

ACP20215 2.0-20.0 GHz COUGARPAK® AMPLIFIER

Typical Values	ACP20215
Ultra Broad Bandwidth	2.0-20.0 GHz
High Gain	20.0 dB
Medium Output Power	+16.0 dBm
High Reverse Isolation	55.0 dB
High Performance Thin Film High Frequency Single-stage CougarPak® Package	

SPECIFICATIONS*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-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.)	2.0 - 18.0 GHz	18.5 dB	17.0 dB
	18.0 - 20.0 GHz	17.5 dB	16.0 dB
Gain Flatness (Max.)	2.0 - 18.0 GHz	±1.5 dB	±1.6 dB
	18.0 - 20.0 GHz	±1.4 dB	±1.4 dB
Noise Figure (Max.)	2.0 - 15.0 GHz	5.8 dB	6.3 dB
	15.0 - 20.0 GHz	8.0 [^] dB	9.0 [^] dB
SWR (Max.)	Input/Output	2.0:1	2.1:1
Power Output (Min.) @ 1dB comp.	2.0 - 15.0 GHz	+15.0 dBm	+14.0 dBm
	15.0 - 20.0 GHz	+13.0 dBm	+12.0 dBm
Reverse Isolation	55.0 dB	—	—
DC Current (Max.)	156 mA	165 mA	170 mA

* Measured in a 50-ohm system at +5 Vdc unless otherwise specified.
^ Noise figure 0.5 dB higher above 19 GHz.

INTERMODULATION PERFORMANCE

Typical @ 25 °C; 8.0 GHz	ACP20215
Second Order Harmonic Intercept Point	+50 dBm
Second Order Two Tone Intercept Point	+45 dBm
Third Order Two Tone Intercept Point	+28 dBm

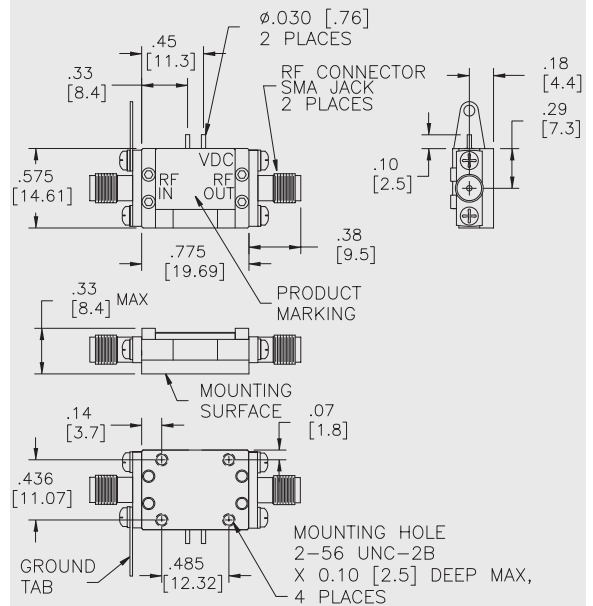
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65 to +150 °C
Maximum Case Temperature	+125 °C
Maximum DC Voltage	+8 Volts
Maximum Continuous RF Input Power	+20 dBm
Maximum Short Term Input Power (1 Minute Max.)	+23 dBm
Maximum Peak Power (3 μsec Max.)	+27 dBm
Burn-in Temperature	+125 °C
Thermal Resistance ¹ (θjc)	+19.4 °C/Watt
Junction Temperature Rise Above Case (Tjc)	+16 °C

¹ Thermal resistance is based on total power dissipation.

