TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 5/10

AC538

5 TO 500 MHz TO-8 CASCADABLE AMPLIFIER

Typical Values	AC538
High Gain	27.5 dB
Low Noise Figure	2.8 dB
High Second Harmonic Intercept Point	+56 dBm
High Performance Thin Film	
Standard Size TO-8 Package	

SPECIFICATIONS*

Parameter	Typical	Guaranteed 0 to 50 °C	Guaranteed -55 to +85 °C
Frequency (Min.)	3-600 MHz	5-500 MHz	5-500 MHz
Small Signal Gain (Min.)	27.5 dB	27.0 dB	26.5 dB
Gain Flatness (Max.)	±0.3 dB	±0.5 dB	±0.8 dB
Noise Figure (Max.)	2.8 dB	3.5 dB	4.0 dB
SWR (Max.) Input/Output	< 1.5:1	1.7:1	1.8:1
Power Output (Min.) @ 1dB comp.	+12.5 dBm	+11.5 dBm	+11.0 dBm
Reverse Isolation	37.0 dB	—	—
DC Current (Max.)	47 mA	50 mA	53 mA

* Measured in a 50-ohm system at +5 Vdc unless otherwise specified.

INTERMODULATION PERFORMANCE

Typical @ 25 °C	AC538
Second Order Harmonic Intercept Point	+56 dBm
Second Order Two Tone Intercept Point	+50 dBm
Third Order Two Tone Intercept Point	+27 dBm

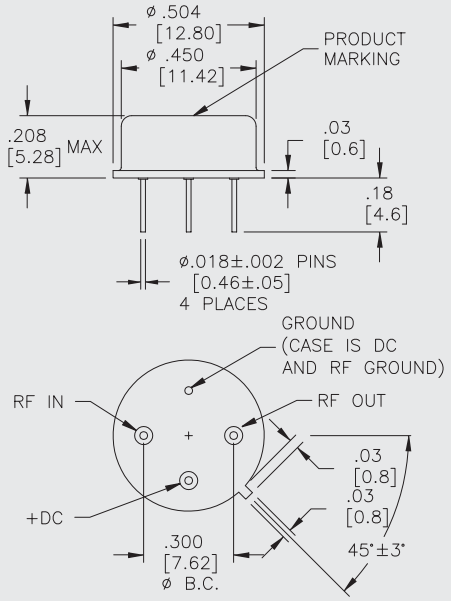
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to +125 °C
Maximum Case Temperature	+125 °C
Maximum DC Voltage	+9 Volts
Maximum Continuous RF Input Power	+10 dBm
Maximum Short Term Input Power (1 Minute Max.)	50 Milliwatts
Maximum Peak Power (3 µsec Max.)	0.5 Watt
Burn-in Temperature	+125 °C
Thermal Resistance[1] (θjc)	+65 C/Watt
Junction Temperature Rise Above Case (Tjc)	+16.2 °C

