AP1309 10 TO 1300 MHz TO-8 CASCADABLE AMPLIFIER

Typical Values	*AP1309*
Low Noise Figure	*<2.5 dB*
High Output Power	*+23.0 dBm*
High Third Order I.P.	*+36 dBm*

High Performance Thin Film

Standard Size TO-8

SPECIFICATIONS*

Parameter	Typical	Guaranteed 0 to 50° C	Guaranteed -55 to +85° C
Frequency (Min.)	**10-1400 MHz**	**10-1300 MHz**	**10-1300 MHz**
Small Signal Gain (Min.)	12.5 dB	12.0 dB	11.5 dB
Gain Flatness (Max.)	±0.2 dB	±0.4 dB	±0.5 dB
Noise Figure (Max.) 50-1200 MHz	<2.5 dB	3.0 dB	3.5 dB
SWR (Max.) Input	<1.5:1^	1.7:1^	1.9:1^
Output	<1.7:1	1.9:1	2.0:1
Power Output (Min.) @ 1dB comp.	+23.0 dBm	+22.0 dBm	+21.5 dBm
DC Current (Max.)	100 mA	105.0 mA	110.0 mA

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.
^ 0.3 higher at 10 MHz.

INTERMODULATION PERFORMANCE

Typical @ 25° C; 500 MHz	*+12 Volts*	*+15 Volts*
Second Order Harmonic Intercept Point	+57 dBm	+54 dBm
Second Order Two Tone Intercept Point	+51 dBm	+49 dBm
Third Order Two Tone Intercept Point	+35 dBm	+36 dBm

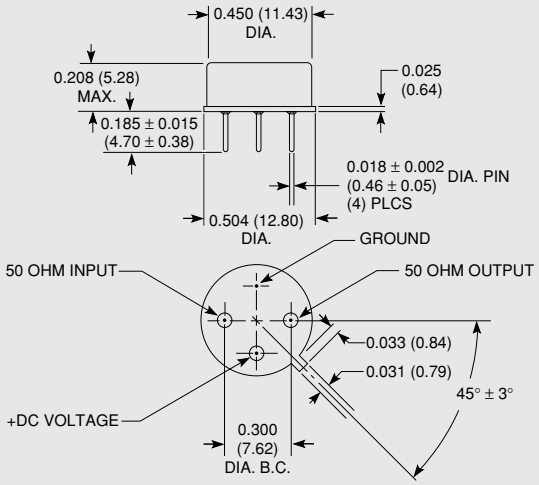
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to 125° C
Maximum Case Temperature	+125° C
Maximum DC Voltage	+17 Volts
Maximum Continuous RF Input Power	+20 dBm
Maximum Short Term Input Power (1 Minute Max.)	250 Milliwatts
Maximum Peak Power (3 µsec Max.)	0.5 Watt
Burn-in Temperature	+105° C
Thermal Resistance[1] (θjc)	+14° C/Watt
Junction Temperature Rise Above Case (Tjc)	+22.4° C

[1] Thermal resistance is based on total power dissipation.

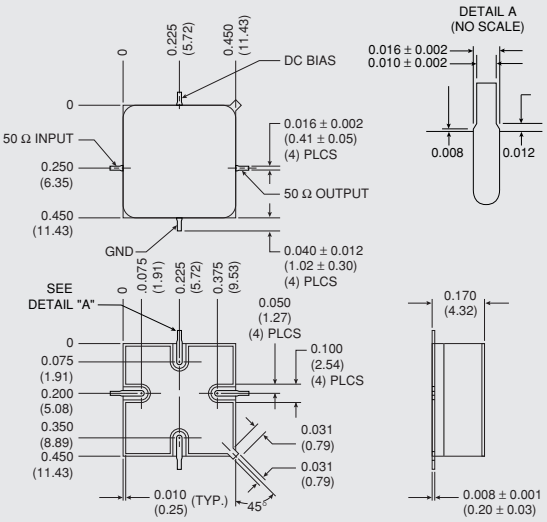
AP1309

TO-8 Package for Amplifiers



APS1309

SMTO-8 Package for Amplifiers

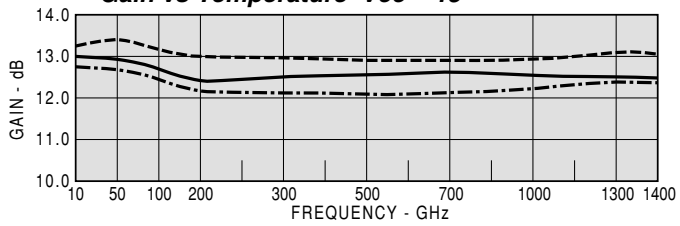


DIMENSIONS ARE IN INCHES (MILLIMETERS)