ACP20215

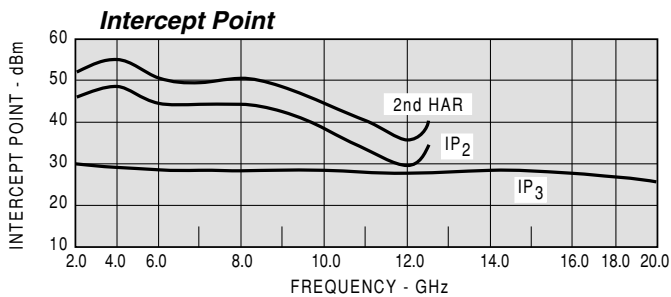
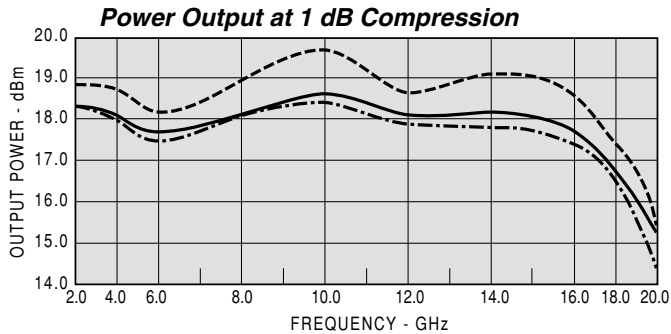
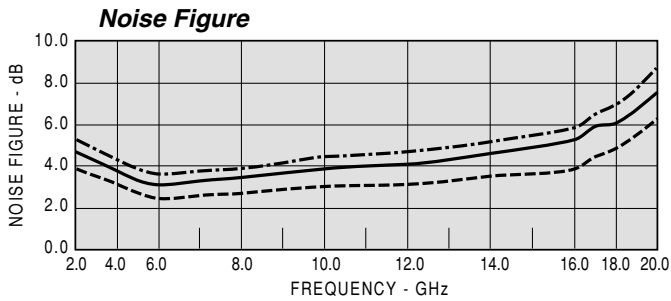
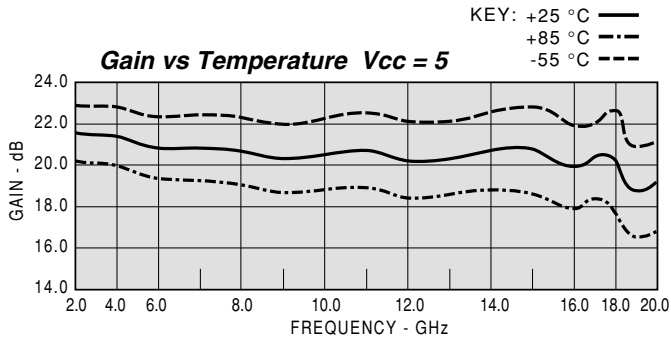
High Frequency CougarPak® SMA Package (single-stage)



DIMENSIONS ARE IN INCHES [MILLIMETERS]

TYPICAL PERFORMANCE

TYPICAL AUTOMATIC TEST DATA



Model: ACP20215 Vcc=+5V Icc=156.0

FREQ	IN	SWR	OUT	GAIN	PHASE	DELAY	Icc=156.0
GHZ				DB	DEG	NSEC	REV/ISO
2.0	1.53	1.18	21.80	165.75			-60.81
2.5	1.48	1.27	21.56	103.10	0.34		-62.70
3.0	1.44	1.47	21.82	42.21	0.35		-58.04
3.5	1.41	1.54	21.91	-20.47	0.35		-63.29
4.0	1.38	1.52	21.62	-80.90	0.33		-60.22
4.5	1.33	1.48	21.43	-140.47	0.32		-67.61
5.0	1.27	1.37	21.26	160.78	0.33		-61.12
5.5	1.24	1.22	21.15	102.85	0.32		-67.36
6.0	1.24	1.15	21.08	45.06	0.32		-77.03
6.5	1.26	1.15	21.05	-13.35	0.32		-65.96
7.0	1.28	1.19	21.04	-71.85	0.33		-59.21
7.5	1.32	1.23	20.94	-130.22	0.32		-64.36
8.0	1.40	1.22	20.80	170.75	0.33		-62.96
8.5	1.49	1.30	20.60	111.95	0.33		-72.29
9.0	1.50	1.61	20.33	54.76	0.32		-74.09
9.5	1.41	1.80	20.21	-1.39	0.31		-62.97
10.0	1.31	1.65	20.47	-59.64	0.32		-60.61
10.5	1.25	1.32	20.74	-120.46	0.34		-55.39
11.0	1.19	1.09	20.58	178.95	0.34		-54.72
11.5	1.13	1.17	20.31	119.71	0.32		-53.12
12.0	1.08	1.28	20.08	61.14	0.32		-52.28
12.5	1.07	1.39	20.17	3.22	0.32		-50.43
13.0	1.06	1.40	20.32	-55.29	0.34		-53.26
13.5	1.06	1.23	20.56	-116.40	0.35		-54.85
14.0	1.20	1.26	20.59	-179.71	0.35		-55.41
14.5	1.27	1.70	20.24	118.04	0.35		-54.17
15.0	1.21	1.81	20.15	56.48	0.35		-48.73
15.5	1.12	1.51	19.83	-7.37	0.35		-45.33
16.0	1.04	1.32	19.49	-69.09	0.34		-43.75
16.5	1.12	1.21	19.47	-129.13	0.33		-42.88
17.0	1.44	1.10	20.02	167.65	0.36		-40.47
17.5	1.68	1.67	20.18	98.77	0.39		-40.20
18.0	1.54	1.85	19.74	30.07	0.38		-40.59
18.5	1.26	1.35	19.02	-36.06	0.36		-42.80
19.0	1.30	1.87	18.36	-101.08	0.35		-45.72
19.5	1.55	1.97	18.21	-164.41	0.36		-46.20
20.0	1.76	1.38	18.74	126.94	0.40		-42.50

