COUGAR COMPONENTS
384 Santa Trinita Ave. • Sunnyvale, CA • 94086 • Phone 408-522-3838
Fax 408-522-3839

AC2078 10 to 2000 MHz TO-8 Cascadable Amplifier

Typical Values	*AC2078*
High Output Power	*+20.5 dB*
High Third Order I.P.	*+34.0 dBm*
Low Noise Figure	*4.0 dB*

High Performance Thin Film
Available in Surface Mount

Specifications

Parameter	Typical	Guaranteed* 0 to 50° C	Guaranteed* -55 to +85° C
Frequency (Min.)	**10-2200 MHz**	**10-2000 MHz**	**10-2000 MHz**
Small Signal Gain (Min.)	10.0 dB	9.0 dB	8.5 dB
Gain Flatness (Max.)	<±0.2 dB	±0.5 dB	±0.6 dB
Noise Figure (Max.) 30-2000 MHz	4.0 dB	4.8 dB	5.3 dB
SWR (Max.) Input/Output	1.5:1	2.0:1^	2.2:1^
Power Output (Min.) @ 1 dB comp.	+20.5 dBm	+19.5 dBm	+19.0 dBm
DC Current (Max.)	100.0 mA	105.0 mA	108.0 mA

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.
^ Input SWR is ≤2.5:1 below 30 MHz.

Intermodulation Performance

Typical @ 25° C	*+15 volts*
Second Order Harmonic Intercept Point	56 dBm
Second Order Two Tone Intercept Point	50 dBm
Third Order Two Tone Intercept Point	34 dBm

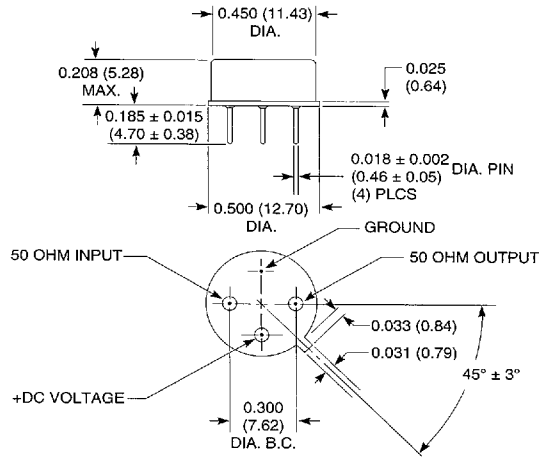
Absolute Maximum Ratings

Storage Temperature	-62 to 125° C
Maximum Case Temperature	+125° C
Maximum DC Voltage	+17 Volts
Maximum Continuous RF Input Power	+17 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	+105° C
Thermal Resistance[1] (θJC)	+16° C/Watt
Junction Temperature Rise above Case (Tjc)	+26° C

1. Thermal resistance is based on total power dissipation.

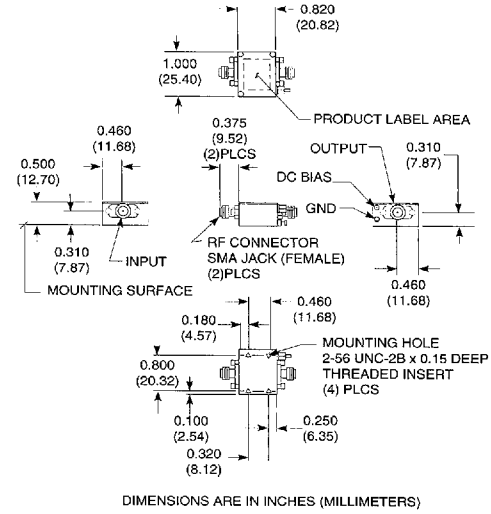
Outline Drawings

TO-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES (MILLIMETERS)

