



UTO/UTC 524 Series Thin-Film Cascadable Amplifier 5 to 500 MHz

T-74-09-01

FEATURES

- Frequency Range: 5 to 500 MHz
- High Gain: 31.0 dB (Typ)
- Medium Power Output:
+17.0 dBm (Typ)
- Temperature Compensated

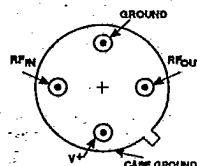
APPLICATIONS

- IF/RF Amplification

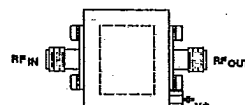
DESCRIPTION

The 524 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 524 Series is available in either the TO-8 hermetic case or connected TC-1 package.



UTO—TO-8T, p. 16-48

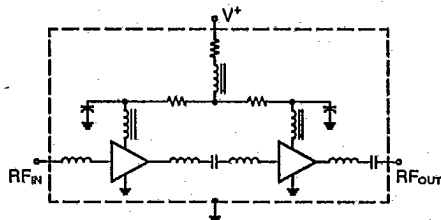


UTC—TC-1, p. 16-42

ELECTRICAL SPECIFICATIONS (Measured in a 50-ohm system @ +15 VDC nominal unless otherwise noted)

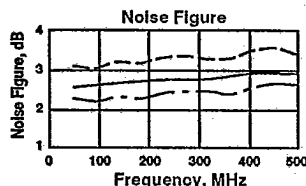
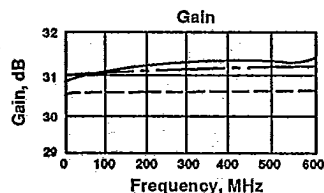
Symbol	Characteristic	Typical T _c = 25°C	Guaranteed Specifications		Unit
			T _c = 0° to 50°C	T _c = -55° to +85°C	
BW	Frequency Range	5-500	5-500	5-500	MHz
GP	Small Signal Gain (Min.)	31.0	30.0	30.0	dB
—	Gain Flatness (Max.)	±0.5	±1.0	±1.0	dB
NF	Noise Figure (Max.)	3.0	4.0	4.0	dB
P _{1dB}	Power Output @ +1 dB Compression (Min.)	+17.0	+14.0	+14.0	dBm
—	Input VSWR (Max.)	<1.5:1	2.0:1	2.0:1	—
—	Output VSWR (Max.)	<1.7:1	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	+34.0	—	—	dBm
HP ₂	One Tone 2nd Harmonic Intercept Point	+40.0	—	—	dBm
I _b	DC Current	70	—	—	mA

SCHEMATIC



TYPICAL PERFORMANCE OVER TEMPERATURE (@ +15 VDC unless otherwise noted)

KEY: +25°C ———
+85°C ———
-55°C ———



MAXIMUM RATINGS

DC Voltage	+17 Volts
Continuous RF Input Power	+13 dBm
Operating Case Temperature	-55°C to +115°C
Storage Temperature	-62°C to +150°C
"R" Series Burn-In Temperature	+115°C

THERMAL CHARACTERISTICS*

θ _{JA}	105/75°C/W
Active Transistor Power Dissipation	131/410 mW
Junction Temperature Above Case Temperature	14/31°C
MTBF (MIL-HDBK-217E, A _{UT} @ 90°C)	538,800 Hrs.

*For further information, see High Reliability section, p. 17-2.

