TELEDYNE COUGAR
A Teledyne Technologies Company

Rev. 5/10

AR2589

100 TO 2500 MHz TO-8B CASCADABLE AMPLIFIER

Typical Values	AR2589
High Output Power	**+28.3 dBm**
High Gain	**20.5 dB**
Low Noise Figure	**< 3.4 dB**

High Performance Thin Film TO-8B Package

SPECIFICATIONS*

Parameter	Typical	Guaranteed 0 to 50 °C	Guaranteed -55 to +85 °C
Frequency (Min.)	**50-2700 MHz**	**100-2500 MHz**	**100-2500 MHz**
Small Signal Gain (Min.)	20.5 dB	19.0 dB	18.5 dB
Gain Flatness (Max.)	< ±0.4 dB	±0.7 dB	±0.8 dB
Noise Figure (Max.)	< 3.4^ dB	4.0^ dB	4.5^ dB
SWR (Max.) Input/Output	< 1.5:1	1.8:1	1.9:1
Power Output (Min.) @ 1dB comp.	+28.3† dBm	+27.5† dBm	+27.0† dBm
Reverse Isolation	34.0 dB	—	—
DC Current (Max.)	283 mA	300 mA	310 mA

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.
^ 0.5 dB higher below 500 MHz. † 0.5 dBm lower at 2500 MHz.

INTERMODULATION PERFORMANCE

Typical @ 25 °C	+12 volts	+15 volts
Second Order Harmonic Intercept Point	+59 dBm	+61 dBm
Second Order Two Tone Intercept Point	+53 dBm	+55 dBm
Third Order Two Tone Intercept Point	+39 dBm	+39 dBm

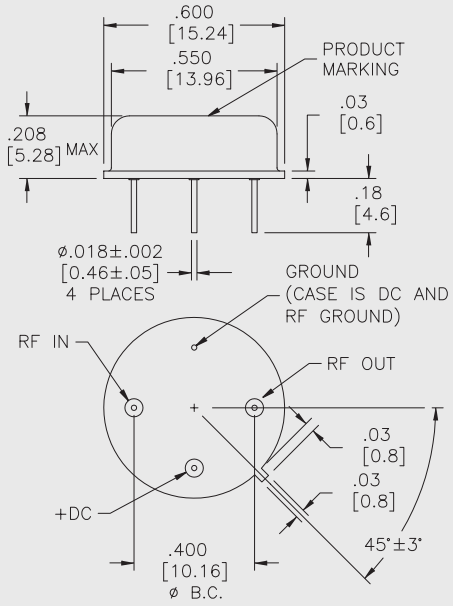
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to +125 °C
Maximum Case Temperature	+125 °C
Maximum DC Voltage	+17 Volts
Maximum Continuous RF Input Power	+17 dBm
Maximum Short Term Input Power (1 Minute Max.)	125 Milliwatts
Maximum Peak Power (3 µsec Max.)	0.5 Watt
Burn-in Temperature	+100 °C
Thermal Resistance[1] (θjc; Vcc = 15)	+14 °C/Watt
Junction Temperature Rise Above Case (Tjc; Vcc = 15)	+61 °C

