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 +/-0.15dB from -65°C to +100°C at 1GHz and approx. +/-0.3dB at 18GHz. No bias is required for operation. Designs are available, in selected frequency bands, from 100MHz (or lower) to 18GHz. Typical output impedance is in the range of 95Ω to 125Ω. This allows for fast pulsed video response and use 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 -17dBm. The upper limit can be raised as high as -13dBm with selected load values. The output polarity is usually negative but can be made positive if requested.

Features:

- Exceptional Temperature Stability
- Low Video Resistance (112Ω 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 Amplifiers
- Broadband Or Narrowband ECM Receivers
- Power and Signal Monitors
- Doppler Radar and Beacon Receivers
- Matched units available for Multi-channel Receivers, Amplitude Comparator Systems and Discriminators

Frequency Range (GHz)	Part (1) Number	Minimum (2) Sensitivity K (mV/mW)	Flatness vs Frequency (+/-dB)	Typical (3) TSS (dBm)	Typical (4) VSWR	Nominal (5) Video Capacitance (pF)	Standard Case Styles	Optional Case Styles
0.1 - 0.5	**ACTP1523N**	800	0.3	-51	2.5:1	270	C3	C8,C15,C62
0.1 - 1	**ACTP1572N**	900	0.4	-51	2.5:1	270	C3	C8,C15,C62
0.5 - 1	**ACTP1524N**	800	0.2	-51	2.5:1	39	C2	C3,C8,C15
0.1 - 2	**ACTP1629N**	900	0.35	-51	2.3:1	75	C3	C8,C15,C62
0.5 - 2	**ACTP1501N**	800	0.35	-51	2.3:1	39	C2	C3,C15
1 - 2	**ACTP1525N**	800	0.25	-51	2.5:1	20	C2	C3,C15
0.1 - 4	**ACTP1573N**	800	0.3	-51	2.3:1	75	C3	C8,C15,C62
2 - 4	**ACTP1502N**	800	0.2	-51	2.3:1	20	C2	C3,C15
2 - 6	**ACTP1514N**	800	0.5	-51	2.3:1	20	C32	C3,C5,C15
1 - 12	**ACTP1663N**	700	0.85	-50	2.5:1	20	C3	C8,C15,C62
2 - 8	**ACTP1555N**	750	0.5	-51	2.5:1	20	C2	C3,C8,C15
4 - 8	**ACTP1503N**	750	0.4	-51	2.5:1	9	C1	C3,C32
4 - 8	**ACTP1648N**	650	0.4	-50	2.0:1	12	C8	C15
6 - 12	**ACTP1583N**	750	0.4	-50	2.5:1	12	C3	C8,C15
8 - 12	**ACTP1504N**	700	0.4	-50	2.4:1	9	C1	C3
2 - 18	**ACTP1528N**	650	1.0	-50	2.8:1	12	C3	C32
0.5 - 18	**ACTP1584N**	600	1.3	-50	3.0:1	20	C32	C3,C15
1 - 18	**ACTP1625N**	650	1.1	-50	2.7:1	20	C32	C3,C15
6 - 18	**ACTP1563N**	600	0.9	-50	2.8:1	12	C32	C3,C15
7 - 18	**ACTP1662N**	650	1.0	-50	2.7:1	12	C32	C3
8 - 18	**ACTP1506N**	650	0.7	-50	2.3:1	12	C1	C3
12 - 18	**ACTP1505N**	700	0.4	-51	2.1:1	9	C1	C3

NOTES:

1) Standard output polarity is negative. If positive output is required, substitute “P” for “N” in part number.
2) Diode values can be changed to alter the level of sensitivity. As sensitivity is increased, VSWR will degrade. 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.
3) Tangential Signal Sensitivity (TSS) is a measure of low level sensitivity with respect to noise. It is measured using a video amplifier with a 2MHz bandwidth and a 3dB noise figure.
4) VSWR measured at or below -20dBm input power level.
5) Video capacitance is used for RF 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.

