

AR3098

500 TO 3000 MHz TO-8B CASCADABLE AMPLIFIER

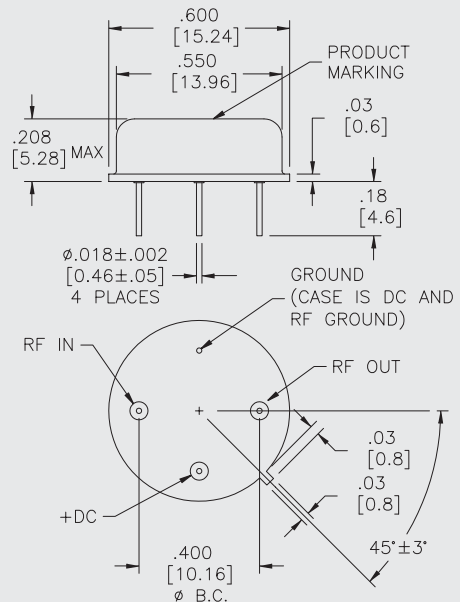
Typical Values

High Output Level	+29.5 dBm
High Third Order I.P.	+43 dBm
High Second Order I.P.	+57 dBm
Low Noise Figure	3.5 dB
High Performance Thin Film Standard Size TO-8B Package	

AR3098

AR3098

TO-8B Package for Amplifiers



SPECIFICATIONS*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-55 to +85 °C
Frequency (Min.)	200-3000 MHz	500-3000 MHz	500-3000 MHz
Small Signal Gain (Min.)	11.5 dB	11.0 dB	10.5 dB
Gain Flatness (Max.)	±0.5 dB	±0.8 dB	±1.2 dB
Noise Figure (Max.)	3.5 dB	4.5 [^] dB	5.0 [^] dB
SWR (Max.) Input/Output	1.5:1	1.7:1 [†]	1.8:1 [†]
Power Output (Min.) @ 1dB comp.	+29.5 dBm	+28.5 dBm	+28.0 dBm
Reverse Isolation	21.0 dB	—	—
DC Current (Max.)	335 mA	350 mA	360 mA

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.
[^] 0.5 dB higher above 2.5 GHz. [†] SWR 0.2 higher above 2.0 GHz.

INTERMODULATION PERFORMANCE

Typical @ 25 °C; 1500 MHz	+12 Volts	+15 Volts
Second Order Harmonic Intercept Point	+64 dBm	+63 dBm
Second Order Two Tone Intercept Point	+58 dBm	+57 dBm
Third Order Two Tone Intercept Point	+42 dBm	+43 dBm

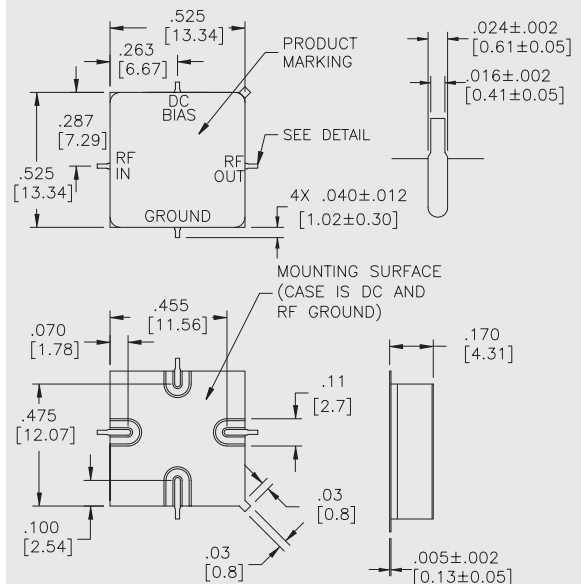
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to +150 °C
Maximum Case Temperature	+110 °C
Maximum DC Voltage	+17 Volts
Maximum Continuous RF Input Power	+20 dBm
Maximum Short Term Input Power (1 Minute Max.)	200 Milliwatts
Maximum Peak Power (3 μsec Max.)	0.5 Watt
Burn-in Temperature	+85 °C
Thermal Resistance ¹ (θjc)	+9.5 °C/Watt
Junction Temperature Rise Above Case (Tjc)	+54.5 °C

¹ Thermal resistance is based on total power dissipation.

