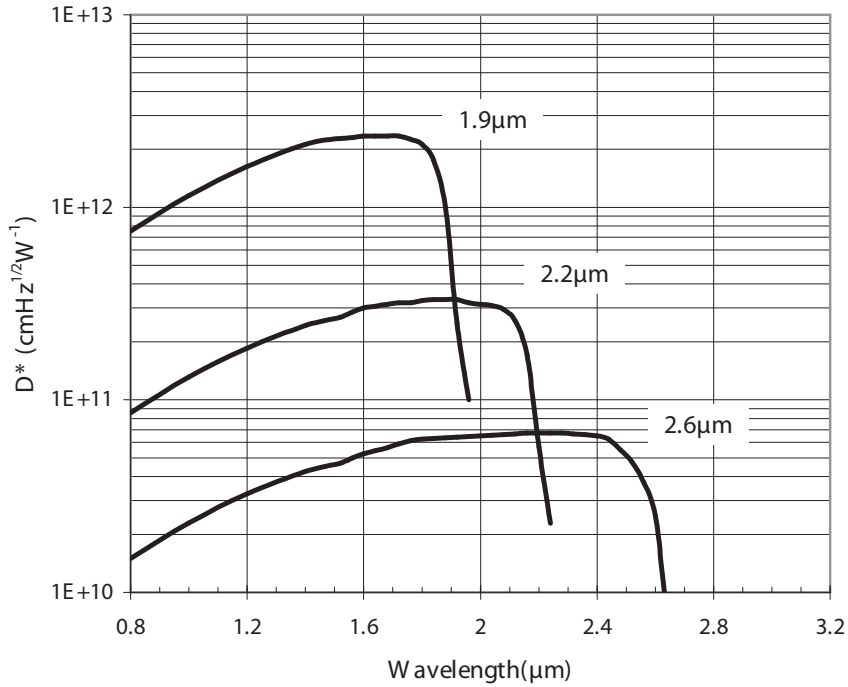
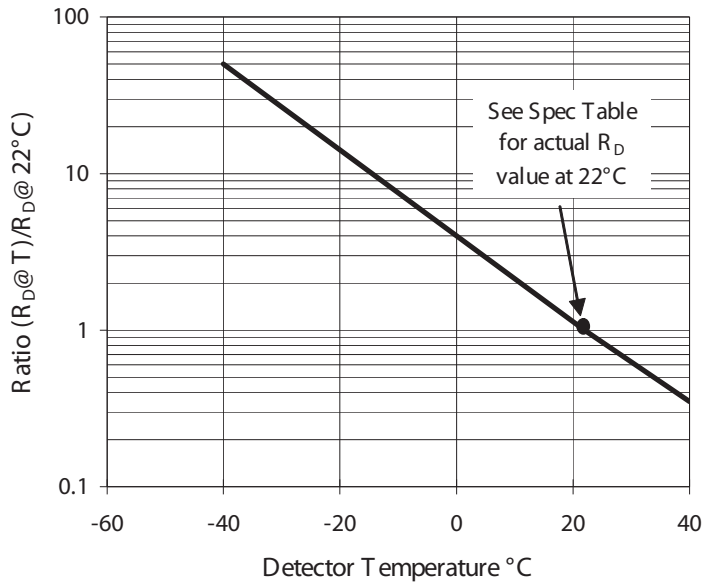


Figure 2
 Typical D* vs Wavelength



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

Figure 3
 Typical Change in Shunt Resistance vs Temperature



Description

Standard packaging and element configurations result in low cost and quick delivery for Teledyne Judson's high-quality photodiode arrays.

The 16 and 32 element InGaAs arrays respond to infrared radiation from 700nm to 1.8 μm . The photodiode arrays come mounted in a dual inline 40 pin package.

Teledyne Judson's NIR arrays have a parallel output format with common substrate and one pinout for each element. This format allows for independent readings from each channel.

A separate transimpedance op-amp circuit is recommended for each channel. The Teledyne Judson Model PA-7:16C and PA- 7:32C preamps are convenient multichannel modules with receptacles for the array package. Transimpedance gain is specified by the user.

Applications

- Clinical Analyzers
- Near-IR Spectroscopy for Analysis of:
 - Protein
 - Blood Samples
 - Agricultural Products
- Fiber Optics:
 - Far-Field Laser Diode Pattern Analysis
 - Infrared Fiber Testing
- Currency Validation



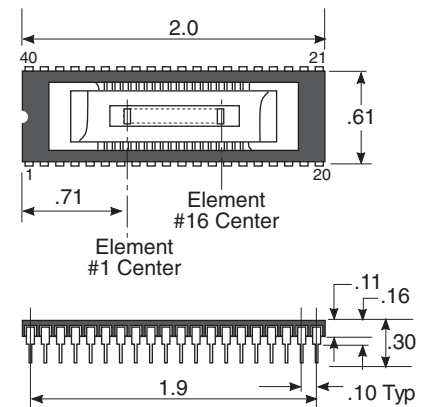
Package

These arrays are mounted in the Teledyne Judson "40P" package, a 40 pin, dual-inline package with glass window (Fig. 9-1).

Pins 1 and 21 are connected to the common substrate. Elements of the 16-element array are connected to pins 23-38. The 32-element array is mounted with odd-numbered elements connected to pins 3-18 and even-numbered elements connected to pins 23-38.

The gap between elements is 0.01mm.

Figure 9-1



Typical Specifications Near IR Series Arrays

| Detector Model Number | Active Size Diameter (mm) | Operating Temp. ($^{\circ}\text{C}$) | Operating Temp (K) | Peak Responsivity (A/W) min | Shunt impedance (Ohm) | | Dark Current (A) @ Vr (max) | | Peak D* (Jones) | | NEP (W/rt-Hz) @ peak wavelength | | Max Reserve Bias (V) Typ | Capacitance (pF) @ 0V Typ |
|-----------------------|---------------------------|--|--------------------|-----------------------------|-----------------------|----------|-----------------------------|-------|-----------------|-----------|---------------------------------|----------|--------------------------|---------------------------|
| | | | | | min | typical | typ | max | min | typ | max | typ | | |
| j22p-40p-500Ux1M:XXE | 0.5x1 | 22 | 295 | 0.9 | 2.00E+07 | 8.00E+07 | 5E-10 | 5E-09 | 2.23E+12 | 4.461E+12 | 3.17E-14 | 1.59E-14 | 3 | 70 |

XX = Specs apply for both 16 and 32 element arrays

In addition to our Extended InGaAs product line, Teledyne Judson Technologies offers a wide range of high performance standard, custom and space qualified detector products and accessories.

- Germanium detectors and arrays
- Indium Arsenide detectors and arrays
- Indium Antimonide detectors and arrays
- Mercury Cadmium Telluride detectors and arrays
- Photovoltaic Mercury Cadmium Telluride detectors and arrays
- Lead Selenide detectors and arrays
- Lead Sulfide detectors and arrays
- Dewars, backfill and vacuum packages
- Thermoelectric, Joule Thomson and closed cycle linear and rotary coolers
- Preamplifiers
- Temperature controllers and readout electronics

Please contact us for more information on these products at 215-368-6900 or on the web at www.teledynejudson.com.



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