

# ARJ109 0.5 TO 200 MHz GULLWING CASCADABLE AMPLIFIER

**Typical Values**

<b>High Output Power</b> .....	<b>ARJ109</b> <b>+28.5 dBm</b>
<b>High Second Order I.P.</b> .....	<b>+75.0 dBm</b>
<b>High Third Order I.P.</b> .....	<b>+44.0 dBm</b>
<b>High Performance Thin Film</b> <b>10-pin Gullwing Package</b>	

## SPECIFICATIONS\*

Parameter	Typical	Guaranteed	
		0 to 50° C	-55 to +85° C
Frequency (Min.)	0.5-300 MHz	0.5-200 MHz	0.5-200 MHz
Small Signal Gain (Min.)	10.8 <sup>^</sup> dB	10.0 <sup>^</sup> dB	9.5 <sup>^</sup> dB
Gain Flatness (Max.)	<±0.2 dB	±0.5 dB	±0.7 dB
Noise Figure (Max.)	4.5 dB	5.2 dB	5.7 dB
SWR (Max.) Input/Output	1.5:1 <sup>†</sup>	1:8:1 <sup>†</sup>	1.9:1 <sup>†</sup>
Power Output (Min.) @ 1 dB comp.	+28.5 dBm	+27.5 dBm	+27.0 dBm
DC Current (Max.)	235 mA	245 mA	255 mA

\* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.  
<sup>^</sup> 0.5 dB lower Above 150 MHz. <sup>†</sup> 0.2:1 higher below 1 MHz

## INTERMODULATION PERFORMANCE

Typical @ 25° C	+12 volts	+15 volts
Second Order Harmonic Intercept Point .....	+79 dBm	+81 dBm
Second Order Two Tone Intercept Point .....	+73 dBm	+75 dBm
Third Order Two Tone Intercept Point .....	+43 dBm	+44 dBm

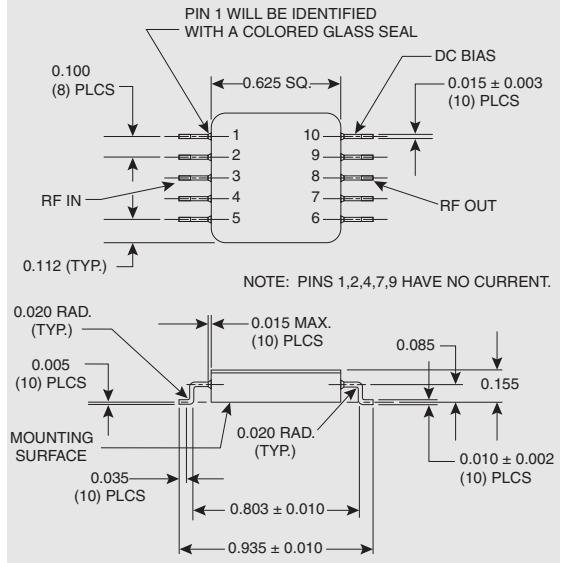
## ABSOLUTE MAXIMUM RATINGS

Storage Temperature .....	-62 to +125° C
Maximum Case Temperature .....	+125° C
Maximum DC Voltage .....	+17 Volts
Maximum Continuous RF Input Power .....	+20 dBm
Maximum Short Term Input Power (1 Minute Max.) .....	200 Milliwatts
Maximum Peak Power (3 μsec Max.) .....	0.5 Watt
Burn-in Temperature .....	+100° C
Thermal Resistance <sup>1</sup> (θjc; Vcc = 15) .....	+15° C/Watt
Junction Temperature Rise Above Case (Tjc; Vcc = 15) ..	+39.7° C