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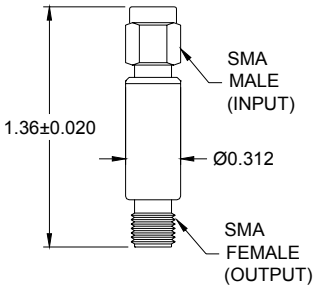
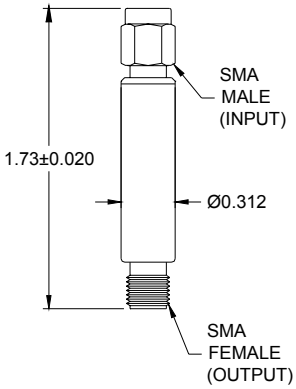
ENVIRONMENTAL SPECIFICATIONS:
MIL-E-5400, MIL-STD-202, MIL-E-16400
Operating Temp: -65°C to +100°C
Storage Temp: -65°C to +100°C
Humidity: MIL-STD-202F, M103, Cond B
Shock: MIL-STD-202F, M213, Cond B
Altitude: MIL-STD-202F, M105, Cond B
Vibration : MIL-STD-202F, M204, Cond B
Thermal Shock: MIL-STD-202F, M107, Cond A
Temperature Cycle: MIL-STD-202F, M105C, Cond D
Maximum Input Power: +14dBm
(This allows for 3dB margin from possible burnout at +17dBm)

SCREENING :
Standard Screening:
Internal Visual per MIL-STD-883, Method 2017
Temperature Cycle: -65°C to +100°C, 10 cycles
Optional High-Rel Screening (Ref MIL-PRF-38534):
Internal Visual per MIL-STD-883, Method 2017
Stabilization Bake per MIL-STD-883, Method 1008
Temperature Cycle per MIL-STD-883, Method 1010
Constant Acceleration per MIL-STD-883, Method 2001
Burn-in per MIL-STD-883, Method 1015
Leak Test per MIL-STD-883, Method 1014
External Visual per MIL-STD-883, Method 2009



CASE STYLE C1



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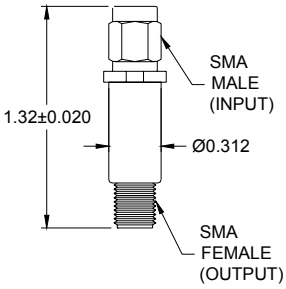

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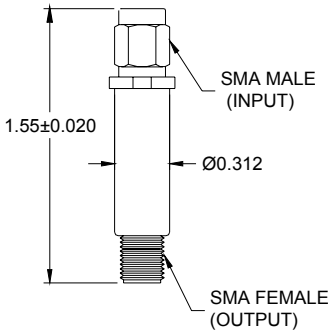

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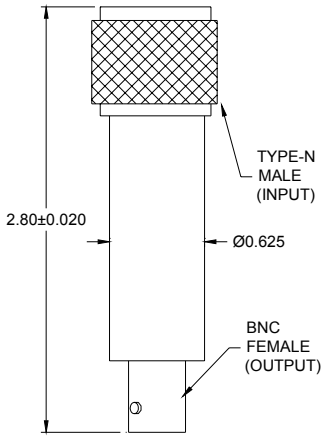

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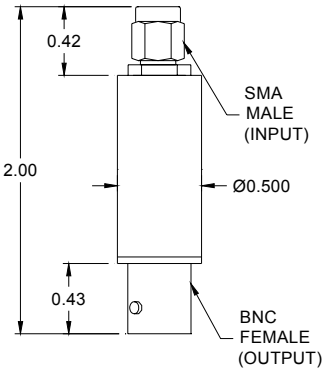

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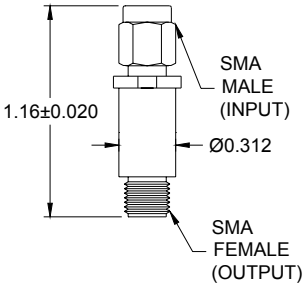

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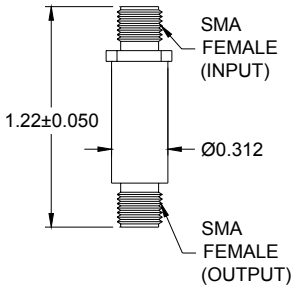

CASE STYLE 62

Part Number Ordering Information: Example: ACTP1555NC312
ACTP1555: Coaxial Tunnel Diode Detector, 2 – 8GHz
N: Negative output polarity
C3: Package type
12: 12pF custom video capacitance (omit for standard value)

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