Amplifier Case—connectorized



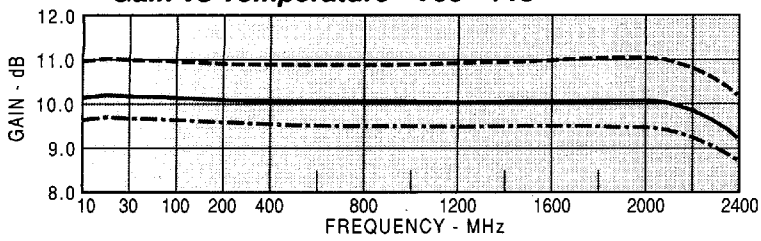
DIMENSIONS ARE IN INCHES (MILLIMETERS)

AC2078

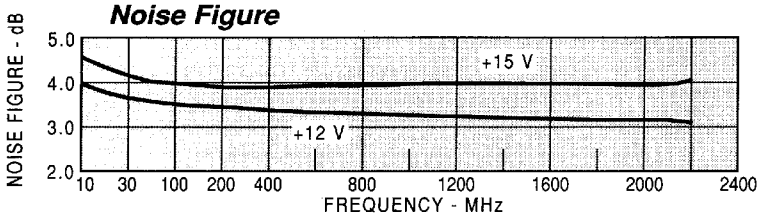
Typical Performance

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

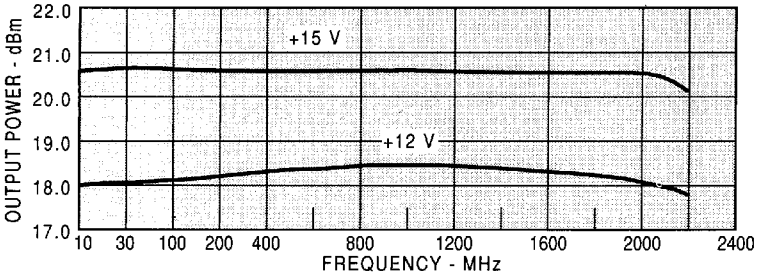
Gain vs Temperature Vcc= +15



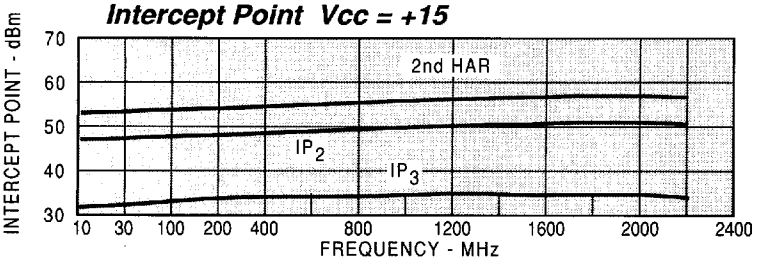
Noise Figure



Power Output at 1 dB Compression



Intercept Point Vcc = +15



MODEL:AC2078 Vcc=12 Icc= 87.24 mA

FREQUENCY MHZ	VSWR IN	VSWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
10.0	2.06	1.65	10.2		-18.7
20.0	1.74	1.32	10.3		-18.7
50.0	1.72	1.28	10.2	1.064	-19.1
100.0	1.71	1.26	10.2	.432	-19.0
200.0	1.69	1.24	10.1	.340	-18.9
300.0	1.67	1.22	10.0	.306	-18.6
400.0	1.66	1.22	10.1	.288	-18.4
500.0	1.64	1.23	10.0	.297	-18.6
600.0	1.61	1.25	9.9	.296	-18.6
700.0	1.57	1.24	10.0	.294	-18.6
800.0	1.53	1.26	10.0	.287	-18.6
900.0	1.51	1.24	9.9	.294	-18.4
1000.0	1.47	1.25	9.9	.301	-18.4
1100.0	1.49	1.26	9.9	.301	-18.8
1200.0	1.46	1.25	9.9	.292	-18.6
1300.0	1.46	1.23	9.9	.306	-18.5
1400.0	1.43	1.27	9.8	.308	-18.5
1500.0	1.39	1.28	9.9	.306	-18.2
1600.0	1.33	1.27	9.9	.318	-18.3
1700.0	1.27	1.30	10.0	.313	-18.4
1800.0	1.23	1.30	10.0	.337	-17.7
1900.0	1.21	1.32	10.1	.322	-17.8
2000.0	1.22	1.36	10.1	.385	-17.9
2100.0	1.29	1.41	10.0	.369	-18.0

