TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 5/10

AR1096

600 TO 1000 MHz TO-8B CASCADABLE AMPLIFIER

Typical Values	AR1096
Low Noise Figure	2.1 dB
High Output Power	+28.0 dBm
High Third Order I.P.	+42 dBm
High Second Order I.P.	+58 dBm

High Performance Thin Film TO-8B Amplifier Package

SPECIFICATIONS*

Parameter		Typical	Guaranteed 0 to 50 °C	Guaranteed -55 to +85 °C
Frequency (Min.)		500-1100 MHz	600-1000 MHz	600-1000 MHz
Small Signal Gain (Min.)		14.2 dB	13.5 dB	13.0 dB
Gain Flatness (Max.)		±0.2 dB	±0.4 dB	±0.5 dB
Noise Figure (Max.)		2.1 dB	2.7 dB	3.2 dB
SWR (Max.)	Input	<1.5:1	1.7:1	1.9:1
	Output	<1.6:1	1.9:1	2.1:1
Power Output (Min.) @ 1dB comp.		+28.0^ dBm	+27.0^ dBm	+26.5^ dBm
Reverse Isolation		21.0 dB	—	—
DC Current (Max.)		230.0 mA	240.0 mA	250.0 mA

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.
^ 0.5 dBm lower above 800 MHz.

INTERMODULATION PERFORMANCE

Typical @ 25 °C	+12 Volts	+15 Volts
Second Order Harmonic Intercept Point	+66 dBm	+64 dBm
Second Order Two Tone Intercept Point	+62 dBm	+58 dBm
Third Order Two Tone Intercept Point	+40 dBm	+42 dBm

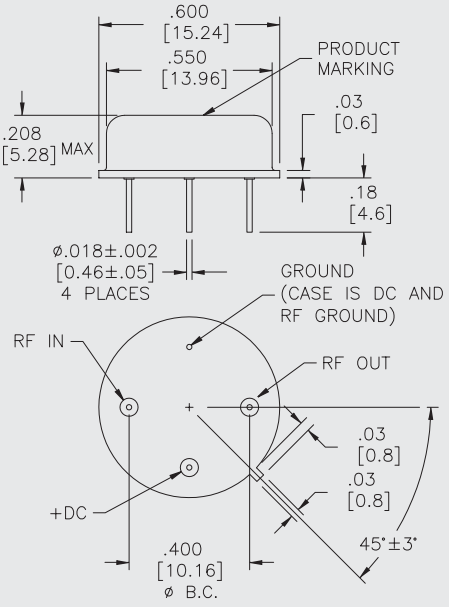
ABSOLUTE MAXIMUM RATINGS

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	+85 °C
Thermal Resistance[1] (θjc)	+12 °C/Watt
Junction Temperature Rise above Case (Tjc)	+43.7 °C

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

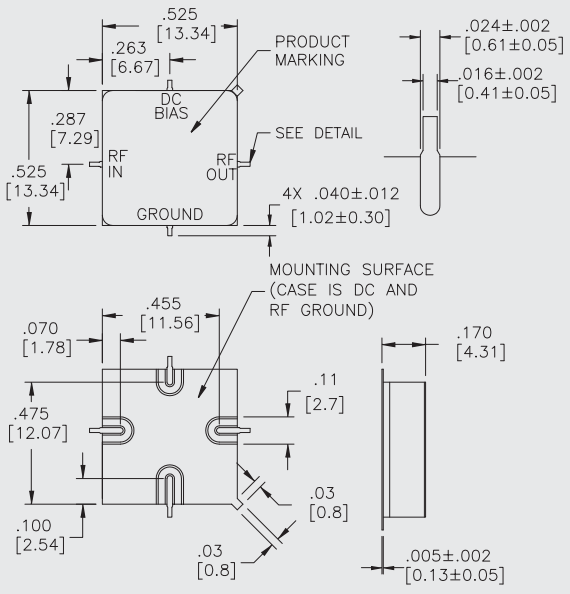
AR1096

TO-8B Package for Amplifiers



ARS1096

SMTO-8B Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

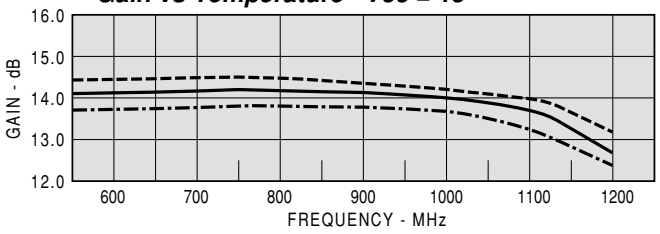
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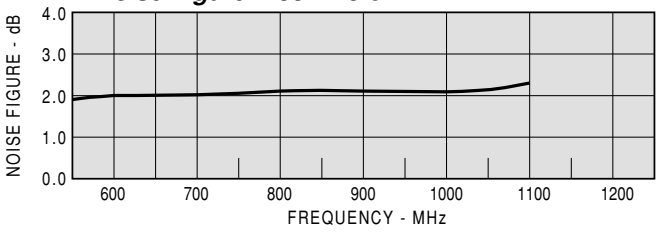
TYPICAL PERFORMANCE

