TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 5/10

AC281
AC282

10 TO 250 MHz
TO-8 CASCADABLE AMPLIFIERS

Typical Values	AC281	AC282
Low Noise Figure	2.3 dB	3.0 dB
High Gain	28.5 dB	29.0 dB
High Output Level	+16.2 dBm	+21.0 dBm
High Third Order I.P.	+29.0 dBm	+33.0 dBm

High Efficiency
High Performance Thin Film
Standard Size TO-8 Package

SPECIFICATIONS*

Parameter		Typical	Guaranteed 0 to 50 °C	Guaranteed -55 to +85 °C
Frequency (Min.)		5-300 MHz	10-250 MHz	10-250 MHz
Small Signal Gain (Min.)	AC281	28.5 dB	27.5 dB	27.0 dB
	AC282	29.0 dB	28.5 dB	28.0 dB
Gain Flatness (Max.)		±0.3 dB	±0.5 dB	±0.7 dB
Noise Figure (Max.)	AC281	2.3 dB	2.6 dB	3.0 dB
	AC282	3.0 dB	3.4 dB	3.8 dB
SWR (Max.)	Input	<1.5:1	1.8:1	2.0:1
	Output	<1.8:1	2.0:1	2.1:1
Power Output (Min.) @ 1dB comp.	AC281	+16.2 dBm	+15.5 dBm	+14.5 dBm
	AC282	+21.0 dBm	+20.0 dBm	+19.5 dBm
Reverse Isolation	AC281	34.0 dB	—	—
	AC282	35.0 dB	—	—
DC Current (Max.)	AC281	27.0 mA	30.0 mA	32.0 mA
	AC282	47.0 mA	50.0 mA	53.0 mA

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

INTERMODULATION PERFORMANCE

Typical @ 25 °C	AC281	AC282
Second Order Harmonic Intercept Point	+39 dBm	+46 dBm
Second Order Two Tone Intercept Point	+33 dBm	+40 dBm
Third Order Two Tone Intercept Point	+29 dBm	+33 dBm

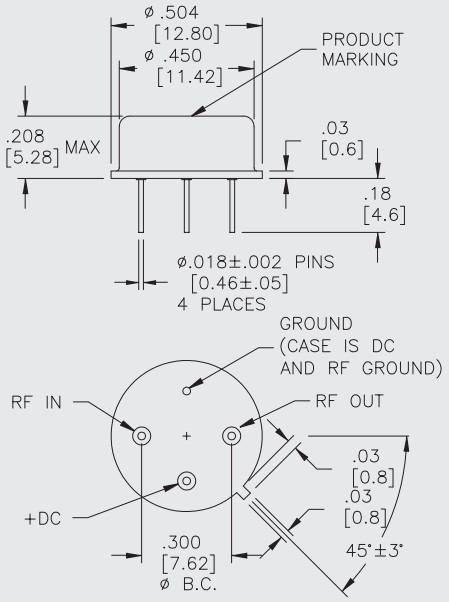
ABSOLUTE MAXIMUM RATINGS

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 (AC281)	+125 °C
Burn-in Temperature (AC282)	+105 °C
Thermal Resistance[1] (θjc; AC281)	+39 °C/Watt
Thermal Resistance[1] (θjc; AC282)	+44 °C/Watt
Junction Temperature Rise Above Case (Tjc; AC281)	+17.7 °C
Junction Temperature Rise Above Case (Tjc; AC282)	+33.1 °C