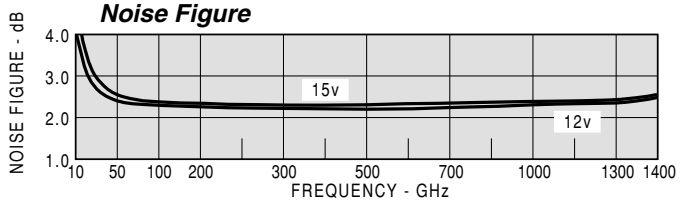
TYPICAL PERFORMANCE

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

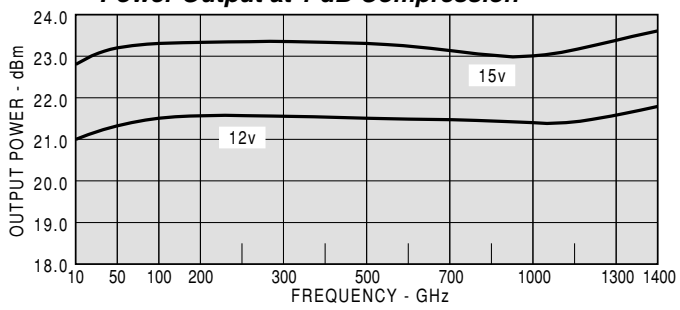
Gain vs Temperature Vcc = 15



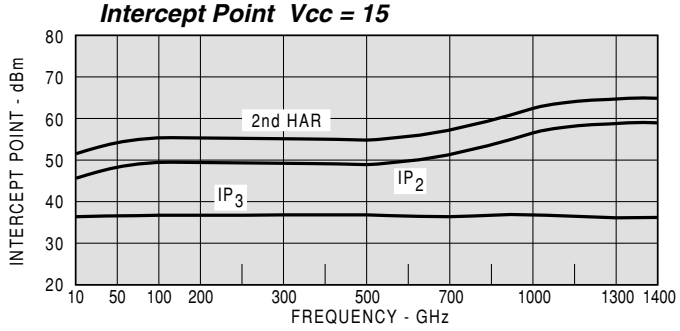
Noise Figure



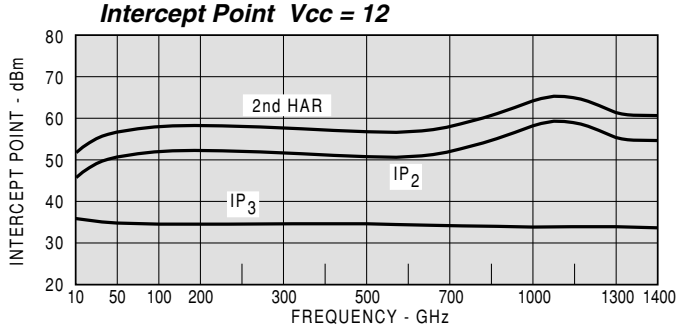
Power Output at 1 dB Compression



Intercept Point Vcc = 15



Intercept Point Vcc = 12



TYPICAL AUTOMATIC TEST DATA

Model: AP1309 Vcc= +15V Icc=100.89

FREQ	SWR	SWR	GAIN	PHASE	DELAY	REV/ISO
MHZ	IN	OUT	DB	DEG	NSEC	DB
10	1.82	1.64	12.99	-153		-20.8
30	1.40	1.67	13.05	-176		-21.0
50	1.38	1.67	12.99	177	0.84	-21.1
100	1.39	1.61	12.78	167	0.51	-20.8
300	1.41	1.50	12.52	141	0.36	-20.4
500	1.36	1.52	12.56	114	0.38	-20.2
700	1.31	1.53	12.55	86	0.38	-19.8
900	1.27	1.55	12.55	58	0.40	-19.3
1000	1.27	1.56	12.57	44	0.39	-19.1
1100	1.29	1.62	12.57	30	0.41	-18.9
1200	1.34	1.71	12.56	14	0.43	-18.5
1300	1.43	1.83	12.55	-1	0.42	-18.3
1400	1.58	2.01	12.54	-18	0.47	-18.1