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

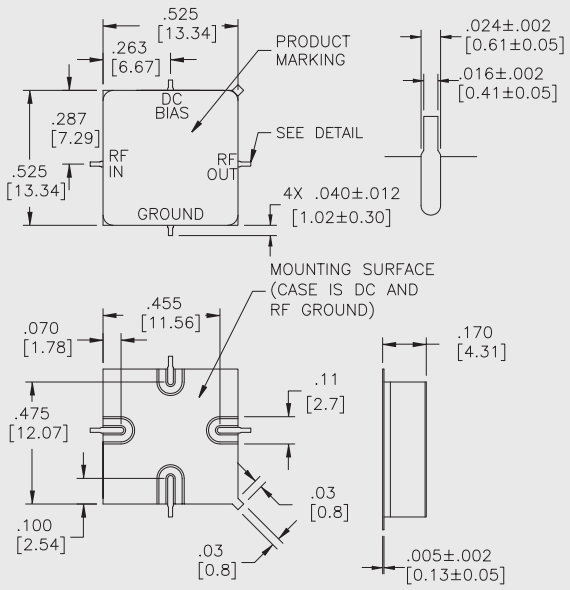
AR2589

TO-8B Package for Amplifiers



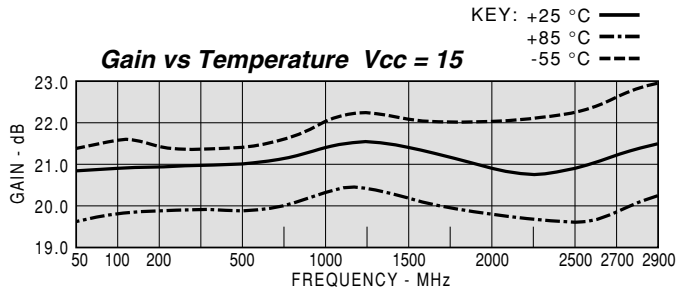
ARS2589

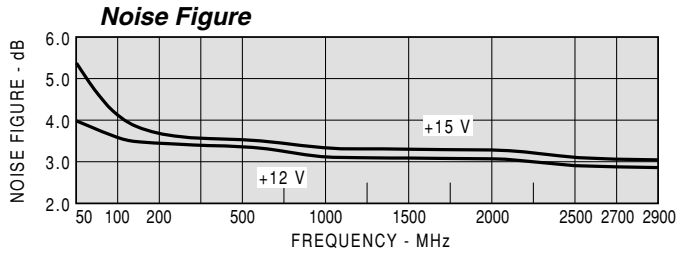
SMTO-8B Package for Amplifiers

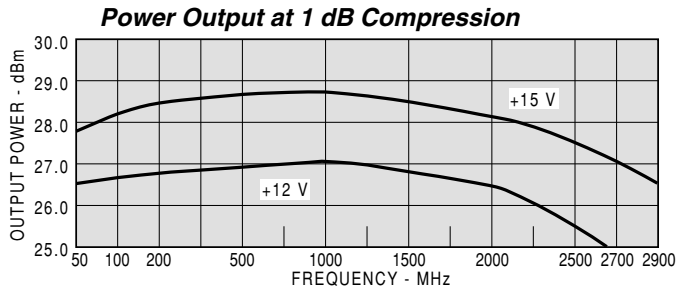


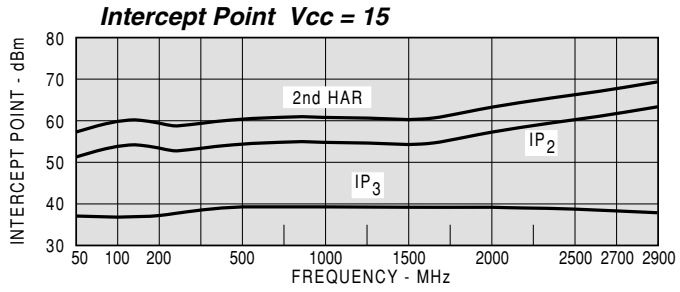
DIMENSIONS ARE IN INCHES [MILLIMETERS]

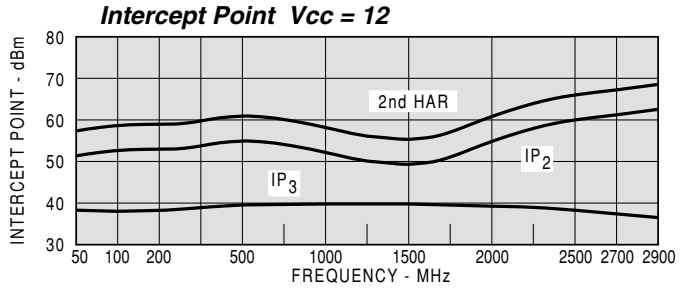
TYPICAL PERFORMANCE











TYPICAL AUTOMATIC TEST DATA

Model: AR2589 Vcc=+15V Icc=282.75

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
20	1.61	1.60	19.75	37		-36.3
50	1.55	1.16	20.48	10	2.5	-35.8
100	1.54	1.08	20.71	-4	0.79	-35.9
300	1.51	1.10	20.68	-35	0.38	-35.1
500	1.55	1.14	20.82	-62	0.36	-34.8
700	1.61	1.21	20.97	-88	0.36	-34.6
900	1.65	1.29	21.13	-114	0.37	-34.4
1100	1.65	1.36	21.30	-142	0.38	-34.3
1300	1.63	1.44	21.32	-170	0.40	-34.6
1500	1.59	1.49	21.20	162	0.40	-35.1
1700	1.53	1.49	21.11	134	0.41	-34.8
1900	1.44	1.47	20.90	106	0.40	-34.8
2100	1.37	1.49	20.63	80	0.36	-35.4
2300	1.31	1.54	20.53	53	0.36	-36.0
2500	1.25	1.61	20.72	25	0.40	-36.8
2700	1.23	1.68	21.19	-4	0.36	-36.9

