



**AMERICAN MICROWAVE
CORPORATION**

PIN-DIODE ATTENUATORS

NEW

PRODUCT DEVELOPMENTS

AT

AMERICAN MICROWAVE CORPORATION

JUNE 22, 1993



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DESCRIPTION

AMC MODEL AGH-0612-600DSF IS AN ULTRA HIGH SPEED OCTAVE BAND ATTENUATOR/MODULATOR, PROGRAMMABLE BY 8 BIT POSITIVE TRUE BINARY LOGIC.

SPECIFICATIONS

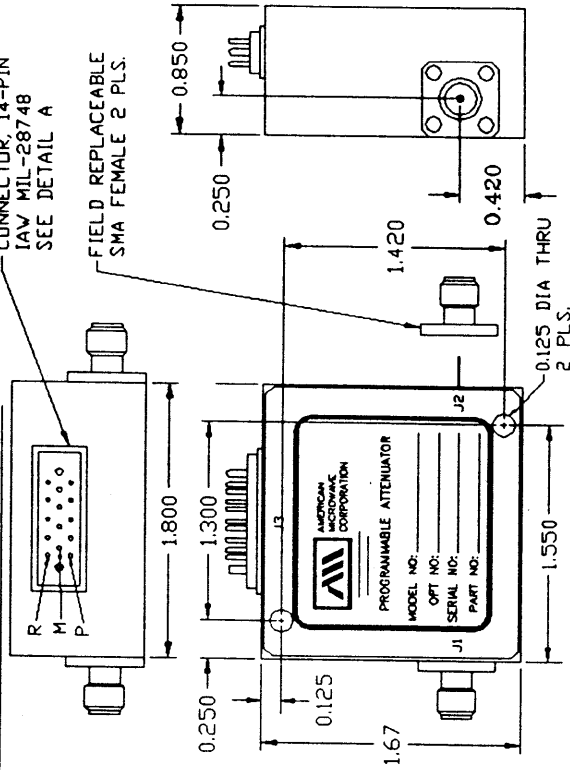
- FREQUENCY RANGE 6-12 GHz MINIMUM
- INSERTION LOSS 2.5 dB MAXIMUM
- FREQUENCY FLATNESS 0-10db ±0.7 MAXIMUM
10-20db ±1.0 MAXIMUM
20-40db ±1.5 MAXIMUM
40-60db ±1.6 MAXIMUM
- ATTENUATION ACCURACY 0-30db ±0.5 MAXIMUM
30-50db ±1.0 MAXIMUM
50-64db ±1.5 MAXIMUM
- SWITCHING TIME 125ns MAXIMUM
- TEMPERATURE COEFFICIENT ±0.01 dB/°C
- VSWR (ON/OFF) 1:7:1 MAXIMUM
- POWER RATINGS
OPERATING +20dBm MAXIMUM
SURVIVAL +30dBm MAXIMUM
- CONTROL 8 BIT POSITIVE TRUE TTL BINARY LOGIC,
0.25dB MINIMUM ATTENUATION STEPS
(SEE PIN FUNCTION TABLE)
- POWER SUPPLY +12 TO +18VDC @100mA MAXIMUM
-12 TO -18VDC @ 15mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT FIELD REPLACEABLE SMA (FEMALE)
POWER AND CONTROLS MINIATURE 14 PIN MALE (MIL-28748),
MATING CONNECTOR (FEMALE) FURNISHED
- SIZE 1.80" x 1.67" x 0.85"

AVAILABLE OPTIONS

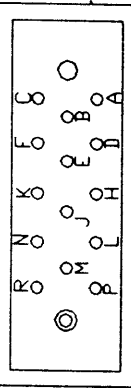
- A01 J1 SMA MALE, J2 SMA FEMALE
- A02 TWO SMA MALE CONNECTORS
- A03 MINIATURE 15 PIN, MALE CONNECTOR (MDM15SSP)
- A04 ULTRA HIGH SPEED (70ns ON/OFF TIME)

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE JOB# 20380E	11/11/92	<i>[Signature]</i>

MECHANICAL OUTLINE



DETAIL A



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 3.4 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +85°C (OPERATING)
-55°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS

DATE

11/11/92

11/11/92

PRODUCT FEATURE

AGH-0612-600DSF

ULTRA HIGH SPEED, 6 TO 12 GHz PROGRAMMABLE ATTENUATOR

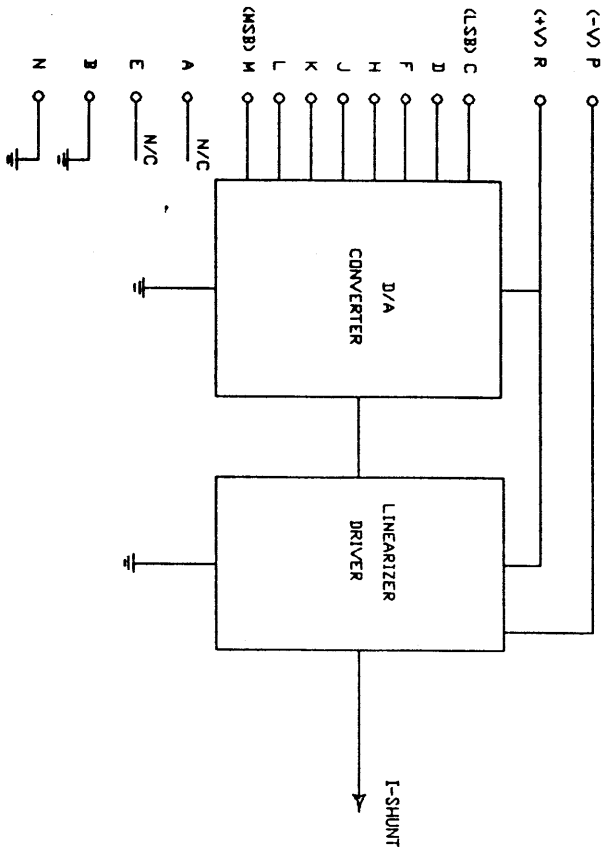
SIZE A

SHEET 1 OF 2

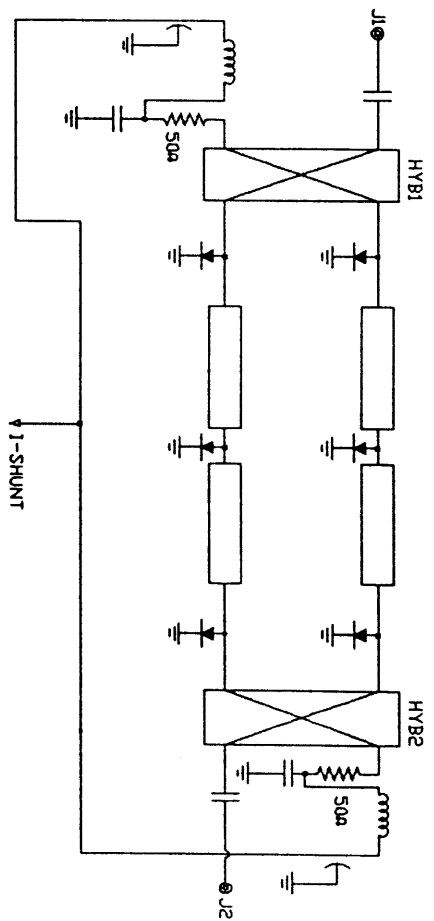
DWG. # 100-2812

FUNCTIONAL SCHEMATIC

LINEARIZER DRIVER CIRCUIT



RF SECTION

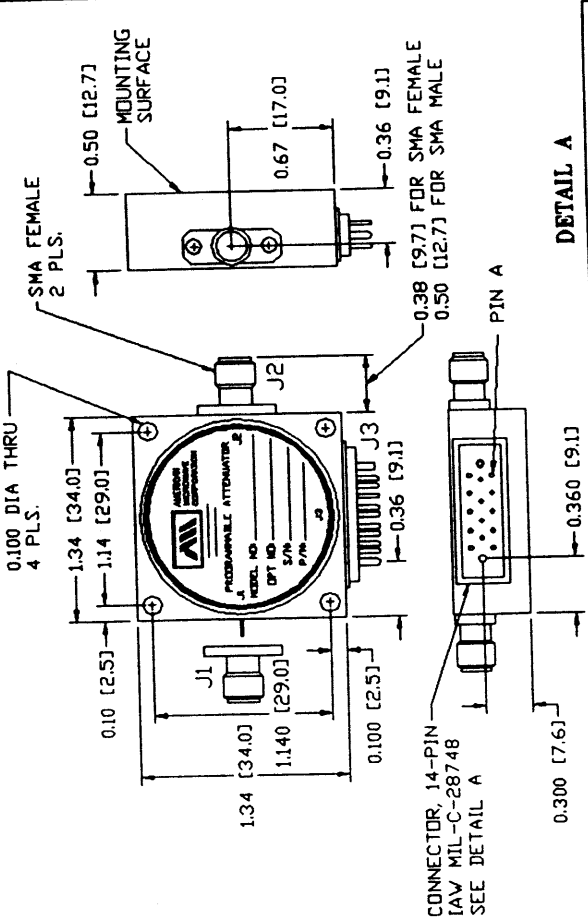


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APPROVALS	DATE	PRODUCT FEATURE AGH-0612-60DDSF ULTRA HIGH SPEED, 6 TO 12 GHz PROGRAMMABLE ATTENUATOR
DRAWN: <i>W/sgp</i> DESIGNED: <i>W/sgp</i>	4/11/92 11/11/92	
SIZE	SHEET 2 OF 2	
A	DWG. # 100-2812	

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE	11/14/82	<i>[Signature]</i>

MECHANICAL OUTLINE



NOTES:
 1) DIMENSIONS ARE IN INCHES [MILLIMETERS]
 2) TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010
 APPROX. 2.4 OZ [68 gm]
 3) WEIGHT:

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +110°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

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APPROVALS	DATE	PRODUCT FEATURE
<i>[Signature]</i>	11/14/82	SF (STANDARD)
<i>[Signature]</i>	12/192	VF (VERY FAST)
		UF (ULTRA FAST)

HIGH SPEED, 6-18 GHz, PIN DIODE, VARIABLE ATTENUATOR
 SHEET 1 OF 2
 DWG. # 100-2813

DESCRIPTION

AMC MODEL AGH-8018-60DD-SF IS A HIGH SPEED OVER-OCTAVE BAND VARIABLE ATTENUATOR/MODULATOR, CONTROLLED BY 8 BIT BINARY LOGIC OR DRIVEN BY AN ANALOG POSITIVE VOLTAGE; UNIT IS PACKAGED IN A MINIATURE HERMETIC HOUSING FOR HIGH RELIABILITY APPLICATIONS.

