

# AC381 AC382

## 10 TO 250 MHz TO-8 CASCADABLE AMPLIFIERS

Typical Values	AC381	AC382
High Reverse Isolation .....	30 dB	30 dB
Low Noise Gain .....	2.7 dB	3.3 dB
High Gain .....	24.0 dB	24.0 dB
High Output Power .....	+16.0 dBm	+21.0 dBm
High Third Order I.P. ....	+29.0 dBm	+34 dBm
High Performance Thin Film Standard Size TO-8 Package Available in Surface Mount		

### SPECIFICATIONS\*

Parameter	Typical	Guaranteed		
		0 to 50 °C	-55 to +85 °C	
Frequency (Min.)	5-350 MHz	10-250 MHz	10-250 MHz	
Small Signal Gain (Min.)	24.0 dB	23.0 dB	22.7 dB	
Gain Flatness (Max.)	±0.3 dB	±0.5 dB	±0.7 dB	
Noise Figure (Max.)	AC381	2.7 dB	3.3 dB	3.8 dB
	AC382	3.3 dB	4.0 dB	4.5 dB
SWR (Max.)	Input	<1.5:1	2.0:1	2.0:1
	Output	<1.4:1	1.7:1	1.8:1
Power Output (Min.) @ 1dB comp.	AC381	+16.0 dBm	+15.0 <sup>^</sup> dBm	+14.5 <sup>^</sup> dBm
	AC382	+21.0 dBm	+20.0 <sup>^</sup> dBm	+19.0 <sup>^</sup> dBm
Reverse Isolation	29.0 dB	—	—	
DC Current (Max.)	AC381	27.0 mA	30.0 mA	32.0 mA
	AC382	47.0 mA	50.0 mA	53.0 mA

\* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.  
^ 0.5 dBm less below 20 MHz.

### INTERMODULATION PERFORMANCE

Typical @ 25 °C	AC381	AC382
Second Order Harmonic Intercept Point .....	+44 dBm	+49 dBm
Second Order Two Tone Intercept Point .....	+38 dBm	+43 dBm
Third Order Two Tone Intercept Point .....	+29 dBm	+34 dBm

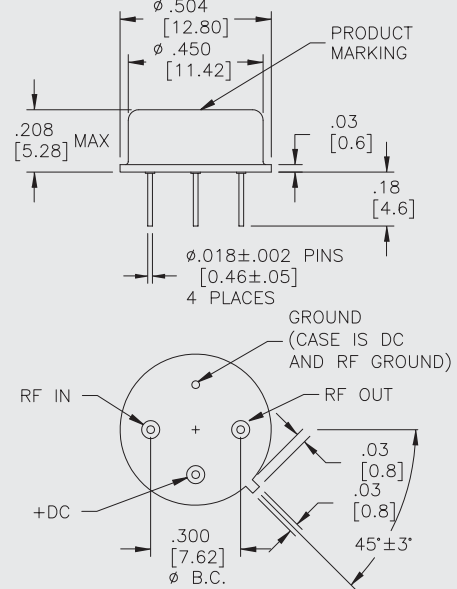
### ABSOLUTE MAXIMUM RATINGS

Storage Temperature .....	-62 to +125 °C
Maximum Case Temperature .....	+125 °C
Maximum DC Voltage .....	+19 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 AC381/AC382 .....	+125 °C/+105 °C
Thermal Resistance <sup>1</sup> (θjc); AC381 .....	+41 °C/Watt
Thermal Resistance <sup>1</sup> (θjc); AC382 .....	+44 °C/Watt
Junction Temperature Rise Above Case (Tjc); AC381 ...	+19 °C
Junction Temperature Rise Above Case (Tjc); AC382 ...	+33 °C

