ACP20015

2.0 TO 20.0 GHz COUGARPAK® AMPLIFIER

Typical Values	ACP20015
Ultra Broad Bandwidth	2.0-20.0 GHz
Medium Noise Figure	3.5 dB
Medium Output Power	+17.0 dBm
High Gain	10.5 dB
Third Order I.P.	+27.0 dBm

High Performance Thin Film
High Frequency Single-stage CougarPak®

SPECIFICATIONS*

Parameter		Typical	Guaranteed 0 to 50 °C	Guaranteed -55 to +85 °C
Frequency (Min.)		**2.0-20.0 GHz**	**2.0-20.0 GHz**	**2.0-20.0 GHz**
Small Signal Gain (Min.)		10.5 dB	9.0 dB	8.5 dB
Gain Flatness (Max.)		±0.5 dB	±0.8 dB	±1.0 dB
Noise Figure (Max.)				
	2.0-4.0 GHz	4.5 dB	6.0 dB	6.5 dB
	4.0-20.0 GHz	3.5 dB	5.0 dB	5.5 dB
SWR (Max.)	Input	1.6:1	2.0:1	2.1:1
	Output	1.4:1	2.0:1	2.0:1
Power Output (Min.)				
@ 1dB comp.	2.0-18.0 GHz	+17.0 dBm	+15.0 dBm	+14.0 dBm
	18.0-20.0 GHz	+16.0 dBm	+14.0 dBm	+13.5 dBm
Reverse Isolation		45.0 dB	—	—
DC Current (Max.)		88.0 mA	96.0 mA	100.0 mA

* Measured in a 50-ohm system at +5 Vdc unless otherwise specified.

INTERMODULATION PERFORMANCE

Typical @ 25 °C	ACP20015
Second Order Harmonic Intercept Point	+36 dBm
Second Order Two Tone Intercept Point	+31 dBm
Third Order Two Tone Intercept Point	+27 dBm

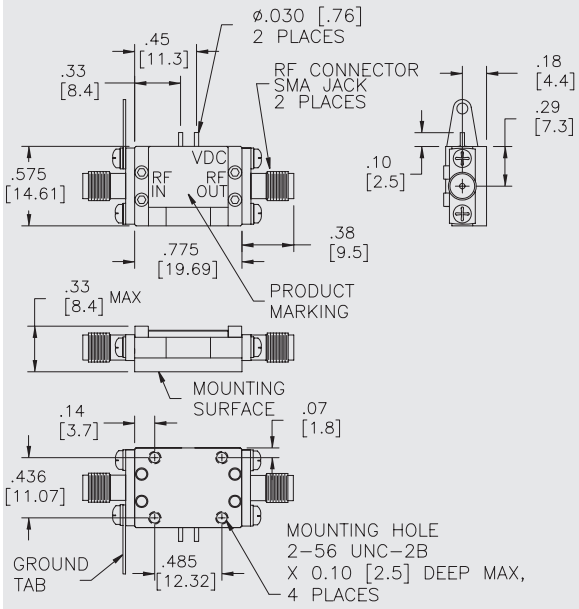
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65 to +150 °C
Maximum Case Temperature	+125 °C
Maximum DC Voltage	+9 Volts
Maximum Continuous RF Input Power	+22 dBm
Burn-in Temperature	+125 °C
Thermal Resistance[1] (θjc)	+40.0 °C/Watt
Junction Temperature Rise Above Case (Tjc)	+15.0 °C

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

ACP20015

High Frequency CougarPak® SMA Package (single-stage)

