



Thin-Film Cascadable Amplifier 10 to 500 MHz

Technical Data

UTO/UTC 526 Series

Features

- **Frequency Range:** 10 to 500 MHz
- **High Gain:** 28.0 dB (Typ)
- **Medium Output Power:** +21.0 dBm (Typ)
- **Temperature Compensated**

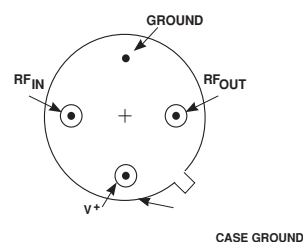
Applications

- **IF/RF Amplification**

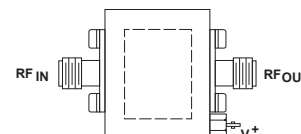
Description

The 526 Series is a high-power, low-noise amplifier. This two-stage RF amplifier is built on a thin-film substrate and is compensated for temperature and bias variations by using resistive feedback and active bias. Blocking capacitors couple the RF through the amplifier. The 526 Series is available in either the TO-8 hermetic case or connected TC-1A package.

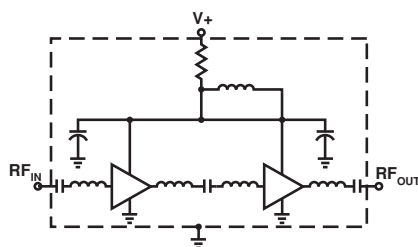
Pin Configuration UTO—TO-8T



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 Characteristics¹

θ_{JC}	105/87°C/W ²
Active Transistor Power Dissipation	70/303 mW ²
Junction Temperature Above Case Temperature	7/26°C ²
MTBF (MIL-HDBK-217E, A_{UF} @ 90°C)	538,800 Hrs.

Notes:

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

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

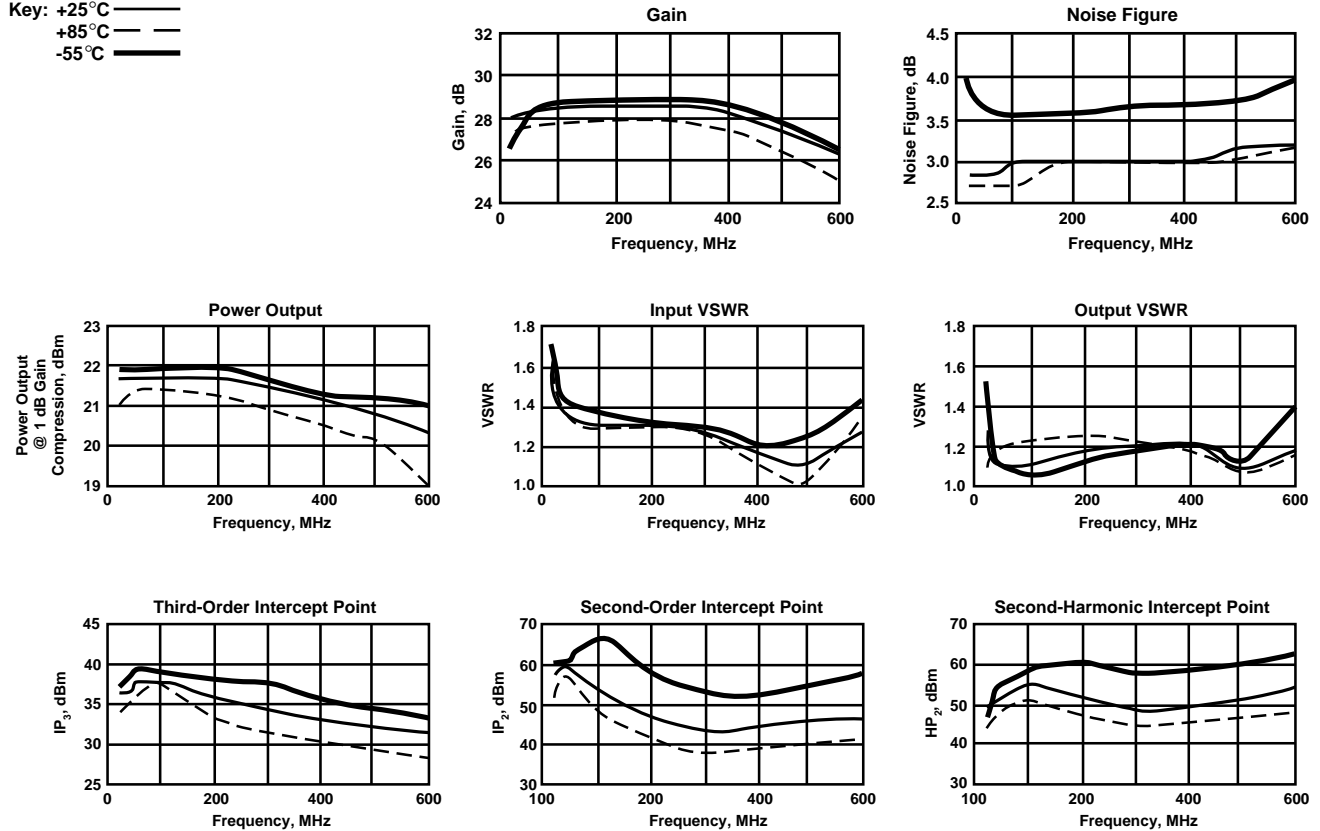
Electrical Specifications

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

Symbol	Characteristic	Typical $T_C = 25^\circ\text{C}$	Guaranteed Specifications		Unit
			$T_C = 0 \text{ to } 50^\circ\text{C}$	$T_C = -55 \text{ to } +85^\circ\text{C}$	
BW	Frequency Range	10-500	10-500	10-500	MHz
GP	Small Signal Gain (Min.)	28.0	26.5	26.0	dB
—	Gain Flatness (Max.)	± 0.4	± 0.7	± 1.0	dB
NF	Noise Figure (Max.)	3.0	4.0	4.5	dB
P_{1dB}	Power Output @ +1 dB Comp. (Min.)	+21.0	+19.0	+18.5	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	+32.0	+28.0	+26.0	dBm
IP_2	Two Tone 2nd Order Intercept Point	+42.0	—	—	dBm
HP_2	One Tone 2nd Harmonic Intercept Point	+48.0	—	—	dBm
I_D	DC Current	93	—	—	mA

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

Key: +25°C —
+85°C —
-55°C —



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

Numerical Readings
Bias = 15.00 Volts

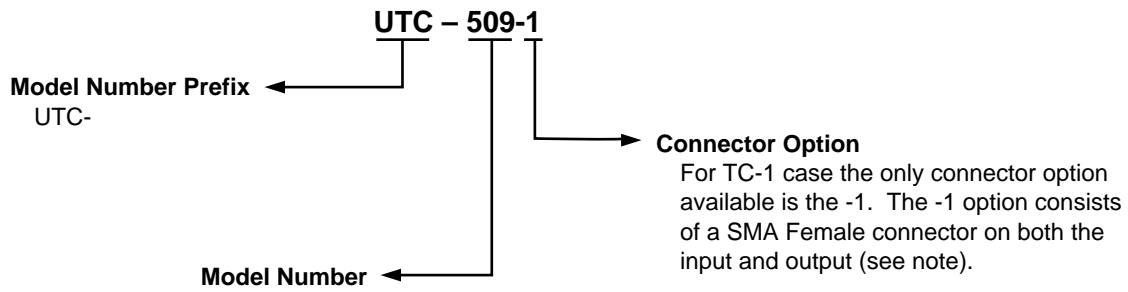
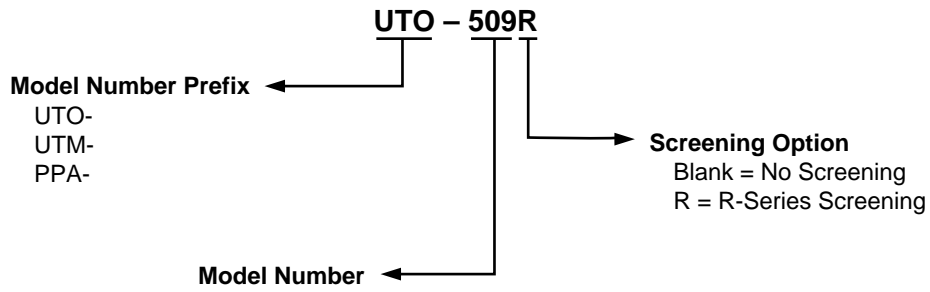
FREQUENCY MHz	VSWR IN	GAIN dB	PHASE DEGREES	PHASE DEV	GROUP DELAY ns	VSWR OUT	ISOLATION dB
1.0	5.25	17.9	141.6			2.39	34.2
2.0	2.77	24.3	82.0			1.70	32.7
3.0	2.23	26.0	58.4			1.60	33.3
5.0	1.78	27.3	37.0			1.41	34.2
10.0	1.50	28.0	17.7	12.86	3.42	1.25	34.9
20.0	1.41	28.3	5.5	3.39	3.42	1.15	35.2
30.0	1.38	28.3	-4	.30	1.66	1.13	35.2
50.0	1.35	28.3	-8.2	-1.76	.99	1.13	35.5
100.0	1.33	28.4	-22.8	-2.14	.77	1.15	35.4
150.0	1.33	28.4	-36.1	-1.17	.72	1.17	35.4
200.0	1.30	28.4	-49.4	-.31	.75	1.17	35.2
250.0	1.27	28.4	-63.0	.37	.76	1.20	35.2
300.0	1.22	28.4	-76.8	.71	.78	1.20	35.0
350.0	1.17	28.3	-90.9	.78	.76	1.20	34.9
400.0	1.13	28.1	-105.4	.50	.81	1.17	34.5
450.0	1.06	27.8	-120.1	-.08	.83	1.15	34.3
500.0	1.06	27.5	-135.1	-.91	.85	1.11	34.1
600.0	1.27	26.2	-164.5			1.15	33.5
800.0	1.74	22.6	145.0			1.41	32.9
1000.0	2.28	18.5	104.8			1.63	32.9
1500.0	4.26	11.8	28.9			1.78	33.7
2500.0	7.70	-1.1	-88.1			5.25	33.0