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

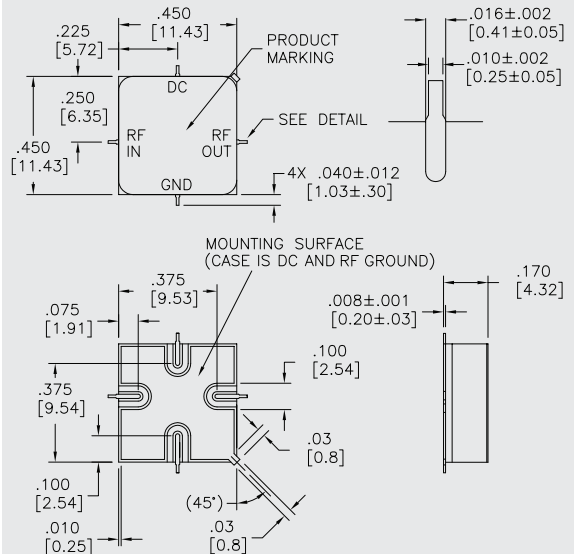
### AC381/AC382

#### TO-8 Package for Amplifiers



### AS381/AS382

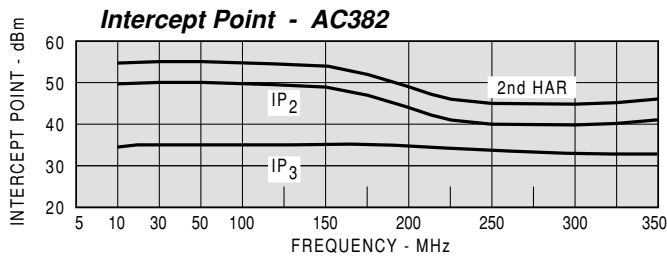
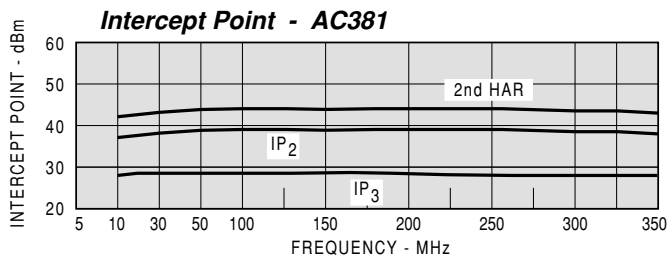
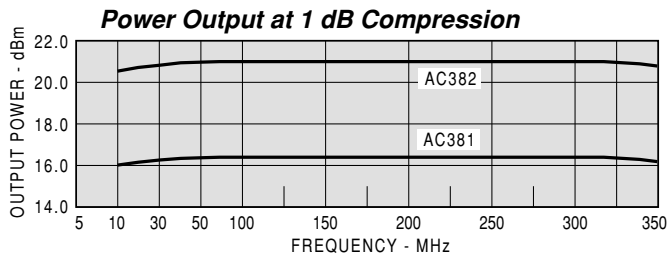
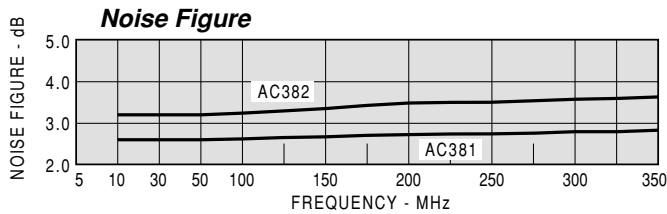
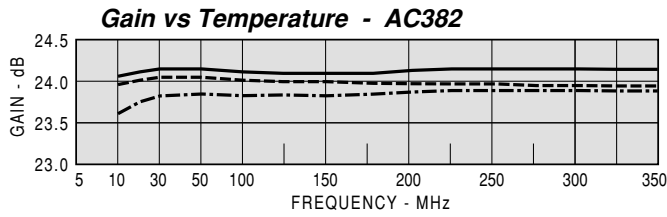
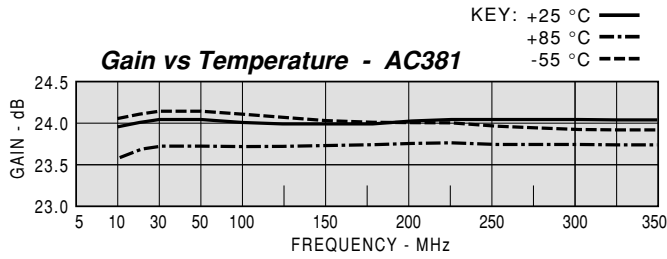
#### SMTO-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