Model: ACP20215 Vcc=+5V Icc=156.0

LINEAR S-PARAMETERS

FREQ.	S11		S21		S12		S22	
GHZ	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG.
2.0	0.21	112.02	12.20	165.72	0.00	-95.95	0.09	-114.40
2.5	0.19	70.84	11.87	103.11	0.00	-64.93	0.12	-169.84
3.0	0.18	32.33	12.25	42.23	0.00	-102.11	0.18	139.65
3.5	0.17	-4.31	12.38	-20.48	0.00	-54.68	0.22	89.57
4.0	0.16	-40.34	11.97	-80.86	0.00	-158.38	0.21	46.07
4.5	0.14	-74.25	11.72	-140.36	0.00	118.96	0.19	6.00
5.0	0.12	-104.13	11.51	160.83	0.00	-47.39	0.15	-29.73
5.5	0.11	-128.71	11.37	102.95	0.00	110.76	0.11	-63.60
6.0	0.10	-144.57	11.28	45.17	0.00	-69.06	0.07	-90.17
6.5	0.11	-155.38	11.26	-13.21	0.00	-157.17	0.06	-99.27
7.0	0.12	-168.38	11.26	-71.67	0.00	172.03	0.07	-95.97
7.5	0.14	173.08	11.16	-130.10	0.00	146.74	0.09	-105.75
8.0	0.17	150.00	10.98	170.97	0.00	113.41	0.13	-130.11
8.5	0.19	126.76	10.80	112.01	0.00	47.43	0.17	-161.00
9.0	0.20	102.76	10.51	54.71	0.00	-170.84	0.23	172.93
9.5	0.17	74.39	10.41	-1.58	0.00	-114.87	0.23	148.75
10.0	0.14	41.09	10.78	-59.64	0.00	150.79	0.20	120.31
10.5	0.11	8.08	11.13	-120.81	0.00	132.45	0.17	88.95
11.0	0.08	-17.99	10.95	178.49	0.00	81.36	0.14	66.73
11.5	0.06	-46.36	10.53	118.92	0.00	35.24	0.11	57.32
12.0	0.05	-88.61	10.28	59.94	0.00	2.23	0.09	53.95
12.5	0.03	-138.55	10.31	1.87	0.00	-37.95	0.08	35.87
13.0	0.02	174.72	10.54	-57.22	0.00	-57.86	0.08	-9.90
13.5	0.02	-67.19	10.86	-118.50	0.00	-75.19	0.14	-57.56
14.0	0.08	-95.37	10.92	177.31	0.00	-72.24	0.20	-95.28
14.5	0.12	-126.05	10.57	115.26	0.00	-86.84	0.22	-130.83
15.0	0.11	-158.64	10.52	53.51	0.00	-94.20	0.18	-165.17
15.5	0.06	166.56	10.19	-10.03	0.01	-123.71	0.12	169.46
16.0	0.01	146.45	9.76	-71.87	0.01	-154.30	0.10	170.15
16.5	0.07	-95.71	9.80	-132.25	0.01	172.83	0.13	178.57
17.0	0.17	-130.16	10.33	164.37	0.01	140.79	0.18	161.41
17.5	0.25	-167.38	10.56	95.13	0.01	101.36	0.20	123.69
18.0	0.22	158.35	10.02	26.26	0.01	63.79	0.14	72.14
18.5	0.12	150.23	9.23	-40.37	0.01	27.73	0.04	-64.99
19.0	0.14	166.95	8.59	-105.15	0.00	15.63	0.14	-155.13
19.5	0.21	143.40	8.51	-169.32	0.00	24.71	0.16	166.27
20.0	0.26	106.90	9.00	121.43	0.01	11.29	0.09	115.06