

AVP2034

600 TO 2200 MHz, 20 WATTS HIGH POWER GaNPak B AMPLIFIER

Typical Values	AVP2034
Broadband.....	500-2400 MHz
High Gain	+40 dB
High Saturated Power, Psat.....	25 Watts
High Third Order I.P.....	+50 dBm
Small Hermetic Package, Cougar GaNPakB	

SPECIFICATIONS*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-55 to +85 °C
Frequency (Min.)	500-2400 MHz	600-2200 MHz	600-2200 MHz
Small Signal Gain (Min.)	40.0 dB	39.0 dB	38.0 dB
Gain Flatness (Max.)	±0.8 dB	±1.0 dB	±1.2 dB
Noise Figure (Max.)	3.7 dB	4.6 dB	5.0 dB
SWR (Max.) Input/Output	<1.8:1	2.0:1	2.0:1
Power Output (Min.) @ 4dB comp.	+44.0 dBm +25.1 W	+43.5 dBm +22.4 W	+43.0 dBm +20.0 W
Reverse Isolation	70.0 dB	65.0 dB	65.0 dB
DC Current (Max.)			
1st Stg: +12V	200 mA	215 mA	230 mA
Linear Oper. 2nd Stg: +28V	1200 mA	1500 mA	1600 mA
Psat w/+8 dBm Input			
2nd Stage: +28V	3200 mA	3500 mA	3700 mA
Switching Speed (Max.) 50% TTL to 90% Rise time or 10% Fall Time [^]	2 ms	4 ms	5 ms

* Measured in a 50-ohm system at +12/+28V.

[^] Faster switching speed option available upon request.

INTERMODULATION PERFORMANCE

Typical @ 25 °C	AVP2034
Second Order Harmonic Intercept Point	+70 dBm
Second Order Two Tone Intercept Point	+75 dBm
Third Order Two Tone Intercept Point	+46 dBm

ABSOLUTE MAXIMUM RATINGS

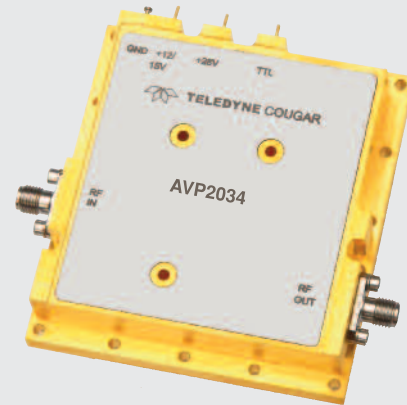
Storage Temperature	-62 to +125 °C
Maximum Case Temperature, +28V/+32V	+90 °C/+75 °C
Maximum DC Voltage	+33 Volts
Maximum Continuous RF Input Power	+12 dBm ¹
Maximum Short Term Input Power (1 Minute Max.)	+14 dBm
Maximum Peak Power (3 μsec Max.)	+16 dBm
Burn-in Temperature, +28V	+85 °C
Thermal Resistance ² (θjc)	+2.2 °C/Watt
Junction Temperature Rise Above Case (Tjc), +28V	+60 °C

¹ If no load or a short on output; decrease input power by +10 dBm.

² Thermal resistance is based on total power dissipation.

AVP2034

CougarGaNPak B



HEAT SINK WARNING:

This amplifier requires an adequate heat sink to prevent damage. Maximum case temperature must not be exceeded. The package is designed to provide adequate heat transfer to proper aluminum heat sink.

