TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 5/10

AC1022
AC1063

5 TO 1000 MHz
TO-8 CASCADABLE AMPLIFIERS

Typical Values	AC1022	AC1063
Low Noise Figure	**2.3 dB**	**2.5 dB**
High Single Stage Gain	**+16.2 dB**	**+16.2 dB**
Low SWR	**< 1.4:1**	**< 1.4:1**

High Performance Thin Film
Standard Size TO-8 Package

SPECIFICATIONS*

Parameter		Typical	Guaranteed 0 to 50 °C	Guaranteed -55 to +85 °C
Frequency (Min.)		**1-1100 MHz**	**5-1000 MHz**	**5-1000 MHz**
Small Signal Gain (Min.)		16.2 dB	15.5 dB	15.0 dB
Gain Flatness (Max.)		±0.25 dB	±0.5 dB	±0.7 dB
Noise Figure (Max.)				
	AC1022	2.3 dB	2.8 dB	3.5 dB
	AC1063	2.5 dB	3.0 dB	4.0 dB
SWR (Max.)	Input/Output	< 1.4:1	1.5:1	1.8:1
Power Output (Min.)				
@ 1dB comp.	AC1022	- 2.0 dBm	- 2.5 dBm	- 3.0 dBm
	AC1063	+5.5 dBm	+3.0 dBm	+2.5 dBm
Reverse Isolation		20.0 dB	—	—
DC Current (Max.)	AC1022	9.0 mA	11.0 mA	12.0 mA
	AC1063	14.0 mA	16.0 mA	18.0 mA

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.

INTERMODULATION PERFORMANCE

Typical @ 25 °C	AC1022	AC1063
Second Order Harmonic Intercept Point	+17 dBm	+26 dBm
Second Order Two Tone Intercept Point	+11 dBm	+20 dBm
Third Order Two Tone Intercept Point	+11 dBm	+15 dBm

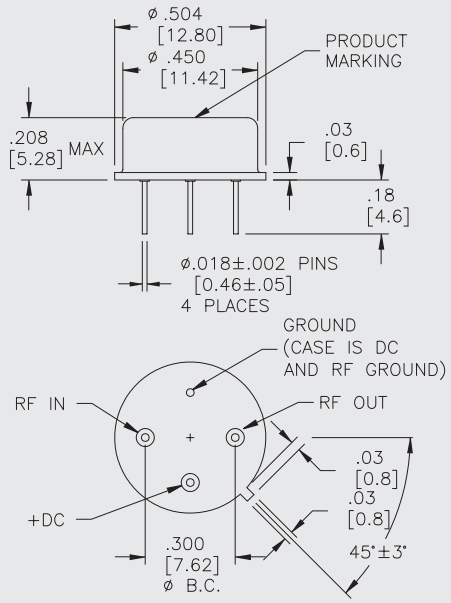
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to +125 °C
Maximum Case Temperature	+125 °C
Maximum DC Voltage	+19 Volts
Maximum Continuous RF Input Power	+13 dBm
Maximum Short Term Input Power (1 Minute Max.)	50 Milliwatts
Maximum Peak Power (3 µsec Max.)	0.5 Watt
Burn-in Temperature (AC1022/AC1063)	+125 °C
Thermal Resistance[1] (θjc; AC1022)	+44 °C/Watt
Thermal Resistance[1] (θjc; AC1063)	+55 °C/Watt
Junction Temperature Rise Above Case (Tjc; AC1022)	+7.2 °C
Junction Temperature Rise Above Case (Tjc; AC1063)	+14.0 °C

