TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 5/10

AR3069

100 TO 3000 MHz TO-8B CASCADABLE AMPLIFIER

Typical Values	AR3069
High Gain	18.0 dB
High Output Level	+0.5 Watt
High Third Order I.P.	+40 dBm
High Reverse Isolation	35 dB

High Performance Thin Film
Standard Size TO-8B Package

SPECIFICATIONS*

Parameter	Typical	Guaranteed 0 to 50 °C	Guaranteed -55 to +85 °C
Frequency (Min.)	**50-3200 MHz**	**100-3000 MHz**	**100-3000 MHz**
Small Signal Gain (Min.)	18.0 dB	17.5 dB	17.0 dB
Gain Flatness (Max.)	±0.4 dB	±0.7 dB	±0.8 dB
Noise Figure (Max.) 500-3000 MHz	<5.2^ dB	6.0^ dB	6.5^ dB
SWR (Max.) Input/Output	<1.6:1	1.8:1	1.9:1
Power Output (Min.) @ 1dB comp.	+27.5 dBm	+27.0 dBm	+26.5 dBm
Reverse Isolation	35.0 dB	—	—
DC Current (Max.)	270 mA	285 mA	300 mA

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.
^ 2.0 dB higher 100-500 MHz.

INTERMODULATION PERFORMANCE

Typical @ 25 °C; 1000 MHz	AR3069
Second Order Harmonic Intercept Point	+60 dBm
Second Order Two Tone Intercept Point	+55 dBm
Third Order Two Tone Intercept Point	+40 dBm

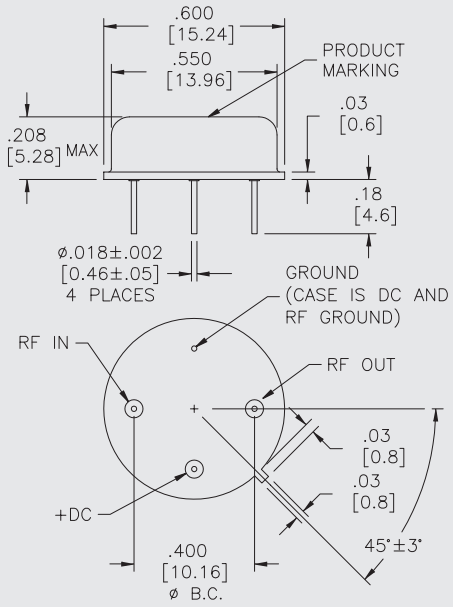
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to +125 °C
Maximum Case Temperature	+110 °C
Maximum DC Voltage	+17 Volts
Maximum Continuous RF Input Power	+17 dBm
Maximum Short Term Input Power (1 Minute Max.)	50 Milliwatts
Maximum Peak Power (3 µsec Max.)	0.5 Watt
Burn-in Temperature	+85 °C
Thermal Resistance[1] (θjc)	+15 °C/Watt
Junction Temperature Rise Above Case (Tjc)	+63.9 °C

