



SILICON POINT CONTACT DETECTOR DIODES

ASI Point Contact Detector Diodes are designed for applications from UHF through 16 GHz. They feature high burnout resistance, broadband operation and high tangential signal sensitivity.

These detector diodes are categorized by TSS (Tangential Signal Sensitivity) for detector applications at the designated frequencies from UHF to 16 GHz.

Figure of Merit is expressed by the relationship:

$$M = \gamma(R_v + R_a)^{-1/2}$$

γ = Voltage sensitivity which is constant between the open circuit voltage and input power level.

R_v = Video Resistance

R_a = Arbitrary resistance to represent amplifier noise (1200 OHMS)

These diodes are available in DO-7, DO-22, DO-23, and DO-37 package styles which make them suitable for use in Coaxial, Waveguide and Stripline applications. The Tangential Signal Sensitivity (TSS) is the amount of signal power below the usually reference level of 1 Milliwatt that is necessary to produce an output pulse whose amplitude is enough to raise the noise fluctuation by an amount equivalent to the average noise level. TSS is approximately 4dB above the MDS (minimum detectable signal-the microwave power requirement to produce an output power equal to the noise power).

$$TSS = MDS - 4dB$$

The minimum detectable signal is expressed by the relationship:

$$MDS = (4kTB)^{1/2} (M)^{-1}$$

MDS = Minimum Detectable Signal

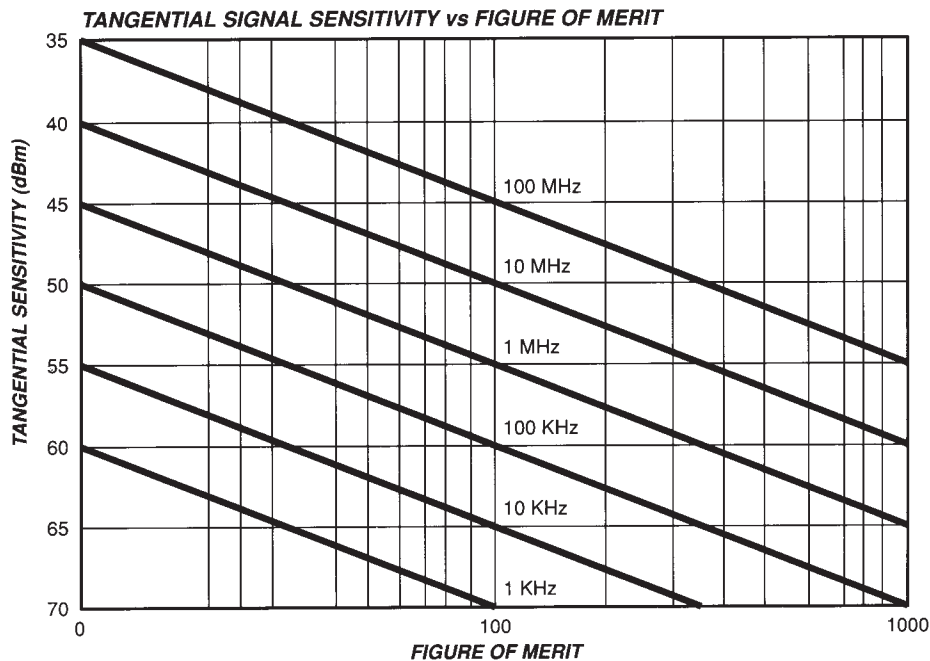
K = Boltzmann's Constant

T = Absolute Temperature

B = Video Bandwidth

M = Figure of Merit at Zero Bias

All of the Point Contact Detector Diodes meet or exceed the Military Environmental Specifications of MIL-S-19500, MIL-STD-202 and methods from MIL-STD-750 that specify mechanical, electrical, thermal and environmental tests.



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POINT CONTACT DETECTOR DIODES

UHF, S, X, K_U -BAND

| FREQUENCY BAND | TYPE NUMBER | | | ELECTRICAL CHARACTERISTICS | | | | | TEST CONDITIONS | | PACKAGE OUTLINE |
|----------------|-------------|----------|------------|--|--------------|------------------------------------|------------------|---------------|-----------------|-------|-----------------|
| | FORWARD | REVERSE | REVERSIBLE | TSS -dBm MIN. | FM MIN. | Z _i ² K OHMS | | FREQUENCY MHz | BASIC TYPE | | |
| UHF | | | | RECTIFICATION EFFICIENCY 65% MIN. | | | | | | | |
| UHF | | | | RECT. EFF = 65%; V _B = 5.0 V MIN. | | | | | | | |
| UHF | 1N830 | 1N830 | 1N830A | 49 | 85 | 4.5 | 22.0 | 3000 | 1N830 | DO-7 | |
| UHF | 1N32 | 1N32R | 1N32A | 49 | 85 | 4.0 | 22.0 | 3000 | 1N32 | DO-22 | |
| S | 1N32A | 1N32AR | 1N32AR | 49 | 200 | 4.0 | 17.0 | 3000 | 1N32A | DO-22 | |
| S | 1N761 | 1N76R1 | 1N76A1 | (SEE NOTE 2) | (SEE NOTE 2) | (SEE NOTE 2) | (SEE NOTE 2) | 9375 | 1N76 | DO-37 | |
| S | 1N76A1 | 1N76AR1 | 1N76A1 | (SEE NOTE 2) | (SEE NOTE 2) | (SEE NOTE 2) | (SEE NOTE 2) | 9375 | 1N76A | DO-37 | |
| X | | | | 40 | 15 | 4.5 | 18.0 | 9375 | 1N833 | DO-7 | |
| X | | | | 45 | 30 | 4.5 | 18.0 | 9375 | 1N833A | DO-7 | |
| X | 1N311 | 1N31R1 | 1N31A1 | 47 ⁴ | 55 | 6.0 | 23.0 | 9375 | 1N31 | DO-37 | |
| X | 1N31A1 | 1N31AR1 | 1N31A1 | 200 | 200 | 3.0 | 17.0 | 9375 | 1N31A | DO-37 | |
| X | 1N1611 | 1N1611R | 1N1611A | 51 ⁴ | 130 | 1.7 ⁴ | 3.1 ⁴ | 9000 | 1N1611 | DO-22 | |
| X | 1N1611A | 1N1611AR | 1N1611A | 53 ⁴ | 220 | 1.7 ⁴ | 3.1 ⁴ | 9000 | 1N1611A | DO-22 | |
| X | 1N1611B | 1N1611BR | 1N1611B | 53 ⁴ | 220 | 1.7 ⁴ | 3.1 ⁴ | 9000 | 1N1611B | DO-22 | |
| X | 1N3143 | 1N3143R | 1N3143R | POWER MONITOR | | | | 9375 | 1N3143 | DO-22 | |
| X | | | 1N3778 | POWER MONITOR | | | | 9375 | 1N3778 | DO-23 | |
| X-K | 1N29261 | | | 40 | 15 | - | 18.0 | 16000 | 1N2926 | DO-37 | |
| X-K | 1N2926A1 | | | 45 | 30 | - | 18.0 | 16000 | 1N2926A | DO-37 | |

NOTES:

- Maximum operation temperature of 70°C. All others 150°C.
- Voltage output test.
- Bandwidth = 10 MHz
- With 50µA bias