SPECIFICATIONS

- FREQUENCY RANGE 6-18 GHz MINIMUM
- INSERTION LOSS 3.0 dB MAXIMUM
- FREQUENCY FLATNESS (±dB MAXIMUM)

FREQUENCY RANGE	10dB	20dB	40dB	60dB
8.0-18 GHz	0.7	1.0	1.5	1.6
6.0-18 GHz	0.9	1.5	3.0	3.5

- ATTENUATION ACCURACY 0-30dB ±0.5dB MAXIMUM
 30-50dB ±1.0dB MAXIMUM
 50-60dB ±1.5dB MAXIMUM
- MONOTONICITY GUARANTEED
- TEMPERATURE COEFFICIENT ±0.02 dB/°C
- SWITCHING TIME

- (-SF) 500 nS MAXIMUM
- (-VF) 200 nS MAXIMUM
- (-UF) 125 nS MAXIMUM
- VSWR (ALL ATTENUATION LEVELS) 1.8:1 MAXIMUM
- POWER RATINGS

- (-SF) +20dBm CW OR PEAK
- (-VF) & (-UF) +10dBm CW OR PEAK
- CONTROL

- DIGITAL 8 BIT TRUE BINARY LOGIC, 0.25dB MINIMUM ATTENUATION STEP.
- ANALOG 0-6V ANALOG VOLTAGE, 10dB/VOLT TRANSFER FUNCTION

- POWER SUPPLY +12 TO +18VDC @ 100 mA MAXIMUM
 -12 TO -18VDC @ 15 mA MAXIMUM
- CONNECTORS

- RF INPUT/OUTPUT FIELD REPLACEABLE SMA (FEMALE)
- POWER & CONTROLS MINIATURE 14 PIN MALE (MIL-C-28748) MATING CONNECTOR (FEMALE)

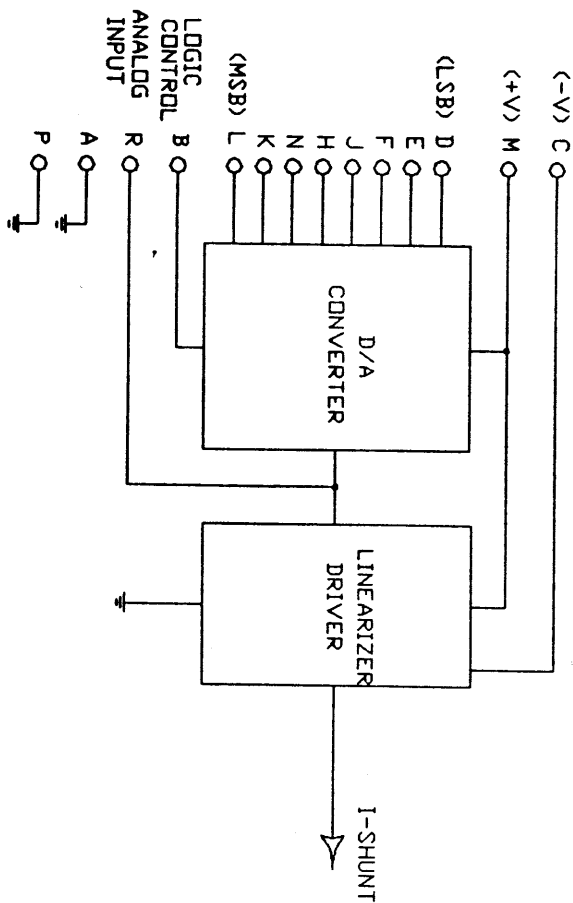
- SIZE 1.34" x 1.34" x 0.50"

AVAILABLE OPTIONS

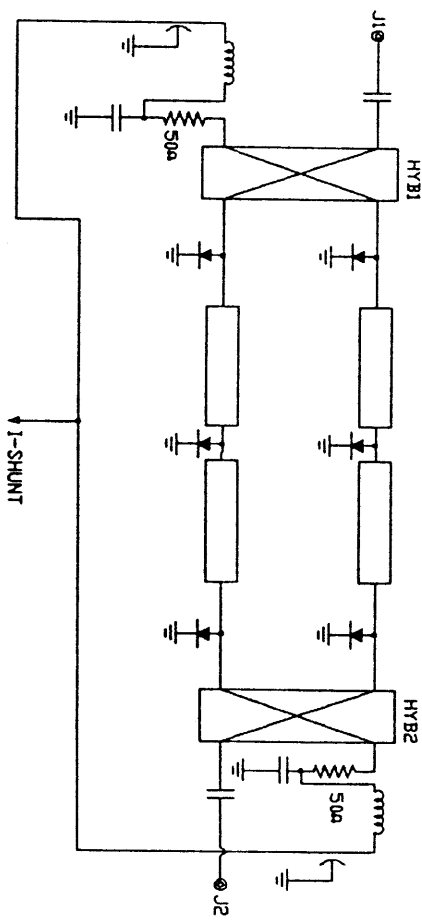
- A01 J1 SMA MALE, J2 SMA FEMALE
- A02 TWO SMA MALE CONNECTORS
- A03 HERMETIC SEALING (MIL-STD-883)

FUNCTIONAL SCHEMATIC

LINEARIZER DRIVER CIRCUIT



RF SECTION



PIN	J3 PIN FUNCTION
A	GROUND
B	LOGIC CONTROL
C	-12 TO -15VDC
D	0.25dB(1LSB)
E	0.5dB
F	1.0dB
H	4.0dB
J	2.0dB
K	16.0dB
L	32.0dB(4MSB)
M	+12 TO +15VDC
N	8.0dB
P	GROUND
R	ANALOG OUTPUT

(NOTE 1)

(NOTE 2)

NOTES:
 1. FOR NORMAL PROGRAMMING CONTROL, PIN B MUST BE GROUND OR LOGIC '0'. APPLICATION OF LOGIC '1' TO PIN B OVER THE DIGITAL INPUT AND SETS THE UNIT TO HIGH ISOLATION (60dB OR GREATER).

2. FOR ANALOG INPUT CONTROL, CONNECT LOGIC '1' (HIGH) ON PIN B, AND APPLY 0-6 VOLTS FOR ANALOG PROGRAMMING.



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PRODUCT FEATURE
 AGH-8018-60DD-SF

HIGH SPEED, 6-18 GHz, PIN DIODE, VARIABLE ATTENUATOR

SF (STANDARD)
 VF (VERY FAST)
 UF (ULTRA FAST)

APPROVALS
 DATE
 9/15/88
 11/11/82
 11/21/92

SIZE A SHEET 2 OF 2 DWG. # 100-2813

DESCRIPTION

AMC MODEL ACH-8018-65DD-205 IS A HIGH SPEED OVER-OCTAVE BAND VARIABLE ATTENUATOR/MODULATOR, CONTROLLED BY 8 BIT POSITIVE TRUE BINARY LOGIC.