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

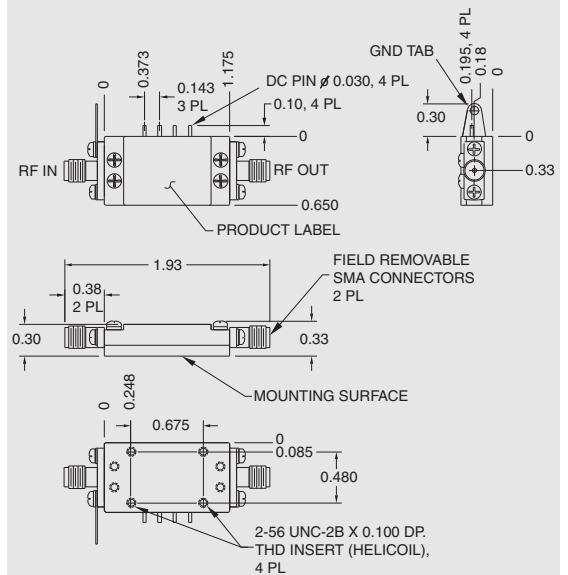
## ARJ109

### 10-pin Gullwing Package



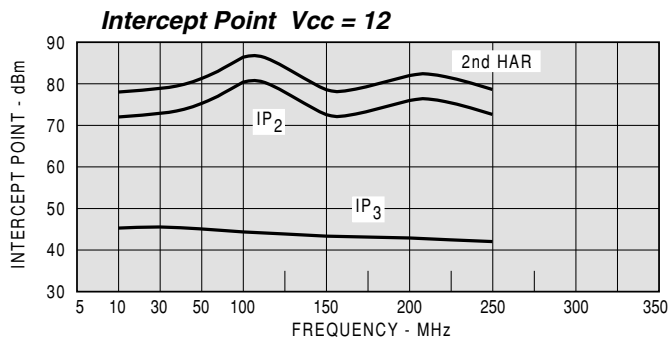
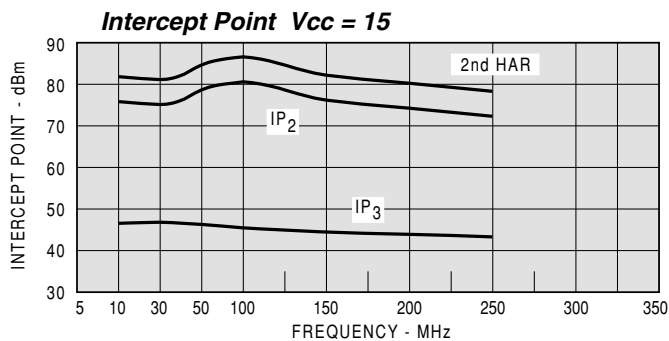
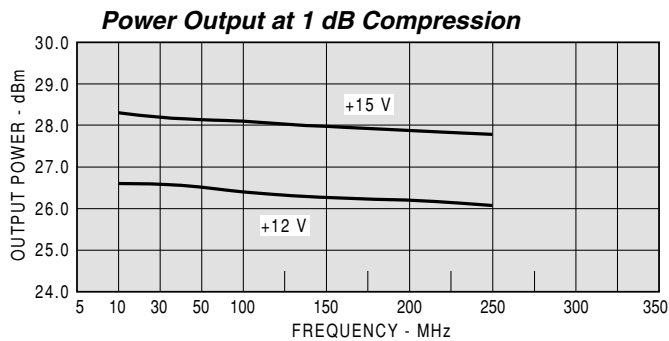
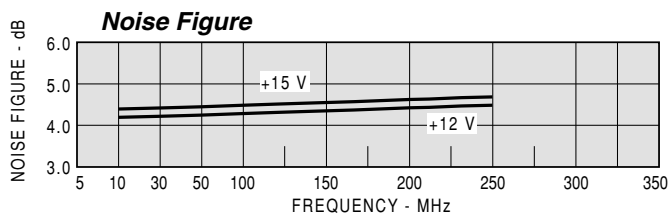
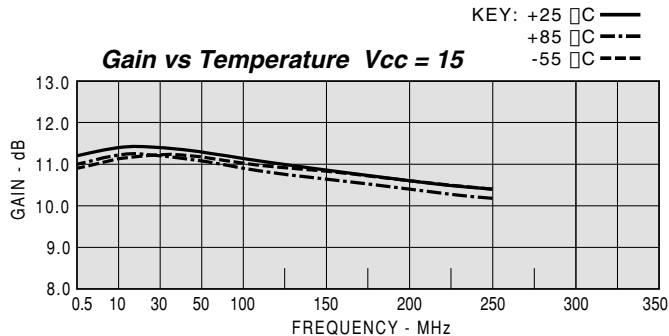
## ACPR109

