



High Performance Voltage Controlled Amplifiers
Typical and Guaranteed Specifications—50 Ω System



Model	Frequency Range MHz	Small Signal Gain dB			AGC Range dB	Noise Figure dB			Power Output At 1dB Compression dBm			Response Time (s)	AGC Control		SWR In/Out		D.C.	
		Typ.	Min. 0/50C	Min. -55/85C		Typ.	Typ.	Max. 0/50C	Max. -55/85C	Typ.	Min. 0/50C		Min. -55/85C	Volts	I(mA) Typ.	Max. 0/50C	Max. -55/85C	Volts Nom.
Available in TO-8 Attenuator, TO-3 and SMA Packages (depending on model) • V_c = 0																		
AGC230	20-250	46.0	42.0	40.0	50.0	5.0	6.0	6.5	8.5	7.5	7.0	10	0 to 5	0 to 14	2.0	2.0	15	62
AGC-330	5-300	22.0	20.0	18.0	36.0	4.0	5.0	6.0	1.0	0.0	-1.0	5	0 to 5	0 to 60	1.7	2.0	15	25
AGC525	10-500	25.5	24.5	24.0	30.0	5.0	6.0	6.5	11.0	10.0	9.5	10	0 to 5	0 to 10	2.0	2.0	15	45
AGC-553	10-500	44.0	40.0	40.0	45.0	6.0	8.0	9.0	0.0	-4.0	-6.0	25	0 to 5	0 to 12	2.0	2.0	15	50
AGS555	10-500	27.0	26.0	25.5	30.0	5.0	6.0	6.5	11.5	10.0	9.5	10	0 to 5	0 to 10	2.0	2.0	5	45
AGC1025	10-1000	21.5	20.5	19.0	25.0	5.2	6.0	6.5	9.0	8.0	7.0	10	0 to 5	0 to 10	2.0	2.0	15	50
AGC-1053	10-1000	22.0	18.0	17.0	35.0	11.0	12.0	13.0	8.0	5.0	3.0	25	0 to 5	0 to 12	2.0	2.0	15	90
AGS2520	700-2500	5.5	4.8	4.3	20.0	5.5	6.0	6.5	15.0	14.5	14.0	3	0 to 5	0 to 10	1.8/2.1	2.0/2.2	5	60

VOLTAGE CONTROLLED AMPLIFIERS

Current data sheets available on website.

AGC230

20 TO 250 MHz TO-8 GAIN CONTROL AMPLIFIER

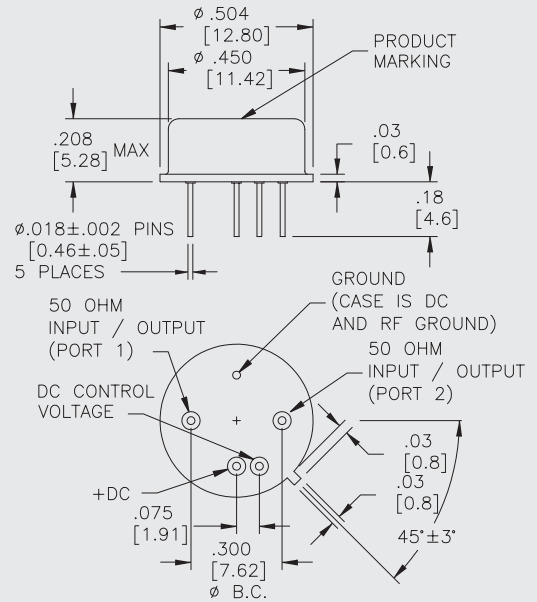
Typical Values

Gain	46 dB
High AGC Range	50.0 dB
High Control Range	0 to +5 Volts
Low Noise Figure	5.0 dB
High Performance Thin Film	
Standard Size TO-8 Package	

AGC230

AGC230

TO-8 Package for Gain Control Amplifiers



SPECIFICATIONS*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-55 to +85 °C
Frequency (Min.)	10-300 MHz	20-250 MHz	20-250 MHz
Gain (Min.) @ V contr. = 0 Volts	46.0 dB	42.0 dB	40.0 dB
Gain (Max.) @ V contr. = +5 Volts	-5.0 dB	-1.0 dB	—
Gain Flatness (Max.)			
@ V contr. = 0 Volts			
20-100 MHz	±0.5 dB	±1.0 dB	±1.5 dB
100-250 MHz	±1.5 dB	±2.0 dB	±2.5 dB
Noise Figure (Max.)			
@ V contr. = 0 Volts	5.0 dB	6.0 dB	6.5 dB
SWR (Max.) Input/Output	< 1.6:1	2.0:1	2.0:1
Power Output (Min.)			
@ 1 dB comp.			
@ V contr. = 0 Volts	+8.5 dBm	+7.5 dBm	+7.0 dBm
Response Time			
Full AGC	10 µsec	—	—
20 dB AGC	5 µsec	—	—
DC Current (Max.) Bias	62 mA	65 mA	68 mA

