

AC513

5 TO 500 MHz TO-8 CASCADABLE AMPLIFIER

Typical Values

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	

AC513

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
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

Second Order Harmonic Intercept Point	+23 dBm
Second Order Two Tone Intercept Point	+17 dBm
Third Order Two Tone Intercept Point	+16 dBm

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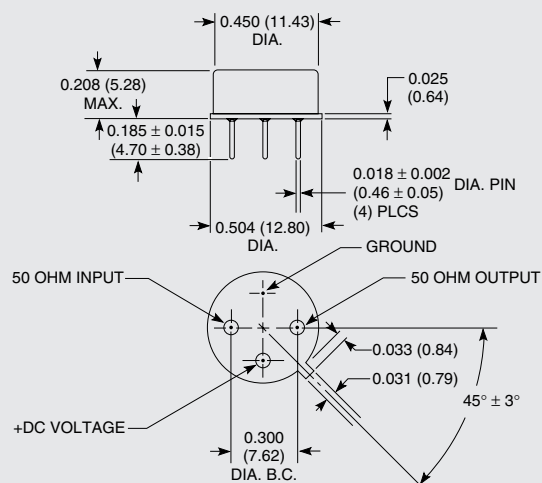
ABSOLUTE MAXIMUM RATINGS

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 ¹ (θjc)	+57° C/Watt
Junction Temperature Rise Above Case (Tjc)	+13.6° C

¹ Thermal resistance is based on total power dissipation.

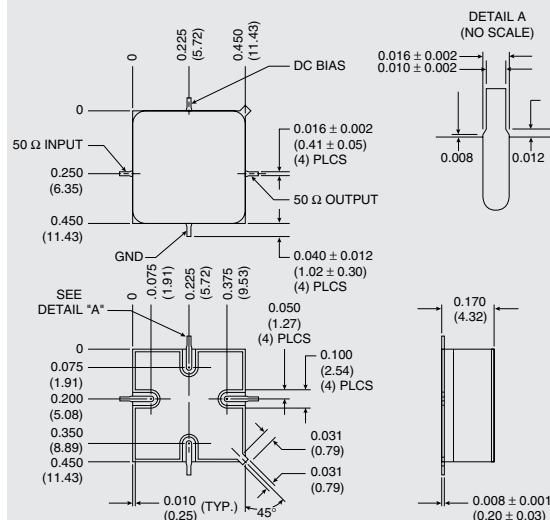
AC513

TO-8 Package for Amplifiers



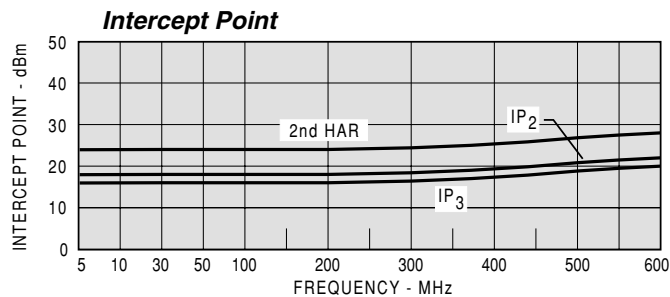
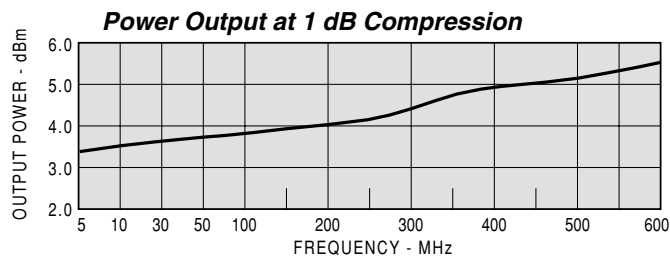
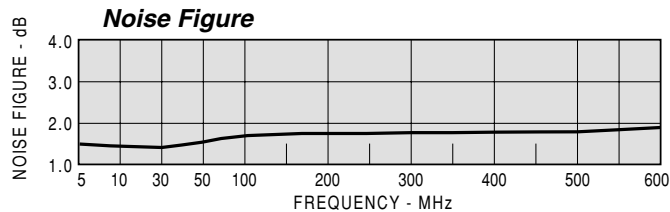
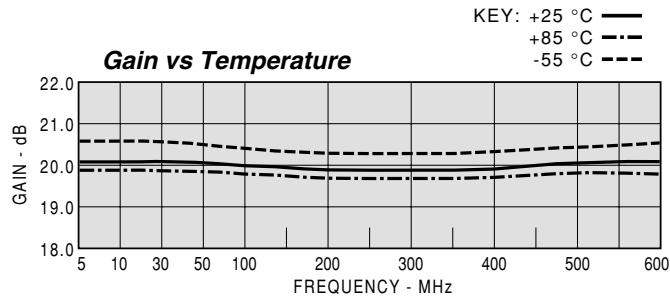
AS513

SMT0-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES (MILLIMETERS)

TYPICAL PERFORMANCE



TYPICAL AUTOMATIC TEST DATA

Model: AC513			VCC=+15V		GROUP DELAY		Icc=13.83	
FREQ	SWR	SWR	GAIN		NSEC		REV/ISO	
MHZ	IN	OUT	DB				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		S11		S12		S22		Icc=13.83	
FREQ.	S11		S21		S12		S22					
MHZ	MAG	ANG	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		GROUP DELAY		Icc=11.08	
FREQ	SWR	SWR	GAIN		NSEC		REV/ISO	
MHZ	IN	OUT	DB				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		S11		S12		S22		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				