TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Thin-Film Cascadable Amplifier 50 to 500 MHz

Technical Data

UTO/UTC 571 Series

Features

- **Frequency Range: 50 to 500 MHz**
- **High Reverse Isolation: 50 dB**
- **Temperature Compensated**

Applications

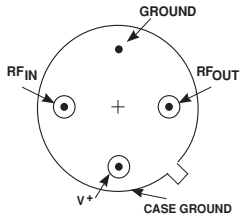
- **IF/RF Amplification**
- **Pre-Mixer RF Stage**
- **Post LO Amplifier Stage**

Description

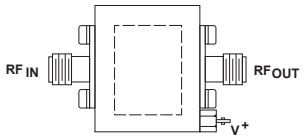
The 571 Series is a medium-gain bipolar RF amplifier that uses resistive feedback and active bias for temperature compensation and increased immunity to bias voltage variations. Built on a thin-film substrate, this cascade amplifier is specially designed for high isolation applications. The 571 Series amplifiers are available in either the TO-8 hermetic case or connectored TC-1A package.

Pin Configuration

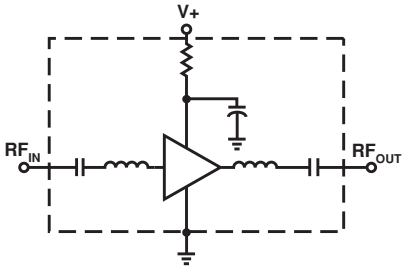
UTO—TO-8T



UTC—TC-1A



Schematic



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 Characteristics[1]

θ_{JC}	105/105°C/W
Active Transistor Power Dissipation	150/180 mW
Junction Temperature Above Case Temperature	16/19°C
MTBF (MIL-HDBK-217E, A_{UF} @ 90°C)	537,400 Hrs.

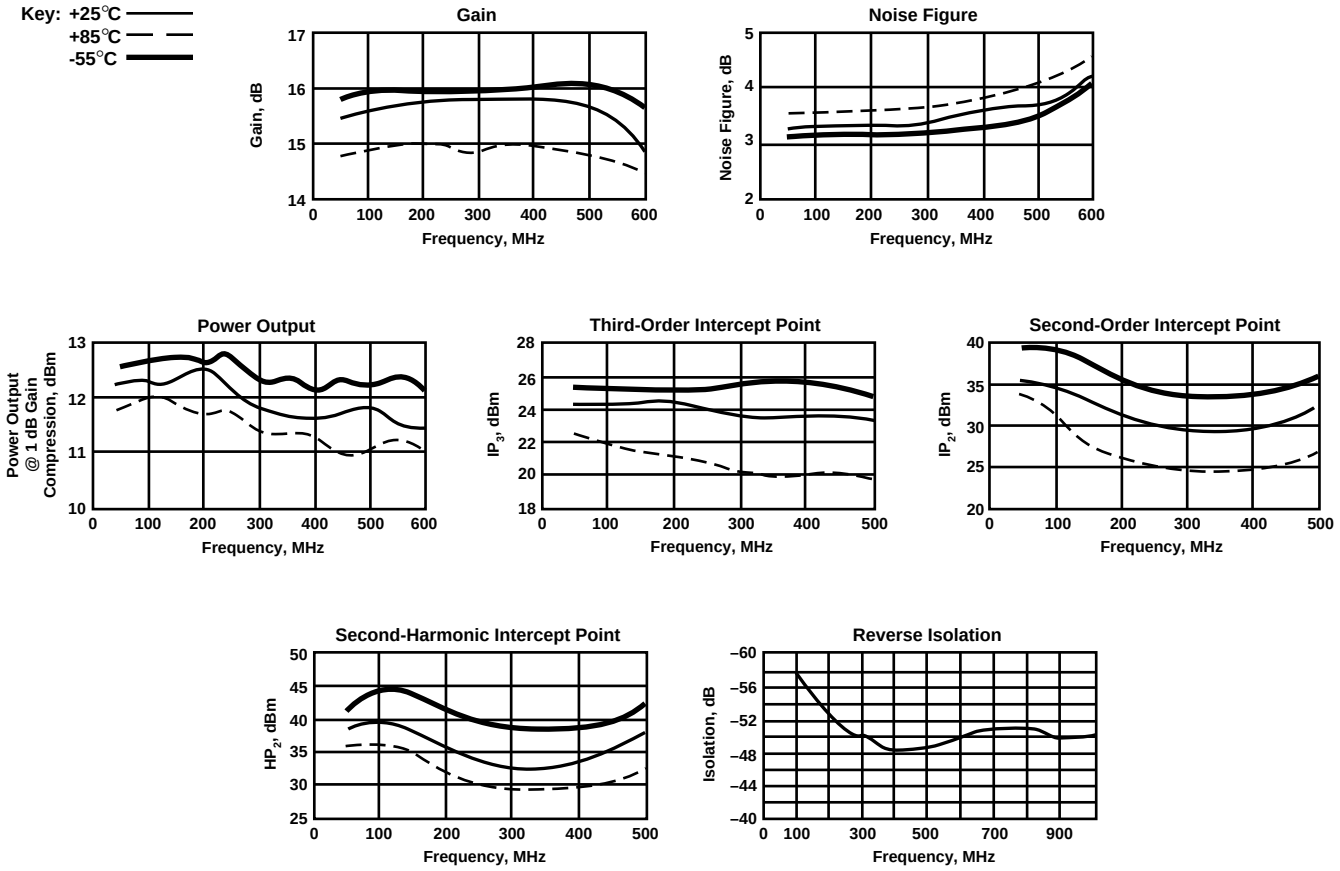
Weight: (typical) UTO—2.1 grams; UTC—21.5 grams