SPECIFICATIONS

- FREQUENCY RANGE 6.0-18.0 GHz MINIMUM
- INSERTION LOSS 3.0 dB MAXIMUM
- FREQUENCY FLATNESS (\pm dB MAXIMUM)

FREQUENCY RANGE	10 dB	20 dB	40 dB	60 dB
8.0-18.0 GHz	0.7	1.0	1.5	1.6
6.0-18.0 GHz	0.9	1.5	3.0	3.5

- ATTENUATION ACCURACY 0-30 dB \pm 0.5 dB MAXIMUM
(MONOTONICITY IS GUARANTEED) 30-50 dB \pm 1.0 dB MAXIMUM
50-60 dB \pm 1.5 dB MAXIMUM
- TEMPERATURE COEFFICIENT \pm 0.025 dB/C MAXIMUM
- SWITCHING TIME
DELAY ON (50% TTL TO 90% RF) 900 ns MAXIMUM
DELAY OFF (50% TTL TO 10% RF) 900 ns MAXIMUM
- VSWR (ALL ATTENUATION LEVELS) 2:1 MAXIMUM

- RF POWER RATINGS
OPERATING POWER +20 dBm CW MAXIMUM
SURVIVAL POWER +30 dBm CW MAXIMUM

- CONTROL 8 BIT TRUE BINARY LOGIC

- POWER SUPPLY 0.25 dB MAXIMUM ATTENUATION STEPS
+12 TO +18VDC @ 100 mA MAXIMUM
-12 TO -18VDC @ 100 mA MAXIMUM

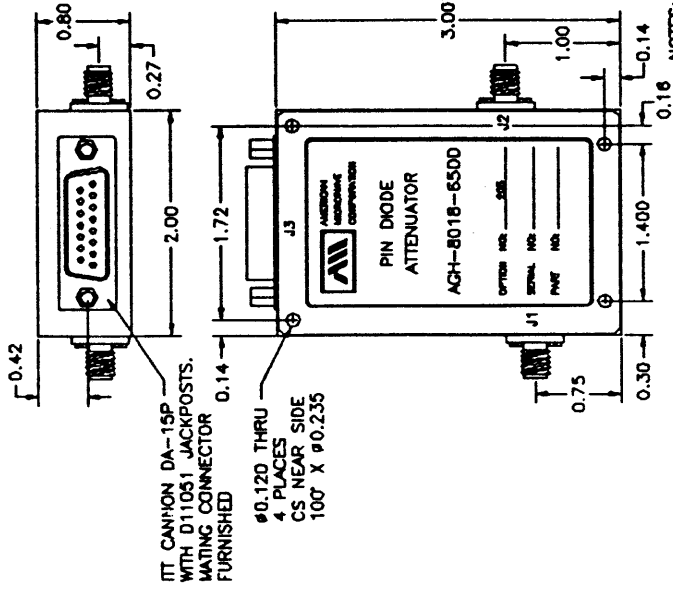
- CONNECTORS
RF INPUT/OUTPUT SMA FEMALE
POWER AND CONTROLS 15 PIN D TYPE SUBMINIATURE MALE,
MATING CONNECTOR FURNISHED

- SIZE 2.00" x 3.00" x 0.80"

AVAILABLE OPTIONS

- A01 J1 SMA MALE, J2 SMA FEMALE
- A02 TWO SMA MALE RF CONNECTORS

MECHANICAL OUTLINE



J3 PIN #	PIN FUNCTION
1	GND
2	ANALOG INPUT
3	N/C
4	GND
5	0.25 dB (LSB)
6	0.5 dB
7	1.0 dB
8	2.0 dB
9	4.0 dB
10	8.0 dB
11	16.0 dB
12	32.0 dB (MSB)
13	+V
14	-V
15	N/C

- NOTES:
 1) DIMENSIONS ARE IN INCHES
 X.XX \pm 0.020
 X.XXX \pm 0.010
 APPROX. 7.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



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APPROVALS

DATE 4/27/93

OWNER 4/27/93

DATE 4/27/93

PRODUCT FEATURE

AGH-8018-65DD-205

8.0-18 GHz, HIGH SPEED PROGRAMMABLE VARIABLE ATTENUATOR

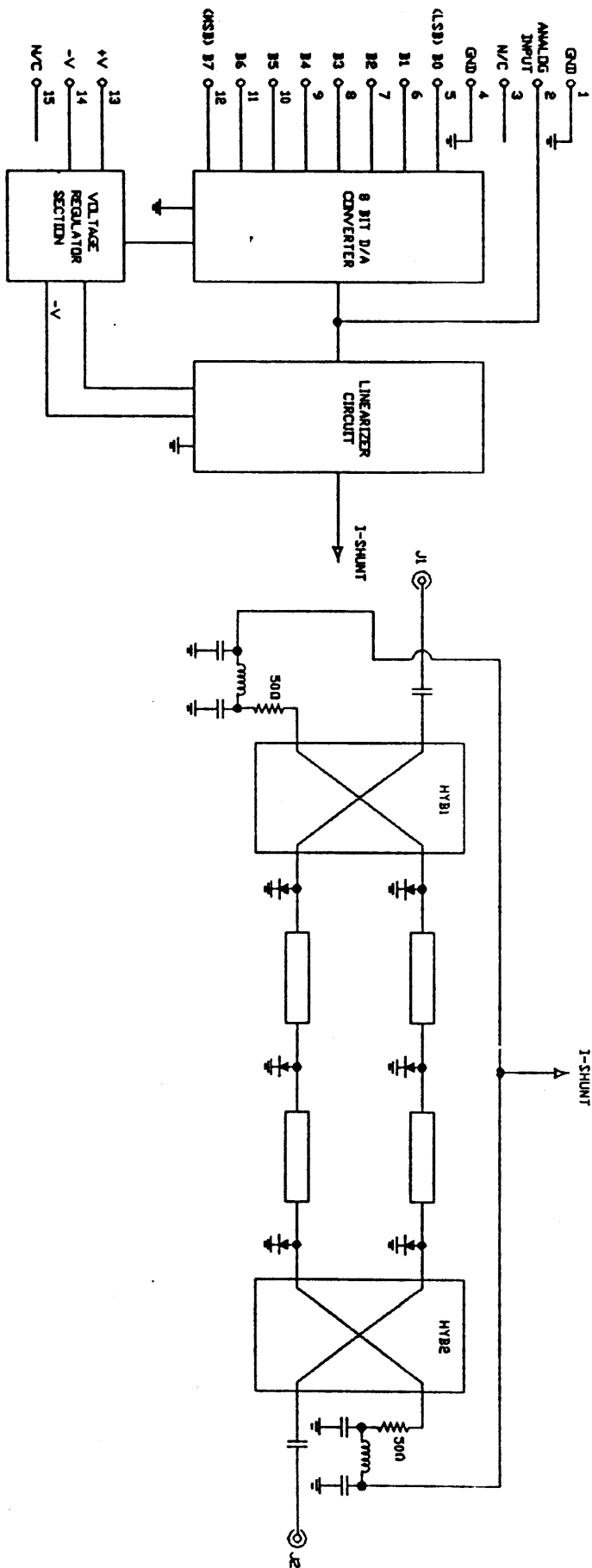
SIZE A



SHEET 1 OF 2

DWG. # 100-3120

FUNCTIONAL SCHEMATIC

DRIVER/CONTROL CIRCUIT RF SECTION



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PRODUCT FEATURE			
AGH-8018-65DD-205			
8.0-18 GHz, HIGH SPEED PROGRAMMABLE VARIABLE ATTENUATOR			
DRAWING APPROVALS	DATE	SHEET 2 OF 2	DWG. # 100-3120
 9/1/88 9/1/27/88 9/1/27/88	9/1/27/88 9/1/27/88		

DESCRIPTION

AMC MODEL AGH-2040-65DD IS AN OCTAVE BAND ATTENUATOR/MODULATOR, PROGRAMMABLE BY 8 BIT POSITIVE TRUE BINARY LOGIC WITH READ DATA LATCHING FUNCTION CAPABILITY.

SPECIFICATIONS

- FREQUENCY RANGE 2-4 GHz MINIMUM
- INSERTION LOSS 2.5 dB MAXIMUM
- FREQUENCY FLATNESS 0-10 dB \pm 0.3 dB MAXIMUM
 10-20 dB \pm 0.8 dB MAXIMUM
 20-40 dB \pm 1.5 dB MAXIMUM
 40-63.75 dB \pm 1.6 dB MAXIMUM
- ATTENUATION ACCURACY 0-30 dB \pm 0.5 dB MAXIMUM
 (MONOTONICITY IS GUARANTEED) 30-50 dB \pm 1.0 dB MAXIMUM
 50-63.75 dB \pm 1.5 dB MAXIMUM
- SWITCHING TIME 2 μ S MAXIMUM
- TEMPERATURE COEFFICIENT \pm 0.025 dB/C MAXIMUM
- VSWR (ALL ATTENUATION LEVELS) 1.8:1 MAXIMUM
- RF POWER RATINGS +30 dBm CW MAXIMUM
- CONTROL 8 BIT POSITIVE TRUE TTL BINARY LOGIC, 300ns DATA TRANSFER STROBE TIME (ACTIVE LOW), 0.25dB MINIMUM ATTENUATION STEPS (SEE PIN FUNCTION TABLE)
- POWER SUPPLY +15VDC \pm 5% @ 100 mA MAXIMUM
 -15VDC \pm 5% @ 100 mA MAXIMUM
- CONNECTORS
 RF INPUT/OUTPUT SMA FEMALE
 POWER AND CONTROLS 15 PIN D-SUBMINIATURE (MALE)
 WITH JACK POST (MATING CONNECTOR FURNISHED)
- SIZE 2.00" x 2.50" x 1.00"

AVAILABLE OPTIONS

- A01 J1 SMA MALE, J2 SMA FEMALE
- A02 TWO SMA MALE RF CONNECTORS



APPROVALS
 DWG: W/gp
 DATE: 04/23/93
 CHECKED: [Signature] 4/27/93

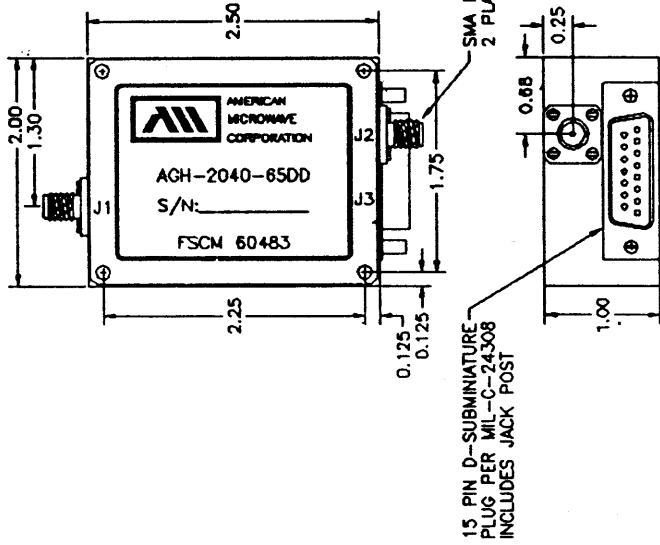
AMERICAN MICROWAVE CORPORATION
 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