LINEARIZATION RANGE: 10.0 to 500.0 MHz

S-Parameters
Bias = 15.00 Volts

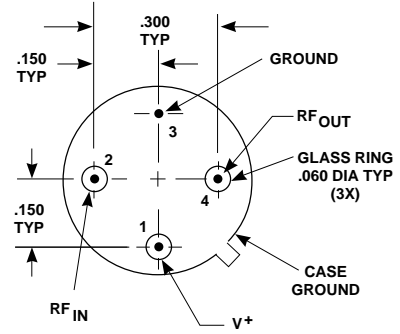
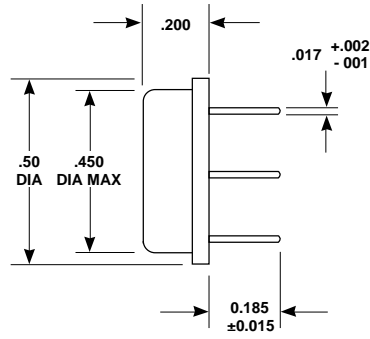
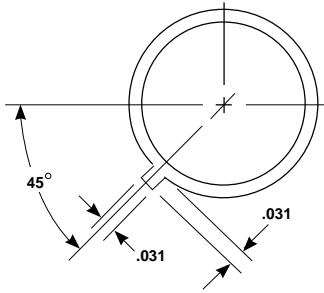
FREQUENCY MHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
1.0	.68	-128.2	17.9	141.6	-34.2	80.8	.41	162.13
2.0	.47	-171.2	24.3	82.0	-32.7	27.8	.26	24.98
3.0	.38	172.2	26.0	58.4	-33.3	12.5	.23	-17.93
5.0	.28	160.3	27.3	37.0	-34.2	3.6	.17	-54.70
10.0	.20	156.5	28.0	17.7	-34.9	-.7	.11	-94.20
20.0	.17	158.5	28.3	5.5	-35.2	-1.2	.07	-131.64
30.0	.16	158.6	28.3	-4	-35.2	-1.7	.06	-154.12
50.0	.15	156.5	28.3	-8.2	-35.5	-1.0	.06	178.10
100.0	.14	146.6	28.4	-22.8	-35.4	-2.1	.07	139.28
150.0	.14	136.4	28.4	-36.1	-35.4	-3.0	.08	114.67
200.0	.13	125.0	28.4	-49.4	-35.2	-2.9	.08	94.76
250.0	.12	114.2	28.4	-63.0	-35.2	-4.3	.09	75.95
300.0	.10	102.7	28.4	-76.8	-35.0	-4.6	.09	56.29
350.0	.08	90.8	28.3	-90.9	-34.9	-6.0	.09	35.64
400.0	.06	80.2	28.1	-105.4	-34.5	-7.2	.08	14.62
450.0	.03	81.2	27.8	-120.1	-34.3	-8.7	.07	-9.18
500.0	.03	170.0	27.5	-135.1	-34.1	-10.4	.05	-44.25
600.0	.12	-176.2	26.2	-164.5	-33.5	-16.5	.07	-137.31
800.0	.27	155.2	22.6	145.0	-32.9	-28.6	.17	159.70
1000.0	.39	125.1	18.5	104.8	-32.9	-41.6	.24	118.14
1500.0	.62	75.5	11.8	28.9	-33.7	-75.0	.28	97.05
2000.0	.73	43.2	4.3	-36.7	-34.8	-82.8	.55	63.13
2500.0	.77	20.8	-1.1	-88.1	-33.0	-105.7	.68	40.22

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

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

TC-1A