Electrical Specifications

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

Symbol	Characteristic	Typical T_C = 25°C	Guaranteed Specifications T_C = 0 to 50°C	Guaranteed Specifications T_C = –55 to +85°C	Unit
BW	Frequency Range	50-500	50-500	50-500	MHz
GP	Small Signal Gain (Min.)	15.5	14.5	14.0	dB
—	Gain Flatness (Max.)	±0.2	±0.5	±0.5	dB
NF	Noise Figure (Max.)	3.1	4.0	4.5	dB
—	Reverse Isolation (Min.)	50	45	45	dB
P_{1dB}	Power Output @ +1 dB Comp. (Min.)	+11.5	+10.0	+10.0	dBm
—	Input VSWR (Max.)	<1.4:1	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	+27.0	—	—	dBm
IP_2	Two Tone 2nd Order Intercept Point	+36.0	—	—	dBm
HP_2	One Tone 2nd Harmonic Intercept Point	+42.0	—	—	dBm
I_D	DC Current	32	—	—	mA

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



Automatic Network Analyzer Measurements (Typical production unit @ +25°C ambient)

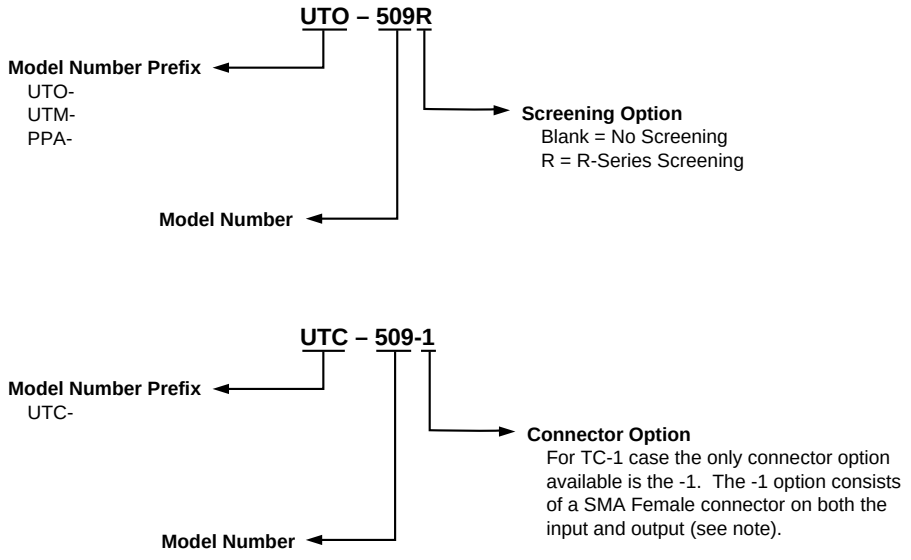
Numerical Readings **Bias = 15.00 Volts**

FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
100.0	1.10	15.2	133.7	–.85	—	1.13	58.6
150.0	1.14	15.3	107.2	–.68	1.46	1.09	54.8
200.0	1.18	15.3	81.4	.19	1.45	1.06	52.5
250.0	1.21	15.3	55.1	.55	1.47	1.05	51.3
300.0	1.23	15.3	28.6	.72	1.47	1.06	50.4
350.0	1.23	15.3	2.3	1.09	1.49	1.09	49.7
400.0	1.23	15.3	–24.7	.76	1.51	1.13	49.5
450.0	1.26	15.3	–52.1	.03	1.55	1.18	49.4
500.0	1.36	15.3	–80.6	–1.80	1.58	1.24	49.6

S-Parameters **Bias = 15.00 Volts**

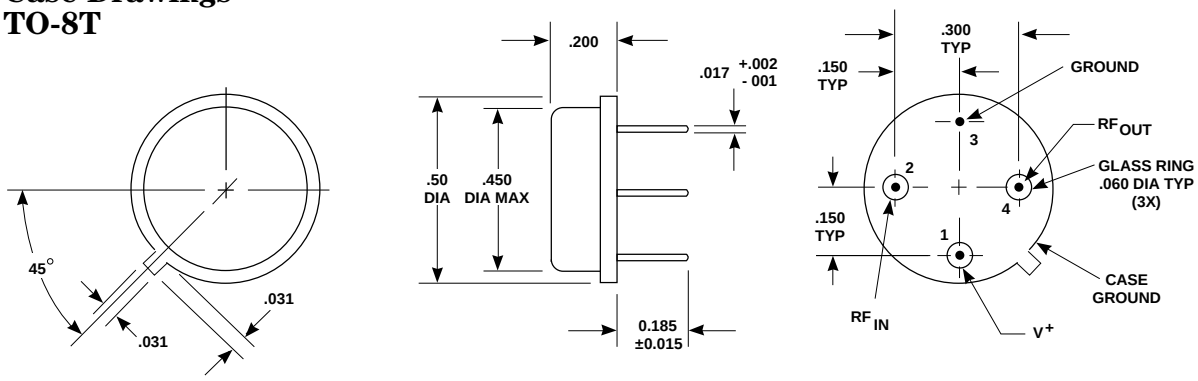
FREQUENCY	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.049	–104.0	15.5	142.9	–58.6	53.6	.060	48.2
200.00	.087	–115.3	15.4	97.3	–53.1	35.5	.030	–48.3
300.00	.108	–123.2	15.3	51.7	–50.3	13.2	.040	–139.4
400.00	.112	–119.5	15.3	4.9	–48.9	–9.3	.069	160.1
500.00	.154	–101.0	15.4	–45.5	–48.7	–31.9	.116	112.0
600.00	.313	–102.6	15.0	–101.7	–49.9	–44.0	.171	65.0
700.00	.537	–124.4	13.3	–162.1	–51.0	–25.6	.217	15.3
800.00	.722	–150.7	9.8	142.9	–50.8	–53.7	.228	–25.6
900.00	.840	–175.5	6.0	93.2	–49.9	–89.0	.241	–53.9
1000.00	.885	163.2	1.7	49.5	–49.9	–110.6	.269	–80.3
1100.00	.900	144.5	2.5	10.0	–50.5	–121.8	.302	–106.3
1200.00	.901	128.1	–6.6	–26.5	–51.6	–129.0	.335	–132.2
1300.00	.902	113.9	–10.5	–59.1	–53.4	–138.7	.368	–156.7
1400.00	.893	100.4	–14.3	–90.2	–55.8	–148.2	.396	178.7
1500.00	.894	87.2	–17.9	–119.7	–55.8	–158.8	.422	155.5