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

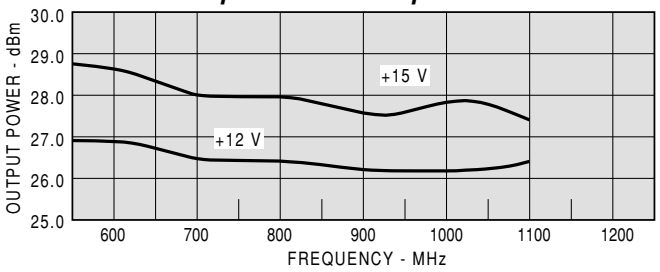
Gain vs Temperature Vcc = 15



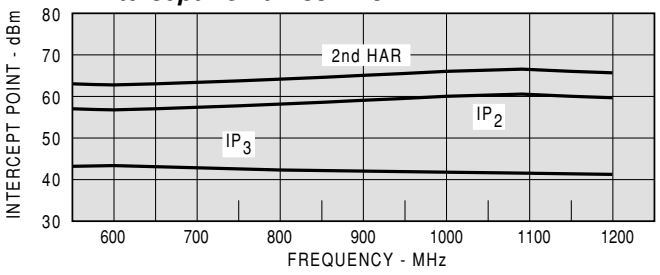
Noise Figure Vcc = 15 & 12



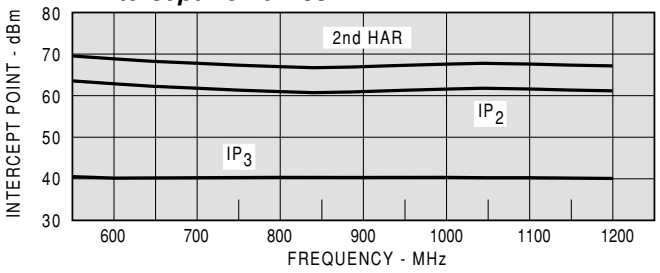
Power Output at 1 dB Compression



Intercept Point Vcc = 15



Intercept Point Vcc = 12



TYPICAL AUTOMATIC TEST DATA

Model: AR1096 Vcc= +15V Icc= 230.52

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
500	1.25	1.83	14.07	86	0.54	-22.7
600	1.36	1.52	14.15	66	0.56	-22.3
700	1.48	1.25	14.16	45	0.58	-21.9
800	1.58	1.08	14.15	23	0.60	-21.5
900	1.62	1.27	14.16	0	0.63	-21.2
1000	1.54	1.69	14.14	-25	0.69	-21.3
1100	1.54	2.51	13.94	-53	0.77	-21.9
1200	2.16	4.02	13.19	-84	0.88	-24.1

LINEAR S-PARAMETERS

Model: AR1096 Vcc= +15V Icc= 230.52

FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500	0.11	-89.7	5.05	86.0	0.073	-50.5	0.29	132.4
600	0.15	-96.3	5.10	65.6	0.077	-63.8	0.21	120.8
700	0.19	-107.3	5.10	44.6	0.080	-78.4	0.11	103.5
800	0.22	-125.3	5.10	22.9	0.084	-95.4	0.04	24.3
900	0.24	-150.7	5.10	0.1	0.087	-114.8	0.12	-54.6
1000	0.21	171.4	5.09	-24.8	0.086	-138.3	0.26	-71.0
1100	0.21	103.0	4.98	-52.6	0.080	-165.9	0.43	-84.3
1200	0.37	31.9	4.57	-84.4	0.062	160.6	0.60	-103.3
1300	0.61	-17.4	3.67	-119.1	0.033	129.2	0.68	-124.2

Model: AR1096 Vcc= +12V Icc= 208.86

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
500	1.27	1.93	13.84	86	0.54	-22.7
600	1.37	1.61	13.94	66	0.56	-22.2
700	1.49	1.33	13.97	45	0.58	-21.7
800	1.59	1.13	13.99	23	0.60	-21.2
900	1.65	1.21	14.02	1	0.64	-20.9
1000	1.60	1.60	14.06	-25	0.70	-20.8
1100	1.64	2.38	13.90	-53	0.79	-21.3
1200	2.34	3.81	13.10	-86	0.90	-23.5

LINEAR S-PARAMETERS

Model: AR1096 Vcc= +12V Icc= 208.86

FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
500	0.12	-94.6	4.92	86.3	0.073	-48.5	0.32	133.8
600	0.16	-99.8	4.98	66.1	0.078	-60.9	0.23	122.0
700	0.20	-110.1	4.99	45.1	0.083	-75.0	0.14	106.1
800	0.23	-127.8	5.01	23.4	0.087	-91.9	0.06	59.9
900	0.24	-153.0	5.02	0.5	0.091	-111.4	0.10	-37.6
1000	0.23	168.5	5.05	-24.7	0.091	-134.6	0.23	-62.7
1100	0.24	102.8	4.96	-53.1	0.086	-162.3	0.41	-78.9
1200	0.40	33.4	4.52	-85.6	0.066	164.4	0.58	-99.4
1300	0.63	-16.5	3.58	-120.6	0.035	136.2	0.66	-120.8