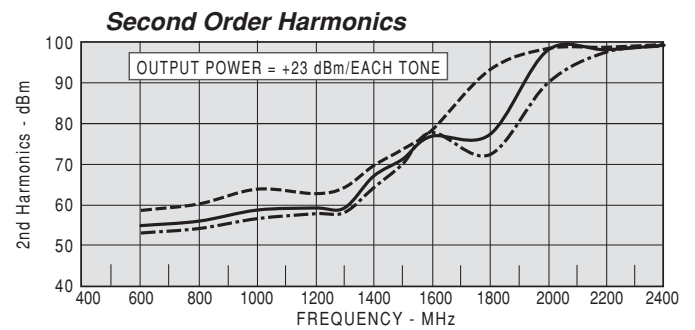
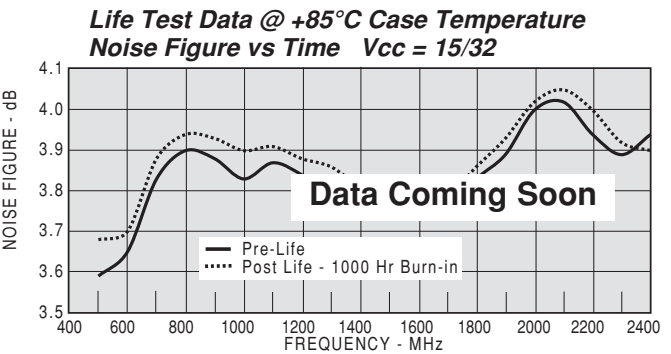
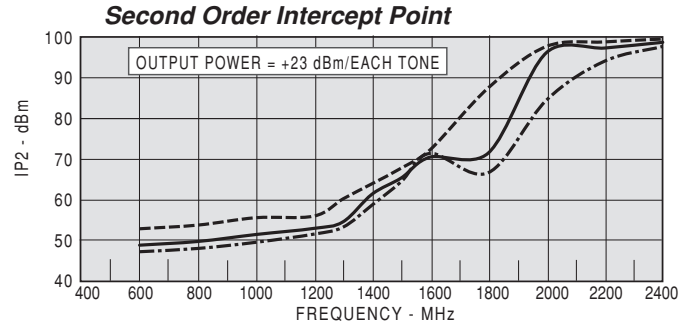
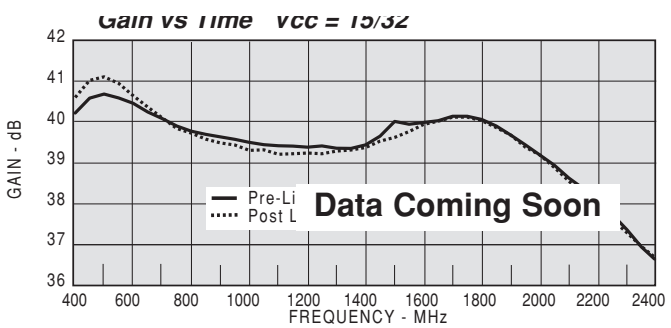
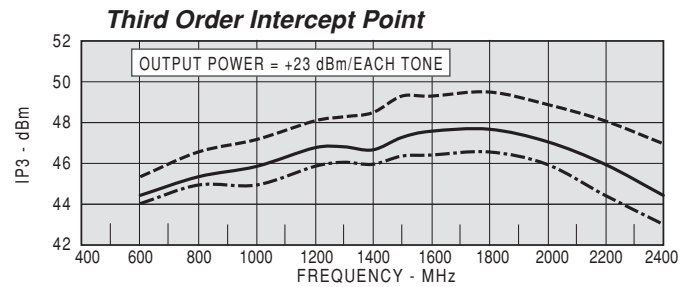
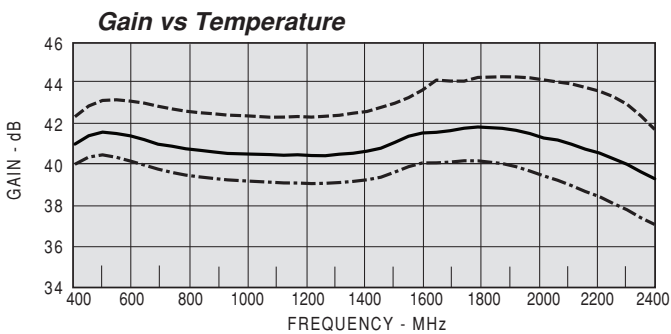
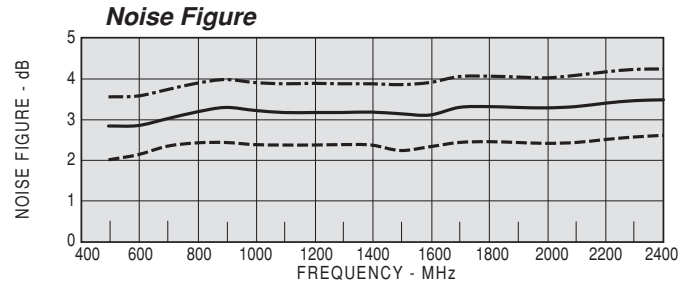
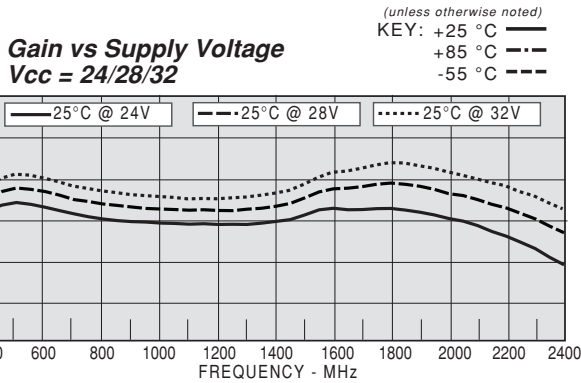
The AVP2034 amplifier provides nominal output power of 20-22 Watts. Each amplifier uses control circuitry to ensure safe startup and automatic thermal shutdown and recovery. The amplifiers have an external pin for TTL on/off control. On/Off Low or High can be specified; standard is Off/Low. The AVP2034 uses the preamp and driver stages to provide ~ 40 dB of overall gain.

