

# ACP14025

# 8.0 TO 14.0 GHz, Half Watt COUGARPAK® AMPLIFIER

**Typical Values**

	<b>ACP14025</b>
High Output Power .....	+28.5 dBm
High Third Order I.P.....	+42.0 dBm
High Second Order I.P.....	+60.0 dBm
High Performance Thin Film High Frequency Single-stage CougarPak®	

## SPECIFICATIONS\*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-55 to +85 °C
Frequency (Min.)	7.5-14.0 GHz	8.0-14.0 GHz	8.0-14.0 GHz
Small Signal Gain (Min.)	7.5 dB	6.5 dB	6.0 dB
Gain Flatness (Max.)	±0.5 dB	±0.8 dB	±1.0 dB
Noise Figure (Max.)	3.8 <sup>^</sup> dB	5.0 <sup>^</sup> dB	5.5 <sup>^</sup> dB
SWR (Max.)	Input Output	<2.0:1 <1.7:1	<2.0:1 <1.8:1
Power Output (Min.) @ 1dB comp.	+28.5 dBm	+27.5 dBm	+27.0 dBm
Reverse Isolation	25.0 dB	—	—
DC Current (Max.)	300 mA	310 mA	320 mA

\* Measured in a 50-ohm system at +10 Vdc unless otherwise specified.  
^ 0.5 dB higher below 9.0 GHz.

## INTERMODULATION PERFORMANCE

**Typical @ 25 °C**

	<b>ACP14025</b>
Second Order Harmonic Intercept Point .....	+59 dBm
Second Order Two Tone Intercept Point .....	+53 dBm
Third Order Two Tone Intercept Point .....	+34 dBm

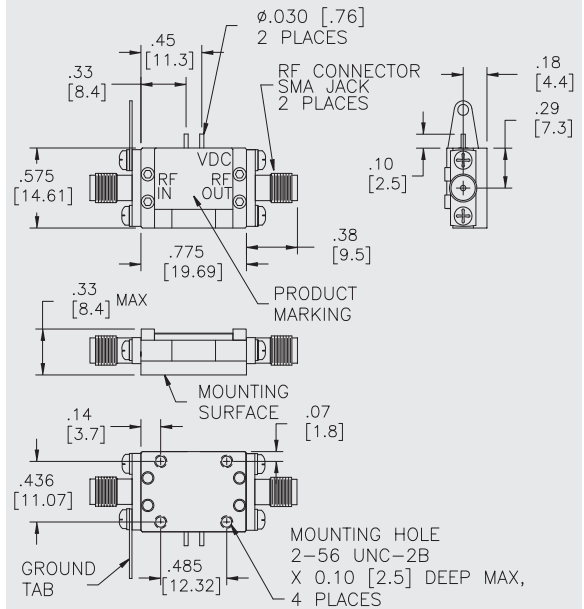
## ABSOLUTE MAXIMUM RATINGS

Storage Temperature .....	-65 to +150 °C
Maximum Case Temperature .....	+85 °C
Maximum DC Voltage .....	+14 Volts
Maximum Continuous RF Input Power .....	+22 dBm
Maximum Short Term Input Power (1 Minute Max.) .....	+25 dBm
Maximum Peak Power (3 μsec Max.) .....	+28 dBm
Burn-in Temperature .....	+105 °C
Thermal Resistance <sup>1</sup> (θjc) .....	+12.3 °C/Watt
Junction Temperature Rise Above Case (Tjc) .....	+41.5 °C