PRODUCT FEATURE
 AGH-2040-65DD
 2-4 GHz PROGRAMMABLE ATTENUATOR

SIZE A SHEET 1 OF 2 DWG. # 100-3118

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ORIGINAL RELEASE, JOB # 20371E	04/23/93	[Signature]

MECHANICAL OUTLINE



J3 PIN #	PIN FUNCTION
1	GND
2	ANALOG INPUT
3	CE
4	GND
5	0.25 dB (LSB)
6	0.5 dB
7	1.0 dB
8	2.0 dB
9	4.0 dB
10	8.0 dB
11	16.0 dB
12	32.0 dB (MSB)
13	+15VDC
14	-15VDC
15	GND

NOTES:

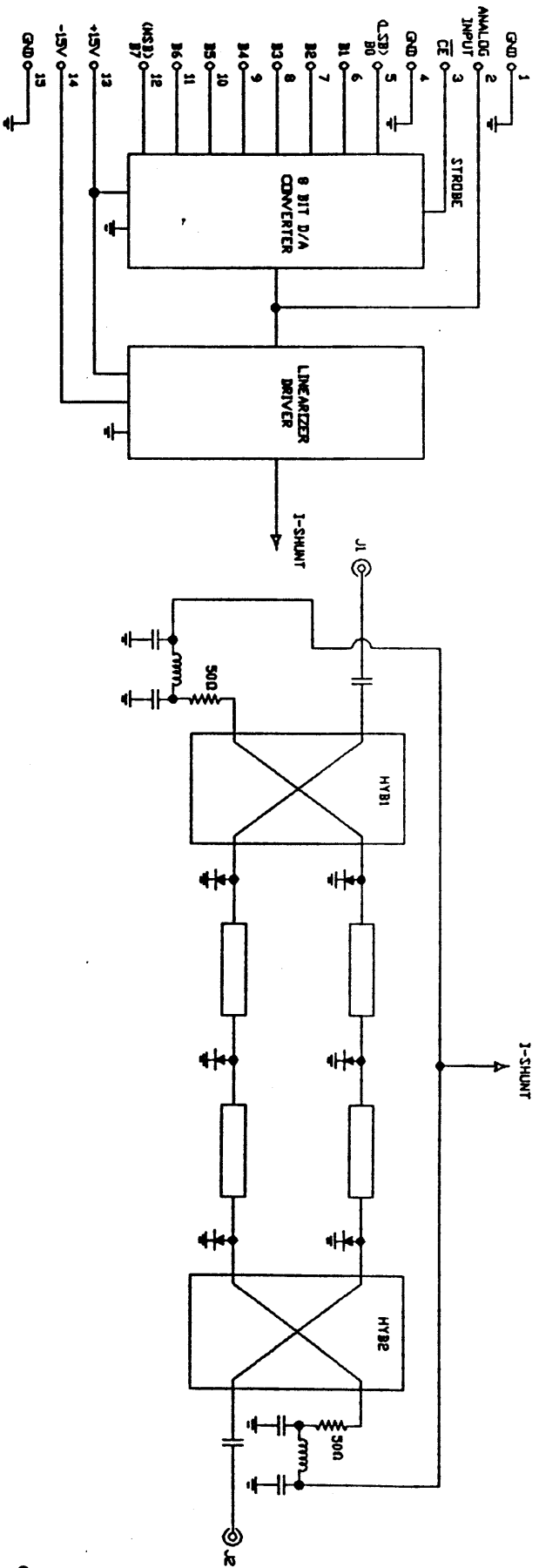
- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX \pm 0.020
 X.XXX \pm 0.010
 APPROX. 0.0 OZ
- 3) WEIGHT:

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

FUNCTIONAL SCHEMATIC

RF SECTION



AMERICAN MICROWAVE CORPORATION
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PRODUCT FEATURE

AGH-2040-65DD

2-4 GHz PROGRAMMABLE ATTENUATOR

APPROVALS	DATE
DESIGNED <i>[Signature]</i>	01/23/85
CHECKED <i>[Signature]</i>	01/27/85

DESCRIPTION

AMC MODEL AGH-4080-65DD IS AN OCTAVE BAND ATTENUATOR/MODULATOR, PROGRAMMABLE BY 8 BIT POSITIVE TRUE BINARY LOGIC WITH READ DATA LATCHING FUNCTION CAPABILITY.

SPECIFICATIONS

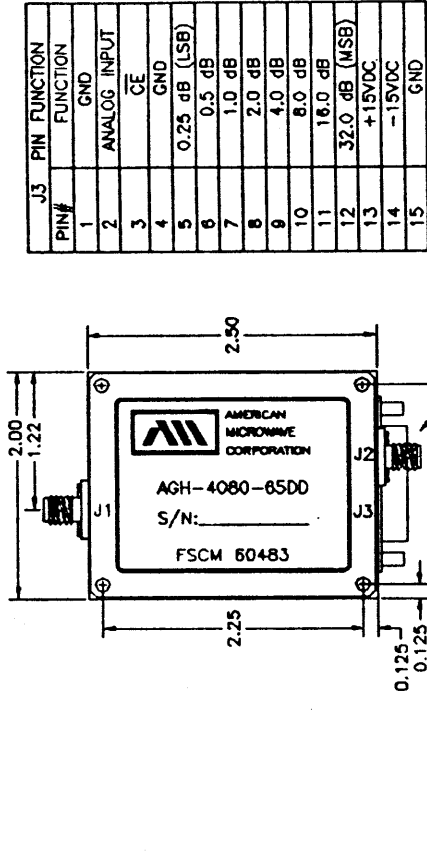
- FREQUENCY RANGE 4-8 GHz MINIMUM
- INSERTION LOSS 3.0 dB MAXIMUM
- FREQUENCY FLATNESS 0-10 dB \pm 0.3 dB MAXIMUM
 10-20 dB \pm 0.8 dB MAXIMUM
 20-40 dB \pm 1.5 dB MAXIMUM
 40-63.75 dB \pm 1.5 dB MAXIMUM
- ATTENUATION ACCURACY 0-30 dB \pm 0.5 dB MAXIMUM
 (MONOTONICITY IS GUARANTEED) 30-50 dB \pm 1.0 dB MAXIMUM
 50-63.75 dB \pm 1.5 dB MAXIMUM
- SWITCHING TIME 2 μ S MAXIMUM
- TEMPERATURE COEFFICIENT \pm 0.025 dB/C MAXIMUM
- VSWR (ALL ATTENUATION LEVELS) 1.8:1 MAXIMUM
- RF POWER RATINGS +30 dBm CW MAXIMUM
- CONTROL 8 BIT POSITIVE TRUE TTL BINARY LOGIC, 300ns DATA TRANSFER STROBE TIME (ACTIVE LOW), 0.25dB MINIMUM ATTENUATION STEPS (SEE PIN FUNCTION TABLE)
- POWER SUPPLY +15VDC \pm 5% @ 100 mA MAXIMUM
 -15VDC \pm 5% @ 100 mA MAXIMUM
- CONNECTORS SMA FEMALE
 RF INPUT/OUTPUT 15 PIN D-SUBMINIATURE (MALE)
 POWER AND CONTROLS WITH JACK POST (MATING CONNECTOR FURNISHED)
- SIZE 2.00" x 2.50" x 1.00"

AVAILABLE OPTIONS

- A01 J1 SMA MALE, J2 SMA FEMALE
- A02 TWO SMA MALE RF CONNECTORS

REVISIONS		DATE	APPROVED
ZONE	REV.		
		A ORIGINAL RELEASE, JOB # 20372E	04/23/83 <i>MJ</i>

MECHANICAL OUTLINE



15 PIN D-SUBMINIATURE PLUG PER MIL-C-24308 INCLUDES JACK POST

J3 PIN #	PIN FUNCTION
1	GND
2	ANALOG INPUT
3	CE
4	GND
5	0.25 dB (LSB)
6	0.5 dB
7	1.0 dB
8	2.0 dB
9	4.0 dB
10	8.0 dB
11	16.0 dB
12	32.0 dB (MSB)
13	+15VDC
14	-15VDC
15	GND

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
 - 3) WEIGHT: APPROX. 8.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +85°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