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.
^ AGC Voltage: 0 to +5 Volts

INTERMODULATION PERFORMANCE

Typical @ 25 °C Vcontrol = 0 Volts	AGC230
Second Order Harmonic Intercept Point	+39 dBm
Second Order Two Tone Intercept Point	+33 dBm
Third Order Two Tone Intercept Point	+21 dBm

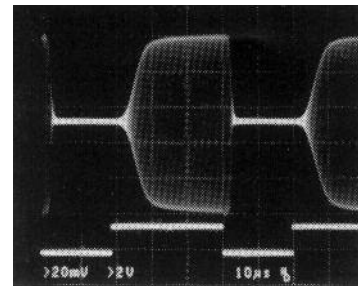
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to +125 °C
Maximum Case Temperature	+125 °C
Maximum DC Voltage	+18 Volts
Maximum Continuous RF Input Power	+13 dBm
Maximum Short Term Input Power (1 Minute Max.)	50 Milliwatts
Maximum Peak Power (3 µsec Max.)	0.5 Watt
Maximum Control Voltage	+7.0 Volts
Burn-in Temperature	+125 °C
Thermal Resistance¹ (θjc)	+12 °C/Watt
Junction Temperature Rise Above Case (Tjc)	+12.0 °C

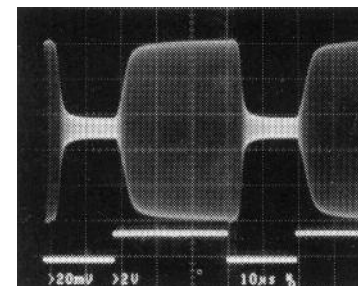
¹Thermal resistance is based on total power dissipation.

SWITCHING SPEED

Typical Switching Speed at 25 °C



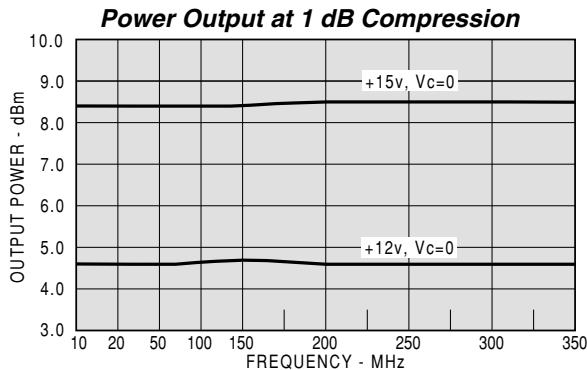
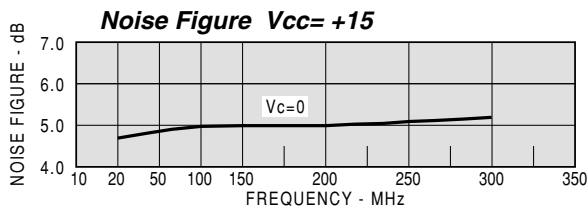
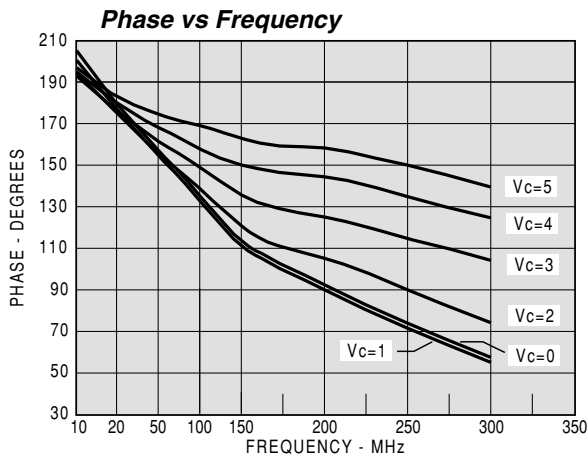
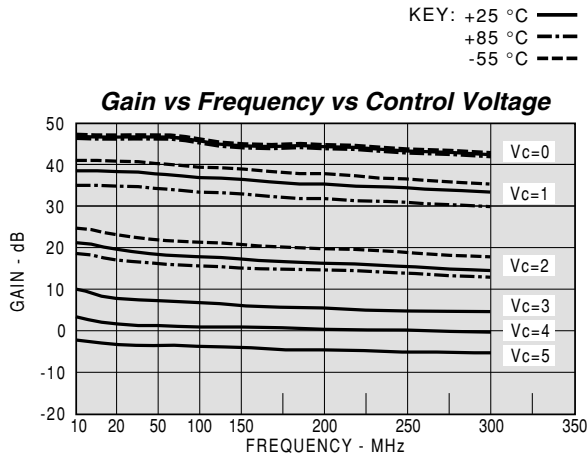
Full AGC, 100 MHz