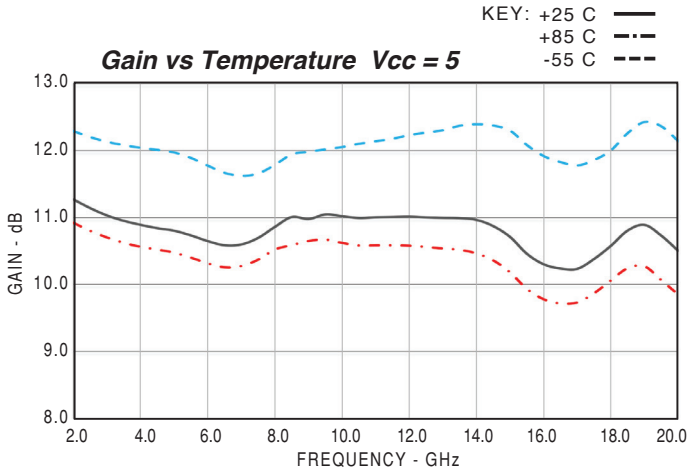


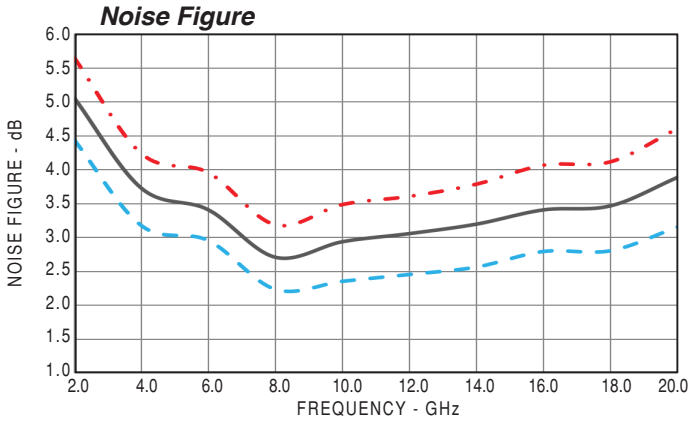
DIMENSIONS ARE IN INCHES [MILLIMETERS]

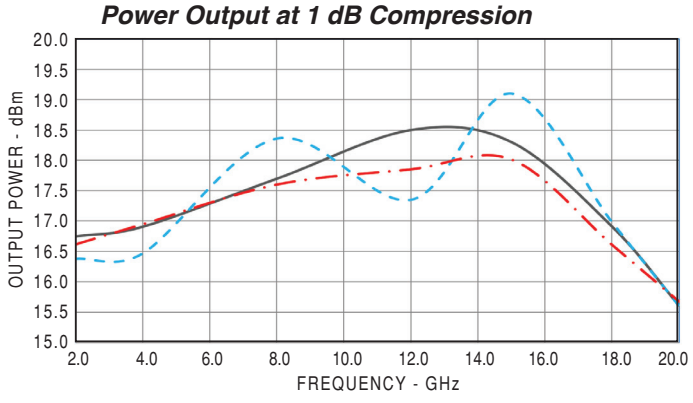
TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

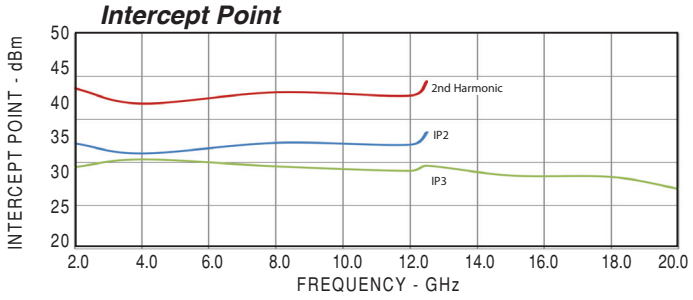
ACP20015

TYPICAL PERFORMANCE









TYPICAL AUTOMATIC TEST DATA

Model: ACP20015 Vcc=+5V Icc=90.6

FREQ GHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
2.0	1.34	1.76	11.27	117.85	0.13	-55.08
2.5	1.42	1.78	11.14	95.58	0.12	-54.74
3.0	1.46	1.77	11.03	74.57	0.11	-54.20
3.5	1.44	1.75	10.95	54.29	0.11	-53.85
4.0	1.37	1.73	10.89	34.46	0.11	-50.79
4.5	1.28	1.65	10.84	14.77	0.11	-50.35
5.0	1.24	1.55	10.80	-4.91	0.11	-49.70
5.5	1.37	1.49	10.73	-24.40	0.11	-48.87
6.0	1.54	1.35	10.65	-43.61	0.11	-48.73
6.5	1.68	1.25	10.58	-62.44	0.10	-48.45
7.0	1.72	1.17	10.60	-81.00	0.10	-47.13
7.5	1.64	1.07	10.69	-99.76	0.11	-47.27
8.0	1.46	1.01	10.86	-119.12	0.11	-46.58
8.5	1.24	1.06	11.01	-139.35	0.11	-45.91
9.0	1.14	1.10	10.98	-159.53	0.11	-46.16
9.5	1.23	1.13	11.04	-179.62	0.11	-44.59
10.0	1.36	1.19	11.02	160.06	0.11	-43.97
10.5	1.44	1.12	10.99	140.18	0.11	-49.33
11.0	1.43	1.06	11.00	120.12	0.11	-43.90
11.5	1.36	1.07	11.01	99.93	0.11	-42.85
12.0	1.31	1.03	11.01	79.49	0.11	-42.39
12.5	1.27	1.00	11.00	59.02	0.11	-42.26
13.0	1.19	1.04	10.99	38.54	0.11	-41.99
13.5	1.17	1.09	10.99	17.83	0.12	-42.49
14.0	1.17	1.11	10.96	-3.18	0.12	-41.83
14.5	1.11	1.15	10.87	-24.42	0.12	-43.13
15.0	1.27	1.19	10.71	-45.63	0.12	-43.70
15.5	1.56	1.26	10.46	-66.02	0.11	-43.28
16.0	1.69	1.29	10.30	-85.79	0.11	-43.72
16.5	1.68	1.31	10.24	-105.50	0.11	-42.89
17.0	1.69	1.38	10.23	-125.12	0.11	-43.25
17.5	1.69	1.40	10.38	-145.25	0.11	-41.81
18.0	1.46	1.51	10.58	-166.00	0.12	-41.35
18.5	1.17	1.59	10.80	172.04	0.13	-40.46
19.0	1.14	1.65	10.89	148.58	0.13	-39.59
19.5	1.48	1.70	10.73	125.56	0.13	-39.14
20.0	1.77	1.80	10.50	103.34	0.12	-39.16