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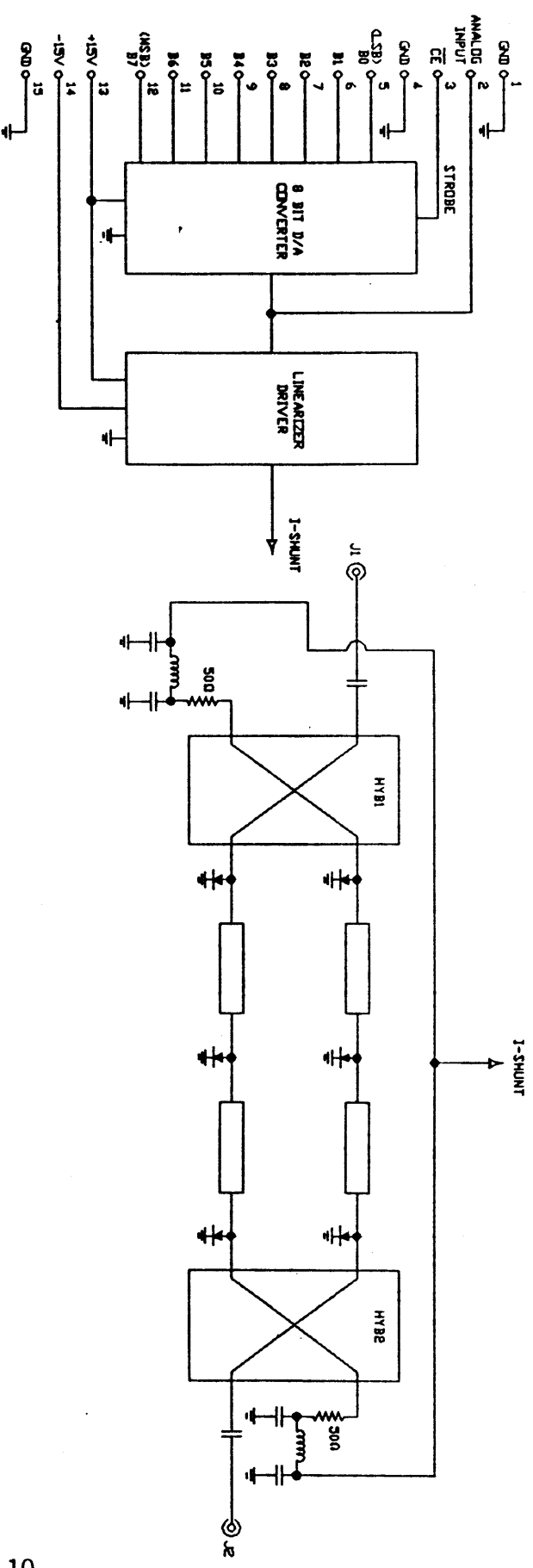
APPROVALS	DATE
<i>WSP</i>	09/23/83
<i>WSP</i>	04/27/83

PRODUCT FEATURE
AGH-4080-65DD
 4-8 GHz PROGRAMMABLE ATTENUATOR

FUNCTIONAL SCHEMATIC

CONTROL CIRCUIT

RF SECTION



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<p>APPROVALS</p> <p>DATE</p>		<p>PRODUCT FEATURE</p> <p>4-8 GHz PROGRAMMABLE ATTENUATOR</p>
<p>DESIGNED BY</p> <p>WJGP</p>	<p>DATE</p> <p>9/23/85</p>	
<p>SIZE A</p>		<p>SHEET 2 OF 2</p>

DESCRIPTION

AMC MODEL AGH-0812-65DD IS AN OCTAVE BAND ATTENUATOR/MODULATOR, PROGRAMMABLE BY 8 BIT POSITIVE TRUE BINARY LOGIC WITH READ DATA LATCHING FUNCTION CAPABILITY.

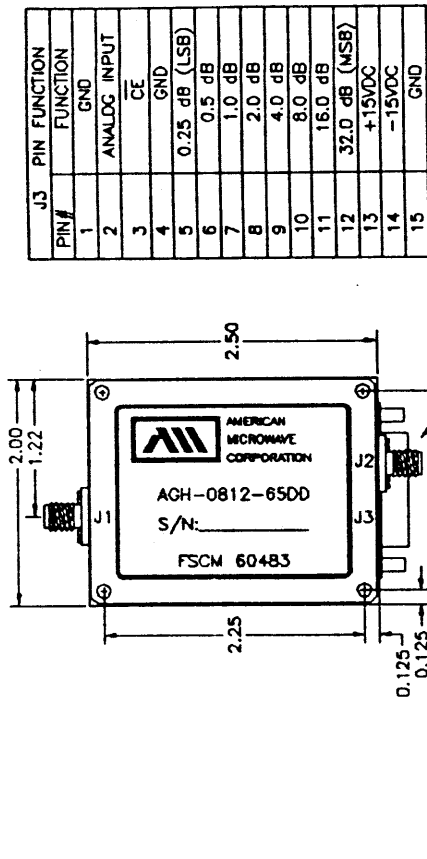
SPECIFICATIONS

- FREQUENCY RANGE 8-12 GHz MINIMUM
- INSERTION LOSS 3.0 dB MAXIMUM
- FREQUENCY FLATNESS 0-10 dB \pm 0.3 dB MAXIMUM
 10-20 dB \pm 0.8 dB MAXIMUM
 20-40 dB \pm 1.5 dB MAXIMUM
 40-63.75 dB \pm 1.6 dB MAXIMUM
- ATTENUATION ACCURACY 0-30 dB \pm 0.5 dB MAXIMUM
 (MONOTONICITY IS GUARANTEED) 30-50 dB \pm 1.0 dB MAXIMUM
 50-53.75 dB \pm 1.5 dB MAXIMUM
- SWITCHING TIME 2 μ S MAXIMUM
- TEMPERATURE COEFFICIENT \pm 0.025 dB/ $^{\circ}$ C MAXIMUM
- VSWR (ALL ATTENUATION LEVELS) 2.0:1 MAXIMUM
- RF POWER RATINGS +30 dBm CW MAXIMUM
- CONTROL 8 BIT POSITIVE TRUE TTL BINARY LOGIC, 300ns DATA TRANSFER STROBE TIME (ACTIVE LOW), 0.25dB MINIMUM ATTENUATION STEPS (SEE PIN FUNCTION TABLE)
- POWER SUPPLY +15VDC \pm 5% @ 100 mA MAXIMUM
 -15VDC \pm 5% @ 100 mA MAXIMUM
- CONNECTORS SMA FEMALE
 RF INPUT/OUTPUT 15 PIN D-SUBMINIATURE (MALE)
 POWER AND CONTROLS WITH JACK POST (MATING CONNECTOR FURNISHED)
- SIZE 2.00" x 2.50" x 1.00"

AVAILABLE OPTIONS

- A01 J1 SMA MALE, J2 SMA FEMALE
- A02 TWO SMA MALE RF CONNECTORS

MECHANICAL OUTLINE



15 PIN D-SUBMINIATURE PLUG PER MIL-C-24308 INCLUDES JACK POST

- NOTES:
- 1) DIMENSIONS ARE IN INCHES
 - 2) TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
APPROX. 8.0 OZ
 - 3) WEIGHT:

ENVIRONMENTAL RATINGS

- TEMPERATURE -55 $^{\circ}$ C TO +85 $^{\circ}$ C (OPERATING)
 -65 $^{\circ}$ C TO +125 $^{\circ}$ C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION
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 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
<i>[Signature]</i>	1/12/83
<i>[Signature]</i>	1/12/83

PRODUCT FEATURE

AGH-0812-65DD

8-12 GHz PROGRAMMABLE ATTENUATOR

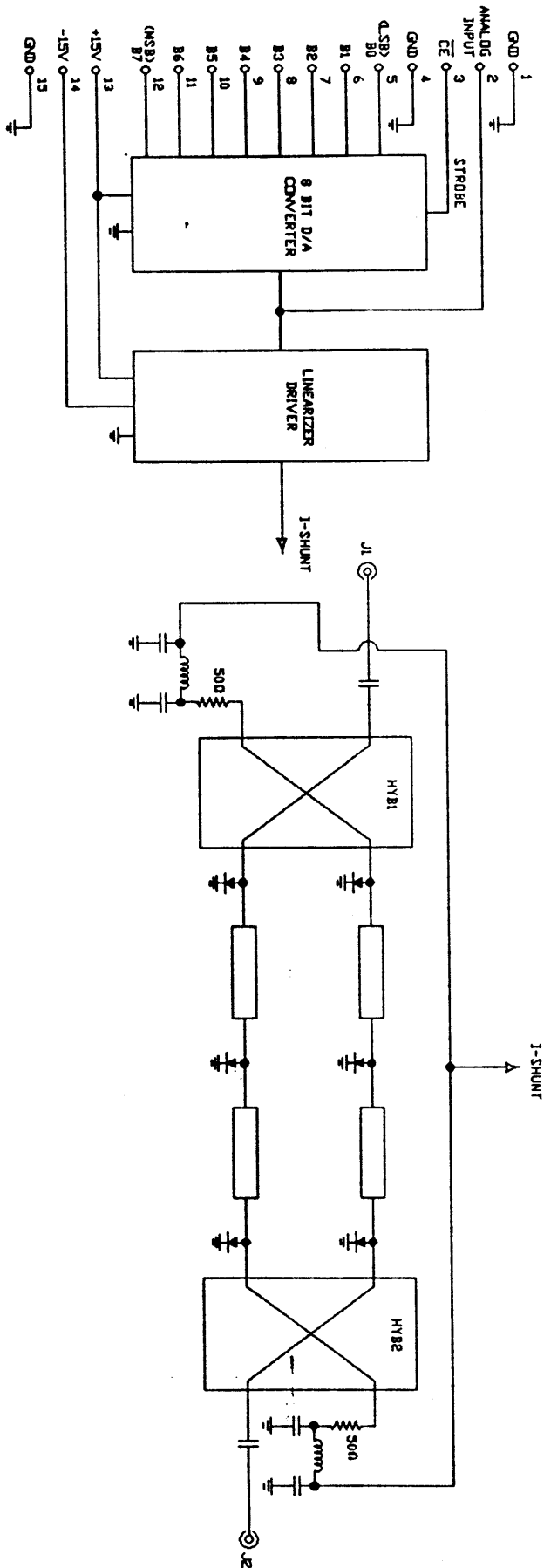
SIZE A

SHEET 1 OF 2

DWG. # 100-3126

FUNCTIONAL SCHEMATIC

RF SECTION



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PRODUCT FEATURE

AGH-0812-65DD

08-12 GHz PROGRAMMABLE ATTENUATOR

APPROVALS	DATE
DESIGN: <i>[Signature]</i>	11/24/88
CHECKED: <i>[Signature]</i>	1/27/93

DESCRIPTION

AMC MODEL AGH-2550-60DD-410 IS AN OVER-OCTAVE BAND VARIABLE ATTENUATOR/MODULATOR, CONTROLLED BY 10 BIT POSITIVE TRUE BINARY LOGIC.