20 dB AGC, 100 MHz

TYPICAL PERFORMANCE

TYPICAL AUTOMATIC TEST DATA



MODEL: AGC230 Vcc = +15V Icc = 61.00 mA Vcontrol = 0.0V

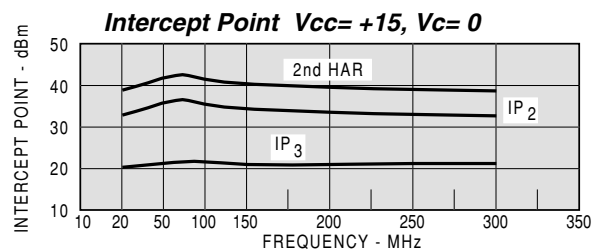
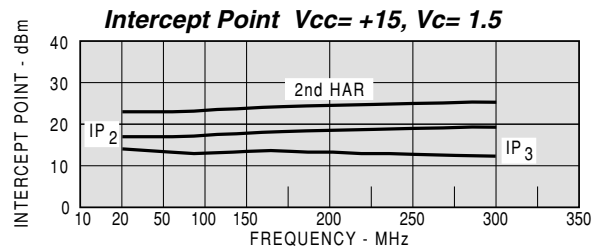
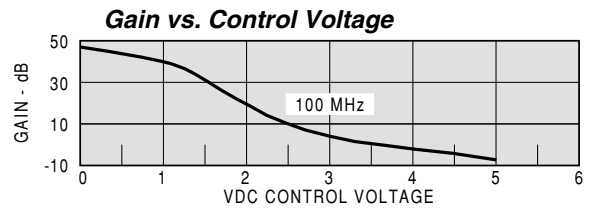
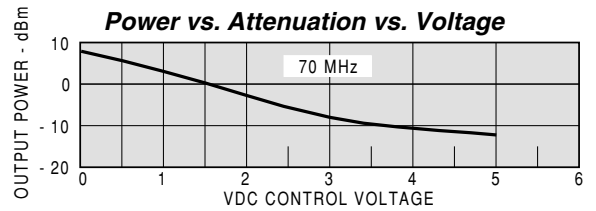
FREQ MHz	VSWR IN	VSWR OUT	GAIN DB	S21 MAG	S21 ANG
10	1.3	1.1	47.7	243.8	-154.6
20	1.2	1.0	47.6	240.9	-177.9
50	1.1	1.1	47.6	239.7	159.6
100	1.1	1.1	46.9	220.8	134.6
150	1.1	1.1	46.1	200.7	107.3
200	1.1	1.1	45.3	183.3	88.9
250	1.1	1.1	44.1	159.7	69.6
300	1.1	1.1	43.4	148.3	52.8

MODEL: AGC230 Vcc = +15V Icc = 61.01 mA Vcontrol = 2.0 V

FREQ MHz	VSWR IN	VSWR OUT	GAIN DB	S21 MAG	S21 ANG
10	1.4	1.5	22.8	13.9	-167.9
20	1.3	1.6	21.3	11.6	169.0
50	1.2	1.6	19.8	9.8	153.1
100	1.2	1.6	18.6	8.5	135.9
150	1.3	1.6	17.9	7.9	113.4
200	1.3	1.6	17.3	7.4	98.9
250	1.3	1.6	16.3	6.5	81.6
300	1.2	1.6	15.7	6.1	67.0

