



UTO/UTC 515 Series
Thin-Film Cascadable Amplifier
2 to 500 MHz

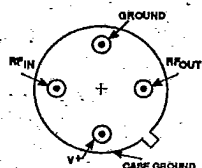
T-7409-01

FEATURES

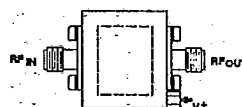
- Frequency Range: 2 to 500 MHz
- Medium Power Output:
+15.5 dBm (Typ)
- Temperature Compensated

APPLICATIONS

- IF/RF Amplification



UTO—TO-8U, p.16-48.



UTC—TC-1, p.16-42

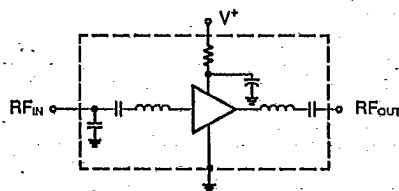
DESCRIPTION

The 515 Series is a thin-film bipolar RF amplifier that uses resistive feedback and active bias to provide temperature compensation and increased immunity to bias voltage variations. Blocking capacitors

couple the RF through the amplifier. The 515 Series is available in either the TO-8 hermetic case or connected TC-1 package.

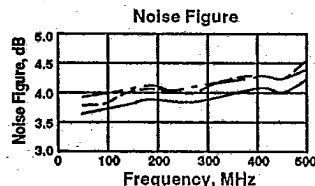
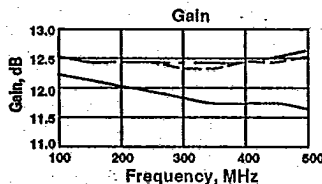
ELECTRICAL SPECIFICATIONS (Measured in a 50-ohm system @ +15 VDC nominal unless otherwise noted)

Symbol	Characteristic	Typical T _o = 25°C	Guaranteed Specifications		Unit
			T _o = 0° to 50°C	T _o = -55° to +85°C	
BW	Frequency Range	2-500	2-500	2-500	MHz
GP	Small Signal Gain (Min.)	12.5	12.0	11.0	dB
—	Gain Flatness (Max.)	±0.2	±0.5	±0.7	dB
NF	Noise Figure (Max.)	4.5	5.5	6.0	dB
P _{1dB}	Power Output @ +1 dB Compression (Min.)	+15.5	+14.0	+13.0	dBm
—	Input VSWR (Max.)	<1.3:1	2.0:1	2.0:1	—
—	Output VSWR (Max.)	<1.6:1	2.0:1	2.0:1	—
IP ₃	Two Tone 3rd Order Intercept Point	+24.0	—	—	dBm
IP ₂	Two Tone 2nd Order Intercept Point	+35.0	—	—	dBm
HP ₂	One Tone 2nd Harmonic Intercept Point	+40.0	—	—	dBm
I _o	DC Current	65	—	—	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 +100°C
Storage Temperature	-62°C to +150°C
"R" Series Burn-In Temperature	+100°C

THERMAL CHARACTERISTICS*

θ _{JA}	75°C/W
Active Transistor Power Dissipation	600 mW
Junction Temperature Above Case Temperature	45°C
MTBF (MIL-HDBK-217E, A _{UT} @ 90°C)	1,328,000 Hrs.

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

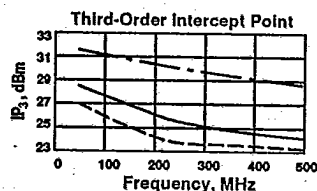
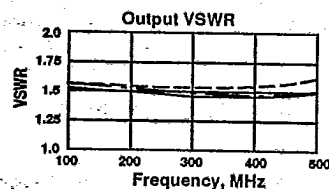
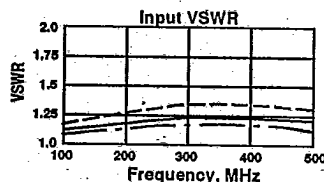
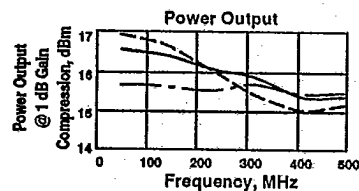
WEIGHT: (typical) UTO—2.1 grams; UTC—21.5 grams

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 515 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	1.21	12.87	152.97	-.70	—	1.30	21.72
150.0	1.20	12.86	139.61	-.60	.73	1.31	21.72
200.0	1.17	12.70	126.69	-.05	.72	1.31	21.69
250.0	1.14	12.70	113.72	.44	.72	1.33	21.67
300.0	1.11	12.64	100.88	1.06	.73	1.36	21.59
350.0	1.10	12.61	87.30	.95	.77	1.40	21.50
400.0	1.11	12.59	73.33	.45	.78	1.46	21.47
450.0	1.16	12.63	59.29	-.12	.80	1.55	21.40
500.0	1.25	12.71	44.50	-1.44	.83	1.67	21.39
550.0	1.37	12.76	29.34	—	.87	1.84	21.47
600.0	1.55	12.82	13.21	—	.98	2.09	21.63

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	.112	-18.6	13.16	151.4	-21.51	-14.1	.129	164.5
200.00	.090	-36.8	12.98	127.3	-21.51	-30.4	.133	146.1
300.00	.059	-42.3	12.97	100.2	-21.21	-47.6	.153	123.9
400.00	.036	5.2	12.88	72.5	-21.31	-67.5	.185	98.1
500.00	.094	42.2	12.84	44.0	-21.21	-90.9	.248	71.4
600.00	.208	37.1	12.86	-12.7	-21.31	-115.5	.347	40.9
700.00	.408	20.4	12.85	-24.7	-22.38	-146.1	.487	7.2
800.00	.680	-5.2	11.30	-70.2	-25.68	-178.5	.549	-25.8
900.00	.880	-37.3	7.50	-115.2	-30.75	167.8	.523	-48.5
1000.00	.927	-61.4	2.54	-143.1	-33.15	166.8	.554	-58.6