LINEAR S-PARAMETERS

Model: AR2589 Vcc=+15V Icc=282.75

FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
20	0.23	-160.2	9.72	36.8	0.015	29.9	0.23	108.7
50	0.21	-178.0	10.57	9.8	0.016	11.2	0.07	115.6
100	0.21	169.8	10.85	-4.4	0.016	2.1	0.04	142.2
300	0.20	142.0	10.81	-35.4	0.018	-7.8	0.05	-174.9
500	0.22	122.5	10.98	-61.5	0.018	-19.4	0.07	-174.2
700	0.23	105.2	11.18	-87.7	0.019	-33.4	0.10	-176.1
900	0.24	89.2	11.40	-114.3	0.019	-39.5	0.13	176.6
1100	0.25	72.3	11.62	-141.7	0.019	-53.7	0.15	162.0
1300	0.24	56.6	11.64	-170.2	0.019	-66.5	0.18	143.2
1500	0.23	42.2	11.48	161.7	0.018	-82.3	0.20	123.5
1700	0.21	28.0	11.36	133.6	0.018	-102.2	0.20	101.5
1900	0.18	11.1	11.09	106.3	0.018	-118.6	0.19	74.2
2100	0.16	-4.4	10.76	79.8	0.017	-136.7	0.20	44.1
2300	0.13	-22.2	10.63	52.5	0.016	-160.9	0.21	14.2
2500	0.11	-42.9	10.86	25.0	0.014	-175.8	0.23	-17.0
2700	0.10	-80.6	11.47	-3.8	0.014	160.0	0.25	-51.4

Model: AR2589 Vcc=+12V Icc=280.16

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
20	1.54	1.58	19.63	37		-36.7
50	1.49	1.18	20.37	10	2.5	-36.5
100	1.49	1.13	20.59	-4	0.78	-36.3
300	1.46	1.16	20.56	-35	0.37	-35.1
500	1.52	1.20	20.71	-61	0.36	-35.2
700	1.58	1.27	20.86	-87	0.36	-35.1
900	1.63	1.35	21.04	-113	0.36	-34.7
1100	1.65	1.43	21.24	-140	0.38	-34.6
1300	1.65	1.53	21.30	-168	0.4	-34.1
1500	1.62	1.62	21.25	164	0.4	-34.5
1700	1.58	1.62	21.27	136	0.41	-33.9
1900	1.50	1.61	21.17	108	0.41	-34.2
2100	1.44	1.61	20.96	81	0.36	-34.2
2300	1.38	1.63	20.93	53	0.37	-34.9
2500	1.34	1.66	21.14	24	0.42	-35.6
2700	1.38	1.65	21.51	-6	0.38	-35.8

LINEAR S-PARAMETERS

Model: AR2589 Vcc=+12V Icc=280.16

FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
20	0.21	-159.0	9.59	36.5	0.015	24.8	0.23	114.5
50	0.20	-177.3	10.43	9.8	0.015	9.8	0.08	133.8
100	0.20	169.8	10.71	-4.3	0.015	3.5	0.06	159.2
300	0.19	141.3	10.67	-35.1	0.018	-7.6	0.07	180.0
500	0.21	121.8	10.85	-61.0	0.017	-17.4	0.09	-179.1
700	0.23	104.8	11.04	-86.8	0.018	-28.1	0.12	-178.8
900	0.24	88.6	11.27	-113.1	0.018	-37.3	0.15	177.0
1100	0.24	71.5	11.53	-140.2	0.019	-51.6	0.18	165.6
1300	0.25	55.9	11.61	-168.4	0.020	-60.9	0.21	149.5
1500	0.24	40.4	11.55	163.7	0.019	-74.6	0.24	132.0
1700	0.22	24.3	11.58	135.8	0.020	-93.3	0.24	113.5
1900	0.20	4.6	11.45	108.3	0.019	-111.6	0.23	90.1
2100	0.18	-14.5	11.16	81.1	0.019	-133.3	0.23	62.6
2300	0.16	-37.9	11.13	52.9	0.018	-153.7	0.24	33.8
2500	0.15	-68.9	11.40	24.2	0.017	-174.5	0.25	1.7
2700	0.16	-108.3	11.90	-5.9	0.016	164.2	0.25	-36.9