Heat sinking is required to keep the case temperatures within a safe operating range. A thin layer of thermal grease or HiTherm (for example the HT-2500 series) helps provide a low resistance thermal path between the case and the mounting surface. The mounting surface should be metal with heat conduction of aluminum or better. Heat sink size depends on whether fan-driven air cooling is used, or if only convection is used.

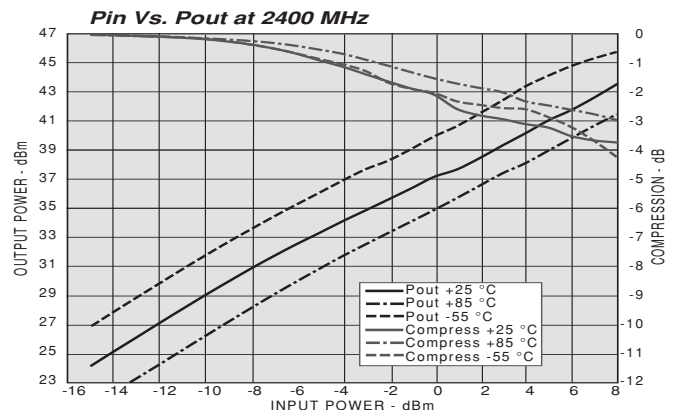
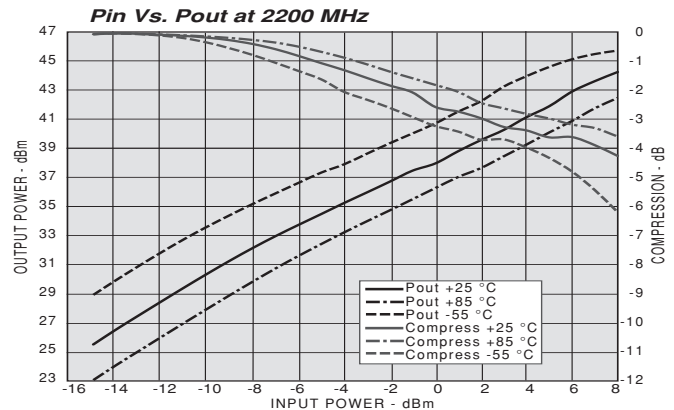
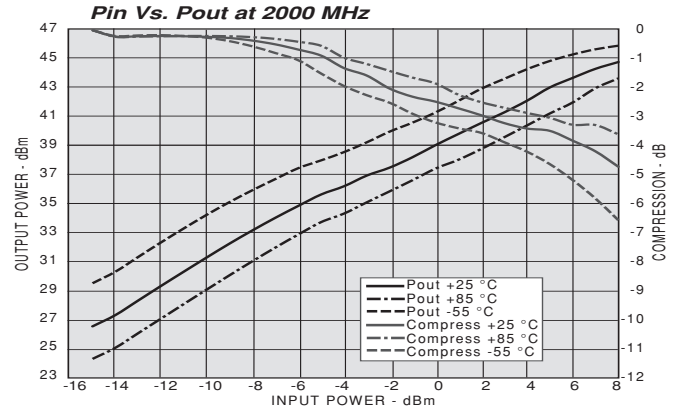
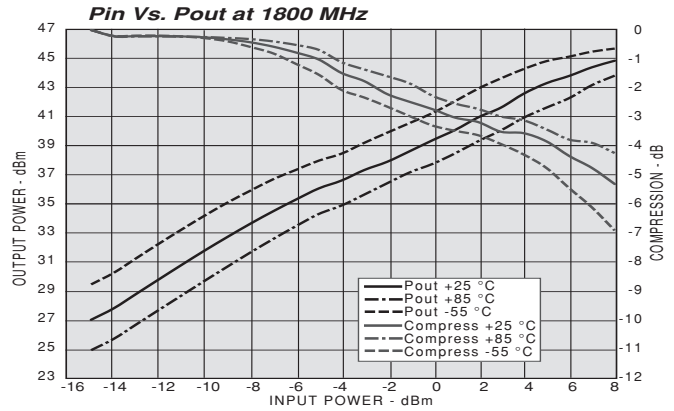
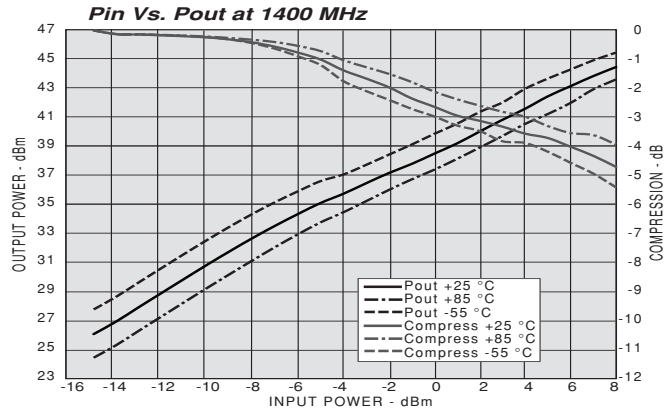
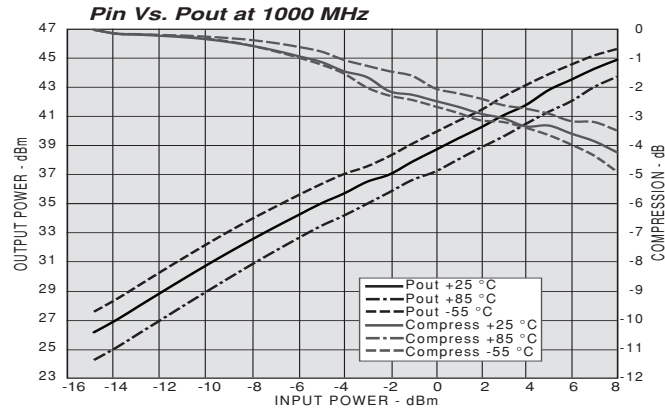
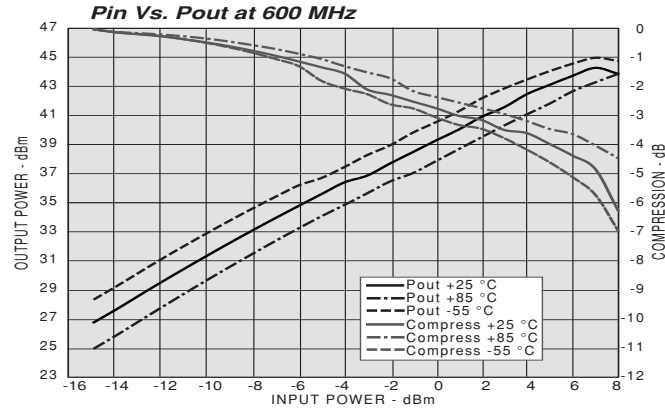
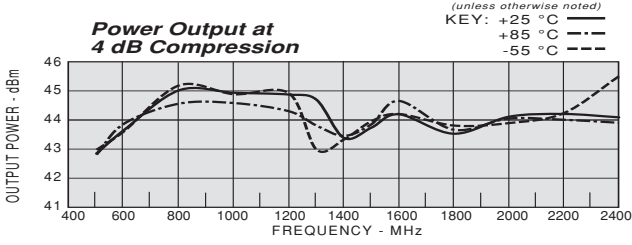
Maximum Tj of both amplifiers is 200°C.