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

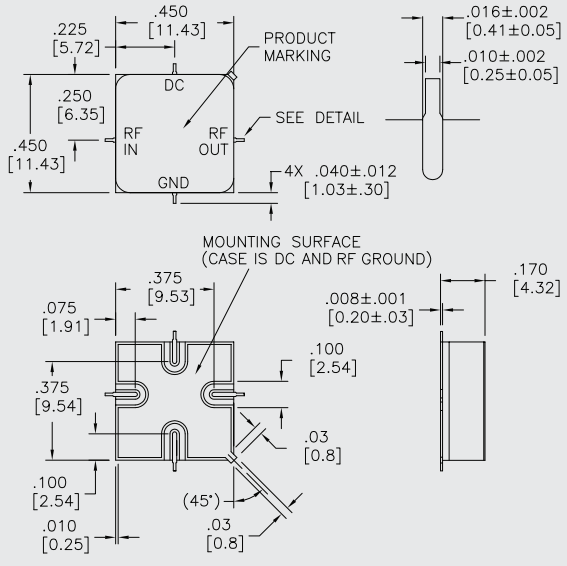
AC538

TO-8 Package for Amplifiers



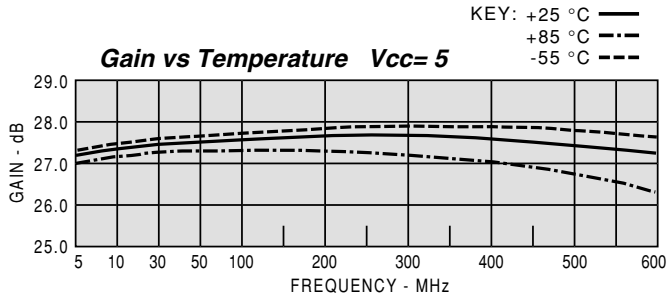
AS538

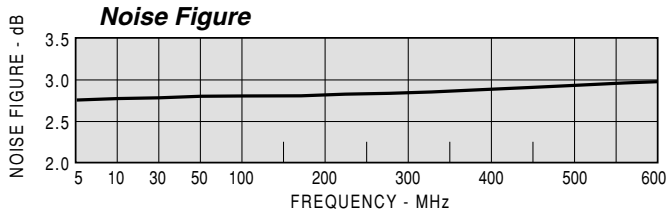
SMTO-8 Package for Amplifiers

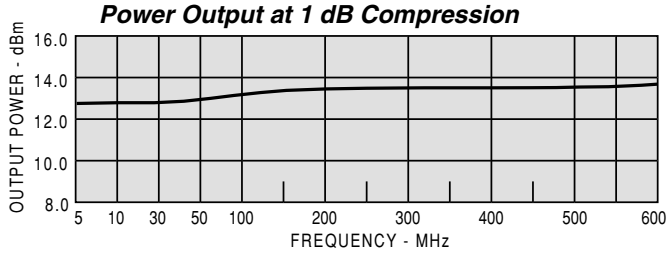


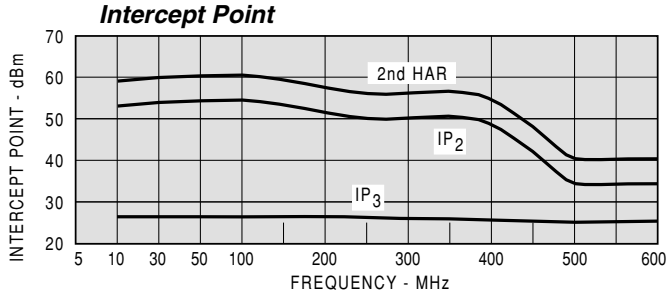
DIMENSIONS ARE IN INCHES [MILLIMETERS]

TYPICAL PERFORMANCE









TYPICAL AUTOMATIC TEST DATA

Model: AC538 Vcc=+5V Icc= 47.22

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB
5	1.39	1.15	27.5		-38.5
10	1.41	1.08	27.6		-38.0
20	1.41	1.06	27.7	3.130	-38.0
50	1.41	1.05	27.7	1.402	-37.8
100	1.41	1.05	27.7	0.988	-37.6
200	1.40	1.05	27.7	0.977	-37.6
300	1.37	1.05	27.7	0.979	-37.2
400	1.34	1.03	27.7	0.995	-36.7
500	1.25	1.03	27.6	1.009	-36.3
600	1.16	1.13	27.3	1.037	-35.5

LINEAR S-PARAMETERS

Model: AC538 Vcc=+5V Icc= 47.22

FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5	0.16	-17.4	23.69	28.6	0.012	35.0	0.07	-127.7
10	0.17	-9.9	24.10	11.9	0.013	19.0	0.04	-140.1
20	0.17	-7.9	24.22	0.6	0.013	11.0	0.03	-157.2
50	0.17	-12.9	24.38	-14.5	0.013	-0.0	0.02	-173.0
100	0.17	-24.4	24.27	-32.3	0.013	-4.0	0.03	177.3
200	0.17	-48.4	24.24	-67.5	0.013	-10.0	0.03	161.0
300	0.16	-69.8	24.34	-102.7	0.014	-17.0	0.02	141.2
400	0.14	-86.7	24.22	-138.5	0.015	-25.0	0.01	128.5
500	0.11	-107.5	23.87	-174.8	0.015	-37.0	0.01	-140.6
600	0.08	-135.4	23.13	147.8	0.017	-49.0	0.06	-150.8
700	0.04	134.1	22.70	109.7	0.019	-62.0	0.15	-175.9