



Wideband High Reverse Isolation Amplifier

10 to 1500 MHz

Technical Data

UTO/UTC 1576 Series

Features

- **High Reverse Isolation: 50 dB (Typ)**
- **Wideband: 10 to 1500 MHz**
- **Excellent Unit-to-Unit Repeatability**
- **Temperature Stabilized**

Applications

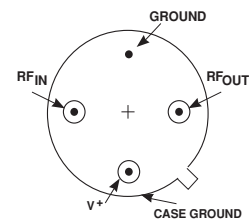
- **Pre/Post Mixer Amp**
- **Oscillator Buffers**
- **Switch and Filter Buffers**
- **Adjacent Channel Suppression**
- **IF/RF Amplification**

Description

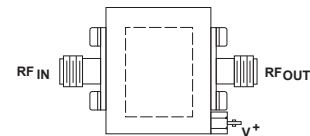
The 1576 series is a thin film, bipolar amplifier that uses a patented design technique to achieve 50 dB of wideband high reverse isolation and medium gain. Without using ferrites, this design technique provides superior repeatable performance, unit-to-unit over other amplifiers that use ferrites. Active bias is also employed for temperature compensation and increased immunity to bias voltage variations. Blocking capacitors couple the RF through the circuit. The amplifier is matched to 50 Ω for easy cascading. The 1576 series amplifiers are available in the TO-8 hermetic case or connected TC-1A package.

Pin Configuration

UTO—TO-8U



UTC—TC-1A



Maximum Ratings

Parameter	Maximum
DC Voltage	+17 Volts
Continuous RF Input Power	+13 dBm
Operating Case Temperature	-55 to +125°C
Storage Temperature	-62 to +150°C
“R” Series Burn-In Temperature	+125°C

Thermal Characteristics¹

θ_{JC}	105/105°C/W ²
Active Transistor Power Dissipation	150/150 mW ²
Junction Temperature Above Case Temperature	16/16°C ²

Notes:

1. Values refer to first and second stages, respectively.

Weight: (typical) UTO—1.7 grams; UTC—21.5 grams

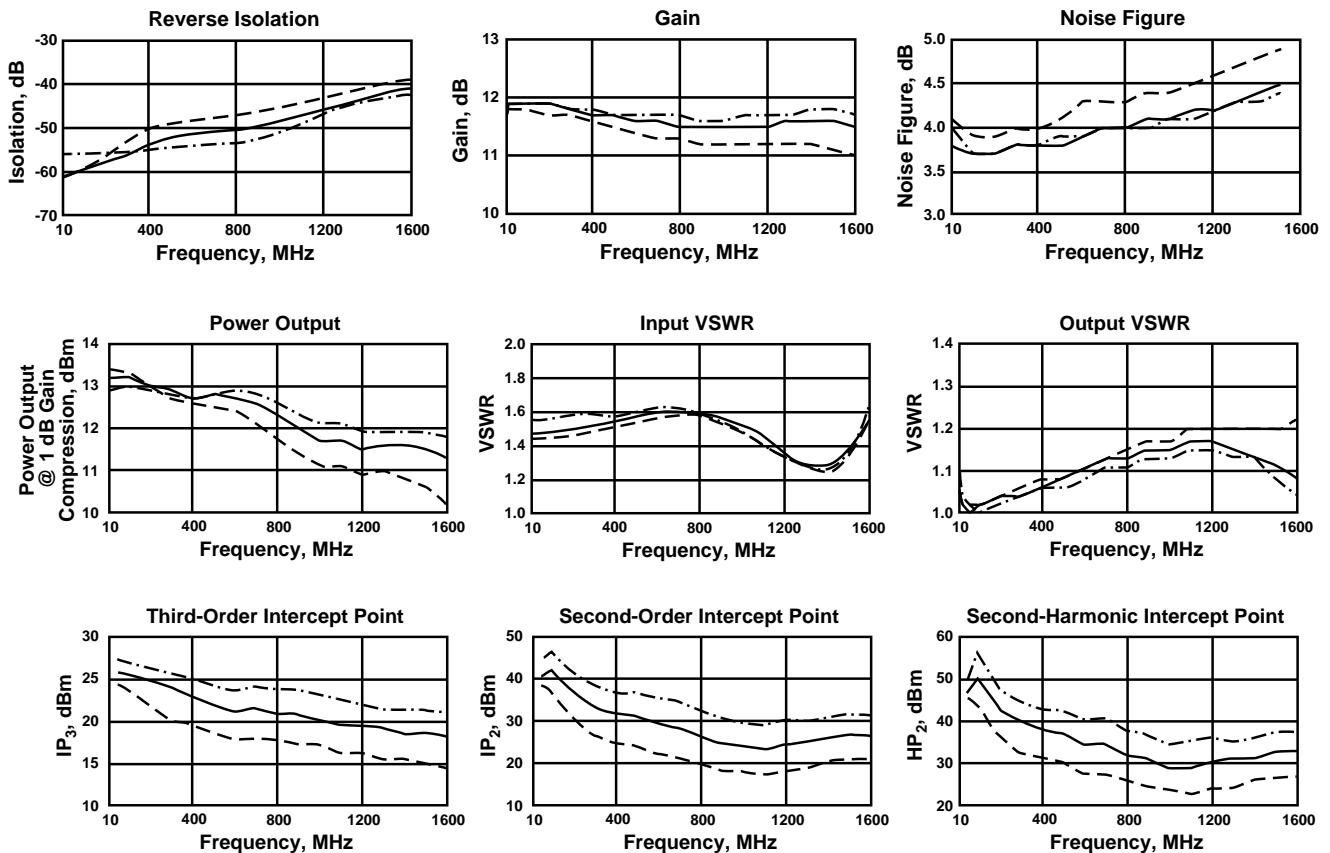
Electrical Specifications

(Measured in 50 Ω system @ +15 VDC nominal unless otherwise noted)

Symbol	Characteristic	Typical $T_C = 25^\circ\text{C}$	Guaranteed Specifications		Unit
			$T_C = 0 \text{ to } 50^\circ\text{C}$	$T_C = -55 \text{ to } +85^\circ\text{C}$	
BW	Frequency Range	10-1500	10-1500	10-1500	MHz
GP	Small Signal Gain (Min.)	11.5	10.5	10.0	dB
—	Reverse Isolation (Min.)	50	40	37	dB
—	Gain Flatness (Max.)	± 0.3	± 0.5	± 0.7	dB
NF	Noise Figure (Max.)	4.2	5.0	5.5	dB
P_{1dB}	Power Output @ +1 dB Comp. (Min.)	+10.5	+9.0	+8.5	dBm
—	Input VSWR (Max.)	1.6:1	2.0:1	2.0:1	—
—	Output VSWR (Max.)	1.4:1	2.0:1	2.0:1	—
IP_3	Two Tone 3rd Order Intercept Point	+20	—	—	dBm
IP_2	Two Tone 2nd Order Intercept Point	+25	—	—	dBm
HP_2	One Tone 2nd Harmonic Intercept Point	+30	—	—	dBm
I_D	DC Current	30	—	—	mA

Typical Performance Over Temperature (@ +15 VDC unless otherwise noted)