Product Options



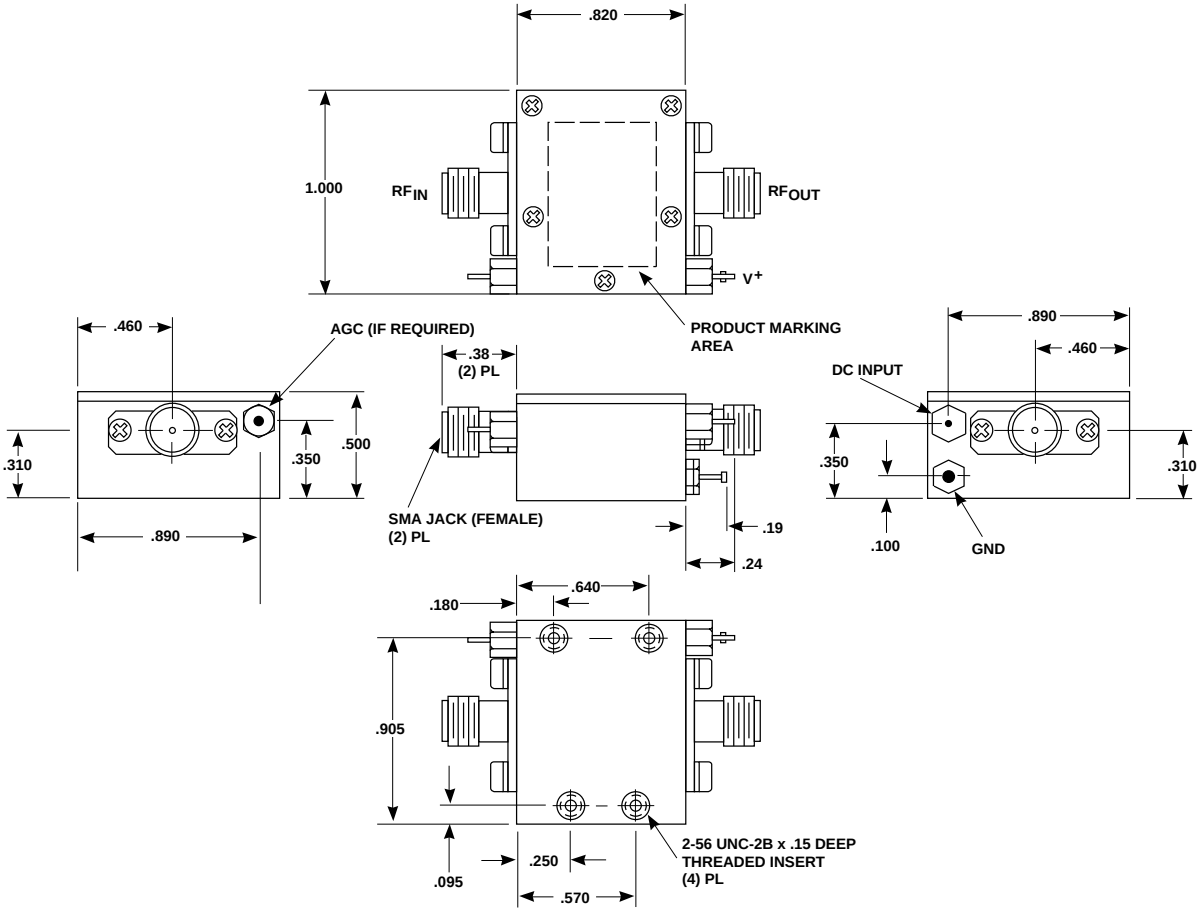
Note: R-Series screening is not available in the TC-1 case as the case is non-hermetic.

Case Drawings
TO-8T



APPROXIMATE WEIGHT 2.1 GRAMS

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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