T-74-09-01 1/91
B-74-09-51

COUGAR COMPONENTS
2225-K Martin Avenue, Santa Clara, CA 95050 (408) 492-1400
FAX (408) 492-1500

AC541 AC542 20 to 500 MHz TO-8 Cascadable Amplifiers

(Typical Values)	AC541	AC542
High Reverse Isolation	37 dB	36 dB
Low Noise Figure	2.8 dB	3.3 dB
High Output Level	6.5 dBm	12.5 dBm
High Third Order I.P.	+ 20.0 dBm	+ 27.0 dBm
High Efficiency		

Specifications

Parameter		Typical	Guaranteed* 0 to 50 °C	Guaranteed* - 55 to 85 °C
Frequency (Min.)		10-600 MHz	20-500 MHz	20-500 MHz
Small Signal Gain (Min.)	AC541	15.5 dB	14.5 dB	14.0 dB
	AC542	17.5 dB	16.5 dB	16.0 dB
Gain Flatness (Max.)		<± 0.5 dB	± 0.7 dB	± 1.0 dB
Noise Figure (Max.)	AC541	2.8 dB	3.3 dB	4.0 dB
	AC542	3.3 dB	3.8 dB	4.5 dB
SWR (Max.)	Input	< 1.8:1	2.0:1	2.0:1
	Output	< 1.2:1	1.5:1	1.5:1
Power Output @ 1dB comp. (Min.)	AC541	+ 6.5 dBm	+ 6.0 dBm	+ 5.5 dBm
	AC542	+ 12.5 dBm	+ 12.0 dBm	+ 11.5 dBm
DC Current (Max.)	AC541	27.0 mA	30.0 mA	32.0 mA
	AC542	47.0 mA	50.0 mA	53.0 mA

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

Intermodulation Performance

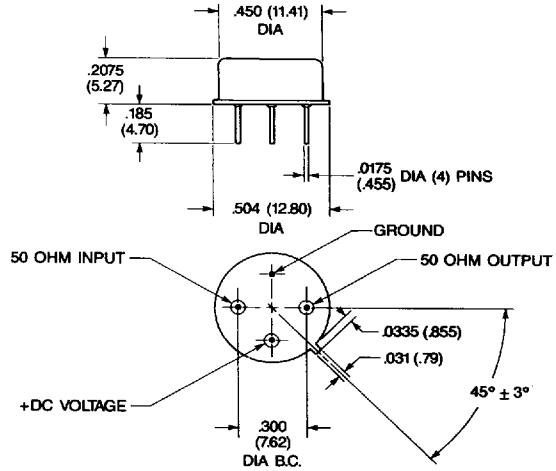
(Typical at 25 °C)	AC541	AC542
Second Order Harmonic Intercept Point	+ 32 dBm	+ 41 dBm
Second Order Two Tone Intercept Point	+ 26 dBm	+ 35 dBm
Third Order Two Tone Intercept Point	+ 20 dBm	+ 28 dBm

Absolute Maximum Ratings

Ambient Operating Temperature	-55 to 100 °C
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
Q Series Burn-in Temperature	+125 °C

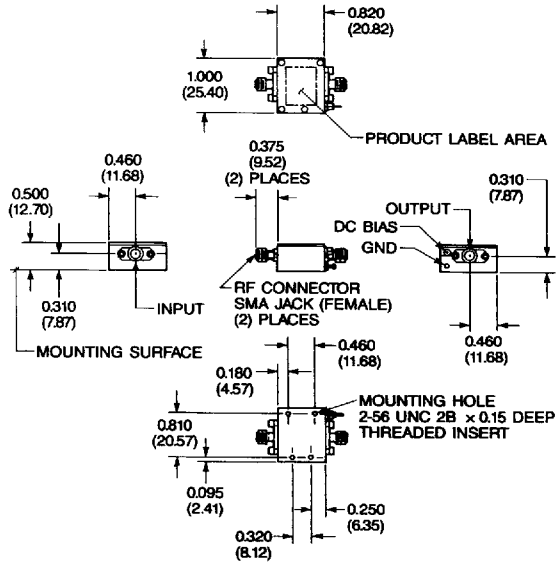
Outline Drawings

TO-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES (MILLIMETERS)