## TYPICAL PERFORMANCE

## TYPICAL AUTOMATIC TEST DATA



Model: AC381				Vcc=+15V		Icc=28.01	
FREQ. MHz	SWR IN	SWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB		
5	1.89	1.81	23.6				
10	1.60	1.43	23.7				
20	1.47	1.33	24.0	2.080	-29.2		
30	1.44	1.31	24.0	1.335	-29.0		
50	1.41	1.30	24.1	0.974	-29.0		
100	1.45	1.29	24.1	0.827	-29.1		
150	1.49	1.29	24.0	0.744	-29.2		
200	1.57	1.30	24.1	0.754	-29.4		
250	1.64	1.32	24.1	0.748	-29.5		
300	1.75	1.36	24.2	0.783	-29.6		
350	1.90	1.42	24.4	0.793	-29.9		

Model: AC381				Vcc=+15V				Icc=28.01	
FREQ. MHz	MAG S11	ANG S11	MAG S21	ANG S21	MAG S12	ANG S12	MAG S22	ANG S22	
5	0.31	-38.6	15.11	-160.8	0.031	17.0	0.29	99.3	
10	0.23	-27.9	15.38	-171.6	0.033	8.0	0.18	74.2	
20	0.19	-18.4	15.82	-179.0	0.035	2.0	0.14	46.8	
30	0.18	-13.0	15.92	176.1	0.035	-1.0	0.13	31.5	
50	0.17	-5.9	15.97	169.0	0.036	-7.0	0.13	15.6	
100	0.18	1.5	16.01	154.3	0.035	-17.0	0.13	-1.5	
150	0.20	2.7	15.89	140.0	0.035	-27.0	0.13	-11.6	
200	0.22	2.1	15.97	127.3	0.034	-37.0	0.13	-23.2	
250	0.24	-0.6	16.09	113.7	0.034	-46.0	0.14	-38.4	
300	0.27	-5.8	16.27	99.7	0.033	-56.0	0.15	-57.9	
350	0.31	-12.9	16.52	85.4	0.032	-67.0	0.17	-80.7	
400	0.35	-23.1	16.74	69.9	0.031	-80.0	0.21	-106.1	

Model: AC381				Vcc=+12V		Icc=22.40	
FREQ. MHz	SWR IN	SWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB		
5	1.96	1.85	23.3				
10	1.65	1.46	23.5				
20	1.53	1.36	23.7	2.123	-29.0		
30	1.49	1.34	23.8	1.341	-28.9		
50	1.46	1.33	23.8	1.003	-28.7		
100	1.50	1.32	23.8	0.836	-29.0		
150	1.54	1.32	23.8	0.759	-29.0		
200	1.60	1.33	23.8	0.769	-29.3		
250	1.67	1.35	23.9	0.761	-29.5		
300	1.78	1.39	23.9	0.796	-29.6		
350	1.93	1.47	24.1	0.807	-29.8		

Model: AC382				Vcc=+15V		Icc=46.94	
FREQ. MHz	SWR IN	SWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB		
5	2.27	2.72	23.0				
10	1.64	1.68	23.5				
20	1.41	1.34	23.9	2.819	-29.9		
30	1.34	1.23	24.0	1.611	-29.6		
50	1.30	1.14	24.0	1.083	-29.6		
100	1.35	1.08	24.0	0.842	-29.7		
150	1.43	1.07	24.0	0.736	-29.8		
200	1.50	1.08	24.0	0.730	-29.9		
250	1.56	1.10	24.1	0.720	-30.0		
300	1.63	1.14	24.2	0.743	-30.1		
350	1.70	1.20	24.3	0.757	-30.2		

Model: AC382				Vcc=+12V		Icc=37.57	
FREQ. MHz	SWR IN	SWR OUT	GAIN DB	GROUP DELAY NSEC	REV/ISO DB		
5	2.27	2.69	22.9				
10	1.65	1.67	23.4				
20	1.42	1.33	23.8	2.814	-29.7		
30	1.36	1.23	23.9	1.597	-29.5		
50	1.33	1.14	23.9	1.089	-29.5		
100	1.38	1.08	23.9	0.838	-29.7		
150	1.45	1.07	23.8	0.736	-29.6		
200	1.53	1.07	23.9	0.726	-29.9		
250	1.60	1.09	23.9	0.723	-30.0		
300	1.67	1.13	24.0	0.740	-30.0		
350	1.75	1.20	24.2	0.756	-30.2		