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

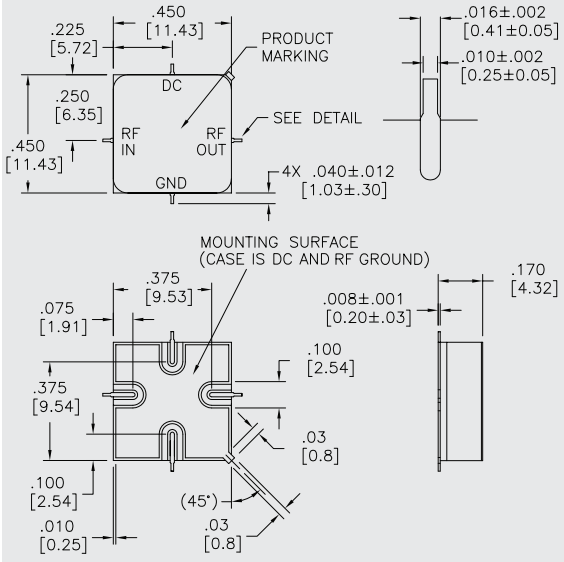
AC1022/AC1063

TO-8 Package for Amplifiers



AS1022/AS1063

SMTO-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

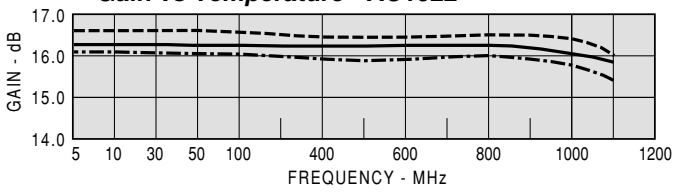
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AC1022/AC1063

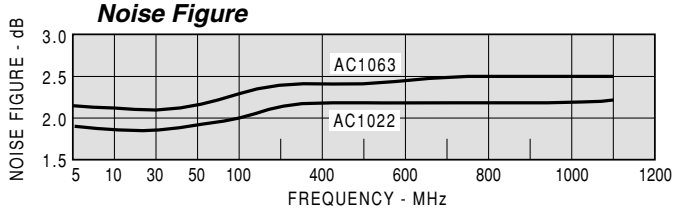
TYPICAL PERFORMANCE

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

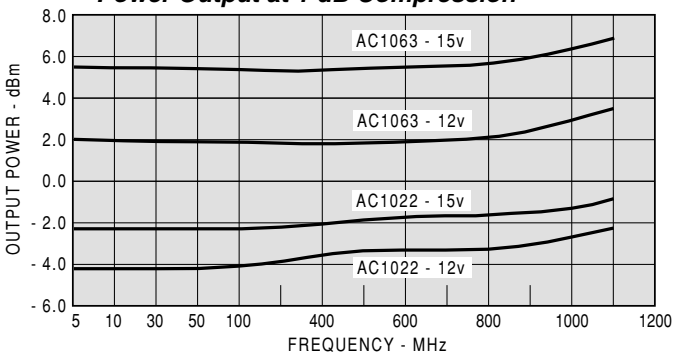
Gain vs Temperature - AC1022



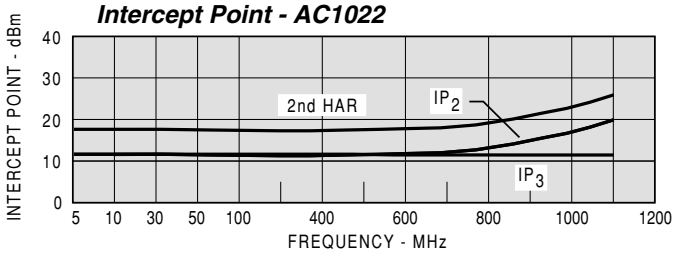
Noise Figure



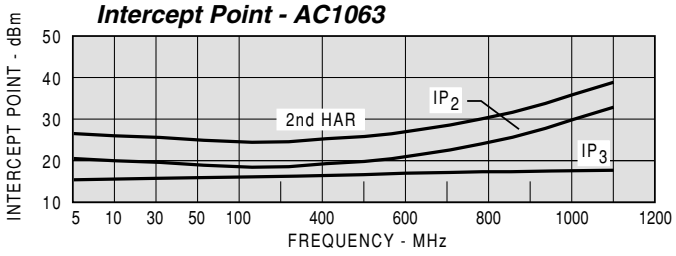
Power Output at 1 dB Compression



Intercept Point - AC1022



Intercept Point - AC1063



TYPICAL AUTOMATIC TEST DATA

Model: AC1022 Vcc=+15V Icc=8.86

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	DELAY NSEC	REV/ISO DB
5	1.25	1.23	16.1		-19.8
10	1.24	1.23	16.1		-19.8
20	1.27	1.23	16.1	0.792	-19.8
50	1.25	1.22	16.1	0.558	-19.8
100	1.26	1.22	16.0	0.452	-19.9
200	1.26	1.23	15.9	0.477	-20.0
300	1.25	1.23	15.9	0.475	-20.1
400	1.24	1.24	15.8	0.465	-20.2
500	1.24	1.24	15.9	0.473	-20.3
600	1.25	1.23	15.9	0.489	-20.4
700	1.20	1.19	16.0	0.484	-20.5
800	1.16	1.13	16.0	0.530	-20.8
900	1.12	1.07	16.1	0.550	-20.9
1000	1.13	1.02	16.0	0.605	-21.1
1100	1.27	1.10	15.7	0.620	-21.1