Amplifier Case - connectorized



DIMENSIONS ARE IN INCHES (MILLIMETERS)

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T-74-09-01
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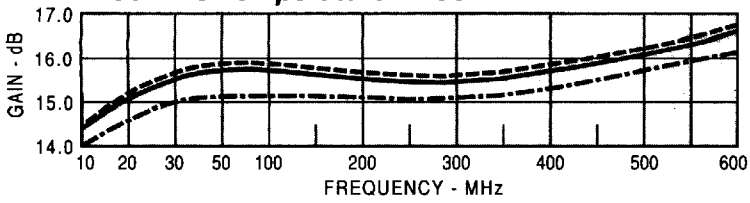
AC541/AC542

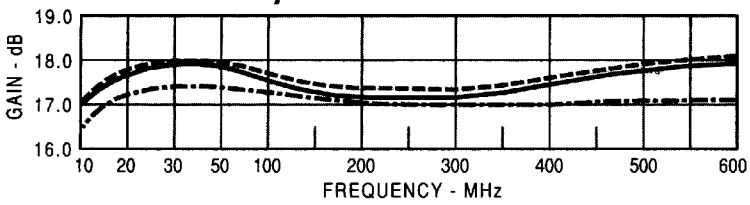
Typical Performance

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

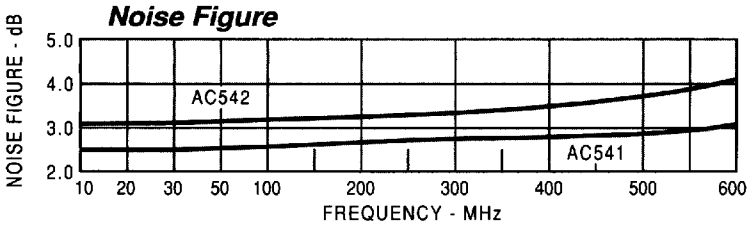
Gain vs Temperature AC541



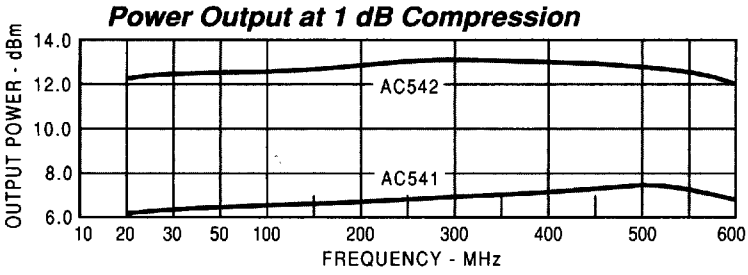
Gain vs Temperature AC542



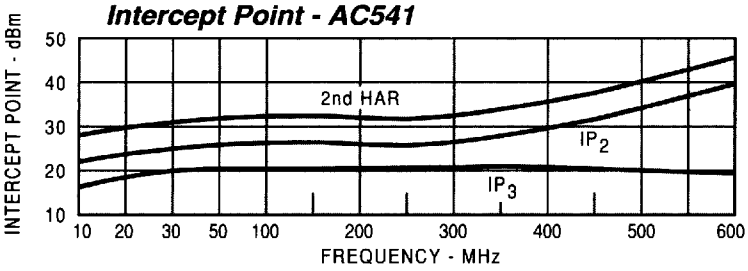
Noise Figure



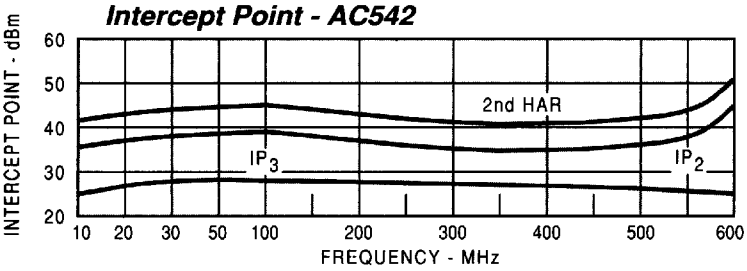
Power Output at 1 dB Compression



Intercept Point - AC541



Intercept Point - AC542



Typical Automatic Test Data

MODEL:AC542 Vcc=15V Icc= 47.00 mA

FREQUENCY MHZ	VSWR IN	VSWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
10.0	1.68	1.18	17.3		-37.2
20.0	1.35	1.11	17.8		-36.5
50.0	1.15	1.08	18.1	1.415	-35.9
100.0	1.13	1.09	18.0	.865	-35.8
200.0	1.15	1.16	17.7	.677	-36.1
300.0	1.22	1.22	17.7	.641	-36.6
400.0	1.38	1.28	18.0	.689	-36.5
500.0	1.54	1.29	18.5	.730	-36.7
600.0	1.48	1.21	19.0	.866	-36.7

LINEAR S-PARAMETERS

MODEL:AC542 Vcc=15V Icc= 47.00 mA

FREQ.	S11		S21		S12		S22	
MHZ	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
10	.25	-51.1	7.30	-160.3	.014	15	.08	121.5
20	.15	-50.6	7.80	-172.9	.015	7	.05	103.8
50	.07	-30.6	8.07	171.8	.016	-3	.04	84.7
100	.06	.5	7.94	156.3	.016	-9	.04	78.6
200	.07	27.2	7.69	131.9	.016	-26	.07	63.3
