

# AC513

## 5 TO 500 MHz TO-8 CASCADABLE AMPLIFIER

Typical Values	AC513
Low Noise Figure .....	1.9 dB
High Gain .....	20.0 dB
Low Power Consumption .....	14 mA at +15V
High Performance Thin Film Standard Size TO-8 Package	

### SPECIFICATIONS\*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-55 to +85 °C
Frequency (Min.)	3-600 MHz	5-500 MHz	5-500 MHz
Small Signal Gain (Min.)	20.0 dB	19.5 dB	19.0 dB
Gain Flatness (Max.)	±0.25 dB	±0.5 dB	±0.8 dB
Noise Figure (Max.)	1.9 dB	2.3 dB	2.8 dB
SWR (Max.) Input/Output	< 1.5:1	1.7:1	2.0:1
Power Output (Min.) @ 1dB comp.	+3.5 dBm	+2.0 dBm	+1.5 dBm
Reverse Isolation	24.0 dB	—	—
DC Current (Max.)	14 mA	16 mA	18 mA

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

### INTERMODULATION PERFORMANCE

Typical @ 25 °C	AC513
Second Order Harmonic Intercept Point .....	+23 dBm
Second Order Two Tone Intercept Point .....	+17 dBm
Third Order Two Tone Intercept Point .....	+16 dBm

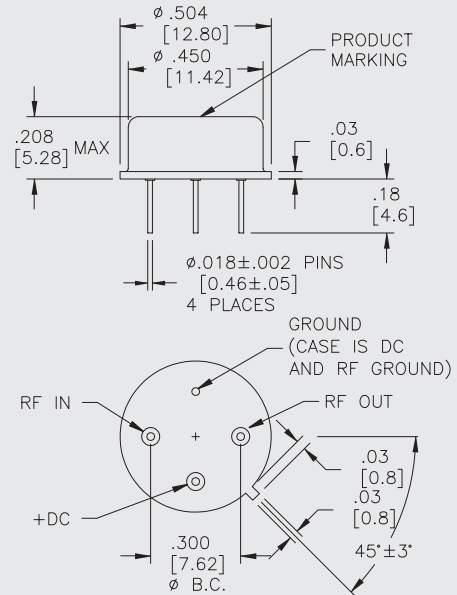
### ABSOLUTE MAXIMUM RATINGS

Storage Temperature .....	-62 to +125 °C
Maximum Case Temperature .....	+125 °C
Maximum DC Voltage .....	+21 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 .....	+125 °C
Thermal Resistance <sup>1</sup> (θjc) .....	+57 °C/Watt
Junction Temperature Rise Above Case (Tjc) .....	+13.6 °C

<sup>1</sup> Thermal resistance is based on total power dissipation.