DIMENSIONS ARE IN INCHES [MILLIMETERS]

TYPICAL PERFORMANCE

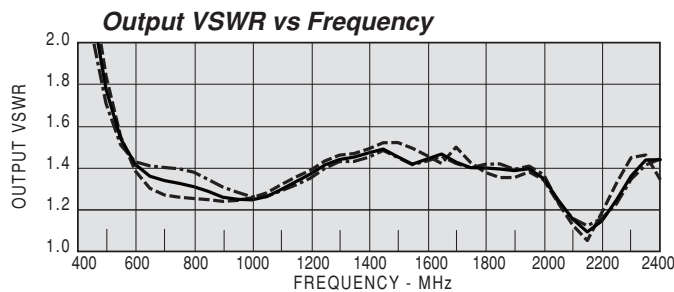
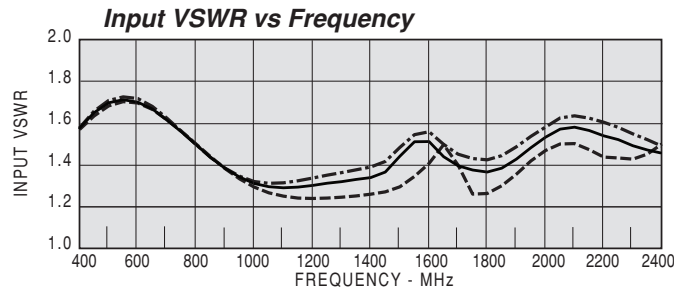
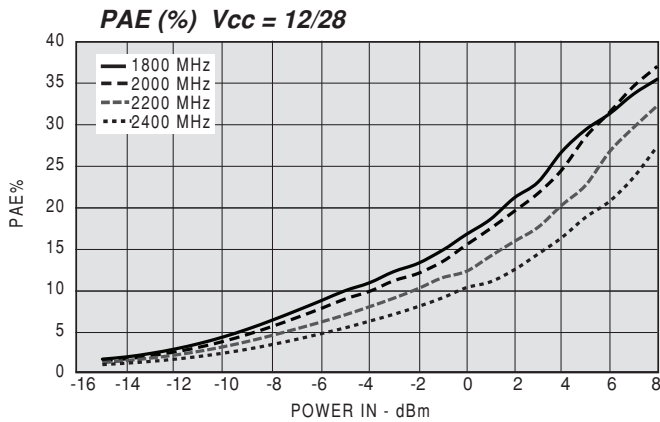
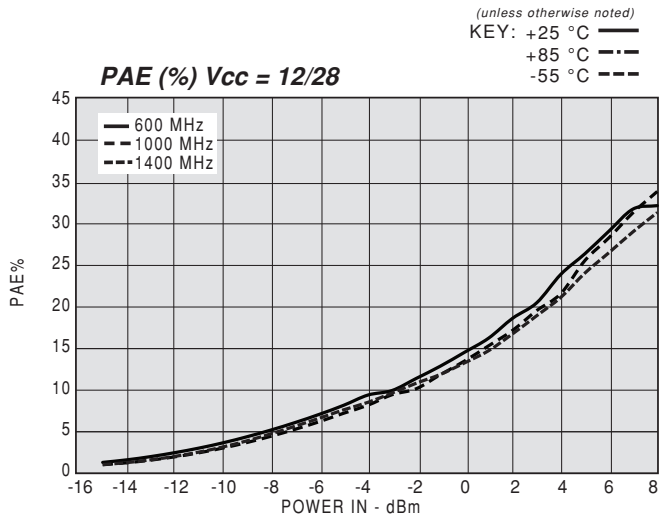