### Cougarpak® CPR



**TYPICAL PERFORMANCE**

**TYPICAL AUTOMATIC TEST DATA**



Model: ARJ109 Vcc=+15V lcc=235.78

FREQ. MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
0.5	1.56	1.78	11.14	-164		-17.2
1	1.28	1.58	11.32	-172		-17.0
5	1.12	1.46	11.54	180		-16.8
10	1.11	1.45	11.55	177	1.5	-16.8
50	1.10	1.46	11.39	160	1.2	-16.9
100	1.08	1.49	11.19	140	1.1	-17.0
150	1.03	1.54	10.99	120	1.1	-17.0
200	1.03	1.60	10.76	101	1.1	-16.9
250	1.09	1.67	10.48	82	1.1	-16.8

Model: ARJ109 Vcc=+15V lcc=235.78

LINEAR S-PARAMETERS

FREQ. MHZ	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.5	0.22	-56.5	3.61	-163.7	0.138	18.5	0.28	145.8
1	0.12	-53.5	3.68	-171.8	0.141	9.3	0.22	157.1
5	0.06	-24.4	3.77	179.9	0.145	1.2	0.19	172.3
10	0.05	-14.7	3.78	176.8	0.145	-1.2	0.18	175.3
50	0.05	-15.8	3.71	159.6	0.143	-11.0	0.19	175.0
100	0.04	-31.2	3.63	139.8	0.141	-21.5	0.20	169.9
150	0.02	-51.5	3.54	120.3	0.142	-32.0	0.21	162.8
200	0.01	130.5	3.45	101.0	0.142	-42.4	0.23	154.8
250	0.04	108.0	3.34	81.8	0.144	-52.8	0.25	145.7
300	0.07	92.7	3.22	62.8	0.145	-63.3	0.27	136.2

Model: ARJ109 Vcc=+12V lcc=185.57

FREQ. MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
0.5	1.55	1.77	11.14	-164		-17.2
1	1.28	1.57	11.31	-172		-17.0
5	1.12	1.46	11.53	180		-16.8
10	1.11	1.44	11.55	177	1.5	-16.8
50	1.10	1.45	11.38	159	1.2	-16.9
100	1.07	1.48	11.18	140	1.1	-17.0
150	1.03	1.54	10.99	120	1.1	-17.0
200	1.03	1.60	10.75	101	1.1	-16.9
250	1.10	1.67	10.48	82	1.1	-16.8

Model: ARJ109 Vcc=+12V lcc=185.57

LINEAR S-PARAMETERS

FREQ. MHZ	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.5	0.22	-56.8	3.61	-163.6	0.138	18.5	0.28	145.2
1	0.12	-53.8	3.68	-171.7	0.141	9.4	0.22	156.9
5	0.05	-25.0	3.77	180.0	0.144	1.1	0.19	172.2
10	0.05	-14.6	3.78	176.7	0.145	-1.3	0.18	175.2
50	0.05	-15.8	3.71	159.5	0.142	-10.8	0.18	175.3
100	0.04	-31.3	3.62	139.8	0.141	-21.4	0.19	170.6
150	0.01	-54.6	3.54	120.3	0.141	-31.6	0.21	163.4
200	0.01	132.8	3.45	101.2	0.142	-42.1	0.23	155.4
250	0.05	110.0	3.34	82.0	0.144	-52.7	0.25	146.4
300	0.08	93.5	3.22	63.0	0.145	-63.3	0.27	136.9