MODEL: AGC230 Vcc = +15V Icc = 61.02 mA Vcontrol = 5.0 V

FREQ MHz	VSWR IN	VSWR OUT	GAIN DB	S21 MAG	S21 ANG
10	1.8	1.7	-3.8	0.6	-167.1
20	1.7	1.7	-5.1	0.6	168.8
50	1.8	1.7	-7.8	0.4	164.8
100	1.7	1.7	-8.2	0.4	165.9
150	1.8	1.7	-7.8	0.4	146.5
200	1.9	1.7	-7.4	0.4	149.0
250	1.7	1.7	-7.0	0.4	139.8
300	1.8	1.7	-6.6	0.5	135.9



AGC525 10 TO 500 MHz TO-8 GAIN CONTROL AMPLIFIER

Typical Values		AGC525
Medium Gain		25.5 dB
Medium AGC Range		30.0 dB
Control Range		0 to +5 Volts
Low Noise Figure		5.0 dB
High Performance Thin Film Standard Size TO-8 Package		

SPECIFICATIONS*

Parameter	Typical	Guaranteed		
		0 to 50 °C	-55 to +85 °C	
Frequency (Min.)		10-600 MHz	10-500 MHz	10-500 MHz
Gain (Min.)	Vc = 0	25.5 dB	24.5 dB	24.0 dB
Gain Flatness (Max.)		±0.5 dB	±0.7 dB	±0.8 dB
AGC Range (Min.)		30 dB	26 dB	—
Noise Figure (Max.)		5.0 dB	6.0 dB	6.5 dB
SWR (Max.)	Input/Output	< 1.6:1	2.0:1	2.0:1
Power Output (Min.)	@ 1dB comp.	+11.0 dBm	+10.0 dBm	+9.5 dBm
Response Time	Full AGC	< 10 µsec	—	—
DC Current (Max.)	Bias	45 mA	48 mA	51 mA
DC Current (Max.)	Vc^	0 to 10 mA	—	—

* Measured in a 50-ohm system at +15 Vdc and 0.0 Control Voltage unless otherwise specified.
^ AGC Voltage: 0 to +5 Volts.

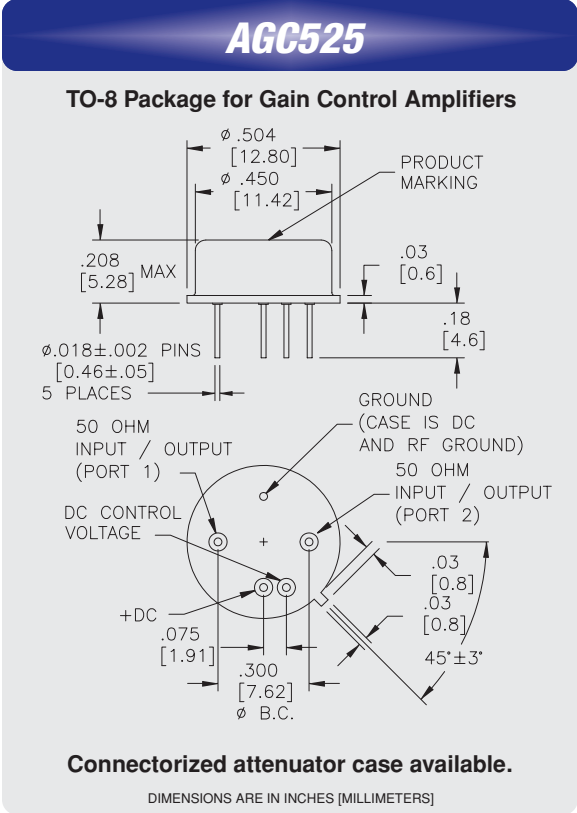
INTERMODULATION PERFORMANCE

Typical @ 25 °C; at Vc = 0, at 200 MHz		AGC525
Second Order Harmonic Intercept Point		+36 dBm
Second Order Two Tone Intercept Point		+30 dBm
Third Order Two Tone Intercept Point		+20 dBm

ABSOLUTE MAXIMUM RATINGS

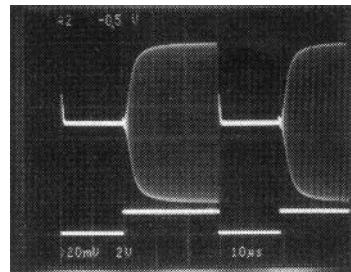
Storage Temperature	-62 to +125 °C
Maximum Case Temperature	+125 °C
Maximum DC Voltage	+18 Volts
Maximum Continuous RF Input Power	+13 dBm
Maximum Short Term Input Power (1 Minute Max.)	50 Milliwatts
Maximum Peak Power (3 µsec Max.)	0.5 Watt
Maximum Control Voltage	+7.0 Volts
Burn-in Temperature	+125 °C
Thermal Resistance ¹ (θjc)	+17 °C/Watt
Junction Temperature Rise Above Case (Tjc)	+12.0 °C

¹Thermal resistance is based on total power dissipation.