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

## ACP14025

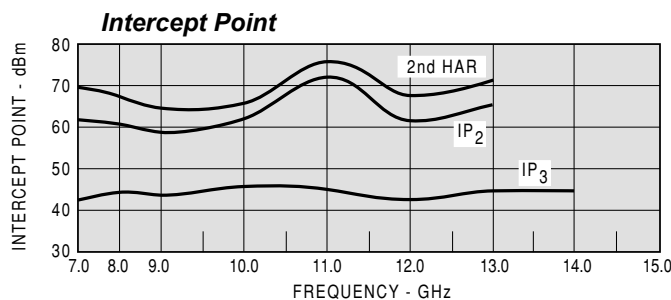
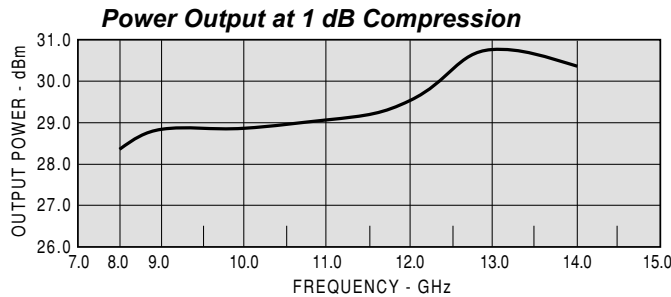
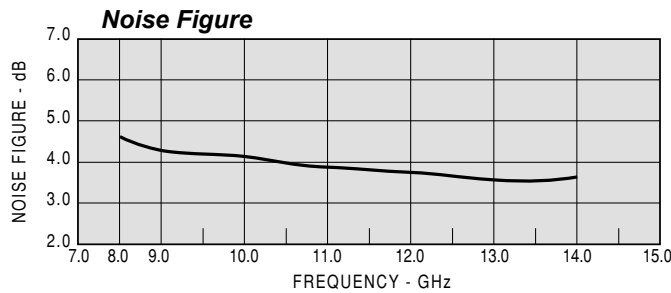
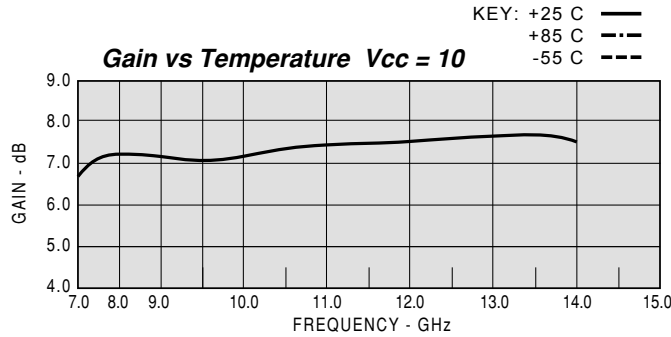
### High Frequency CougarPak® SMA Package (single-stage)



DIMENSIONS ARE IN INCHES [MILLIMETERS]

**TYPICAL PERFORMANCE**

**TYPICAL AUTOMATIC TEST DATA**



Model: A2CP142025			Vcc=+10V			Icc=281	
FREQ	SWR	SWR	GAIN	PHASE	DELAY	REV/ISO	
GHZ	IN	OUT	DB	DEG	NSEC	DB	
4.0	2.88	1.79	8.24	-119.76	0.4	-28.29	
4.5	2.24	1.58	7.94	172.03	0.37	-28.47	
5.0	2.12	1.44	7.5	108.07	0.34	-28.9	
5.5	2.29	1.37	6.95	47.83	0.32	-29.4	
6.0	2.48	1.35	6.59	-9.25	0.32	-29.57	
6.5	2.56	1.37	6.48	-64.22	0.3	-29.47	
7.0	2.36	1.41	6.63	-119.13	0.29	-28.94	
7.5	2.03	1.45	6.94	-175.23	0.31	-28.07	
8.0	1.68	1.46	7.21	127.77	0.33	-27.32	
8.5	1.48	1.41	7.26	70.43	0.32	-26.73	
9.0	1.48	1.34	7.14	14.05	0.31	-25.86	
9.5	1.52	1.28	7.03	-41.18	0.31	-25.17	
10.0	1.48	1.26	7.19	-96.11	0.31	-24.49	
10.5	1.32	1.31	7.36	-152.05	0.30	-23.54	
11.0	1.06	1.39	7.42	150.77	0.31	-22.88	
11.5	1.22	1.41	7.35	94.55	0.31	-22.60	
12.0	1.31	1.41	7.51	38.96	0.30	-21.69	
12.5	1.32	1.38	7.64	-18.79	0.33	-20.77	
13.0	1.40	1.33	7.68	-77.21	0.32	-19.97	
13.5	1.48	1.29	7.55	-135.95	0.30	-19.10	
14.0	1.51	1.30	7.47	164.55	0.33	-18.62	
14.5	1.47	1.32	7.24	104.89	0.32	-17.98	
15.0	1.37	1.31	6.97	44.07	0.35	-17.62	
15.5	1.29	1.33	6.60	-17.78	0.36	-17.51	
16.0	1.31	1.56	5.88	-80.61	0.35	-17.60	
16.5	1.31	2.06	4.80	-143.63	0.35	-18.23	
17.0	1.17	2.63	3.53	154.79	0.34	-18.91	
17.5	1.94	2.67	2.18	93.41	0.34	-19.67	
18.0	3.52	2.07	0.85	32.00	0.34	-20.67	
18.5	5.56	1.38	-0.46	-30.42	0.37	-21.70	
19.0	5.49	1.22	-1.72	-96.25	0.37	-22.39	
19.5	3.25	1.68	-4.03	-172.01	0.44	-23.79	
20.0	3.34	2.16	-9.74	113.67	0.41	-29.26	