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

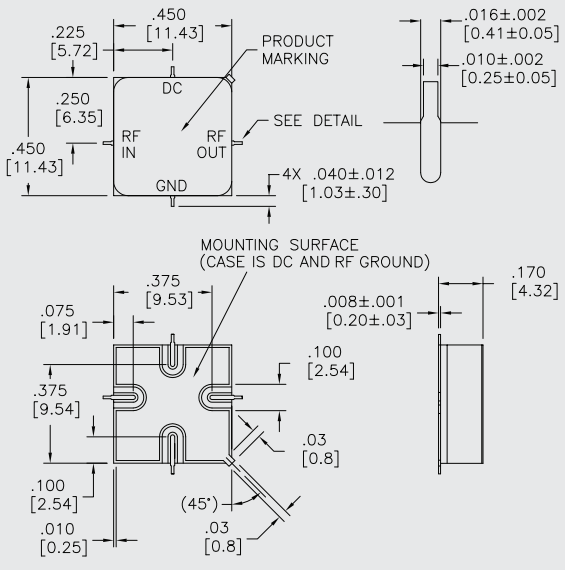
AC281/AC282

TO-8 Package for Amplifiers



AS281/AS282

SMTO-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

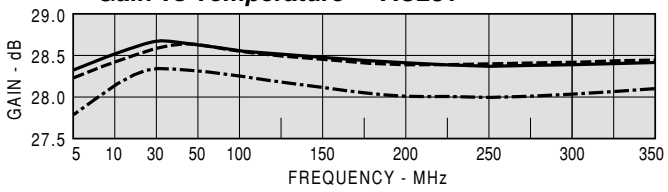
TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

AC281/AC282

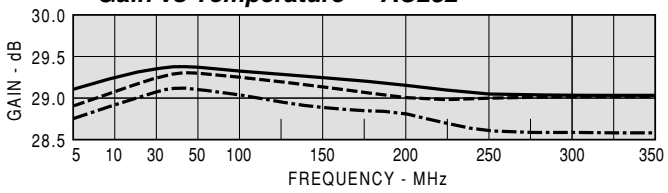
TYPICAL PERFORMANCE

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

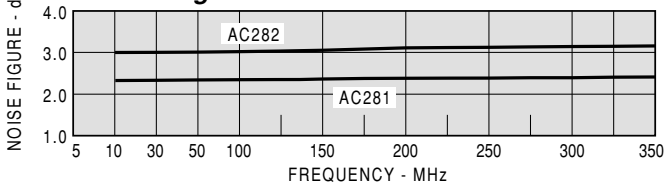
Gain vs Temperature - AC281



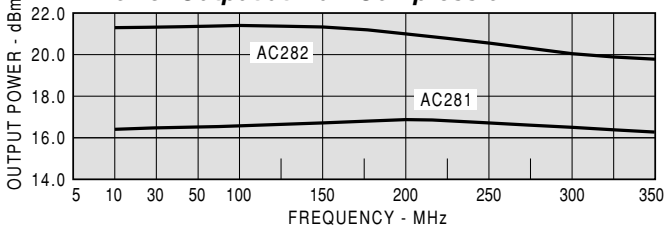
Gain vs Temperature - AC282



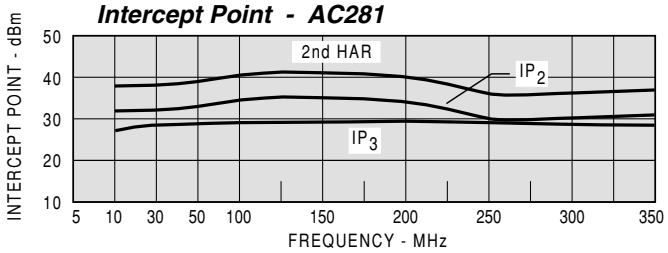
Noise Figure



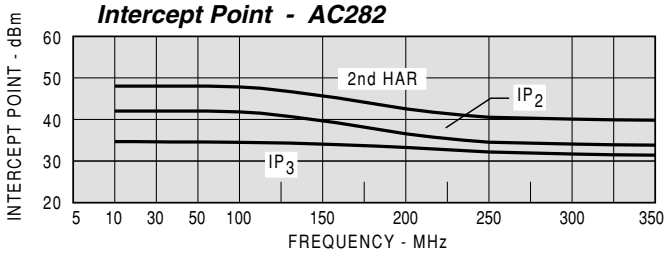
Power Output at 1 dB Compression



Intercept Point - AC281



Intercept Point - AC282



TYPICAL AUTOMATIC TEST DATA

Model: AC281 Vcc=+15V Icc=28.33

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	DELAY NSEC	REV/ISO DB
10	1.22	1.42	28.4		-34.4
20	1.09	1.31	28.6		-34.0
50	1.02	1.31	28.6		-33.9
100	1.09	1.38	28.5	0.974	-33.9
150	1.16	1.47	28.4	0.921	-34.1
200	1.23	1.54	28.3	0.911	-34.1
250	1.31	1.57	28.2	0.899	-34.3
300	1.39	1.57	28.3	0.964	-34.6

