T-74-09-01 4/91

B-74-13-51

COUGAR COMPONENTS

2225-K Martin Avenue, Santa Clara, CA 95050 (408) 492-1400
FAX (408) 492-1500

AP2509 10 to 2500 MHz TO-8 Cascadable Amplifier

(Typical Values)	AP2509
High Output Power	+ 27.5 dBm
High Third Order	+ 39 dBm
High Second Harmonics @ +12 volts	+ 69 dBm

High Performance Thin Film
Standard Size TO-8

Specifications

Parameter	Typical	Guaranteed* 0 to 50 °C	Guaranteed* - 55 to 85 °C
Frequency (Min.)	10-2500 MHz	10-2500 MHz	10-2500 MHz
Small Signal Gain (Min.)	8.5 dB	8.0 dB	7.5 dB
Gain Flatness (Max.)	± 0.4 dB	± 0.5 dB	± 0.8 dB
Noise Figure (Max.) 100-2000 MHz	4.0 dB	4.5 dB	5.0 dB
SWR (Max.)	1.7:1	1.7:1^	1.8:1^
Power Output @ 1dB comp. (Min.)	+ 27.5 dBm	+ 26.0 dBm	+ 25.5 dBm
DC Current (Max.)	185.0 mA	190.0 mA	195.0 mA

*Measured in a 50-ohm system at +15 Vdc unless otherwise specified.
^1.9:1 Below 20 MHz.

Intermodulation Performance

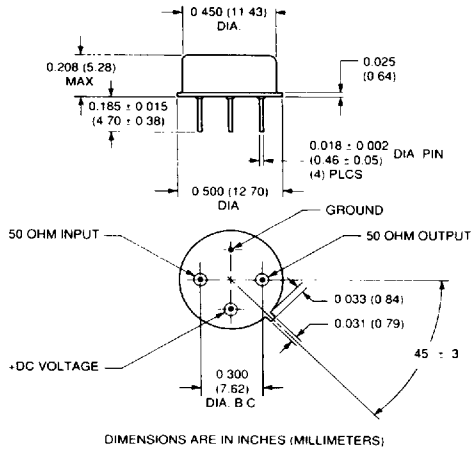
(Typical at 25 °C)	Vcc = +12.0 V	Vcc = +15.0 V
Second Order Harmonic Intercept Point	+ 69 dBm	+ 58 dBm
Second Order Two Tone Intercept Point	+ 63 dBm	+ 52 dBm
Third Order Two Tone Intercept Point	+ 39 dBm	+ 40 dBm

Absolute Maximum Ratings

Ambient Operating Temperature	-55 to 100 °C
Storage Temperature	-62 to 125 °C
Maximum Case Temperature	+100 °C
Maximum DC Voltage	+17 Volts
Maximum Continuous RF Input Power	+20 dBm
Maximum Short Term Input Power (1 Minute Max.)	100 Milliwatts
Maximum Peak Power (3 µsec Max.)	0.5 Watt
Q Series Burn-in Temperature	+100 °C

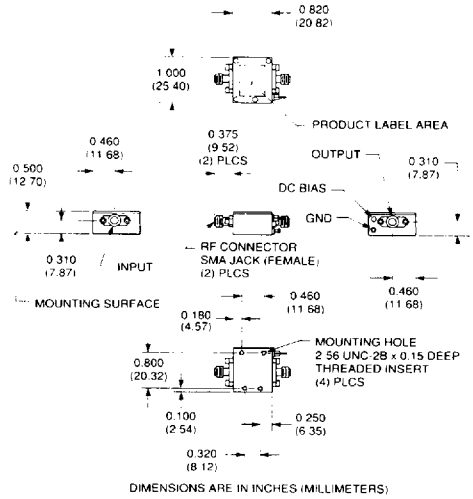
Outline Drawings

TO-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES (MILLIMETERS)

Amplifier Case - connectorized



DIMENSIONS ARE IN INCHES (MILLIMETERS)