LINEAR S-PARAMETERS

Model: AC1022 Vcc=+15V Icc=8.86

FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5	0.11	-171.4	6.41	-177.5	0.102	4.0	0.10	-172.2
10	0.11	-177.6	6.40	179.8	0.102	1.0	0.10	-179.1
20	0.12	176.2	6.36	176.9	0.102	-1.0	0.10	174.8
50	0.11	169.8	6.37	170.8	0.102	-4.0	0.10	164.8
100	0.11	160.0	6.31	162.8	0.102	-8.0	0.10	150.9
200	0.11	137.2	6.25	145.6	0.100	-17.0	0.10	124.7
300	0.11	118.3	6.22	128.4	0.099	-25.0	0.10	97.6
400	0.11	93.4	6.20	111.5	0.098	-33.0	0.11	72.8
500	0.11	72.5	6.23	94.9	0.096	-41.0	0.11	50.4
600	0.11	60.1	6.20	77.2	0.096	-49.0	0.10	31.0
700	0.09	44.2	6.29	59.4	0.094	-57.0	0.09	10.2
800	0.07	33.3	6.32	40.5	0.091	-65.0	0.06	-13.2
900	0.06	43.7	6.36	20.7	0.090	-73.0	0.03	-46.1
1000	0.06	72.6	6.32	-1.0	0.088	-80.0	0.01	-160.4
1100	0.12	72.8	6.12	-23.3	0.088	-88.0	0.05	117.9
1200	0.20	64.3	5.70	-47.4	0.089	-95.0	0.08	85.9

Model: AC1063 Vcc=+15V Icc=14.46

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	DELAY NSEC	REV/ISO DB
5	1.17	1.12	16.1		-20.3
10	1.18	1.12	16.1		-20.3
20	1.18	1.12	16.1	0.787	-20.2
50	1.18	1.12	16.1	0.540	-20.2
100	1.17	1.12	16.0	0.434	-20.3
200	1.17	1.13	16.0	0.466	-20.3
300	1.19	1.14	15.9	0.460	-20.4
400	1.23	1.15	15.9	0.457	-20.5
500	1.23	1.14	16.0	0.465	-20.5
600	1.22	1.12	16.0	0.474	-20.6
700	1.25	1.11	16.1	0.487	-20.5
800	1.28	1.15	16.2	0.514	-20.5
900	1.30	1.22	16.3	0.545	-20.4
1000	1.31	1.34	16.2	0.593	-20.2
1100	1.36	1.49	15.9	0.613	-19.8

LINEAR S-PARAMETERS

Model: AC1063 Vcc=+15V Icc=14.46

FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5	0.08	-5.2	6.41	-177.9	0.097	4.0	0.05	-10.1
10	0.08	-3.4	6.40	179.9	0.097	1.0	0.06	-4.4
20	0.08	-0.4	6.37	177.1	0.097	-0.0	0.06	-1.4
50	0.08	-0.3	6.39	171.2	0.097	-4.0	0.06	-1.2
100	0.08	-5.9	6.33	163.5	0.097	-8.0	0.06	-3.5
200	0.08	-13.2	6.31	146.5	0.096	-15.0	0.06	-8.7
300	0.09	-25.7	6.24	129.9	0.095	-22.0	0.07	-18.2
400	0.10	-36.9	6.24	113.5	0.095	-29.0	0.07	-32.1
500	0.10	-46.6	6.28	97.0	0.094	-36.0	0.06	-48.6
600	0.10	-61.6	6.31	79.7	0.094	-43.0	0.05	-76.1
700	0.11	-83.9	6.38	62.3	0.094	-50.0	0.05	-119.8
800	0.12	-106.6	6.43	43.9	0.094	-57.0	0.07	-166.6
900	0.13	-135.7	6.51	24.2	0.095	-63.0	0.10	155.2
1000	0.13	-167.7	6.45	2.7	0.098	-70.0	0.14	121.5
1100	0.15	153.3	6.25	-19.4	0.102	-78.0	0.20	92.5
1200	0.20	116.1	5.79	-42.6	0.107	-87.0	0.24	64.8