TYPICAL PERFORMANCE



TYPICAL PERFORMANCE

TYPICAL AUTOMATIC TEST DATA



Model: AVP2034
Vcc=+12V / +28V
Temp = +25 °C

FREQ. MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
400	0.22	-49.20	112.40	51.84	0.0002	-53.24	0.48	73.60
500	0.26	-85.28	120.11	-14.79	0.0002	-103.27	0.28	52.26
600	0.26	-120.56	117.64	-75.23	0.0002	-143.53	0.17	52.78
700	0.23	-153.27	112.34	-131.12	0.0002	170.73	0.15	58.59
800	0.20	178.49	109.52	176.26	0.0002	116.47	0.13	57.58
900	0.16	156.91	107.66	124.53	0.0002	69.15	0.12	57.45
1000	0.14	143.74	106.43	73.17	0.0002	38.55	0.11	66.28
1100	0.13	134.86	105.70	21.93	0.0002	-0.59	0.13	70.89
1200	0.13	125.12	105.54	-29.16	0.0002	-38.11	0.16	66.38
1300	0.14	113.66	106.31	-80.13	0.0003	-75.61	0.18	57.32
1400	0.15	103.80	108.10	-131.40	0.0003	-110.59	0.19	43.52
1500	0.18	94.51	113.49	176.97	0.0004	-162.57	0.19	30.91
1600	0.20	65.59	119.51	121.07	0.0003	141.48	0.18	26.83
1700	0.17	49.41	121.04	64.64	0.0003	125.96	0.18	13.93
1800	0.16	43.41	123.58	6.21	0.0003	78.09	0.17	8.37
1900	0.18	36.72	121.31	-53.23	0.0003	35.57	0.16	-2.14
2000	0.21	18.20	116.24	-113.31	0.0004	-13.46	0.15	-18.41
2100	0.23	-7.12	112.34	-173.91	0.0004	-61.78	0.07	-34.59
2200	0.21	-32.70	107.05	123.40	0.0004	-111.07	0.07	41.12
2300	0.20	-58.00	100.54	58.33	0.0004	-167.12	0.15	28.88
2400	0.19	-84.04	92.80	-10.18	0.0005	134.59	0.18	0.01
2500	0.19	-110.35	80.97	-84.39	0.0005	71.99	0.12	-20.86
2600	0.23	-145.51	60.23	-162.86	0.0004	6.65	0.12	25.11