Model: AP1309 Vcc=+15V Icc= 100.89

FREQ	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
10	0.29	-50.0	4.46	-152.9	0.091	15.6	0.24	-177.0
30	0.17	-25.5	4.49	-175.9	0.089	3.6	0.25	178.9
50	0.16	-17.1	4.46	177.3	0.088	0.9	0.25	173.2
100	0.16	-11.4	4.35	166.7	0.091	-1.8	0.23	161.1
300	0.17	-39.3	4.22	140.9	0.096	-17.8	0.20	151.8
500	0.15	-63.0	4.25	113.7	0.097	-30.8	0.21	131.5
700	0.13	-90.5	4.24	86.3	0.102	-44.9	0.21	110.8
900	0.12	-129.5	4.24	58.3	0.108	-60.5	0.22	88.3
1000	0.12	-153.1	4.25	44.4	0.111	-68.8	0.22	74.6
1100	0.13	-179.5	4.25	29.5	0.114	-77.9	0.24	60.0
1200	0.14	153.3	4.25	14.1	0.120	-88	0.26	45.9
1300	0.18	127.6	4.24	-1.1	0.122	-99.1	0.29	31.4
1400	0.23	100.6	4.24	-18	0.125	-111.4	0.34	15.6
1500	0.30	76.1	4.16	-35.6	0.127	-124.6	0.38	-0.5

Model: AP1309 Vcc= +12V Icc=88.0

FREQ	SWR	SWR	GAIN	PHASE	DELAY	REV/ISO
MHZ	IN	OUT	DB	DEG	NSEC	DB
10	1.82	1.68	12.75	-153		-20.9
30	1.44	1.71	12.80	-176		-21.1
50	1.42	1.72	12.75	177	0.82	-21.2
100	1.44	1.65	12.55	167	0.50	-20.9
300	1.45	1.54	12.32	141	0.36	-20.5
500	1.40	1.57	12.34	114	0.38	-20.2
700	1.35	1.59	12.34	86	0.38	-19.7
900	1.31	1.61	12.36	58	0.40	-19.1
1000	1.31	1.62	12.39	44	0.39	-18.8
1100	1.33	1.69	12.39	29	0.42	-18.4
1200	1.39	1.79	12.39	14	0.43	-18.1
1300	1.48	1.91	12.37	-2	0.43	-17.9
1400	1.64	2.10	12.37	-19	0.47	-17.6

Mo\del: AP1309 Vcc=+12V Icc= 88.0

FREQ	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5	0.52	-48.4	3.99	-121.8	0.091	34.9	0.32	-176.7
10	0.29	-46.9	4.34	-153.5	0.09	14.9	0.25	-174.9
30	0.18	-22.8	4.37	-176	0.088	3.4	0.26	179.5
50	0.17	-15.8	4.34	177.3	0.087	1.4	0.26	174.0
100	0.18	-11.9	4.24	166.7	0.09	-1.8	0.25	162.4
300	0.19	-39.3	4.13	141	0.095	-16.9	0.21	153.3
500	0.17	-63.6	4.14	113.7	0.097	-29.2	0.22	133.7
700	0.15	-91.3	4.14	86.3	0.103	-42.9	0.23	113.8
900	0.13	-129.2	4.15	58.2	0.111	-58.3	0.23	92.1
1000	0.13	-152.4	4.16	44.3	0.114	-66.6	0.24	79.3
1100	0.14	-177.5	4.17	29.3	0.12	-76.2	0.26	64.7
1200	0.16	156.4	4.16	13.9	0.124	-86.7	0.28	50.7
1300	0.19	130.4	4.16	-1.6	0.128	-97.8	0.31	36.3
1400	0.24	103.5	4.16	-18.5	0.132	-110.1	0.36	20.5
1500	0.32	77.9	4.07	-36.3	0.135	-123.7	0.40	3.7