LINEAR S-PARAMETERS

Model: AC281 Vcc=+15V Icc=28.33

FREQ	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
10	0.10	-84.5	26.22	-172.7	0.019	7.0	0.17	81.5
20	0.05	-99.7	26.90	179.0	0.020	1.0	0.13	58.0
50	0.01	-173.7	26.92	165.5	0.020	-7.0	0.13	35.8
100	0.04	97.7	26.69	148.1	0.020	-19.0	0.16	25.8
150	0.07	79.6	26.24	131.4	0.020	-29.0	0.19	15.5
200	0.10	64.6	25.91	115.1	0.020	-40.0	0.21	1.4
250	0.13	51.8	25.83	98.8	0.019	-52.0	0.22	-17.2
300	0.16	34.4	25.97	81.5	0.019	-62.0	0.22	-42.2
350	0.19	13.9	26.03	63.2	0.018	-77.0	0.23	-76.6

Model: AC281 Vcc=+12V Icc=22.73

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	DELAY NSEC	REV/ISO DB
10	1.25	1.45	27.9		-34.0
20	1.12	1.36	28.2		-33.6
50	1.05	1.36	28.2		-33.6
100	1.08	1.41	28.1	0.978	-33.7
150	1.13	1.48	28.0	0.927	-33.8
200	1.20	1.52	27.9	0.918	-34.0
250	1.28	1.55	27.9	0.911	-34.1
300	1.36	1.55	27.9	0.980	-34.7

Model: AC282 Vcc= +15V Icc=47.21

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	DELAY NSEC	REV/ISO DB
5	1.57	2.02	29.1		-36.2
10	1.29	1.47	29.2		-35.2
20	1.20	1.30	29.4		-35.0
50	1.18	1.29	29.5	1.315	-34.8
100	1.20	1.41	29.4	1.021	-34.9
150	1.23	1.55	29.2	0.965	-34.7
200	1.27	1.66	29.2	0.927	-35.0
250	1.32	1.73	29.1	0.963	-35.1
300	1.36	1.76	29.1	1.007	-35.3

LINEAR S-PARAMETERS

Model: AC282 Vcc=+15V Icc=47.21

FREQ	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5	0.22	-91.4	28.44	-158.2	0.016	19.0	0.34	112.5
10	0.13	-116.3	28.86	-171.4	0.017	8.0	0.19	93.8
20	0.09	-143.6	29.44	179.4	0.018	3.0	0.13	74.6
50	0.08	173.6	29.75	165.3	0.018	-7.0	0.13	54.3
100	0.09	137.7	29.35	146.9	0.018	-17.0	0.17	41.1
150	0.10	112.4	28.94	129.5	0.018	-29.0	0.22	26.5
200	0.12	92.7	28.71	112.9	0.018	-38.0	0.25	9.6
250	0.14	70.8	28.46	95.5	0.017	-50.0	0.27	-11.2
300	0.15	50.4	28.55	77.5	0.017	-63.0	0.27	-37.9
350	0.17	26.1	28.67	58.1	0.017	-78.0	0.28	-73.5

Model: AC282 Vcc=+12V Icc=37.73

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	DELAY NSEC	REV/ISO DB
5	1.56	2.01	28.8		-35.9
10	1.27	1.47	28.9		-35.1
20	1.17	1.31	29.1		-34.7
50	1.12	1.30	29.2	1.321	-34.7
100	1.15	1.40	29.1	1.020	-34.8
150	1.18	1.52	29.0	0.960	-34.8
200	1.23	1.61	28.9	0.927	-34.9
250	1.28	1.67	28.9	0.965	-35.0
300	1.34	1.69	28.9	1.007	-35.3