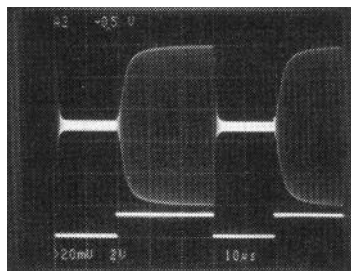


SWITCHING SPEED

Typical Switching Speed at 25 °C



Full AGC, 100 MHz

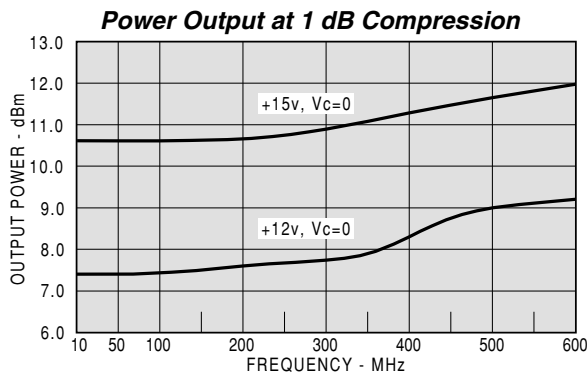
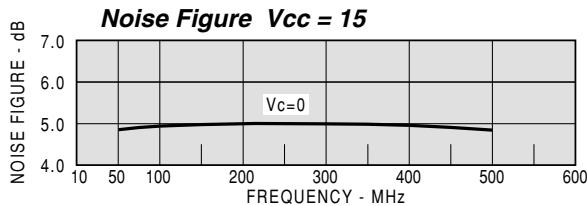
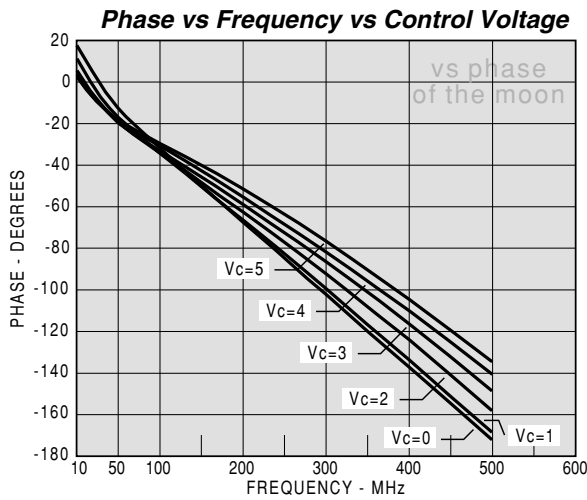
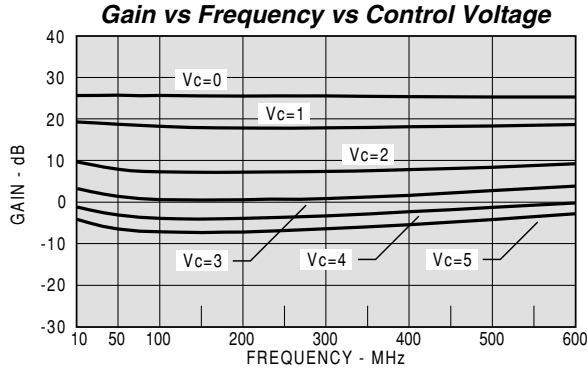


Half AGC, 100 MHz

TYPICAL PERFORMANCE

TYPICAL AUTOMATIC TEST DATA

KEY: +25 °C —
+85 °C - - -
-55 °C - - -



MODEL: AGC525 Vcc = +15V Icc = 44.63 mA Vcontrol = 0.0V

FREQ MHz	VSWR IN	VSWR OUT	GAIN DB	S21 MAG	S21 ANG
5	1.6	1.3	24.9	17.6	39.8
10	1.4	1.2	25.5	18.8	17.6
50	1.3	1.1	25.4	18.7	-13.4
100	1.3	1.1	25.4	18.6	-31.7
200	1.3	1.1	25.5	18.8	-65.7
300	1.4	1.0	25.6	19.0	-100.0
400	1.5	1.1	25.8	19.6	-135.6
500	1.6	1.2	25.9	19.6	-172.4

