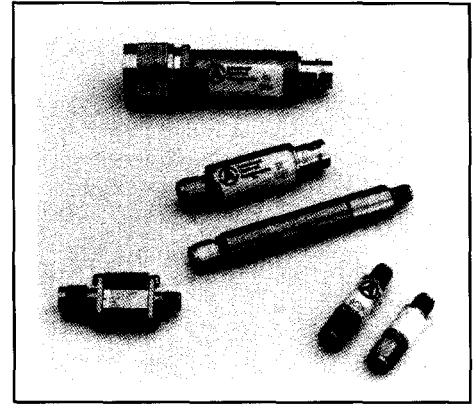


## COAXIAL TUNNEL DIODE DETECTORS

Superior performance and high reliability are designed into these detectors. They offer extremely stable output voltage over wide temperature excursions (typically  $\pm 0.15\text{dB}$  from  $-65^\circ\text{C}$  to  $+100^\circ\text{C}$ ). No bias is required for operation. Designs are available, in selected frequency bands, from 100 MHz (or lower) to 18 GHz. Typical output impedance is in the range of 95 to 125 Ohms. This allows for fast pulsed video response and thus used in wide bandwidth requirements. Video bandwidths may be modified by selection of the RF bypass capacitor and load value. Square law typically ranges from TSS up to  $-17\text{ dBm}$ . The upper limit can be raised as high as  $-13\text{dBm}$  with selected load values. The output polarity is usually negative but can be made positive if requested.



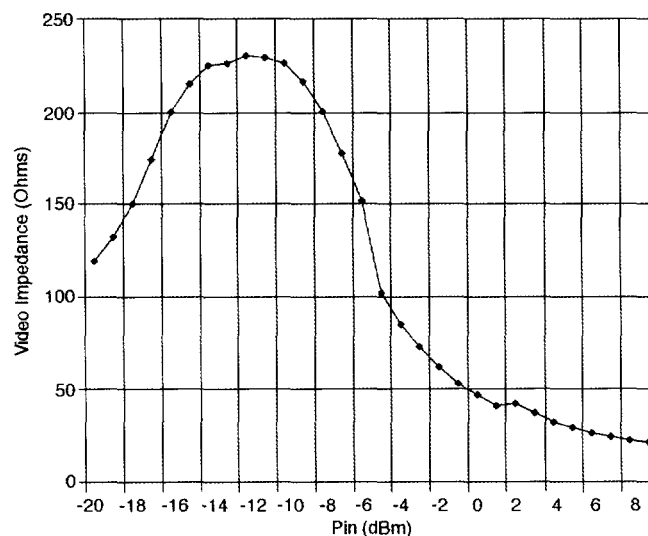
### FEATURES

- Exceptional Temperature Stability
- Low Video Resistance (110 Ohms Typical)
- Flat Output vs. Frequency Over Broadband Performance
- Very Fast Pulse Response
- No Bias Required
- Flexible Design Options

### APPLICATIONS

- Transmitter Monitoring
- Missile Guidance Systems
- Input to Low-noise Video Amplifiers
- Matched Units are Available for Multi-channel Receivers, Amplitude Comparator Systems and Discriminators
- Broadband or Narrowband ECM Receivers
- Power and Signal Monitors
- Doppler Radar and Beacon Receivers

