TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 2/16

AR1298 — 20 TO 1200 MHZ TO-8B CASCADABLE AMPLIFIER

Typical Values	AR1298
High Output Power	1 Watt
Low Noise Figure	4.0 dB
High Third Order Intercept Point	+45 dBm
High Second Order Harmonics	+69 dBm
High Performance Thin Film TO-8B Package	

SPECIFICATIONS*

Parameter	Typical	Guaranteed* 0 to 50 °C	Guaranteed* -55 to +85 °C
Frequency (Min.)	**10-1300 MHz**	**20 -1200 MHz**	**20 -1200 MHz**
Small Signal Gain (Min.)	11.5 dB	11.0^ dB	10.5^ dB
Gain Flatness (Max.)	±0.6 dB	±1.0 dB	±1.0 dB
Noise Figure (Max.) 50-1200 MHz	4.0† dB	4.5† dB	5.0† dB
SWR (Max.) Input	1.6:1	1.9:1	2.0:1
Output 20-400 MHz	2.3:1	2.5:1	2.7:1
400-1200 MHz	1.8:1	2.0:1	2.1:1
Power Output (Min.) @ 1dB comp. 20-1000 MHz	+30.5 dBm	+29.5 dBm	(+29.0) dBm
1000-1200 MHz	+29.5 dBm	+28.5 dBm	(+28.5) dBm
Reverse Isolation	19.0 dB	—	—
DC Current (Max.)	410.0 mA	420.0 mA	450.0 mA

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

INTERMODULATION PERFORMANCE

Typical @ 25 °C	AR1298
Second Order Harmonic Intercept Point	+69 dBm
Second Order Two Tone Intercept Point	+63 dBm
Third Order Two Tone Intercept Point	+45 dBm

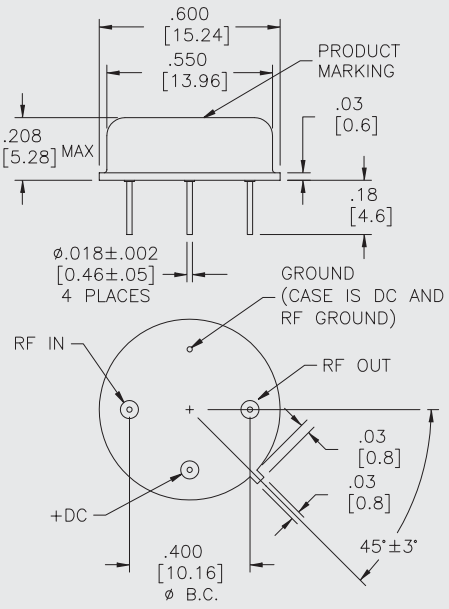
ABSOLUTE MAXIMUM RATINGS

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

[1] If no load on output; decrease input power (no damage) by 10 dBm.
[2] Thermal resistance is based on total power dissipation.

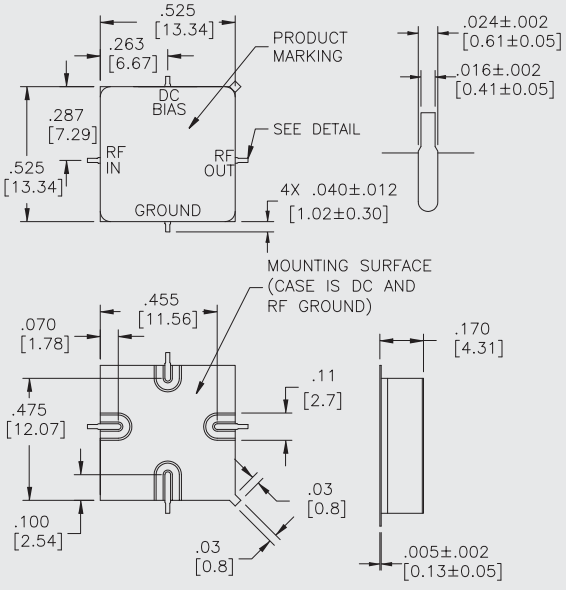
AR1298

TO-8B Package for Amplifiers



ARS1298

SMTO-8B Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

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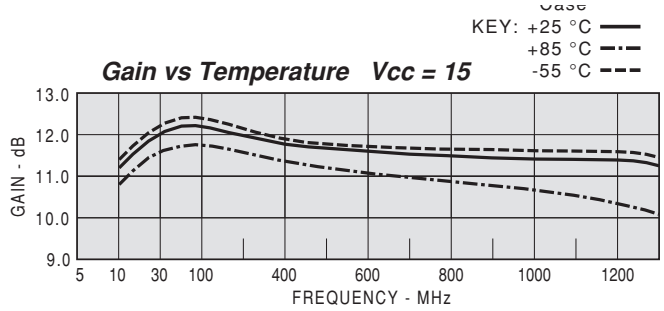
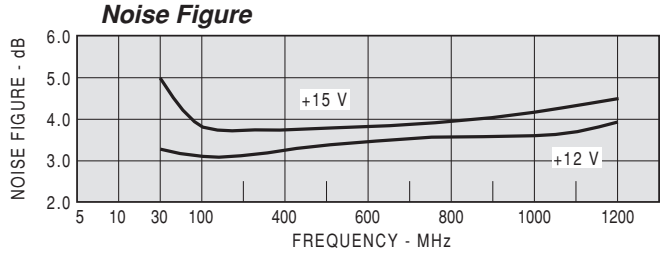
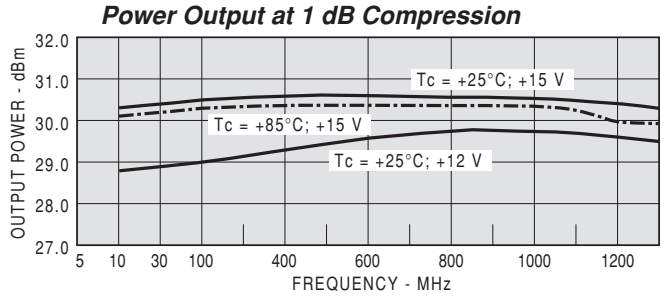
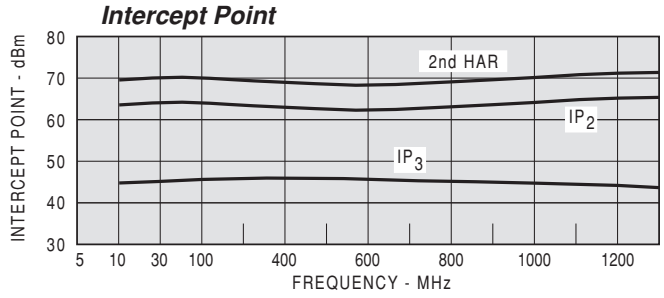
AR1298

TYPICAL PERFORMANCE









TYPICAL AUTOMATIC TEST DATA

Model: AR1298 Vcc= +15V Icc= 409.90

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	DELAY NSEC	REV/ISO 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

LINEAR S-PARAMETERS

Model: AR1298 Vcc= +15V Icc= 409.90

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 MHZ	SWR IN	SWR OUT	GAIN DB	DELAY NSEC	REV/ISO 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

LINEAR S-PARAMETERS

Model: AR1298 Vcc= +12V Icc= 396.90

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