

# AC4083

# 1000 TO 4000 MHz TO-8 CASCADABLE AMPLIFIER

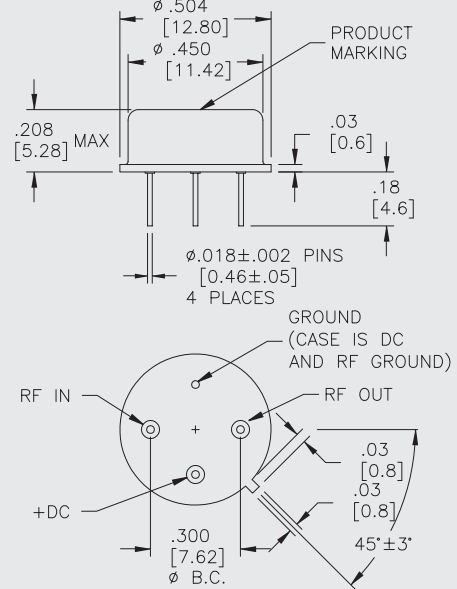
**Typical Values**

Low Voltage	+8 Volts
Low Noise Figure	<3.0 dB
High Gain	+18.5 dB
High Reverse Isolation	40 dB
High Performance Thin Film	
Standard Size TO-8 Package	

**AC4083**

## AC4083

**TO-8 Package for Amplifiers**



## SPECIFICATIONS\*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-55 to +85 °C
Frequency (Min.)	1000-4000 MHz	1000-4000 MHz	1000-4000 MHz
Small Signal Gain (Min.)	18.5 dB	18.0 dB	17.0 dB
Gain Flatness (Max.)	±0.4 dB	±0.7 dB	±0.8 dB
Noise Figure (Max.)	<3.0 dB	3.5 dB	4.0 dB
SWR (Max.)	Input <1.4:1 Output <1.4:1	1.7:1 1.7:1^	1.9:1 1.9:1^
Power Output (Min.) @ 1dB comp.	+12.5 dBm	+12.0† dBm	+11.5† dBm
Reverse Isolation	40.0 dB	—	—
DC Current (Max.)	30.0 mA	33.0 mA	36.0 mA

\* Measured in a 50-ohm system at +8 Vdc unless otherwise specified.  
 ^ 0.2 higher above 3800 MHz. † 0.5 dBm lower below 1500 MHz.

## INTERMODULATION PERFORMANCE

Typical @ 25 °C; 2500 MHz	+5 Volts	+8 Volts
Second Order Harmonic Intercept Point	+48 dBm	+47 dBm
Second Order Two Tone Intercept Point	+42 dBm	+41 dBm
Third Order Two Tone Intercept Point	+23 dBm	+24 dBm

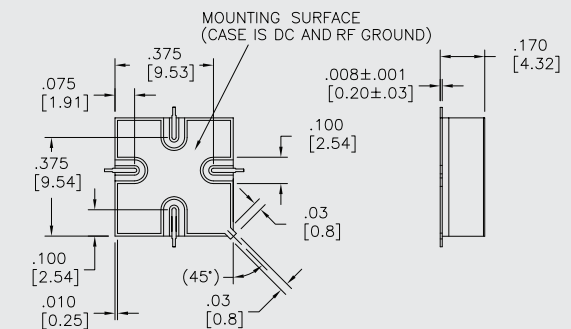
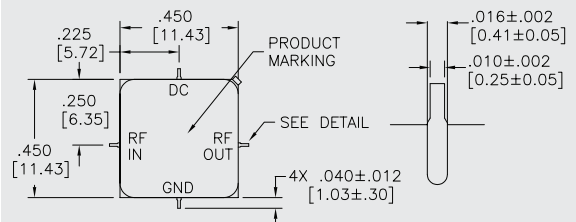
## ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to +125 °C
Maximum Case Temperature	+125 °C
Maximum DC Voltage	+10 Volts
Maximum Continuous RF Input Power	+17 dBm
Maximum Short Term Input Power (1 Minute Max.)	100 Milliwatts
Maximum Peak Power (3 μsec Max.)	0.5 Watt
Burn-in Temperature	+125 °C
Thermal Resistance <sup>1</sup> (θjc)	+47 °C/Watt
Junction Temperature Rise Above Case (Tjc)	+11.3 °C