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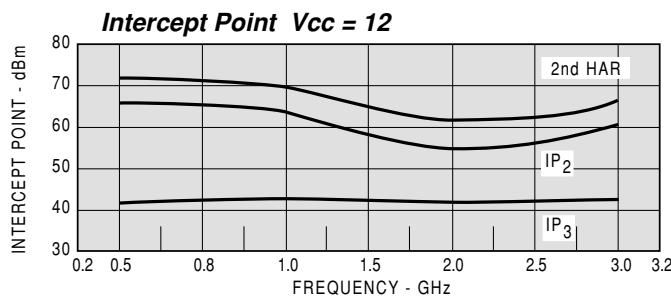
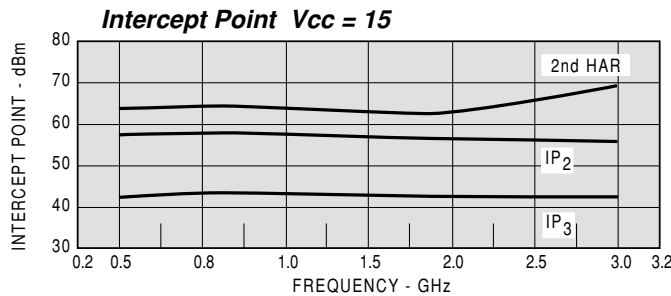
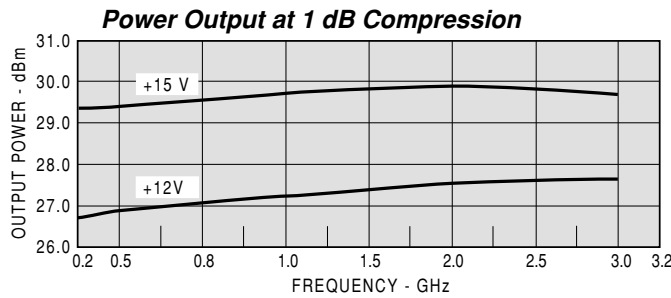
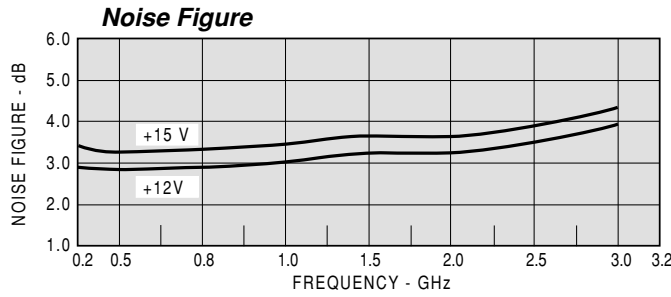
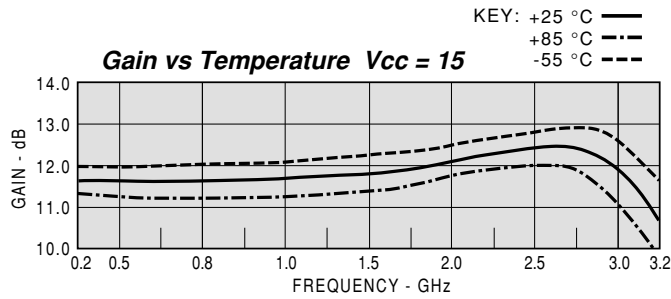
SMTO-8B Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

TYPICAL PERFORMANCE

TYPICAL AUTOMATIC TEST DATA



Model: AR3098 Vcc=+15V Icc=334.4

FREQ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	GROUP DELAY NSEC	REV/ISO DB
200	1.44	1.40	11.65	163	0.30	-20.1
400	1.42	1.34	11.61	144	0.26	-20.3
600	1.40	1.28	11.62	126	0.26	-20.4
800	1.39	1.20	11.65	108	0.25	-20.7
1000	1.39	1.13	11.70	89	0.26	-21.1
1200	1.38	1.09	11.75	71	0.26	-21.3
1400	1.37	1.15	11.80	52	0.26	-21.6
1600	1.36	1.22	11.86	33	0.26	-21.9
1800	1.31	1.27	11.84	15	0.26	-21.7
2000	1.34	1.34	12.15	-6	0.29	-22.3
2200	1.32	1.33	12.19	-27	0.29	-22.5
2400	1.27	1.27	12.27	-48	0.29	-22.3
2600	1.27	1.28	12.36	-70	0.31	-22.1
2800	1.33	1.45	12.28	-96	0.35	-21.7
3000	1.45	1.83	11.80	-121	0.36	-21.5
3200	1.58	2.39	10.61	-146	0.34	-21.3