SPECIFICATIONS

- FREQUENCY RANGE 1.9-5.6 GHz MINIMUM
- INSERTION LOSS 2.0 dB MAXIMUM 2.5-5.0 GHz
2.1 dB MAXIMUM 1.9-5.6 GHz
- FREQUENCY FLATNESS (\pm dB MAXIMUM)

FREQUENCY RANGE	10 dB	20 dB	40 dB	60 dB
2.5-5.0 GHz	0.3	0.8	1.5	1.6
1.9-5.6 GHz	0.5	1.4	3.0	3.5

- ATTENUATION ACCURACY 0-30 dB \pm 0.5 dB MAXIMUM
30-50 dB \pm 1.0 dB MAXIMUM
50-60 dB \pm 1.5 dB MAXIMUM
- TEMPERATURE COEFFICIENT \pm 0.025 dB/ $^{\circ}$ C MAXIMUM
- SWITCHING TIME
DELAY ON (50% TTL TO 90% RF) 2.0 μ s MAXIMUM
DELAY OFF (50% TTL TO 10% RF) 2.0 μ s MAXIMUM
- VSWR (ALL ATTENUATION LEVELS) 2:1 MAXIMUM

- RF POWER RATINGS
OPERATING POWER +20 dBm CW MAXIMUM
SURVIVAL POWER +30 dBm CW MAXIMUM

- CONTROL 10 BIT TRUE BINARY LOGIC
0.1 dB MAXIMUM ATTENUATION STEPS
- POWER SUPPLY +12 TO +18VDC @ 100 mA MAXIMUM
-12 TO -18VDC @ 100 mA MAXIMUM

- CONNECTORS
RF INPUT/OUTPUT SMA FEMALE
POWER AND CONTROLS 15 PIN D TYPE SUBMINIATURE MALE,
MATING CONNECTOR FURNISHED

- SIZE 2.00" x 3.00" x 0.80"

AVAILABLE OPTIONS

- A01 J1 SMA MALE, J2 SMA FEMALE
- A02 TWO SMA MALE RF CONNECTORS
- A03 8 BIT BINARY LOGIC
- A04 11 BIT BINARY LOGIC
- A05 12 BIT BINARY LOGIC



AMERICAN MICROWAVE CORPORATION

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APPROVALS

DATE

WSP, 04/28/93

5/19/93

PRODUCT FEATURE

AGH-2550-60DD-410

1.9-5.6 GHz, PROGRAMMABLE VARIABLE ATTENUATOR

SIZE A

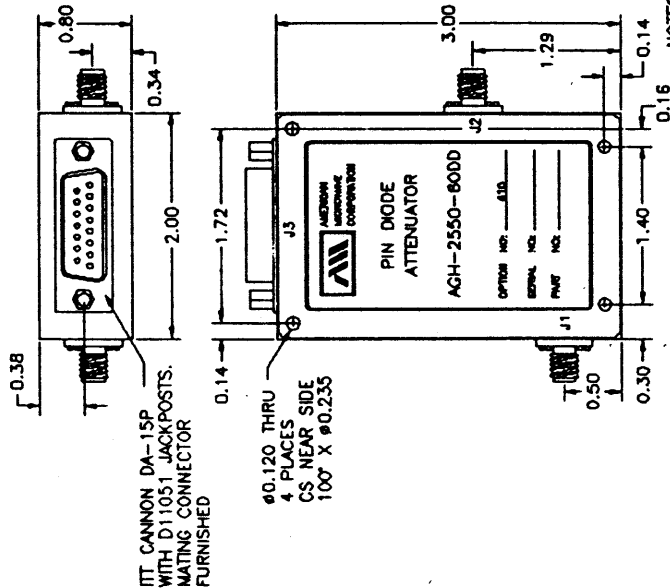
SHEET 1 OF 2

DWG. # 100-3128

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 212313-2E	04/28/93	<i>[Signature]</i>

MECHANICAL OUTLINE



PIN#	J3	PIN FUNCTION
1		FUNCTION
2		GND
3		ANALOG INPUT
4		0.1 dB (LSB)
5		0.2 dB
6		0.4 dB
7		0.8 dB
8		1.6 dB
9		3.2 dB
10		6.4 dB
11		12.8 dB
12		25.6 dB
13		+V
14		-V
15		N/C

NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
APPROX. 6.0 OZ
- 3) WEIGHT:

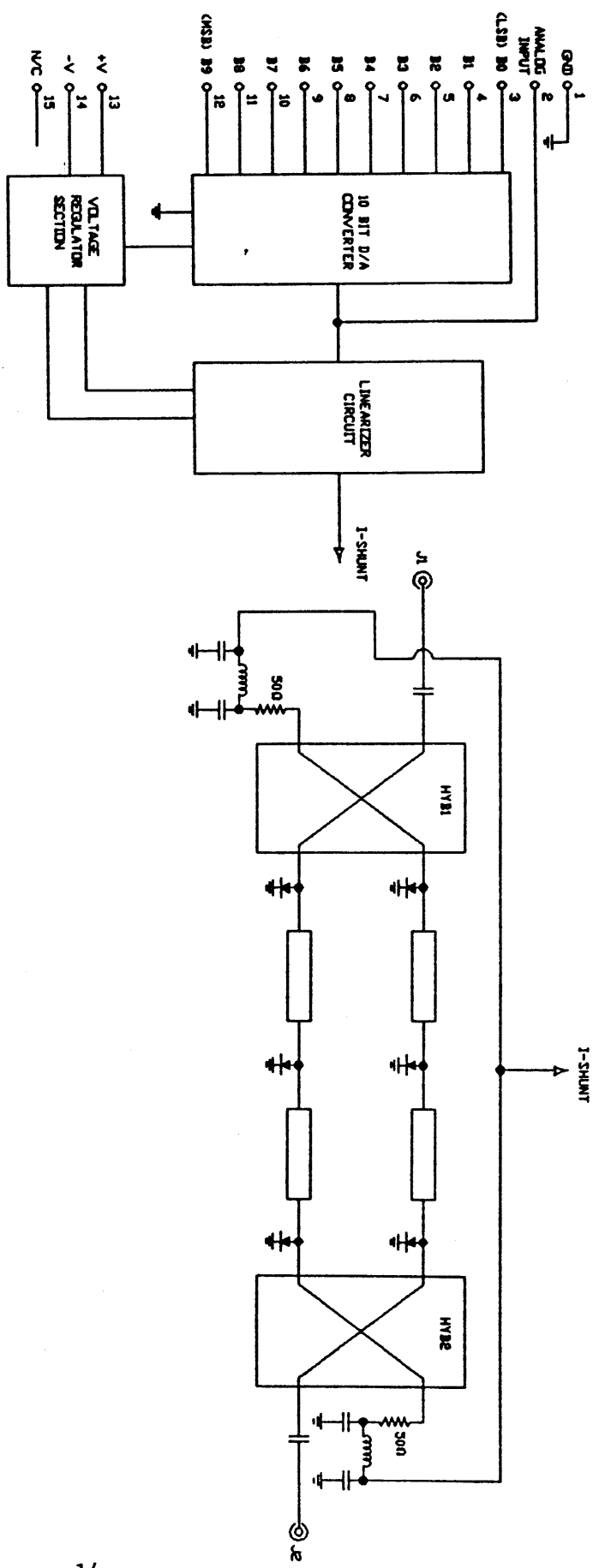
ENVIRONMENTAL RATINGS


- TEMPERATURE -55 $^{\circ}$ C TO +85 $^{\circ}$ C (OPERATING)
-65 $^{\circ}$ C TO +125 $^{\circ}$ C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A

FUNCTIONAL SCHEMATIC

DRIVER/CONTROL CIRCUIT

RF SECTION



	AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701	TEL: (301) 662-4700 FAX: (301) 662-4938
PRODUCT FEATURE	AGH-2550-80DD-410
1.9-5.6 GHz, PROGRAMMABLE VARIABLE ATTENUATOR	
SHEET 2 OF 2	DWG. # 100-5128

APPROVALS	DATE
DESIGNED BY: <i>WJG</i>	DATE: <i>4/28/83</i>
DRAWN BY: <i>WJG</i>	DATE: <i>5/8/83</i>

DESCRIPTION

AMC MODEL AGT-2018-60DD-100 IS A MULTIOCTAVE ATTENUATOR/MODULATOR, PROGRAMMABLE BY 8 BIT POSITIVE TRUE BINARY LOGIC, PACKAGED IN A LOW PROFILE HOUSING.