Key: $+25^\circ\text{C}$ —
 $+85^\circ\text{C}$ - -
 -55°C —

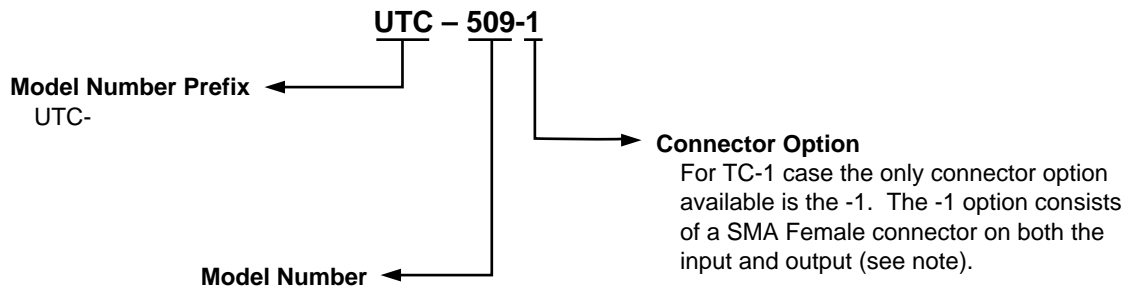
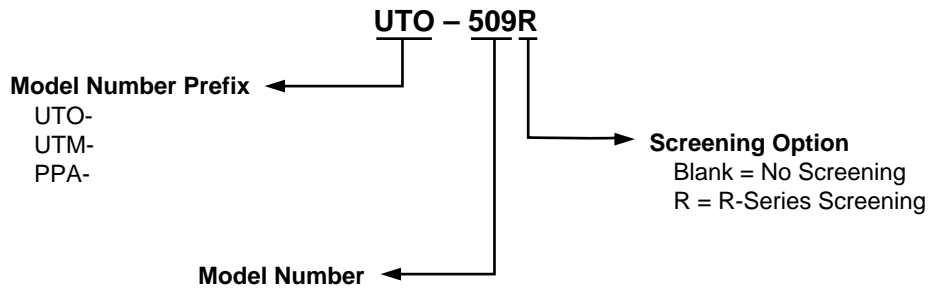


Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)**S-Parameters and Numerical Readings****Bias = 15.00 Volts**

FREQ GHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂		GPDEL ns	PHASE DEG
	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang		
.050	-14.47	176.75	11.80	169.22	-60.50	16.86	-55.34	-63.11	.56	-1.40
.100	-14.39	169.41	11.80	157.06	-59.68	7.87	-45.27	62.90	.45	-1.83
.200	-14.22	156.55	11.76	133.17	-57.93	8.88	-36.88	60.15	.42	-1.82
.300	-13.95	143.05	11.71	109.30	-56.53	12.23	-33.30	52.08	.41	-1.35
.400	-13.61	128.94	11.68	85.82	-54.70	2.28	-30.69	43.95	.41	-.77
.500	-13.25	113.25	11.68	62.31	-53.34	-4.09	-28.53	35.65	.40	-.06
.600	-13.00	95.71	11.68	38.55	-52.38	-12.80	-26.63	25.59	.41	.53
.700	-12.92	76.93	11.68	14.59	-51.79	-22.49	-24.89	13.84	.40	1.12
.800	-13.03	56.52	11.67	-9.57	-50.81	-28.48	-23.46	1.28	.41	1.60
.900	-13.44	34.55	11.68	-34.46	-50.06	-37.63	-22.23	-13.03	.41	1.98
1.000	-14.17	10.40	11.64	-59.02	-48.89	-44.93	-21.28	-27.97	.42	2.10
1.100	-15.32	-16.29	11.59	-84.00	-47.06	-54.54	-20.52	-43.70	.43	1.92
1.200	-16.78	-47.91	11.55	-108.90	-45.37	-66.24	-20.02	-61.07	.44	1.29
1.300	-18.43	-89.25	11.51	-134.41	-43.86	-80.29	-19.78	-79.41	.45	.16
1.400	-18.55	-141.46	11.49	-160.33	-42.33	-97.58	-19.96	-99.87	.47	-1.66
1.500	-16.16	166.53	11.47	172.78	-41.40	-116.95	-20.56	-122.63	.50	-4.31
1.600	-12.87	126.17	11.46	144.66	-40.76	-137.50	-21.85	-149.05	.52	—
1.700	-9.84	91.51	11.31	115.03	-40.99	-159.99	-23.86	178.25	.54	—
1.800	-7.44	60.21	10.95	83.75	-42.13	-172.18	-26.07	134.99	.56	—
1.900	-5.67	29.43	10.19	51.28	-43.40	164.12	-25.96	74.92	.57	—
2.000	-4.61	1.16	9.06	19.11	-47.55	-171.73	-23.65	28.02	.56	—
2.100	-3.94	-24.99	7.49	-12.53	-42.15	-164.58	-20.50	-.86	.58	—
2.200	-3.64	-49.00	5.63	-42.31	-38.98	-177.87	-17.54	-26.32	.63	—
2.300	-3.55	-70.49	3.61	-70.09	-35.27	169.97	-15.45	-48.58	.66	—
2.400	-3.49	-87.41	1.82	-93.52	-32.10	150.41	-13.70	-65.71	.63	—
2.500	-3.29	-104.45	-.27	-119.43	-28.93	117.32	-11.64	-84.08	.57	—
2.600	-3.13	-122.66	-2.97	-144.90	-28.52	75.79	-9.86	-109.20	.51	—
2.700	-3.06	-139.89	-5.92	-166.80	-29.70	43.31	-8.96	-133.52	.46	—
2.800	-2.93	-155.58	-8.63	173.85	-31.01	23.36	-8.40	-155.21	.42	—
2.900	-2.60	-170.93	-11.60	153.97	-31.23	3.99	-7.84	-176.08	.37	—
3.000	-2.14	173.39	-15.19	137.47	-31.86	-20.29	-7.36	163.34	.30	—