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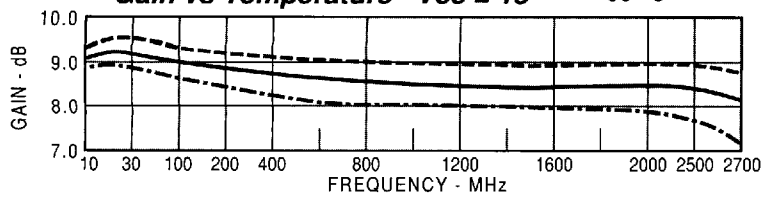
AP2509

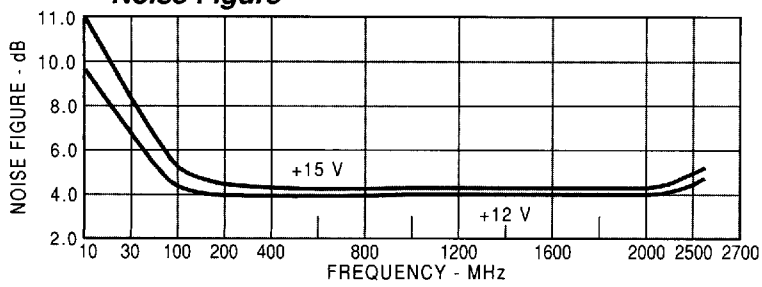
Typical Performance

KEY: +25 °C ——
+85 °C –·–·–
-55 °C – – –

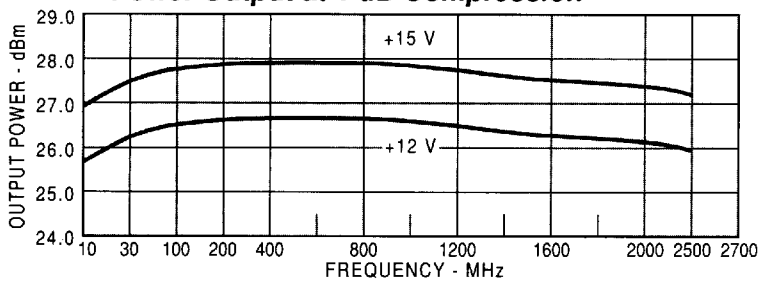
Gain vs Temperature Vcc = 15



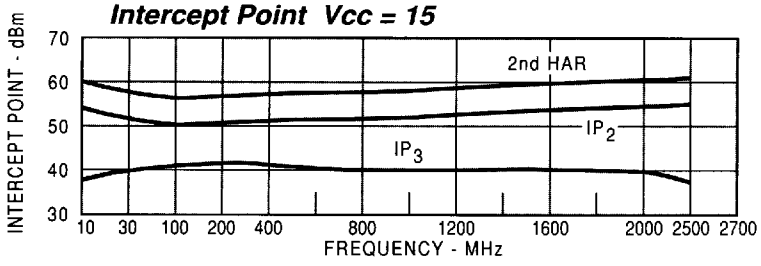
Noise Figure



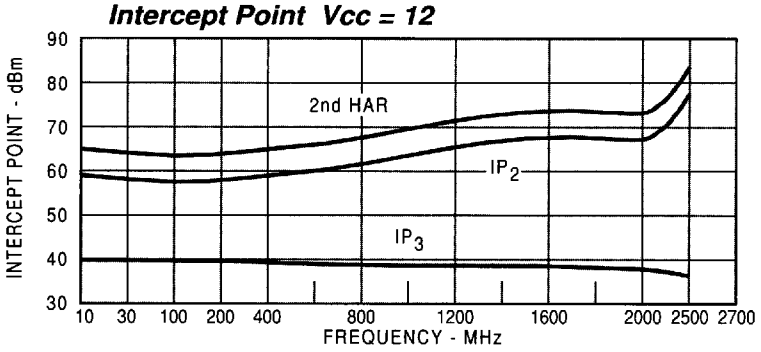
Power Output at 1 dB Compression



Intercept Point Vcc = 15



Intercept Point Vcc = 12



Typical Automatic Test Data

MODEL:AP2509 Vcc=15V Icc= 186.92 mA

FREQUENCY MHZ	VSWR IN	VSWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
10.0	1.62	1.73	8.6		-16.9
50.0	1.10	1.56	8.7		-16.9
100.0	1.07	1.54	8.6	.421	-16.8
300.0	1.08	1.45	8.4	.274	-16.7
500.0	1.09	1.44	8.4	.258	-16.9
700.0	1.07	1.45	8.4	.265	-16.9
900.0	1.06	1.42	8.4	.255	-17.1
1100.0	1.06	1.39	8.3	.256	-17.2
1300.0	1.12	1.30	8.4	.269	-17.3
1500.0	1.10	1.22	8.5	.264	-17.5
1700.0	1.09	1.16	8.5	.259	-17.6
1900.0	1.10	1.12	8.6	.287	-17.7
2100.0	1.05	1.16	8.6	.302	-18.1
2300.0	1.11	1.23	8.7	.310	-18.5
2500.0	1.41	1.37	8.5	.353	-19.3
2700.0	2.11	1.50	8.1	.378	-20.8

LINEAR S-PARAMETERS

MODEL:AP2509 Vcc=15V Icc= 186.92 mA

FREQ.	S11		S21		S12		S22	
MHZ	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
10	.24	-73.7	2.69	-152.9	.143	23	.27	169.8
50	.05	-61.2	2.72	-180.0	.143	2	.22	172.1