### COAXIAL TUNNEL DIODE DETECTOR PERFORMANCE



TUNNEL DETECTOR VIDEO IMPEDANCE VS INPUT POWER

## COAXIAL TUNNEL DIODE DETECTOR ELECTRICAL SPECIFICATIONS

| Model Number | Frequency Range (GHz) | Minimum Sensitivity K (mV/mW) | Flatness vs Frequency (±dB) | TSS (dBm) | VSWR (max) | Nominal Video Capacitance (pF) | Standard Case Styles | Optional Case Styles |
|--------------|-----------------------|-------------------------------|-----------------------------|-----------|------------|--------------------------------|----------------------|----------------------|
| ACTP-1523NC3 | 0.1-0.5               | 1000                          | 0.15                        | -51       | 2.4:1      | 270                            | C3                   | C8,C64,C15           |
| ACTP-1572NC3 | 0.1-1.0               | 950                           | 0.28                        | -51       | 1.9:1      | 270                            | C3                   | C8,C64,C15           |
| ACTP-1524NC2 | 0.5-1.0               | 1000                          | 0.15                        | -51       | 2.3:1      | 39                             | C2                   | C15,C3,C8            |
| ACTP-1629NC3 | 0.1-2.0               | 1100                          | 0.35                        | -51       | 2.3:1      | 75                             | C3                   | C8,C64,C13,C15       |
| ACTP-1501NC2 | 0.5-2.0               | 900                           | 0.3                         | -51       | 2.2:1      | 39                             | C2                   | C3, C15              |
| ACTP-1525NC2 | 1.0-2.0               | 1000                          | 0.15                        | -51       | 2.1:1      | 39                             | C2                   | C3, C15              |
| ACTP-1573NC3 | 0.1-4.0               | 900                           | 0.25                        | -51       | 2.3:1      | 75                             | C3                   | C15,C64,C8           |
| ACTP-1502NC2 | 2.0-4.0               | 900                           | 0.15                        | -51       | 2.3:1      | 39                             | C2                   | C3, C15              |
| ACTP-1514NC2 | 2.0-6.0               | 900                           | 0.3                         | -51       | 2.3:1      | 39                             | C2                   | C3, C15              |
| ACTP-1663NC3 | 1.0-12.0              | 800                           | 0.9                         | -51       | 2.2:1      | 20                             | C3                   | C8, C15C3            |
| ACTP-1555NC2 | 2.0-8.0               | 800                           | 0.5                         | -51       | 2.5:1      | 39                             | C2                   | C3,C15,C8            |
| ACTP-1503NC1 | 4.0-8.0               | 800                           | 0.35                        | -51       | 2.5:1      | 9.1                            | C1                   | C5, C3               |
| ACTP-1648NC8 | 4.0-8.0               | 900                           | 0.4                         | -51       | 2.0:1      | 12                             | C8                   | C15                  |
| ACTP-1583NC3 | 6.0-12.0              | 850                           | 0.4                         | -51       | 2.5:1      | 12                             | C3                   | C15,C8               |
| ACTP-1504NC1 | 8.0-12.0              | 750                           | 0.4                         | -51       | 2.5:1      | 9.1                            | C1                   | C3                   |
| ACTP-1528NC3 | 2.0-18.0              | 750                           | 1.0                         | -50       | 2.8:1      | 12                             | C3                   | C32                  |
| ACTP-1584NC3 | 0.5-18.0              | 750                           | 1.30                        | -50       | 2.6:1      | 20                             | C3                   | C15                  |
| ACTP-1625NC3 | 1.0-18.0              | 750                           | 1.1                         | -50       | 2.6:1      | 20                             | C3                   | C15                  |
| ACTP-1563NC3 | 6.0-18.0              | 750                           | 0.9                         | -51       | 2.7:1      | 20                             | C3                   | C15                  |
| ACTP-1662NC3 | 7.0-18.0              | 900                           | 0.9                         | -51       | 3.0:1      | 20                             | C3                   | *                    |
| ACTP-1506NC1 | 8.0-18.0              | 700                           | 0.7                         | -50       | 2.3:1      | 12                             | C1                   | *                    |
| ACTP-1505NC1 | 12.0-18.0             | 750                           | 0.3                         | -51       | 2.1:1      | 9                              | C1                   | *                    |

### NOTES:

1. The video capacitance is used for r.f. bypass. This value can be changed if required for video response time or other considerations. Contact the factory if value other than those shown are needed.
2. VSWR is measured at or below -20dBm input power level.
3. Tangential signal sensitivity is a measure of low level sensitivity with respect to noise. It is measured with a video amplifier with a 2MHz bandwidth and a 3dB noise figure.
4. The standard output polarity is negative. If positive output is required, substitute (P) for (N) in the part number.
5. Diode values can be changed to alter the level of sensitivity. As sensitivity is increased, the VSWR will get worse. VSWR will improve as sensitivity is lowered. Flatness and TSS will also be influenced by these changes. If your applications require something special please contact the factory.

### GENERAL ENVIRONMENTAL RATINGS

- Operating and Storage Temperature Range: -65°C to +100°C
- Shock: 50 g @ 11msec
- Vibration: 20 g, 10 - 2000 Hz
- Input Power Rating: +14dBm  
(this allows for a 3dB margin from possible burnout at +17dBm)

Screening recommendations available upon request