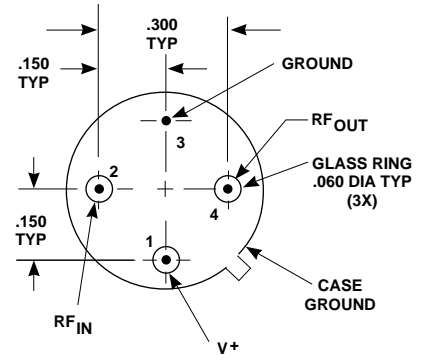
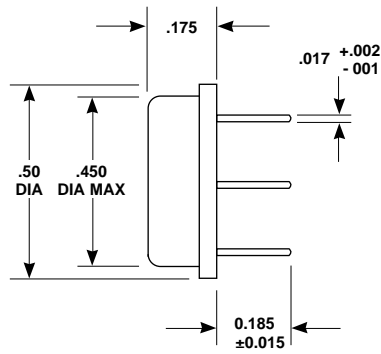
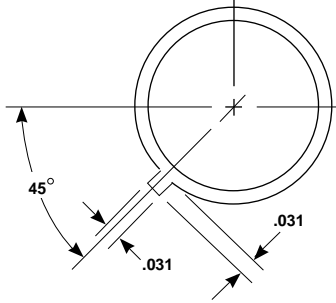
LINEARIZATION RANGE: .010 to 1.500 GHz

Product Options



Note: R-Series screening is not available in the TC-1 case as the case is non-hermetic.