300	.10	55.2	7.70	108.8	.015	-40	.10	45.1
400	.16	52.1	7.96	84.0	.015	-58	.12	24.4
500	.21	36.4	8.40	57.7	.015	-80	.13	3.8
600	.19	17.2	8.94	26.6	.015	-106	.10	-26.6
700	.06	12.3	8.92	-10.7	.013	-140	.04	-121.4

MODEL:AC542 Vcc=12V Icc= 37.58 mA

FREQUENCY MHZ	VSWR IN	VSWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
10.0	1.68	1.18	17.1		-37.2
20.0	1.36	1.11	17.7		-36.0
50.0	1.16	1.08	18.0	1.418	-36.0
100.0	1.16	1.09	17.8	.860	-36.0
200.0	1.17	1.15	17.6	.671	-36.1
300.0	1.22	1.21	17.6	.636	-36.4
400.0	1.38	1.26	18.0	.688	-36.0
500.0	1.53	1.27	18.6	.742	-36.6
600.0	1.44	1.20	19.1	.867	-36.5

MODEL:AC541 Vcc=15V Icc= 26.89 mA

FREQUENCY MHZ	VSWR IN	VSWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
10.0	2.15	1.16	14.9		-38.8
20.0	1.75	1.10	15.6		-38.1
50.0	1.55	1.06	16.0	1.537	-37.3
100.0	1.56	1.06	15.8	.915	-37.1
200.0	1.55	1.09	15.6	.718	-37.6
300.0	1.51	1.11	15.6	.677	-37.9
400.0	1.59	1.13	15.8	.727	-38.1
500.0	1.73	1.10	16.2	.790	-38.0
600.0	1.68	1.02	16.5	.921	-38.2

MODEL:AC541 Vcc=12V Icc= 21.63 mA

FREQUENCY MHZ	VSWR IN	VSWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
10.0	2.22	1.16	14.6		-38.7
20.0	1.82	1.10	15.3		-38.4
50.0	1.62	1.06	15.7	1.569	-37.7
100.0	1.61	1.05	15.5	.917	-37.3
200.0	1.60	1.09	15.3	.716	-38.4
300.0	1.53	1.11	15.3	.686	-37.3
400.0	1.58	1.12	15.7	.742	-37.6
500.0	1.68	1.09	16.1	.804	-38.3
600.0	1.62	1.02	16.3	.953	-38.5

COUGAR COMPONENTS

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