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

## AS4083

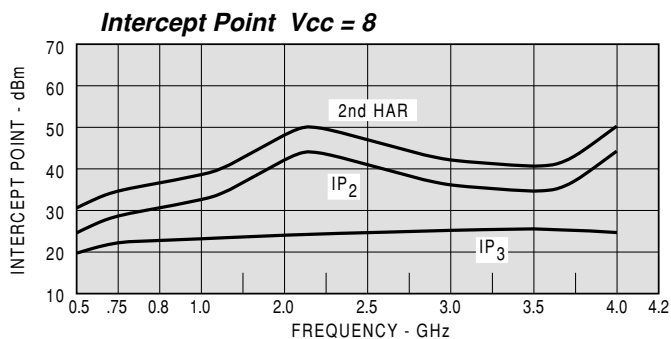
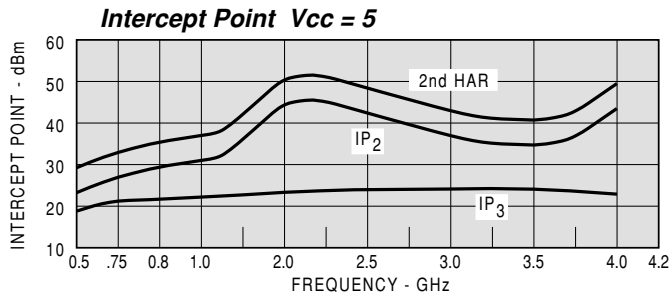
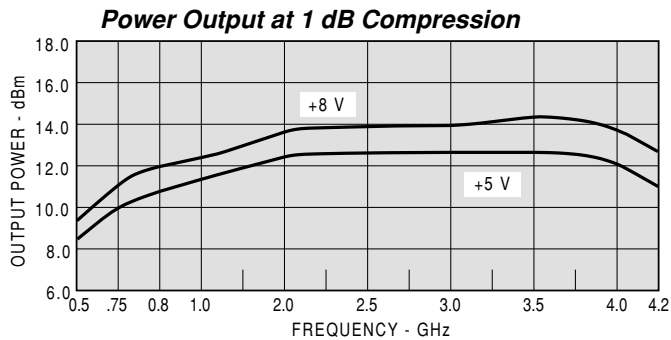
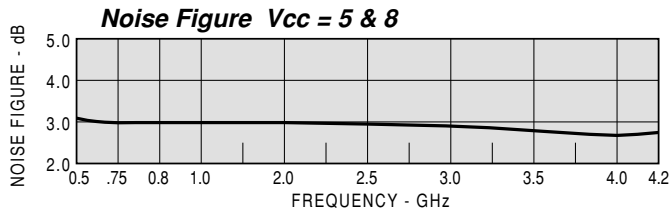
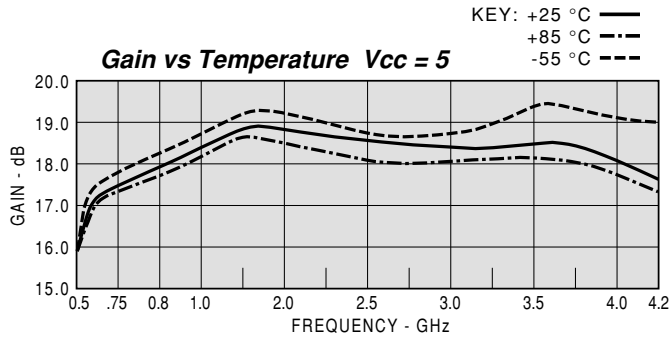
**SMTO-8 Package for Amplifiers**



DIMENSIONS ARE IN INCHES [MILLIMETERS]

**TYPICAL PERFORMANCE**

**TYPICAL AUTOMATIC TEST DATA**



Model: AC4083				Vcc= +5V			lcc= 26.44
FREQ	SWR	SWR	GAIN	PHASE	DELAY	REV/ISO	
MHZ	IN	OUT	DB	DEG	NSEC	DB	
500	1.43	2.54	15.64	29	0.70	-41.2	
700	1.28	1.82	17.14	-10	0.51	-40.5	
900	1.22	1.46	17.94	-43	0.43	-40.0	
1000	1.26	1.34	18.20	-57	0.40	-39.7	
1200	1.34	1.19	18.52	-85	0.39	-39.8	
1400	1.46	1.16	18.61	-110	0.35	-39.7	
1600	1.45	1.17	18.76	-135	0.34	-40.2	
1800	1.47	1.20	18.87	-159	0.34	-40.7	
2000	1.53	1.25	18.78	177	0.33	-41.0	
2200	1.48	1.23	18.62	154	0.32	-41.7	
2400	1.40	1.21	18.60	132	0.31	-41.9	
2600	1.36	1.19	18.45	110	0.30	-40.8	
2800	1.30	1.19	18.29	89	0.30	-39.8	
3000	1.30	1.20	18.28	67	0.30	-38.0	
3200	1.24	1.25	18.43	45	0.31	-37.0	
3400	1.07	1.33	18.52	22	0.32	-35.8	
3600	1.11	1.43	18.38	-2	0.34	-34.6	
3800	1.04	1.58	18.17	-27	0.35	-33.6	
4000	1.10	1.70	18.10	-51	0.33	-32.5	
4200	1.12	1.74	17.76	-77	0.36	-31.8	