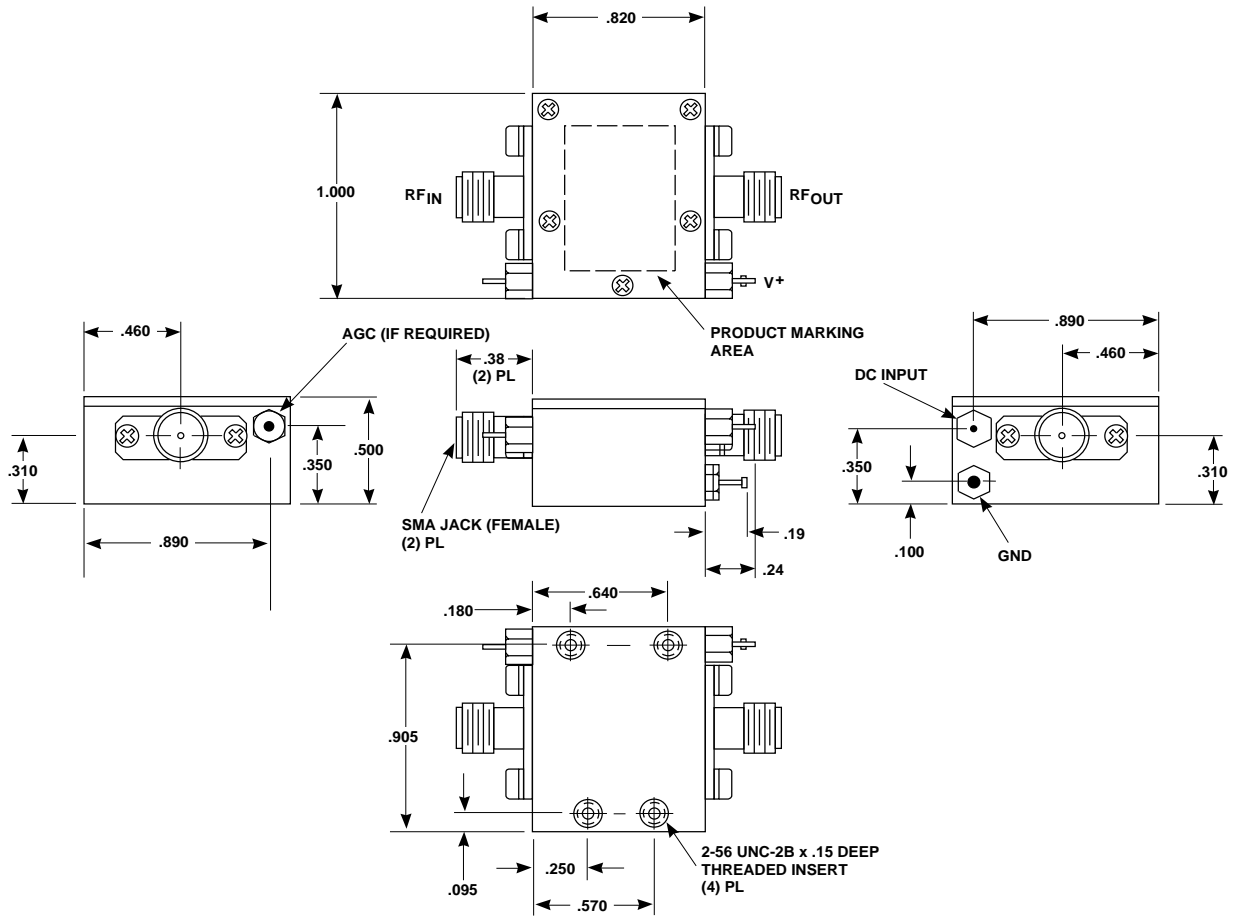
**Case Drawings
TO-8U**



APPROXIMATE WEIGHT 2.1 GRAMS

- NOTES (UNLESS OTHERWISE SPECIFIED):
 1. DIMENSIONS ARE SPECIFIED IN INCHES
 2. TOLERANCES: xx ± .02
 xxx ± .010

Case Drawings TC-1



TYPICAL WEIGHT WITH CONNECTORS = 21.5 GRAMS

NOTES: 1. THE TC-1 CASE IS A NON-HERMETIC CASE.
2. THE ONLY CONNECTOR OPTION AVAILABLE FOR THE TC-1 CASE IS THE -1, SMA FEMALE CONNECTORS AT BOTH INPUT AND OUTPUT PORTS.

NOTES (UNLESS OTHERWISE SPECIFIED):
1. DIMENSIONS ARE SPECIFIED IN INCHES
2. TOLERANCES: xx ± .02
xxx ± .010

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