LINEAR S-PARAMETERS

Model: ACP20015 Vcc= +5V Icc=90.6

FREQ	S11		S21		S12		S22	
GHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2.0	0.15	167.79	3.66	117.85	0.002	59.84	0.28	153.96
2.5	0.17	142.68	3.61	95.58	0.002	49.83	0.28	147.54
3.0	0.19	121.88	3.56	74.57	0.002	40.08	0.28	142.88
3.5	0.18	100.71	3.53	54.29	0.002	42.53	0.27	139.17
4.0	0.15	76.20	3.50	34.45	0.003	24.42	0.27	137.62
4.5	0.12	41.91	3.48	14.76	0.003	15.94	0.24	138.61
5.0	0.11	-10.57	3.47	-4.91	0.003	2.14	0.21	138.70
5.5	0.16	-56.44	3.44	-24.41	0.003	-14.00	0.20	141.16
6.0	0.21	-80.32	3.41	-43.61	0.004	-29.46	0.15	144.34
6.5	0.25	-96.32	3.38	-62.44	0.004	-43.78	0.11	144.10
7.0	0.27	-107.93	3.39	-80.99	0.004	-67.39	0.08	150.46
7.5	0.24	-116.46	3.43	-99.76	0.005	-79.99	0.03	144.29
8.0	0.19	-122.08	3.49	-119.12	0.005	-102.24	0.01	-177.42
8.5	0.11	-119.62	3.55	-139.34	0.005	-127.17	0.03	-44.94
9.0	0.06	-68.09	3.54	-159.54	0.005	-140.34	0.05	-19.41
9.5	0.10	-37.68	3.57	-179.62	0.006	-164.30	0.06	-30.07
10.0	0.15	-38.85	3.56	160.06	0.006	157.05	0.09	-36.16
10.5	0.18	-46.12	3.55	140.18	0.003	-166.66	0.06	-62.64
11.0	0.18	-59.18	3.55	120.11	0.007	159.27	0.03	-74.59
11.5	0.15	-83.85	3.55	99.93	0.007	133.40	0.04	-44.85
12.0	0.13	-116.41	3.55	79.48	0.008	110.39	0.01	-24.67
12.5	0.12	-143.25	3.55	59.03	0.008	92.45	0.00	-61.11
13.0	0.09	178.76	3.55	38.54	0.008	73.03	0.02	51.00
13.5	0.08	130.17	3.54	17.83	0.008	53.68	0.04	53.57
14.0	0.08	89.76	3.53	-3.16	0.007	43.32	0.05	58.00
14.5	0.05	29.12	3.50	-24.42	0.008	23.89	0.07	56.91
15.0	0.12	-36.34	3.43	-45.61	0.007	-4.67	0.09	49.36
15.5	0.22	-57.32	3.33	-66.03	0.006	-33.42	0.12	51.69
16.0	0.26	-68.24	3.28	-85.76	0.007	-48.37	0.13	44.30
16.5	0.25	-86.49	3.25	-105.49	0.007	-67.73	0.14	28.19
17.0	0.26	-107.66	3.25	-125.11	0.006	-93.49	0.16	23.25
17.5	0.26	-124.01	3.30	-145.22	0.008	-115.95	0.17	18.48
18.0	0.19	-137.17	3.38	-165.98	0.008	-142.82	0.20	7.36
18.5	0.08	-161.73	3.47	172.01	0.009	-156.00	0.23	9.86
19.0	0.07	46.85	3.50	148.58	0.011	179.77	0.25	8.74
19.5	0.19	18.73	3.44	125.59	0.011	155.89	0.26	9.73
20.0	0.28	10.58	3.35	103.33	0.011	136.06	0.29	17.87