Model: ACP14025		LINEAR S-PARAMETERS						Icc= 281	
		Vcc= +10V							
FREQ	S11	S21		S12		S22			
GHZ	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	
4.0	0.49	-131.60	2.58	-120.05	0.04	142.69	0.28	-75.67	
4.5	0.38	155.20	2.50	172.17	0.04	83.09	0.22	124.54	
5.0	0.36	77.46	2.36	108.04	0.04	26.47	0.18	-173.56	
5.5	0.39	8.93	2.23	47.91	0.03	-25.55	0.15	134.70	
6.0	0.43	-48.31	2.13	-9.01	0.04	-76.66	0.15	81.30	
6.5	0.44	-99.30	2.11	-64.28	0.03	-122.73	0.16	28.17	
7.0	0.41	-146.42	2.15	-119.15	0.04	-174.07	0.17	-22.25	
7.5	0.34	169.68	2.23	-175.19	0.04	138.20	0.18	-68.73	
8.0	0.25	135.28	2.28	127.98	0.04	85.37	0.19	-115.52	
8.5	0.20	111.46	2.31	70.82	0.05	32.81	0.17	-158.21	
9.0	0.19	89.93	2.28	14.21	0.05	-19.73	0.14	163.84	
9.5	0.21	58.00	2.26	-41.03	0.05	-70.10	0.12	137.63	
10.0	0.19	13.65	2.29	-96.22	0.06	-122.81	0.11	119.25	
10.5	0.14	-39.81	2.33	-152.00	0.07	-174.76	0.13	101.54	
11.0	0.03	-98.05	2.35	150.72	0.07	133.62	0.16	73.95	
11.5	0.10	-12.05	2.33	94.63	0.07	79.37	0.17	42.55	
12.0	0.14	-104.88	2.36	39.04	0.08	30.27	0.17	5.08	
12.5	0.14	172.15	2.41	-18.68	0.09	-23.50	0.16	-33.46	
13.0	0.17	96.67	2.42	-77.02	0.10	-78.47	0.14	-71.62	
13.5	0.19	26.35	2.39	-135.58	0.11	-133.65	0.12	-106.41	
14.0	0.20	-41.47	2.37	164.76	0.12	169.21	0.13	-144.27	
14.5	0.19	-109.15	2.31	104.94	0.13	111.54	0.14	175.90	
15.0	0.16	-169.63	2.23	44.32	0.13	53.37	0.13	141.36	
15.5	0.13	145.71	2.136	-17.38	0.13	-6.21	0.14	131.33	
16.0	0.14	117.93	1.98	-80.41	0.13	-67.51	0.22	120.16	
16.5	0.14	86.57	1.74	-143.43	0.12	-128.59	0.35	92.30	
17.0	0.08	117.91	1.50	154.98	0.11	170.26	0.45	54.74	
17.5	0.32	113.09	1.30	93.68	0.10	107.77	0.45	12.54	
18.0	0.56	66.72	1.106	32.04	0.09	44.76	0.34	-27.10	
18.5	0.70	22.42	0.95	-30.33	0.08	-17.04	0.15	-53.14	
19.0	0.69	-18.67	0.82	-96.39	0.07	-79.58	0.11	12.48	
19.5	0.53	-47.58	0.62	-172.09	0.06	-148.21	0.27	8.17	
20.0	0.54	-60.87	0.317	113.95	0.04	162.84	0.38	-21.43	