Typical Automatic Test Data

MODEL:AC2078 Vcc=15 Icc= 99.80 mA

FREQUENCY MHZ	VSWR IN	VSWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
10.0	2.15	1.65	10.2		-18.5
20.0	1.72	1.27	10.4		-18.3
50.0	1.70	1.22	10.3	1.062	-18.8
100.0	1.69	1.20	10.3	.442	-18.8
200.0	1.66	1.18	10.2	.339	-18.7
300.0	1.66	1.17	10.1	.309	-18.5
400.0	1.63	1.17	10.1	.286	-18.2
500.0	1.63	1.17	10.1	.298	-18.4
600.0	1.59	1.18	10.0	.297	-18.6
700.0	1.55	1.18	10.1	.292	-18.3
800.0	1.50	1.21	10.1	.290	-18.5
900.0	1.49	1.20	10.0	.296	-18.5
1000.0	1.47	1.19	10.0	.300	-18.0
1100.0	1.46	1.20	10.0	.299	-18.9
1200.0	1.43	1.18	10.0	.296	-18.8
1300.0	1.43	1.18	10.0	.302	-18.3
1400.0	1.41	1.20	9.9	.306	-18.4
1500.0	1.35	1.20	10.0	.310	-18.4
1600.0	1.30	1.20	10.0	.318	-18.4
1700.0	1.24	1.21	10.1	.311	-18.9
1800.0	1.19	1.23	10.0	.338	-18.2
1900.0	1.18	1.25	10.2	.323	-18.4
2000.0	1.22	1.27	10.2	.383	-18.5
2100.0	1.30	1.32	10.1	.365	-18.2

LINEAR S-PARAMETERS

MODEL:AC2078 Vcc=15 Icc= 99.80 mA

FREQ.	S11		S21		S12		S22	
MHZ	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
10	.36	-32.6	3.23	-150.5	.119	25	.24	136.3
20	.27	-19.4	3.31	-168.9	.121	10	.12	141.0
50	.26	-13.4	3.27	179.5	.115	3	.10	149.0
100	.26	-16.4	3.26	171.6	.114	-4	.09	144.6
200	.25	-26.7	3.24	159.3	.116	-8	.08	121.9
300	.25	-41.1	3.20	148.3	.119	-17	.08	109.9
400	.24	-51.2	3.22	137.9	.123	-22	.08	100.6
500	.24	-63.1	3.19	127.3	.120	-27	.08	85.1
600	.23	-76.3	3.16	116.6	.117	-35	.08	79.8
700	.22	-88.2	3.19	106.1	.121	-41	.08	67.5
800	.20	-101.0	3.18	95.7	.119	-47	.09	57.3
900	.20	-115.6	3.17	85.0	.119	-52	.09	49.5
1000	.19	-131.1	3.17	74.1	.125	-59	.09	39.7
1100	.19	-143.4	3.16	63.3	.113	-66	.09	31.6
1200	.18	-158.8	3.16	52.7	.114	-72	.08	22.0
1300	.18	-171.7	3.15	41.9	.122	-76	.08	7.8
1400	.17	176.5	3.13	30.8	.121	-83	.09	6.4
1500	.15	164.7	3.18	19.6	.120	-91	.09	.1
1600	.13	146.1	3.17	8.3	.120	-97	.09	-9.3
1700	.11	125.6	3.21	-3.0	.113	-106	.09	-15.5
1800	.09	100.5	3.18	-15.2	.123	-113	.10	-20.1
1900	.08	62.5	3.24	-26.9	.120	-127	.11	-30.0
2000	.10	24.7	3.23	-40.7	.119	-130	.12	-33.8
2100	.13	-11.9	3.20	-53.8	.123	-138	.14	-38.1
2200	.17	-38.2	3.17	-68.0	.124	-147	.15	-47.5

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