LINEAR S-PARAMETERS

Model: AC4083				Vcc= +5V						lcc= 26.44
FREQ.	S11		S21		S12		S22			
MHZ	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG		
500	0.18	-96.1	6.05	29.2	0.009	41.8	0.43	123.8		
700	0.12	-85.4	7.19	-10.4	0.009	24.0	0.29	97.5		
900	0.10	-78.9	7.89	-42.6	0.010	13.9	0.19	81.2		
1000	0.11	-84.1	8.13	-57.1	0.010	7.7	0.14	77.2		
1200	0.14	-88.0	8.44	-85.0	0.010	-3.8	0.09	83.2		
1400	0.19	-100.2	8.52	-110.4	0.010	-17.5	0.07	94.9		
1600	0.18	-115.6	8.67	-134.8	0.010	-33.7	0.08	105.0		
1800	0.19	-135.9	8.78	-159.0	0.009	-47.5	0.09	104.4		
2000	0.21	-152.0	8.68	177.4	0.009	-66.5	0.11	98.3		
2200	0.19	-169.0	8.53	154.3	0.008	-87.8	0.10	80.4		
2400	0.17	-169.6	8.51	132.2	0.008	-105.3	0.09	59.8		
2600	0.15	159.0	8.37	110.5	0.009	-122.4	0.09	34.6		
2800	0.13	136.6	8.21	89.0	0.010	-138.4	0.09	2.2		
3000	0.13	141.1	8.20	67.4	0.013	-151.6	0.09	-29.6		
3200	0.11	141.5	8.34	45.3	0.014	-163.0	0.11	-59.4		
3400	0.03	164.5	8.44	22.0	0.016	-171.2	0.14	-86.4		
3600	0.05	170.8	8.30	-2.2	0.019	-179.0	0.18	-104.4		
3800	0.02	165.9	8.10	-27.3	0.021	-172.5	0.22	-123.3		
4000	0.05	167.4	8.04	-50.7	0.024	164.3	0.26	-140.2		
4200	0.06	84.4	7.73	-76.9	0.026	157.2	0.27	-156.5		
4400	0.10	48.4	7.00	-106.8	0.028	150.1	0.26	-166.3		

Model: AC4083				Vcc= +8V			lcc= 29.10
FREQ	SWR	SWR	GAIN	PHASE	DELAY	REV/ISO	
MHZ	IN	OUT	DB	DEG	NSEC	DB	
500	1.39	2.55	16.09	31	0.71	-40.6	
700	1.22	1.85	17.59	-10	0.52	-39.4	
900	1.19	1.50	18.34	-42	0.44	-39.2	
1000	1.23	1.38	18.57	-57	0.41	-39.1	
1200	1.33	1.23	18.83	-85	0.39	-39.2	
1400	1.46	1.17	18.87	-110	0.35	-39.5	
1600	1.44	1.13	18.99	-134	0.33	-40.1	
1800	1.46	1.11	19.06	-158	0.33	-41.1	
2000	1.52	1.11	18.97	179	0.32	-41.1	
2200	1.46	1.09	18.80	156	0.31	-41.6	
2400	1.38	1.07	18.73	134	0.3	-41.8	
2600	1.33	1.07	18.66	113	0.3	-40.6	
2800	1.27	1.11	18.61	92	0.29	-39.8	
3000	1.29	1.16	18.62	71	0.30	-38.1	
3200	1.28	1.23	18.77	48	0.31	-37.2	
3400	1.16	1.31	18.90	25	0.32	-36.2	
3600	1.22	1.39	18.87	2	0.33	-35.4	
3800	1.15	1.50	18.73	-24	0.35	-34.5	
4000	1.19	1.61	18.73	-48	0.34	-33.5	
4200	1.24	1.63	18.35	-75	0.37	-32.8	