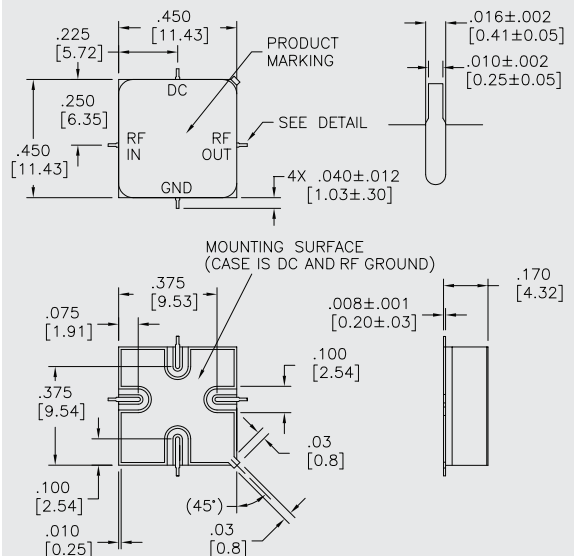
### AC513

#### TO-8 Package for Amplifiers



### AS513

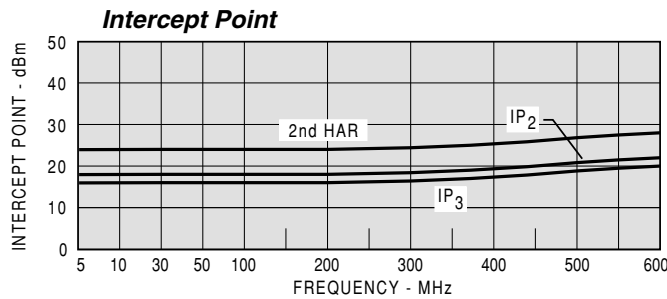
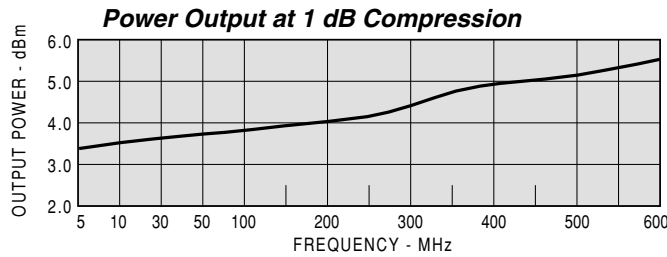
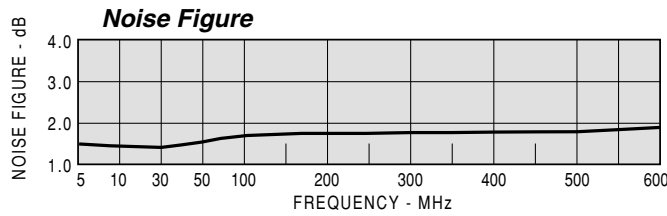
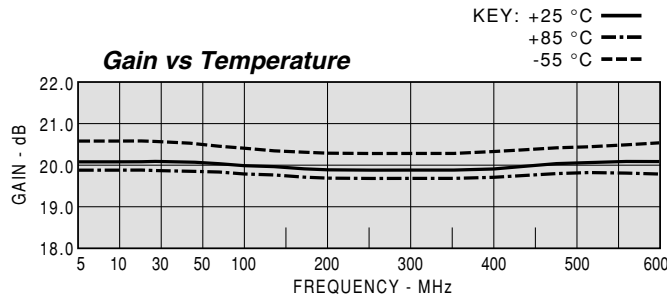
#### SMT0-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

**TYPICAL PERFORMANCE**

**TYPICAL AUTOMATIC TEST DATA**



Model: AC513			Vcc=+15V		Icc=13.83	
FREQ	SWR IN	SWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB	
5	1.30	1.27	20.6		-24.1	
10	1.29	1.26	20.6		-24.1	
20	1.29	1.26	20.6	0.870	-24.1	
50	1.27	1.25	20.6	0.624	-24.1	
100	1.28	1.26	20.5	0.513	-24.1	
200	1.25	1.29	20.4	0.544	-24.1	
300	1.18	1.32	20.4	0.545	-23.9	
400	1.12	1.35	20.4	0.549	-23.8	
500	1.09	1.39	20.5	0.578	-23.6	
600	1.20	1.46	20.5	0.639	-23.3	

Model: AC513			Vcc=+15V				Icc=13.83	
FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5	0.13	-175.2	10.78	-177.6	0.062	5.0	0.12	-175.6
10	0.13	-179.2	10.76	179.6	0.062	2.0	0.12	178.3
20	0.13	177.7	10.66	176.4	0.062	1.0	0.11	172.2
50	0.12	172.1	10.69	169.6	0.063	-2.0	0.11	160.5
100	0.12	166.8	10.57	160.5	0.063	-4.0	0.11	142.7
200	0.11	154.3	10.47	140.9	0.063	-8.0	0.13	112.9
300	0.08	150.4	10.44	121.1	0.064	-13.0	0.14	88.3
400	0.05	154.5	10.47	101.5	0.065	-17.0	0.15	70.2
500	0.04	-178.7	10.57	80.6	0.066	-22.0	0.16	58.8
600	0.09	-155.8	10.58	57.6	0.069	-26.0	0.19	53.5
700	0.17	-162.1	10.36	32.6	0.072	-32.0	0.23	46.6

Model: AC513			Vcc=+12V		Icc=11.08	
FREQ	SWR IN	SWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB	
5	1.10	1.11	19.8		-23.4	
10	1.09	1.10	19.8		-23.4	
20	1.09	1.10	19.8	0.893	-23.4	
50	1.09	1.10	19.8	0.608	-23.3	
100	1.10	1.10	19.7	0.506	-23.4	
200	1.09	1.13	19.6	0.540	-23.4	
300	1.09	1.16	19.7	0.541	-23.3	
400	1.13	1.19	19.7	0.550	-23.2	
500	1.18	1.24	19.8	0.583	-23.1	
600	1.34	1.36	19.8	0.646	-22.8	

Model: AC513			Vcc=+12V				Icc=11.08	
FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5	0.05	-169.9	9.81	-177.8	0.068	4.0	0.05	-170.2
10	0.04	-177.2	9.80	179.6	0.068	2.0	0.05	179.2
20	0.04	-177.3	9.74	176.4	0.068	0.0	0.05	169.6
50	0.04	-179.2	9.77	169.8	0.068	-2.0	0.05	152.4
100	0.05	179.1	9.67	160.7	0.068	-5.0	0.05	130.5
200	0.04	-175.2	9.60	141.4	0.068	-10.0	0.06	102.0
300	0.04	-154.5	9.62	121.8	0.068	-14.0	0.08	81.8
400	0.06	-131.1	9.69	102.1	0.069	-19.0	0.09	72.2
500	0.08	-131.7	9.81	81.0	0.070	-24.0	0.11	70.5
600	0.15	-144.2	9.82	57.8	0.072	-29.0	0.15	69.5
700	0.21	-158.8	9.59	32.8	0.076	-35.0	0.22	60.0