TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 5/10

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 Ouput 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 Suface Mount

SPECIFICATIONS*

Parameter		Typical	Guaranteed 0 to 50 °C	Guaranteed -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^ dBm	+14.5^ dBm
	AC382	+21.0 dBm	+20.0^ dBm	+19.0^ 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

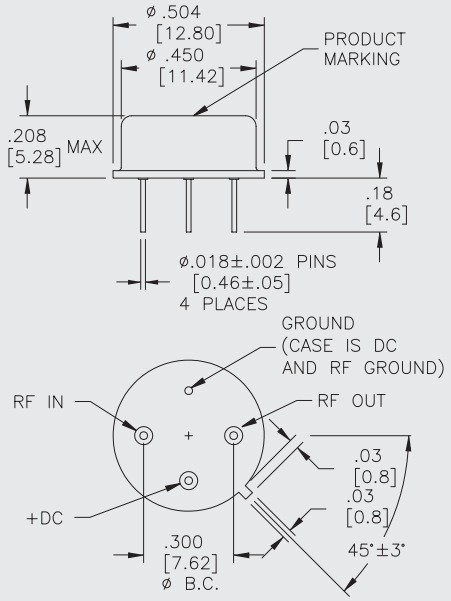
ABSOLUTE MAXIMUM RATINGS

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[1] (θjc); AC381	+41 °C/Watt
Thermal Resistance[1] (θjc); AC382	+44 °C/Watt
Junction Temperature Rise Above Case (Tjc); AC381	+19 °C
Junction Temperature Rise Above Case (Tjc); AC382	+33 °C

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

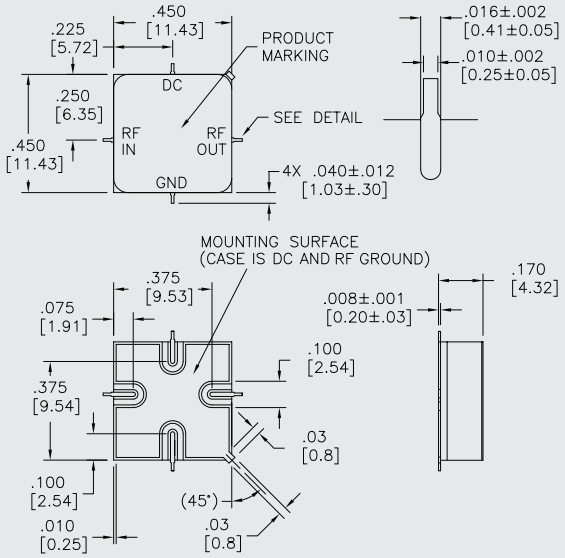
AC381/AC382

TO-8 Package for Amplifiers



AS381/AS382

SMTO-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

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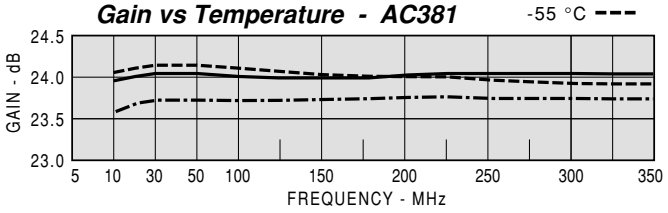
AC381/AC382

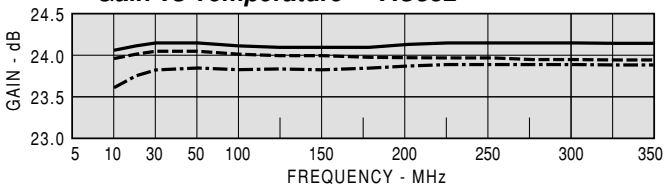
TYPICAL PERFORMANCE

KEY: +25 °C ——
+85 °C -·-·-
-55 °C - - -

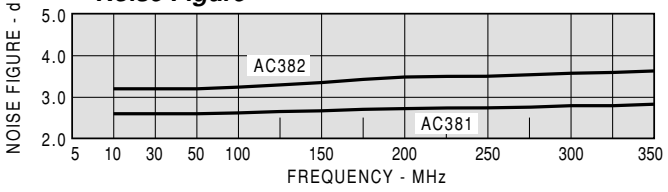
Gain vs Temperature - AC381



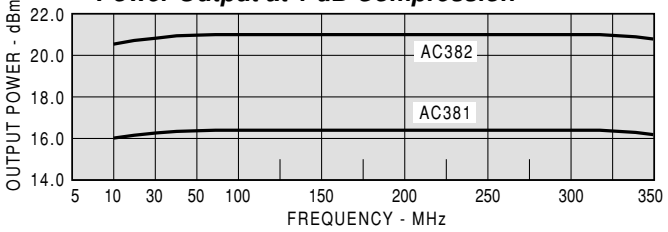
Gain vs Temperature - AC382



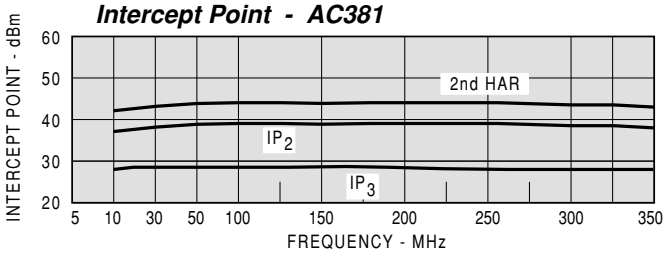
Noise Figure



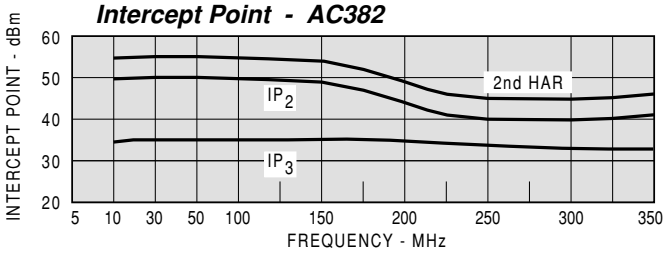
Power Output at 1 dB Compression



Intercept Point - AC381



Intercept Point - AC382



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		-30.2
10	1.60	1.43	23.7		-29.6
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

LINEAR S-PARAMETERS

Model: AC381 Vcc=+15V Icc=28.01

FREQ.	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
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		-30.0
10	1.65	1.46	23.5		-29.3
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		-31.8
10	1.64	1.68	23.5		-30.3
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		-31.6
10	1.65	1.67	23.4		-30.4
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