

# AR1298 10 TO 1200 MHZ TO-8B CASCADABLE AMPLIFIER

**Typical Values**

<b>High Output Power</b> .....	<b>1 Watt</b>
<b>Low Noise Figure</b> .....	<b>4.0 dB</b>
<b>High Third Order Intercept Point</b> .....	<b>+45 dBm</b>
<b>High Second Order Harmonics</b> .....	<b>+69 dBm</b>
<b>High Performance Thin Film TO-8B Package</b>	

**AR1298**

## SPECIFICATIONS\*

Parameter	Typical	Guaranteed	
		0 to 50° C	-55 to +85° C
Frequency (Min.)	10-1300 MHz	10-1200 MHz	10-1200 MHz
Small Signal Gain (Min.)	11.5 dB	11.0 <sup>^</sup> dB	10.5 <sup>^</sup> dB
Gain Flatness (Max.)	±0.6 dB	±0.8 dB	±1.0 dB
Noise Figure (Max.) 30-1200 MHz	4.0 <sup>†</sup> dB	4.5 <sup>†</sup> dB	5.0 <sup>†</sup> dB
SWR (Max.)	Input 1.6:1 Output 1.8:1	1.9:1 2.0:1	2.0:1 2.1:1
Power Output (Min.) @ 1dB comp.	+30.5 dBm	+29.5 dBm	(+29.0) dBm
DC Current (Max.)	410.0 mA	420.0 mA	425.0 mA

\* Measured in a 50-ohm system at +15 Vdc unless otherwise specified. ( ) -55/+71° C. <sup>†</sup>1.0 dB higher below 100 MHz, 0.5 dB higher above 1000 MHz. <sup>^</sup> 0.5 dB lower above 1000 MHz.

## INTERMODULATION PERFORMANCE

**Typical @ 25° C**

<b>Second Order Harmonic Intercept Point</b> .....	<b>+69 dBm</b>
<b>Second Order Two Tone Intercept Point</b> .....	<b>+63 dBm</b>
<b>Third Order Two Tone Intercept Point</b> .....	<b>+45 dBm</b>

**AR1298**

## ABSOLUTE MAXIMUM RATINGS

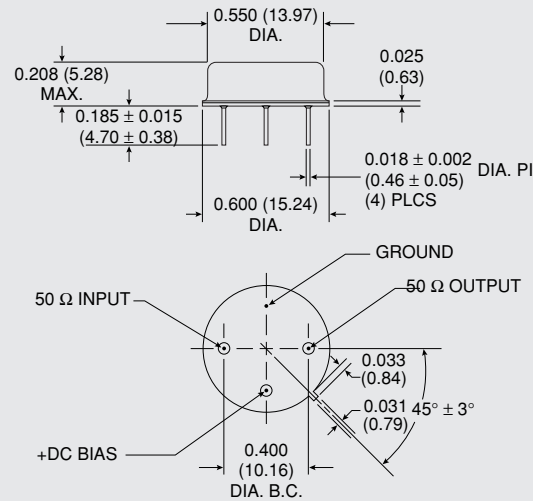
<b>Storage Temperature</b> .....	<b>-62 to 125° C</b>
<b>Maximum Case Temperature</b> .....	<b>+85° C</b>
<b>Maximum DC Voltage</b> .....	<b>+16 Volts</b>
<b>Maximum Continuous RF Input Power</b> .....	<b>+20 dBm<sup>1</sup></b>
<b>Maximum Short Term Input Power (1 Minute Max.)</b> .....	<b>250 Milliwatts</b>
<b>Maximum Peak Power (3 µsec Max.)</b> .....	<b>0.5 Watt</b>
<b>Burn-in Temperature</b> .....	<b>+71° C</b>
<b>Thermal Resistance<sup>2</sup> (θjc)</b> .....	<b>+14° C/Watt</b>
<b>Junction Temperature Rise Above Case (Tjc)</b> .....	<b>+89.0° C</b>

<sup>1</sup> If no load on output; decrease input power (no damage) by 10 dBm.

<sup>2</sup> Thermal resistance is based on total power dissipation.