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

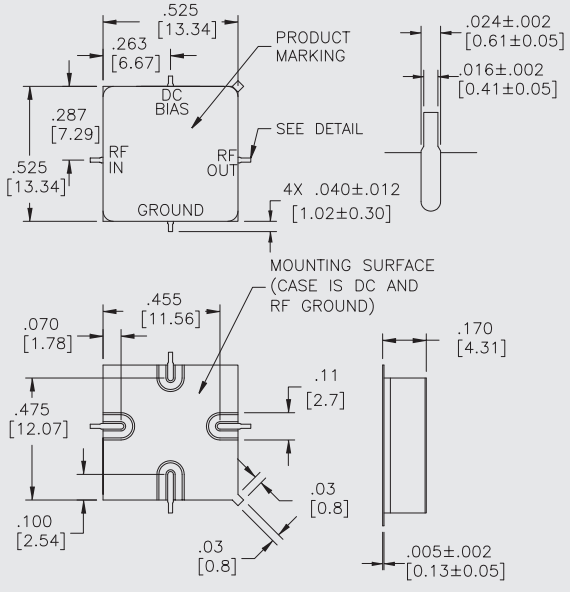
AR3069

TO-8B Package for Amplifiers



ARS3069

SMTO-8B Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

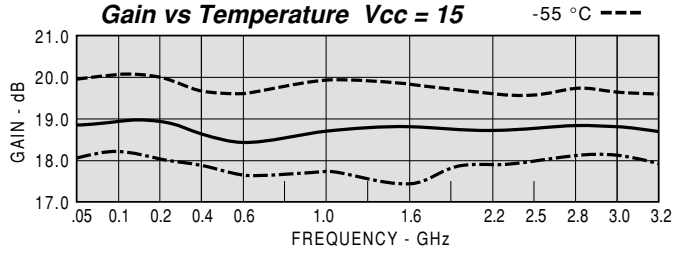
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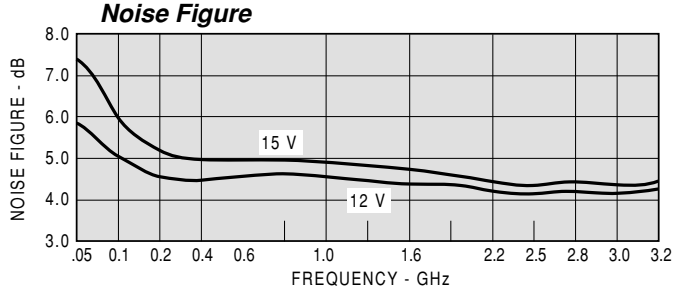
TYPICAL PERFORMANCE

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

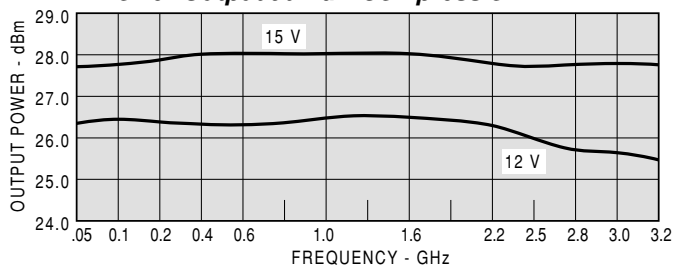
Gain vs Temperature Vcc = 15



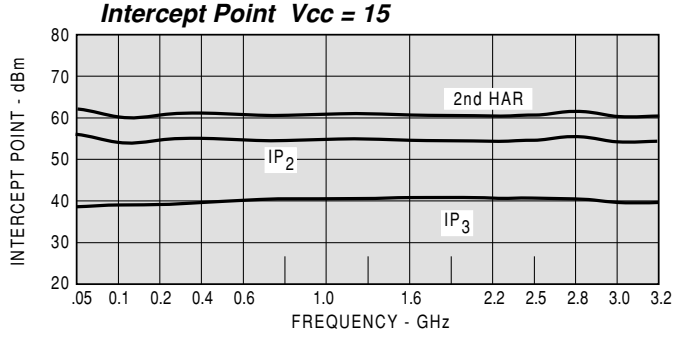
Noise Figure



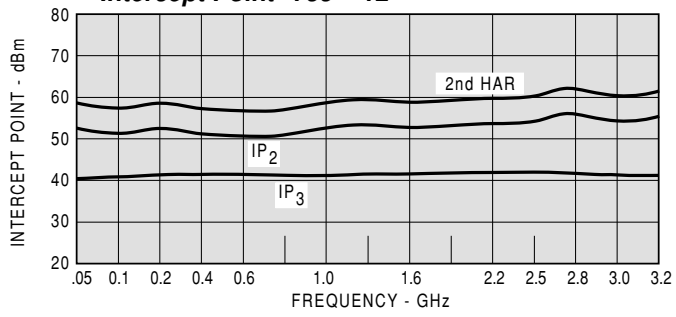
Power Output at 1 dB Compression



Intercept Point Vcc = 15



Intercept Point Vcc = 12



TYPICAL AUTOMATIC TEST DATA

Model: AR3069 Vcc= +15V Icc= 268.16

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	GROUP DELAY NSEC	REV/ISO DB
100	1.17	1.23	18.57	-7		-34.7
200	1.21	1.24	18.59	-24		-33.0
400	1.31	1.28	18.21	-51	0.36	-33.4
600	1.37	1.32	17.95	-75	0.33	-33.1
800	1.41	1.34	17.97	-99	0.33	-33.4
1000	1.38	1.34	18.12	-123	0.34	-33.7
1200	1.43	1.36	18.25	-149	0.36	-34.4
1400	1.48	1.38	18.31	-175	0.36	-34.9
1600	1.39	1.38	18.33	160	0.36	-35.1
1800	1.33	1.41	18.14	134	0.36	-35.8
2000	1.37	1.44	18.16	108	0.36	-36.5
2200	1.32	1.47	18.15	83	0.35	-37.0
2400	1.31	1.47	18.02	57	0.35	-37.5
2600	1.24	1.45	18.11	30	0.38	-37.3
2800	1.23	1.39	18.31	3	0.38	-37.9
3000	1.40	1.33	18.34	-27	0.40	-37.2
3200	1.53	1.26	18.13	-57	0.42	-36.9