SPECIFICATIONS

- FREQUENCY RANGE 2-18 GHz MINIMUM
- INSERTION LOSS 4.5 dB MAXIMUM
- FREQUENCY FLATNESS 0-30 dB ±1.0 dB MAXIMUM
30-40 dB ±2.0 dB MAXIMUM
40-50 dB ±3.0 dB MAXIMUM
50-64 dB ±4.0 dB MAXIMUM
- ATTENUATION ACCURACY 0-20 dB ±1.0 dB MAXIMUM
(DEVIATION FROM NOMINAL ATTENUATION) 20-40 dB ±1.5 dB MAXIMUM
40-64 dB ±2.0 dB MAXIMUM
- RISE/FALL TIME 3 μS MAXIMUM
- VSWR 2 : 1 MAXIMUM
- POWER RATINGS
OPERATING +20 dBm MAXIMUM
SURVIVAL +30 dBm MAXIMUM

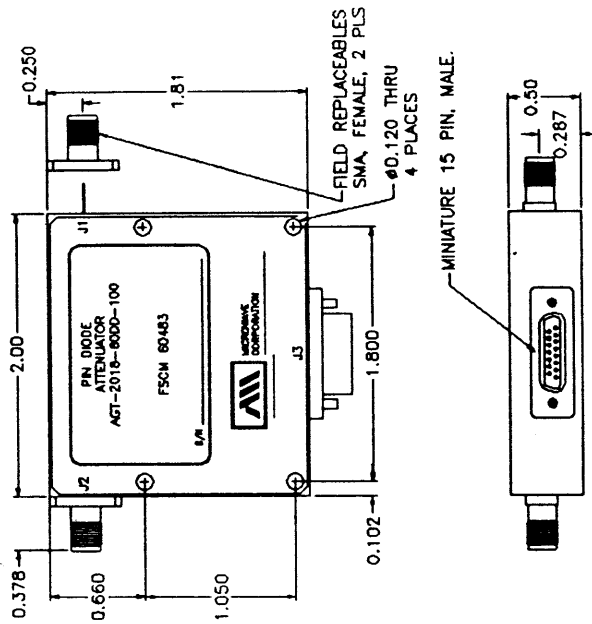
- CONTROL 8 BIT POSITIVE TRUE TTL BINARY LOGIC (SEE PIN FUNCTIONS TABLE)
- POWER SUPPLY +12VDC ±5% @ 210 mA MAXIMUM
-12VDC ±5% @ 30 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT FIELD REPLACEABLE SMA (FEMALE)
POWER AND CONTROLS MINIATURE 15 PIN (MALE)
MATING CONNECTOR (FEMALE) FURNISHED
- SIZE 2.0" x 1.81" x 0.50"

AVAILABLE OPTIONS

- A01 BLINDMATE "GPO" RF CONNECTORS
- A02 ±15 VOLTS POWER SUPPLY
- A03 EXTENDED FREQUENCY BAND 0.3-18 GHz
(+10 dBm OPERATING +27 dBm SURVIVAL,
0.3 -2 GHz)

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE	10/17/92	<i>[Signature]</i>

MECHANICAL OUTLINE



J3 PIN FUNCTIONS	FUNCTIONS.
1	GND
2	ANALOG INPUT
3	N/C
4	GND
5	0.25 dB (LSB)
6	0.5 dB
7	1.0 dB
8	2.0 dB
9	4.0 dB
10	8.0 dB
11	16.0 dB
12	32.0 dB
13	+V
14	-V
15	N/C

NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ±0.020
X.XXX ±0.010
- 3) WEIGHT: APPROX. 2.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +125°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 2040 COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



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APPROVALS

DATE

OWNED BY
W.S.P. 10/17/92

CHECKED BY
[Signature] 11/22/92

PRODUCT FEATURE

AGT-2018-60DD-100

MINIATURE 2 TO 18 GHz PROGRAMMABLE ATTENUATOR

SIZE A

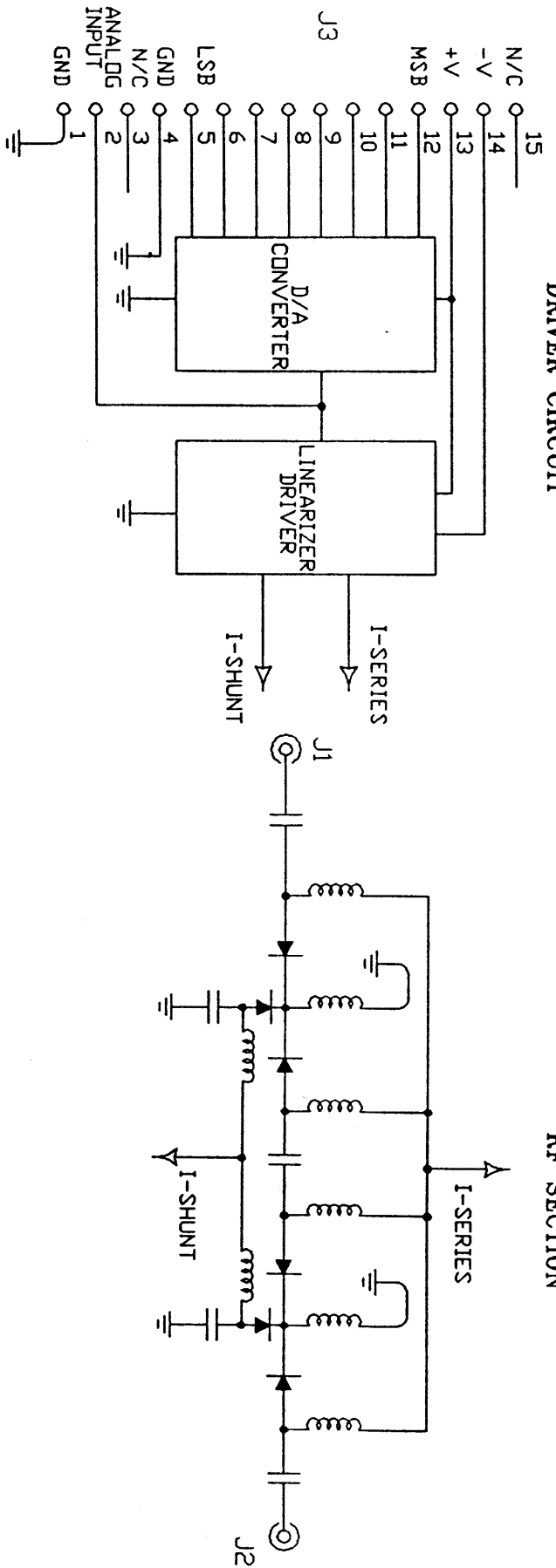
SHEET 1 OF 2

DWG. # 100-2756

FUNCTIONAL SCHEMATIC

DRIVER CIRCUIT

RF SECTION



AMERICAN MICROWAVE CORPORATION
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 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE	PRODUCT FEATURE
DRAWN: <i>M. J. B.</i> CHECKED: <i>M. J. B.</i>	10/17/92	AGT-2018-60DD-100 MINIATURE 2 TO 18 GHz PROGRAMMABLE ATTENUATOR
APPROVED: <i>M. J. B.</i>	11/22/92	

SIZE A SHEET 2 OF 2 DWG. # 100-2756

DESCRIPTION

AMC MODEL AGT-2000-70DD IS A BROAD BAND VARIABLE ATTENUATOR/MODULATOR, CONTROLLED BY 10 BIT POSITIVE TRUE BINARY LOGIC.

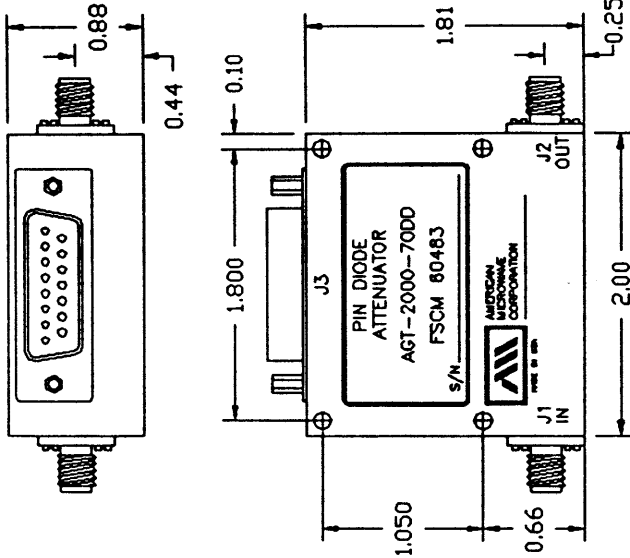
SPECIFICATIONS

- FREQUENCY RANGE 0.01-2.0 GHz MINIMUM
- INSERTION LOSS 2.0 dB MAXIMUM
- FREQUENCY FLATNESS (\pm dB MAXIMUM)
 - 0-30 dB \pm 0.5 dB MAXIMUM
 - 30-50 dB \pm 1.5 dB MAXIMUM
 - 50-70 dB \pm 2.5 dB MAXIMUM
- ATTENUATION ACCURACY
 - 0-20 dB \pm 1.0 dB MAXIMUM
 - 20-50 dB \pm 1.5 dB MAXIMUM
 - 50-70 dB \pm 2.0 dB MAXIMUM
- SWITCHING TIME 3 μ S MAXIMUM
- VSWR 1.8:1 MAXIMUM
- RF POWER RATINGS
 - OPERATING +20 dBm CW MAXIMUM
 - SURVIVAL +30 dBm CW MAXIMUM
- CONTROL 10 BIT TRUE BINARY LOGIC
0.1 dB MAXIMUM ATTENUATION STEPS.
- POWER SUPPLY +12 TO +18VDC @ 210 mA MAXIMUM
-12 TO -18VDC @ 30 mA MAXIMUM
- CONNECTORS
 - RF INPUT/OUTPUT SMA FEMALE
 - POWER AND CONTROLS 15 PIN D-SUBMINIATURE (MALE)
MATING CONNECTOR FURNISHED
- SIZE 2.00" x 1.81" x 0.88"