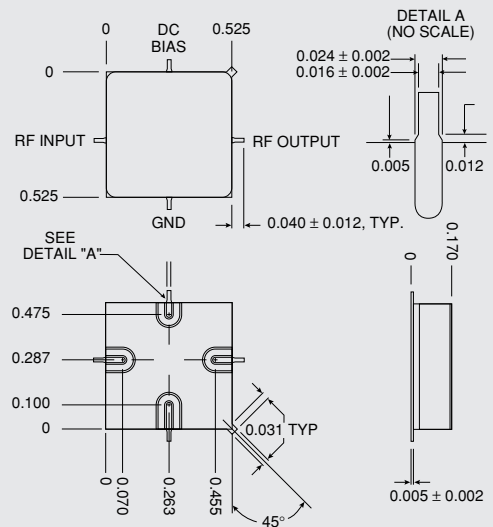
## AR1298

### TO-8B Package for Amplifiers



## ARS1298

### SMT0-8B Package for Amplifiers

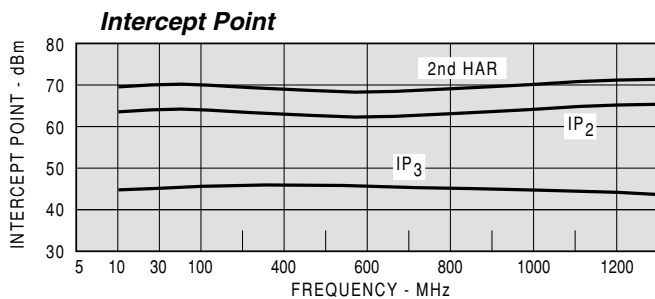
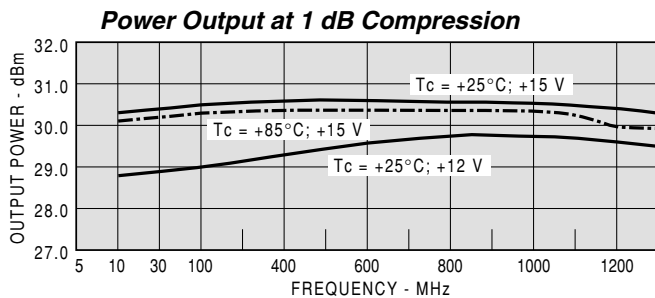
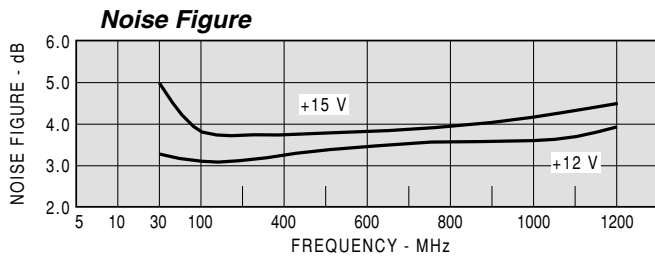
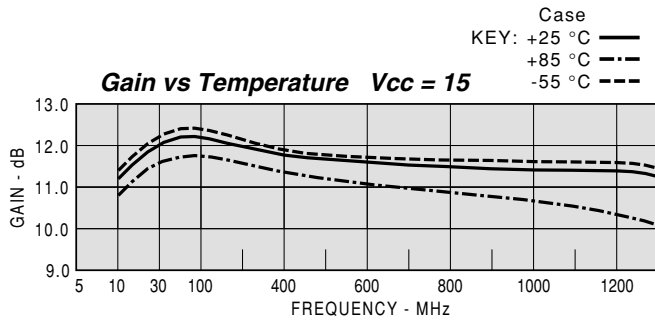


DIMENSIONS ARE IN INCHES (MILLIMETERS)



## TYPICAL PERFORMANCE

## TYPICAL AUTOMATIC TEST DATA



Model: AR1298		Vcc= +15V		Icc= 409.90	
FREQ	SWR	SWR	GAIN	DELAY	REV/ISO
MHZ	IN	OUT	DB	NSEC	DB
10	1.57	1.43	11.1		-18.5
20	1.32	1.55	11.8		-19.3
50	1.17	1.72	12.2	1.211	-19.9
100	1.13	1.74	12.2	0.651	-20.0
200	1.21	1.66	12.0	0.537	-19.9
300	1.29	1.55	11.8	0.492	-19.7
400	1.38	1.43	11.7	0.483	-19.6
500	1.45	1.34	11.6	0.478	-19.3
600	1.54	1.28	11.5	0.471	-19.1
700	1.57	1.23	11.4	0.495	-18.9
800	1.59	1.21	11.4	0.497	-18.6
900	1.59	1.20	11.3	0.507	-18.3
1000	1.54	1.17	11.3	0.529	-17.9
1100	1.50	1.12	11.3	0.570	-17.5
1200	1.59	1.03	11.2	0.620	-17.2
1300	1.90	1.21	10.9	0.687	-17.2