LINEAR S-PARAMETERS

Model: AR3069 Vcc= +15V Icc= 268.16

FREQ	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.08	5.5	8.48	-6.90	0.018	1.2	0.1	160.7
200	0.10	5.8	8.50	-23.6	0.022	-5.2	0.11	148.4
400	0.14	-7.0	8.14	-51.0	0.021	-19.7	0.12	120.9
600	0.16	-23.5	7.90	-75.2	0.022	-32.6	0.14	90.9
800	0.17	-36.6	7.91	-98.6	0.021	-47.0	0.15	61.1
1000	0.16	-59.4	8.06	-123.1	0.021	-61.0	0.15	35.5
1200	0.18	-78.6	8.18	-148.7	0.019	-75.1	0.15	10.8
1400	0.19	-94.9	8.23	-174.5	0.018	-86.0	0.16	-15.3
1600	0.16	-109.3	8.25	159.7	0.018	-99.8	0.16	-41.9
1800	0.14	-121.4	8.08	133.8	0.016	-116.4	0.17	-65.0
2000	0.16	-133.3	8.09	107.8	0.015	-128.1	0.18	-95.5
2200	0.14	-139.8	8.08	82.7	0.014	-142.0	0.19	-121.4
2400	0.14	-123.8	7.96	57.4	0.013	-153.1	0.19	-147.1
2600	0.11	-130.5	8.05	29.9	0.014	-165.0	0.18	-175.4
2800	0.10	-122.4	8.23	2.50	0.013	-173.8	0.16	163.0
3000	0.17	-131.6	8.26	-26.6	0.014	178.4	0.14	132.3
3200	0.21	-136.5	8.06	-56.8	0.014	169.1	0.11	88.6

Model: AR3069 Vcc= +12V Icc= 263.47

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	GROUP DELAY NSEC	REV/ISO DB
100	1.17	1.33	18.94	-7		-34.0
200	1.21	1.34	18.98	-23		-33.7
400	1.3	1.37	18.59	-50	0.36	-33.9
600	1.35	1.40	18.35	-74	0.32	-33.6
800	1.37	1.40	18.41	-97	0.32	-33.9
1000	1.34	1.39	18.59	-121	0.34	-34.3
1200	1.39	1.40	18.74	-147	0.35	-34.8
1400	1.44	1.41	18.80	-172	0.36	-35.0
1600	1.37	1.39	18.79	162	0.36	-35.3
1800	1.32	1.40	18.62	136	0.36	-35.6
2000	1.37	1.39	18.66	110	0.36	-36.1
2200	1.35	1.39	18.58	85	0.35	-36.2
2400	1.35	1.37	18.44	60	0.36	-36.6
2600	1.27	1.32	18.55	33	0.37	-36.3
2800	1.24	1.26	18.67	7	0.36	-36.5
3000	1.40	1.19	18.71	-22	0.40	-35.6
3200	1.51	1.07	18.58	-53	0.42	-35.2

LINEAR S-PARAMETERS

Model: AR3069 Vcc=+12V Icc= 263.47

FREQ	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.08	3.8	8.85	-6.6	0.020	-5.5	0.14	166.7
200	0.10	4.0	8.89	-23.2	0.021	-3.2	0.14	155.2
400	0.13	-9.3	8.50	-50.3	0.020	-15.0	0.16	130.8
600	0.15	-25.5	8.27	-74.0	0.021	-28.7	0.17	104.4
800	0.16	-37.7	8.33	-97.0	0.020	-40.7	0.17	78.2
1000	0.15	-59.8	8.50	-121.3	0.019	-54.0	0.16	55.8
1200	0.16	-77.8	8.65	-146.8	0.018	-65.5	0.17	33.7
1400	0.18	-93.0	8.71	-172.5	0.018	-77.2	0.17	9.4
1600	0.16	-106.6	8.70	161.9	0.017	-89.2	0.16	-14.9
1800	0.14	-117.4	8.53	136.0	0.017	-104.6	0.17	-37.5
2000	0.16	-129.2	8.57	110.3	0.016	-116.7	0.16	-67.9
2200	0.15	-136.4	8.50	85.4	0.015	-128.7	0.16	-95.2
2400	0.15	-124.8	8.35	59.8	0.015	-141.0	0.16	-120.0
2600	0.12	-135.3	8.46	32.8	0.015	-152.0	0.14	-147.6
2800	0.11	-131.8	8.58	6.6	0.015	-161.2	0.11	-162.0
3000	0.17	-138.4	8.62	-22.2	0.017	-172.0	0.08	176.9
3200	0.20	-142.3	8.49	-52.5	0.017	177.1	0.03	156.6