100	.03	-49.9	2.69	172.3	.144	-2	.21	165.4
300	.04	-65.1	2.62	152.7	.147	-16	.18	147.5
500	.04	-84.0	2.63	134.1	.142	-28	.18	126.7
700	.03	-113.4	2.63	115.2	.142	-39	.18	108.7
900	.03	-148.8	2.65	96.6	.140	-51	.17	90.4
1100	.03	173.2	2.61	78.3	.138	-62	.16	74.2
1300	.06	170.9	2.62	59.3	.136	-74	.13	58.5
1500	.05	170.2	2.65	40.1	.134	-86	.10	34.3
1700	.04	176.3	2.67	21.3	.132	-100	.07	5.4
1900	.05	155.5	2.70	.9	.130	-114	.06	-43.5
2100	.03	108.6	2.70	-20.9	.125	-129	.07	-89.2
2300	.05	6.6	2.71	-43.2	.119	-145	.10	-121.3
2500	.17	-29.4	2.67	-68.4	.108	-163	.15	-143.0
2700	.36	-55.6	2.54	-95.7	.091	178	.20	-167.5
2900	.57	-80.7	2.20	-125.3	.061	168	.22	151.7

MODEL:AP2509 Vcc=12V Icc= 172.70 mA

FREQUENCY MHZ	VSWR IN	VSWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
10.0	1.61	1.78	8.6		-17.2
50.0	1.11	1.64	8.6		-17.2
100.0	1.08	1.63	8.5	.425	-17.1
300.0	1.09	1.53	8.3	.270	-16.9
500.0	1.10	1.51	8.4	.256	-17.1
700.0	1.08	1.52	8.3	.264	-17.1
900.0	1.07	1.49	8.4	.255	-17.2
1100.0	1.06	1.46	8.3	.252	-17.3
1300.0	1.13	1.38	8.3	.266	-17.3
1500.0	1.11	1.29	8.4	.264	-17.3
1700.0	1.10	1.21	8.4	.260	-17.3
1900.0	1.12	1.13	8.6	.283	-17.4
2100.0	1.07	1.09	8.6	.304	-17.5
2300.0	1.10	1.11	8.7	.307	-17.7
2500.0	1.37	1.20	8.6	.354	-18.3
2700.0	2.13	1.30	8.2	.389	-19.5

COUGAR COMPONENTS

61290

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