Gmax = 25.9 Gmin = 24.9 Gflat = 0.96 INswr max = 1.6 OUTswr max = 1.3

MODEL: AGC525 Vcc = +15V Icc = 44.64 mA Vcontrol = 2.0V

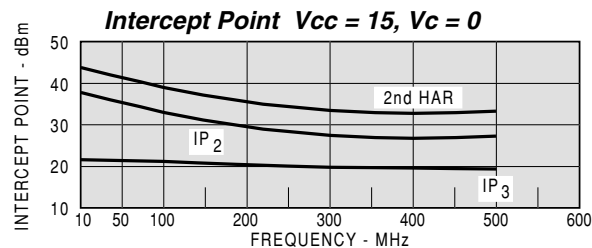
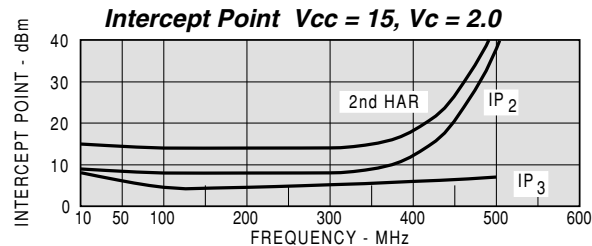
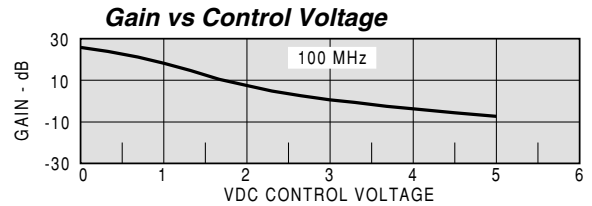
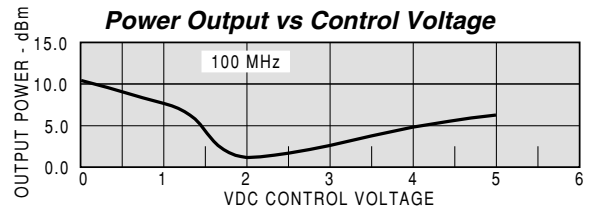
FREQ MHz	VSWR IN	VSWR OUT	GAIN DB	S21 MAG	S21 ANG
5	1.4	1.5	10.7	3.4	27.9
10	1.3	1.6	10.0	3.2	4.8
50	1.1	1.6	7.9	2.5	-20.2
100	1.1	1.6	7.4	2.4	-34.8
200	1.0	1.6	7.3	2.3	-63.6
300	1.0	1.5	7.5	2.4	-93.3
400	1.0	1.5	8.3	2.6	-125.1
500	1.0	1.5	8.9	2.8	-159.8

Gmax = 10.7 Gmin = 7.3 Gflat = 3.44 INswr max = 1.4 OUTswr max = 1.6

MODEL: AGC525 Vcc = +15V Icc = 44.64 mA Vcontrol = 5.0V

FREQ MHz	VSWR IN	VSWR OUT	GAIN DB	S21 MAG	S21 ANG
5	1.6	1.6	-2.9	0.7	23.8
10	1.4	1.7	-4.2	0.6	1.4
50	1.4	1.8	-6.5	0.5	-18.8
100	1.4	1.8	-7.3	0.4	-30.5
200	1.4	1.7	-7.4	0.4	-54.5
300	1.4	1.7	-7.0	0.4	-78.6
400	1.4	1.6	-5.5	0.5	-106.7
500	1.4	1.6	-4.4	0.6	-137.3

Gmax = -2.9 Gmin = 7.4 Gflat = 4.51 INswr max = 1.6 OUTswr max = 1.8



AGS2520 700 TO 2500 MHz SMT0-8 GAIN CONTROL AMPLIFIER

Typical Values

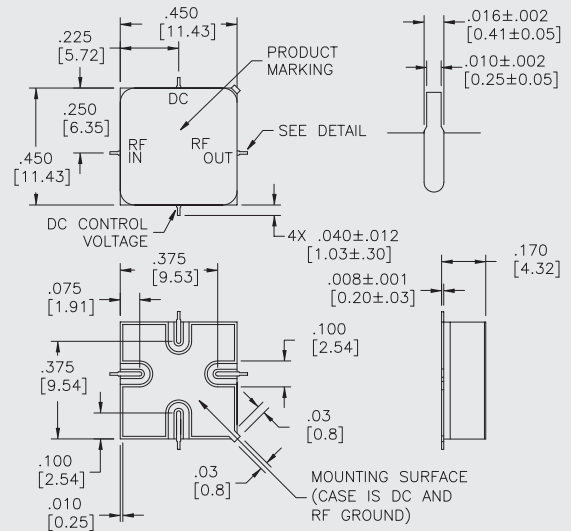
Broad Bandwidth	700-2500 MHz
Medium Output Level	+15.0 dBm
AGC Range (Vc = 0 to 5)	+20 dB
High Performance Thin Film Surface Mount TO-8 Package	