Model: AVP2034
Vcc=+12V / +28V
Temp = +85 °C

FREQ. MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
400	0.22	-51.60	100.55	49.67	0.0002	-54.99	0.45	74.05
500	0.26	-86.29	105.89	-17.51	0.0002	-105.32	0.26	56.39
600	0.26	-120.92	102.36	-77.98	0.0002	-149.37	0.18	60.73
700	0.24	-152.91	97.84	-133.64	0.0002	157.85	0.17	64.15
800	0.20	-179.77	94.69	173.53	0.0002	114.48	0.16	57.38
900	0.16	160.35	92.97	121.71	0.0002	67.03	0.13	52.31
1000	0.14	148.62	91.66	70.26	0.0002	34.83	0.12	58.58
1100	0.14	139.36	90.67	18.89	0.0002	-0.13	0.13	66.01
1200	0.15	128.33	90.32	-32.22	0.0003	-37.59	0.15	64.36
1300	0.16	114.78	90.84	-83.30	0.0003	-76.55	0.18	58.36
1400	0.16	103.18	92.28	-134.77	0.0003	-118.80	0.18	44.43
1500	0.20	91.10	96.31	173.23	0.0004	-161.95	0.18	34.14
1600	0.22	65.29	101.29	117.53	0.0004	143.06	0.18	29.15
1700	0.19	47.36	101.77	60.70	0.0003	117.55	0.17	18.38
1800	0.18	39.49	102.43	2.23	0.0003	78.71	0.17	13.07
1900	0.20	30.59	99.21	-56.82	0.0004	31.41	0.16	1.40
2000	0.23	12.23	94.25	-116.38	0.0004	-15.53	0.16	-14.22
2100	0.24	-11.79	89.35	-176.15	0.0004	-58.58	0.07	-31.82
2200	0.23	-37.20	84.11	122.45	0.0004	-112.05	0.07	39.38
2300	0.22	-63.06	78.16	59.34	0.0005	-162.79	0.15	30.35
2400	0.20	-90.50	72.04	-6.25	0.0005	140.89	0.18	6.93
2500	0.18	-118.44	64.88	-76.30	0.0005	83.83	0.16	-16.67
2600	0.18	-147.29	53.45	-152.58	0.0004	20.35	0.10	-9.14

Model: AVP2034
Vcc=+12V / +28V
Temp = -55 °C

FREQ. MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
400	0.22	-47.39	130.82	57.12	0.0001	-51.09	0.51	74.13
500	0.25	-83.30	143.10	-9.44	0.0002	-92.78	0.30	48.98
600	0.26	-119.64	142.62	-70.41	0.0002	-144.01	0.16	44.22
700	0.24	-153.31	138.61	-126.62	0.0001	167.64	0.12	56.48
800	0.20	176.86	134.83	-179.82	0.0001	126.20	0.11	62.24
900	0.16	152.71	132.92	128.25	0.0001	70.90	0.11	65.09
1000	0.13	136.47	131.43	76.77	0.0001	48.89	0.11	71.08
1100	0.11	127.45	130.54	25.47	0.0002	1.68	0.14	70.47
1200	0.11	120.12	130.55	-25.56	0.0002	-42.12	0.16	63.33
1300	0.11	111.18	131.84	-76.40	0.0002	-73.60	0.19	53.29
1400	0.12	104.43	134.62	-127.55	0.0003	-115.14	0.20	39.39
1500	0.13	97.37	140.94	-179.53	0.0003	-147.24	0.21	27.56
1600	0.17	83.36	151.59	127.08	0.0004	166.44	0.19	13.21
1700	0.17	38.48	159.34	66.50	0.0004	89.73	0.20	9.24
1800	0.12	50.85	162.55	9.59	0.0003	70.64	0.16	-3.32
1900	0.15	47.82	163.00	-51.10	0.0003	29.62	0.15	-6.95
2000	0.19	27.00	160.38	-112.80	0.0004	-17.52	0.15	-23.11
2100	0.20	0.38	156.87	-175.68	0.0004	-72.40	0.06	-50.57
2200	0.18	-21.83	150.66	118.44	0.0004	-122.63	0.09	58.97
2300	0.18	-40.17	140.16	48.86	0.0004	177.65	0.18	25.42
2400	0.20	-61.20	121.86	-25.06	0.0004	116.30	0.15	-8.41
2500	0.26	-93.41	92.48	-102.27	0.0003	49.64	0.12	40.43
2600	0.31	-138.77	60.64	-175.57	0.0002	-7.59	0.30	18.88

OUTLINE DRAWING - COUGAR GaNPak B