Model: AR1298		LINEAR S-PARAMETERS						Icc= 409.90	
		Vcc= +15V							
FREQ.	S11	S21		S12		S22			
MHZ	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	
10	0.22	-60.9	3.58	-159.4	0.119	8.0	0.18	153.7	
20	0.14	-70.1	3.90	-170.7	0.109	-2.0	0.22	-176.7	
50	0.08	-83.7	4.05	176.3	0.102	-6.0	0.27	178.8	
100	0.06	-94.9	4.07	164.6	0.100	-8.0	0.27	170.7	
200	0.10	-106.6	3.99	145.3	0.101	-15.0	0.25	159.0	
300	0.13	-116.6	3.91	127.5	0.104	-23.0	0.21	152.0	
400	0.16	-126.1	3.86	110.4	0.105	-32.0	0.18	147.8	
500	0.18	-138.4	3.81	93.1	0.108	-40.0	0.15	144.3	
600	0.21	-152.2	3.76	76.0	0.111	-50.0	0.12	146.5	
700	0.22	-166.0	3.72	58.4	0.114	-60.0	0.10	152.7	
800	0.23	178.0	3.70	40.0	0.117	-69.0	0.09	159.2	
900	0.23	161.5	3.67	22.2	0.122	-81.0	0.09	160.6	
1000	0.21	135.9	3.67	3.0	0.127	-92.0	0.08	154.4	
1100	0.20	102.2	3.66	-17.4	0.133	-106.0	0.06	139.3	
1200	0.23	55.8	3.62	-40.0	0.138	-122.0	0.02	54.5	
1300	0.31	8.2	3.50	-64.5	0.138	-141.0	0.10	-45.5	
1400	0.47	-32.8	3.21	-91.2	0.132	-161.0	0.23	-71.7	

Model: AR1298		Vcc= +12V		Icc= 396.90	
FREQ	SWR	SWR	GAIN	DELAY	REV/ISO
MHZ	IN	OUT	DB	NSEC	DB
10	1.54	1.47	11.0		-18.8
20	1.32	1.65	11.7		-19.6
50	1.17	1.84	12.1	1.162	-20.2
100	1.13	1.86	12.1	0.655	-20.3
200	1.21	1.78	11.9	0.530	-20.2
300	1.31	1.67	11.8	0.492	-20.0
400	1.39	1.55	11.6	0.482	-19.7
500	1.47	1.46	11.5	0.471	-19.4
600	1.53	1.39	11.4	0.471	-19.1
700	1.57	1.32	11.4	0.491	-18.8
800	1.60	1.28	11.3	0.498	-18.3
900	1.61	1.25	11.3	0.503	-17.9
1000	1.58	1.22	11.3	0.535	-17.4
1100	1.51	1.19	11.3	0.572	-17.0
1200	1.59	1.18	11.3	0.630	-16.5
1300	1.92	1.35	11.0	0.701	-16.4

Model: AR1298		LINEAR S-PARAMETERS						Icc= 396.90	
		Vcc= +12V							
FREQ.	S11	S21		S12		S22			
MHZ	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	
10	0.21	-58.7	3.55	-160.3	0.115	6.0	0.19	163.2	
20	0.14	-65.6	3.87	-171.1	0.105	-2.0	0.25	-174.6	
50	0.08	-76.8	4.01	176.1	0.098	-5.0	0.30	179.4	
100	0.06	-88.6	4.02	164.4	0.096	-8.0	0.30	171.3	
200	0.10	-102.5	3.95	145.5	0.097	-14.0	0.28	160.4	
300	0.13	-112.2	3.88	127.8	0.100	-20.0	0.25	153.3	
400	0.16	-124.7	3.82	110.6	0.103	-28.0	0.22	148.2	
500	0.19	-136.1	3.77	93.4	0.107	-37.0	0.19	142.5	
600	0.21	-149.9	3.73	76.2	0.111	-47.0	0.16	140.2	
700	0.22	-163.2	3.69	58.7	0.115	-56.0	0.14	139.7	
800	0.23	-178.1	3.69	40.9	0.121	-66.0	0.12	138.3	
900	0.23	165.0	3.67	22.8	0.127	-77.0	0.11	135.2	
1000	0.23	140.3	3.67	3.5	0.134	-89.0	0.10	121.1	
1100	0.20	107.7	3.67	-17.2	0.142	-105.0	0.09	94.7	
1200	0.23	61.8	3.66	-39.8	0.149	-121.0	0.08	38.8	
1300	0.32	11.8	3.55	-65.0	0.150	-141.0	0.15	-20.3	
1400	0.48	-31.1	3.25	-92.6	0.146	-162.0	0.28	-58.6	