AGS2520

700-2500 MHz
+15.0 dBm
+20 dB

AGS2520

SMT0-8 Package for Gain Control Amplifier



SPECIFICATIONS*

Parameter	Typical	Guaranteed		
		0 to 50 °C	-55 to +85 °C	
Frequency (Min.)		0.7-2.5 GHz	0.7-2.5 GHz	0.7-2.5 GHz
Small Signal Gain (Min.) Vc=0	5.5 dB	4.8 dB	4.3 dB	
Gain Flatness (Max.)	±0.2 dB	±0.4 dB	±0.5 dB	
AGC Range (Min.)	20 dB	18 dB	—	
Noise Figure (Max.)	5.5 dB	6.0 dB	6.5 dB	
SWR (Max.)	Input Output	<1.6:1 <1.9:1	1.8:1 2.1:1	2.0:1 2.2:1
Power Output (Min.) @ 1dB comp.		+15.0 dBm	+14.5 dBm	+14.0 dBm
Response Time	Full AGC	<3 µsec	—	—
DC Current (Max.)	Bias	60.0 mA	64.0 mA	68.0 mA

* Measured in a 50-ohm system at +5 Vdc and 0.0 Control Voltage unless otherwise specified.
^ AGC Voltage: 0 to +5 Volts.

INTERMODULATION PERFORMANCE

Typical @ 25 °C, Vc = 0, 1500 MHz

AGS2520

Second Order Harmonic Intercept Point	+42 dBm
Second Order Two Tone Intercept Point	+36 dBm
Third Order Two Tone Intercept Point	+26 dBm

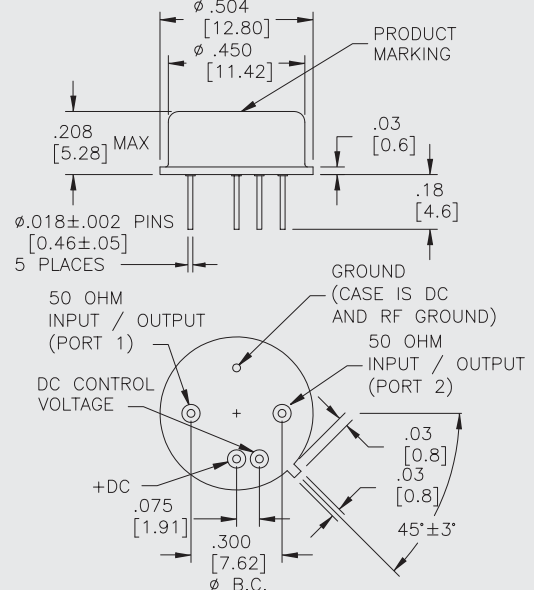
ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-62 to +125 °C
Maximum Case Temperature	+125 °C
Maximum DC Voltage	+10 Volts
Maximum Continuous RF Input Power	+13 dBm
Maximum Short Term Input Power (1 Minute Max.)	50 Milliwatts
Maximum Peak Power (3 µsec Max.)	0.5 Watt
Burn-in Temperature	+125 °C
Thermal Resistance¹ (θjc)	+61.6 °C/Watt
Junction Temperature Rise Above Case (Tjc)	+16.9 °C

¹ Thermal resistance is based on total power dissipation.