Model: AR3098 Vcc=+15V Icc=334.4

LINEAR S-PARAMETERS

FREQ.	S11		S21		S12		S22	
MHZ	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.18	-22.1	3.82	163.2	0.099	-10.4	0.17	164.1
400	0.17	-38.2	3.81	144.4	0.097	-23.2	0.15	153.9
600	0.17	-55.4	3.81	126.0	0.095	-35.4	0.12	146.3
800	0.16	-73.0	3.82	107.7	0.092	-46.4	0.09	141.9
1000	0.16	-88.6	3.84	89.3	0.088	-58.0	0.06	150.1
1200	0.16	-103.6	3.87	70.7	0.086	-68.3	0.05	-177.1
1400	0.16	-118.3	3.89	52.0	0.083	-79.5	0.07	-152.0
1600	0.15	-134.8	3.92	33.0	0.081	-88.1	0.10	-151.8
1800	0.14	-146.2	3.91	14.5	0.082	-99.3	0.12	-162.3
2000	0.15	-165.1	4.05	-6.1	0.077	-110.6	0.15	-173.5
2200	0.14	170.3	4.07	-27.3	0.075	-119.5	0.14	160.7
2400	0.12	139.7	4.11	-48.0	0.077	-128.8	0.12	128.0
2600	0.12	99.8	4.15	-70.5	0.078	-139.2	0.12	81.4
2800	0.14	60.4	4.11	-95.5	0.082	-151.5	0.18	35.2
3000	0.18	29.8	3.89	-121.5	0.085	-163.7	0.29	2.4
3200	0.23	10.7	3.39	-145.9	0.087	-176.9	0.41	-21.2

Model: AR3098 Vcc=+12V Icc=321.1

FREQ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	GROUP DELAY NSEC	REV/ISO DB
200	1.43	1.56	11.69	163	0.29	-20.6
400	1.41	1.49	11.67	145	0.26	-20.7
600	1.40	1.42	11.68	126	0.25	-21.0
800	1.38	1.33	11.71	108	0.25	-21.1
1000	1.37	1.24	11.75	90	0.25	-21.3
1200	1.36	1.16	11.80	71	0.26	-21.4
1400	1.35	1.11	11.86	53	0.26	-21.6
1600	1.33	1.13	11.90	34	0.26	-21.7
1800	1.28	1.15	11.86	15	0.26	-21.3
2000	1.30	1.20	12.12	-5	0.28	-21.7
2200	1.26	1.19	12.12	-26	0.29	-21.6
2400	1.22	1.18	12.13	-46	0.29	-21.2
2600	1.23	1.26	12.15	-68	0.31	-20.9
2800	1.31	1.49	12.01	-92	0.33	-20.6
3000	1.43	1.88	11.57	-116	0.34	-20.4

Model: AR3098 Vcc=+12V Icc=321.1

LINEAR S-PARAMETERS

FREQ.	S11		S21		S12		S22	
MHZ	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200	0.18	-22.2	3.84	163.3	0.093	-9.8	0.22	165.2
400	0.17	-38.6	3.83	144.7	0.092	-21.6	0.20	154.4
600	0.17	-56.4	3.84	126.4	0.090	-32.6	0.17	144.5
800	0.16	-73.7	3.85	108.3	0.088	-42.6	0.14	136.0
1000	0.16	-89.4	3.87	90.1	0.086	-53.5	0.11	131.6
1200	0.15	-104.7	3.89	71.5	0.085	-62.6	0.07	133.8
1400	0.15	-119.5	3.92	52.9	0.083	-73.4	0.05	153.1
1600	0.14	-136.1	3.93	34.0	0.082	-82.5	0.06	175.8
1800	0.12	-149.5	3.92	15.4	0.086	-93.1	0.07	173.5
2000	0.13	-167.3	4.04	-4.7	0.083	-103.7	0.09	171.1
2200	0.12	165.5	4.04	-25.5	0.084	-113.6	0.09	138.6
2400	0.10	130.2	4.04	-46.1	0.087	-124.2	0.08	93.0
2600	0.10	82.2	4.05	-68.1	0.090	-135.6	0.12	44.2
2800	0.14	40.9	3.98	-92.1	0.093	-148.5	0.20	11.6
3000	0.18	11.4	3.79	-116.5	0.096	-162.3	0.30	-12.5
3200	0.21	-6.1	3.37	-139.4	0.097	-176.2	0.41	-30.8