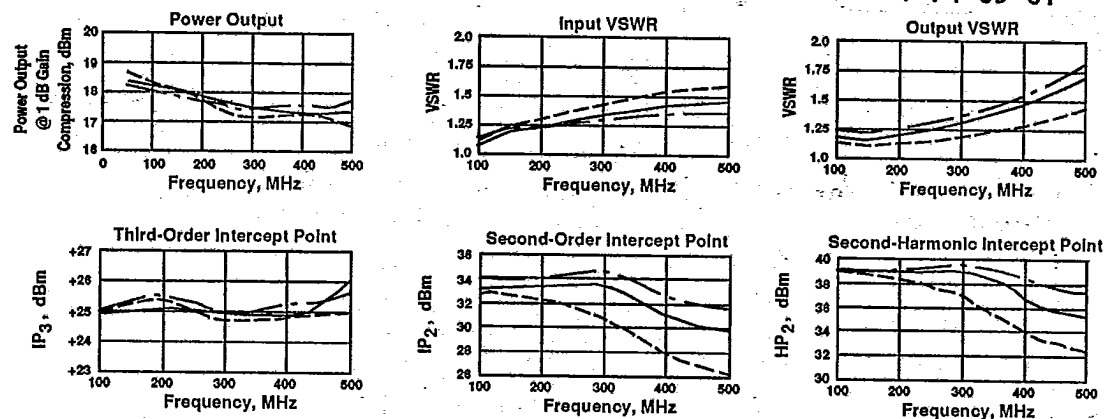
WEIGHT: (typical) UTO—2.1 grams; UTC—21.5 grams

Avantek, Inc. • 481 Cottonwood Drive, Milpitas, CA 95035 • Contact your local representative, distributor or field sales office for further information. Listings are in the back of this Data Book.

UTO/UTC 524 Series
Thin-Film Cascadable Amplifier

TYPICAL PERFORMANCE OVER TEMPERATURE (continued)

T-74-09-01



AUTOMATIC NETWORK ANALYZER MEASUREMENTS (Typical production unit @ +25°C ambient)

NUMERICAL READINGS

BIAS = 15.00 VOLTS

FREQ MHz	VSWR IN	GAIN dB	PHASE DEG	PHASE DEV	GPDEL ns	VSWR OUT	ISOL dB
100.0	1.25	31.46	-20.38	.10	.00	1.05	40.57
150.0	1.34	31.51	-32.57	-.23	.66	1.04	39.54
200.0	1.42	31.44	-44.01	.19	.65	1.04	40.12
250.0	1.48	31.38	-56.01	.05	.67	1.04	40.34
300.0	1.52	31.38	-67.96	-.03	.66	1.03	39.95
350.0	1.54	31.34	-79.78	.00	.66	1.03	39.95
400.0	1.53	31.35	-91.84	-.20	.66	1.05	39.79
450.0	1.52	31.39	-103.59	-.09	.65	1.08	40.15
500.0	1.49	31.37	-115.14	.21	.65	1.11	40.04
550.0	1.46	31.33	-126.91	—	.67	1.15	40.03
600.0	1.46	31.27	-139.17	—	.69	1.20	40.47
650.0	1.46	31.23	-151.74	—	.72	1.24	40.26
700.0	1.53	31.22	-164.94	—	.78	1.30	40.74
750.0	1.66	31.13	-179.01	—	.81	1.34	40.68
800.0	1.86	31.04	-165.76	—	.88	1.36	40.68
850.0	2.18	30.81	149.93	—	.91	1.38	40.41
900.0	2.53	30.32	133.10	—	.94	1.36	39.58
950.0	3.04	29.59	116.05	—	.90	1.31	39.11
1000.0	3.48	28.52	100.77	—	.79	1.26	38.54

LINEARIZATION RANGE: 100.0 to 500.0 MHz

S-PARAMETERS

BIAS = 15.00 VOLTS

FREQ MHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	Mag	Ang	dB	Ang	dB	Ang	Mag	Ang
100.00	.116	90.4	31.304	-20.8	-41.203	-2.1	.035	-11.8
200.00	.179	67.3	31.292	-43.6	-39.699	-4.1	.040	-55.7
300.00	.209	47.6	31.294	-67.4	-39.988	-14.8	.031	-109.3
400.00	.209	25.9	31.400	-91.4	-40.334	-25.1	.042	168.3
500.00	.186	-2.9	31.539	-115.2	-40.886	-29.3	.091	128.7
600.00	.166	-47.8	31.555	-140.4	-41.566	-33.0	.146	107.4
700.00	.193	-108.2	31.508	-168.0	-42.063	-37.1	.190	87.6
800.00	.296	-163.8	31.091	160.4	-41.981	-37.6	.203	65.3
900.00	.423	149.7	29.882	127.5	-40.913	-38.9	.177	46.8
1000.00	.615	112.6	27.794	98.0	-39.580	-50.7	.129	42.4