AGC2520

TO-8 Package for Gain Control Amplifiers

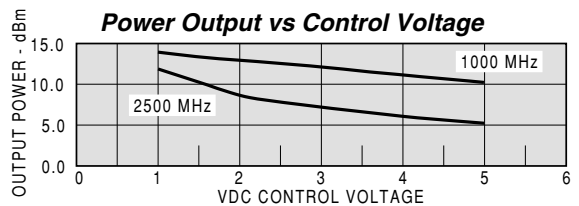
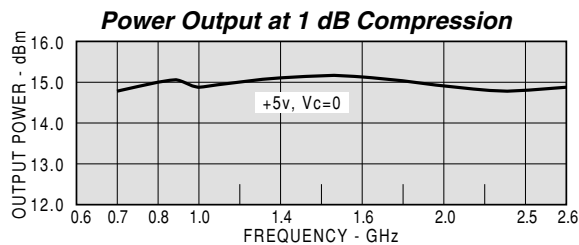
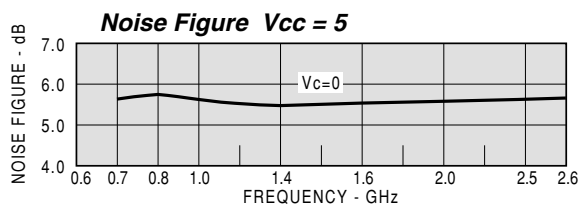
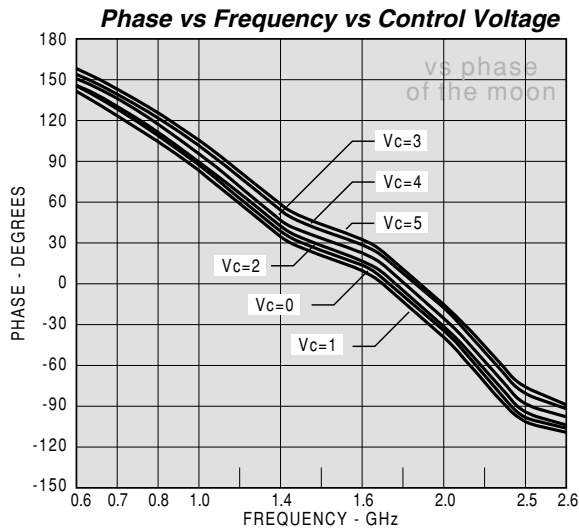
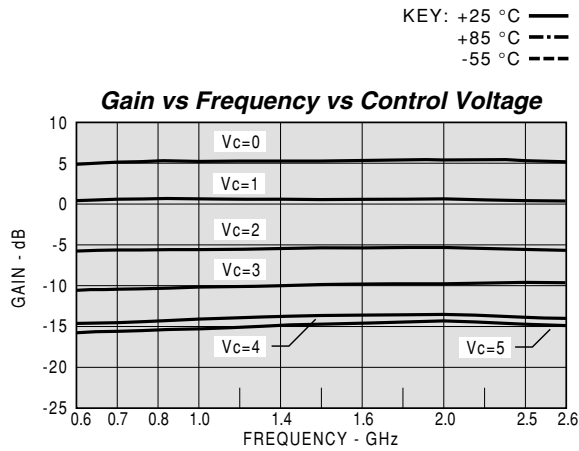


Connectorized attenuator case available.

DIMENSIONS ARE IN INCHES [MILLIMETERS]

TYPICAL PERFORMANCE

TYPICAL AUTOMATIC TEST DATA



Model: AGS2520 Vcc= +5V Vcontrol=+0.0V Icc= 57.57

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
600	1.85	1.58	4.73	149	0.48	-24.9
1000	1.57	1.62	5.16	92	0.36	-25.7
1500	1.48	1.78	5.31	31	0.33	-25.7
2000	1.41	1.95	5.69	-30	0.38	-25.9
2500	1.33	1.89	5.59	-89	0.34	-25.6
2600	1.33	1.87	5.49	-101	0.35	-25.7

Model: AGS2520 Vcc= +5V Vcontrol=+2.0V Icc= 57.53

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
600	1.33	1.28	-6.49	149	0.46	-36.4
1000	1.18	1.25	-6.19	94	0.35	-37.4
1500	1.15	1.36	-5.95	33	0.33	-37.9
2000	1.22	1.46	-5.87	-25	0.33	-38.6
2500	1.30	1.59	-6.44	-86	0.32	-39.2
2600	1.32	1.62	-6.56	-98	0.33	-39.9

Model: AGS2520 Vcc= +5V Vcontrol=+5.0V Icc= 57.55

FREQ MHZ	SWR IN	SWR OUT	GAIN DB	PHASE DEG	DELAY NSEC	REV/ISO DB
600	1.43	1.56	-16.41	161	0.42	-46.1
1000	1.44	1.57	-15.42	110	0.32	-46.5
1500	1.51	1.69	-14.39	50	0.33	-47.0
2000	1.60	1.80	-14.03	-8	0.32	-47.3
2500	1.67	1.98	-14.80	-67	0.28	-48.5
2600	1.68	2.03	-14.91	-78	0.32	-49.0