AVAILABLE OPTIONS

- A01 J1 SMA MALE, J2 SMA FEMALE
- A02 TWO SMA MALE RF CONNECTORS
- A03 8 BIT BINARY LOGIC
- A04 11 BIT BINARY LOGIC
- A05 12 BIT BINARY LOGIC

MECHANICAL OUTLINE



J3 PIN #	PIN FUNCTION
1	GND
2	ANALOG INPUT
3	0.1 dB (LSB)
4	0.2 dB
5	0.4 dB
6	0.8 dB
7	1.6 dB
8	3.2 dB
9	6.4 dB
10	12.8 dB
11	25.6 dB
12	51.2 dB (MSB)
13	+V
14	-V
15	N/C

NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
APPROX. 4.0 OZ
- 3) WEIGHT:

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO +125°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



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APPROVALS

DATE

DRAWN 9/6/93

CHECKED 5/9/93

PRODUCT FEATURE

AGT-2000-70DD

0.01-2 GHz, PROGRAMMABLE VARIABLE ATTENUATOR

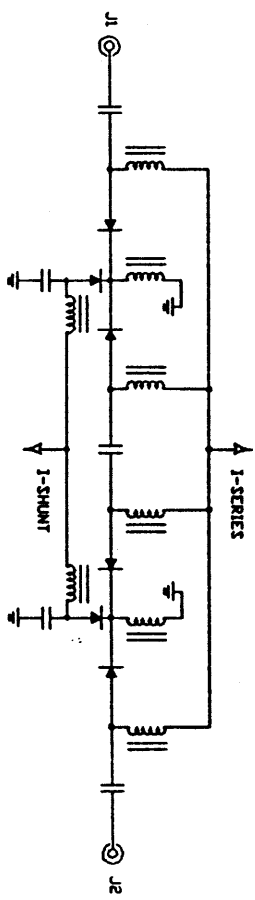
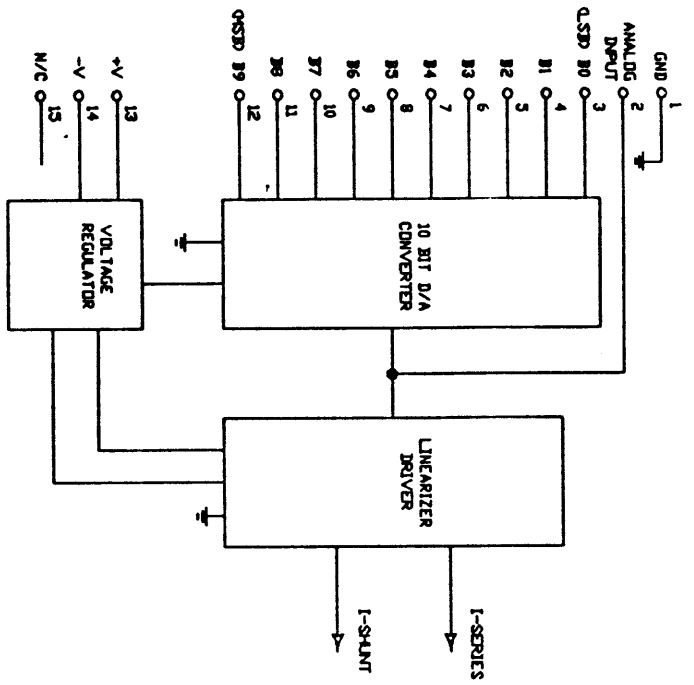
SIZE A SHEET 1 OF 2


DWG. # 100-3127

FUNCTIONAL SCHEMATIC

RF SECTION

DRIVER CIRCUIT



		AMERICAN MICROWAVE CORPORATION	
7311G GROVE RD., FREDERICK, MD. 21701		TEL: (301) 662-4700 FAX: (301) 662-4938	
PRODUCT FEATURE			
AGT-2000-70DD			
0.01-2 GHz, PROGRAMMABLE VARIABLE ATTENUATOR			
DRAWN <i>WJG</i>	DATE 9/28/93	APPROVALS <i>[Signature]</i>	DATE 5/8/93
DESIGNED <i>[Signature]</i>			
SIZE A	SHEET 2 OF 2	DWG. #	100-3127

DESCRIPTION

AMC MODEL AGH-1020-60D-SF IS A VOLTAGE CONTROLLED, HIGH SPEED VARIABLE ATTENUATOR/MODULATOR WITH BUILT IN LINEARIZER/DRIVER CIRCUITRY DESIGNED FOR HIGH DYNAMIC RANGE AND HIGH ACCURACY APPLICATIONS.

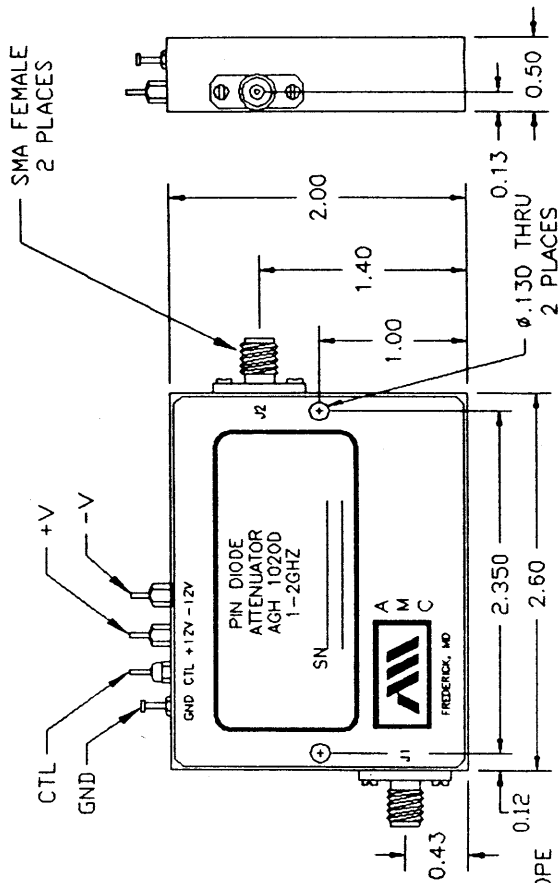
SPECIFICATIONS

- FREQUENCY RANGE 1-2 GHz
- INSERTION LOSS 2.0 dB MAXIMUM
- FREQUENCY FLATNESS 0-10 dB \pm 0.3 dB MAXIMUM
10-20 dB \pm 0.8 dB MAXIMUM
20-40 dB \pm 1.5 dB MAXIMUM
40-60 dB \pm 1.6 dB MAXIMUM
- ATTENUATION DYNAMIC RANGE 60 dB
- ATTENUATION ACCURACY 0-30 dB \pm 0.5 dB MAXIMUM
(DEVIATION FROM NOMINAL ATTENUATION)
- MONOTONICITY GUARANTEED
- TEMPERATURE COEFFICIENT \pm 0.025 dB/ $^{\circ}$ C MAXIMUM
- SWITCHING TIME 500 ns MAXIMUM
(-SF) 200 ns MAXIMUM
(-VF) 125 ns MAXIMUM
(-UF) 1.5:1 MAXIMUM (1-2 GHz)
- VSWR (ALL ATTENUATION LEVELS) +20 dBm CW OR PEAK
-10 dBm CW OR PEAK
- POWER HANDLING VOLTAGE CONTROLLED
(-VF) & (-UF) 10 dB/VOLT TRANSFER FUNCTION SLOPE
CONTROL +12VDC \pm 5% @ 100 mA MAXIMUM
POWER SUPPLY -12VDC \pm 5% @ 20 mA MAXIMUM
- CONNECTORS SMA FEMALE
- RF INPUT/OUTPUT SOLDER PIN
- POWER CONTROL 2.6" x 2.0" x 0.50"
- SIZE 2.6" x 2.0" x 0.50"

AVAILABLE OPTIONS

- A01 J1 SMA MALE, J2 SMA FEMALE
- A02 J1 SMA FEMALE, J2 SMA MALE
- A03 J1 SMA MALE, J2 SMA MALE
- A04 SMA FEMALE CONTROL CONNECTOR
- A05 SMA MALE CONTROL CONNECTOR
- A06 MINIATURE 14 PIN MALE (MIL-C-28748) CONNECTOR
- A07 REMOVABLE SMA FEMALE RF CONNECTOR
- A08 \pm 15VDC SUPPLIES
- A09 \pm 18 VOLT POWER SUPPLY
- A10 0-30 dB RANGE
- A11 5 dB/VOLT TRANSFER FUNCTION SLOPE
- A12 0.75-2.25 GHz WITH INSERTION LOSS OF 2.1 dB MAXIMUM,
VSWR OF 2.0:1 MAXIMUM AND FREQUENCY FLATNESS OF
 \pm 0.5 dB @ 10 db, \pm 1.4 dB @ 20 db, \pm 3.0 dB @ 40 db
AND \pm 3.5 dB @ 60 db
- A13 8 BIT DIGITAL CONTROLLED AND LINEARIZED
- A14 OPTION 20, OPTIMIZED FOR 1365-1435 MHz

MECHANICAL OUTLINE



NOTES:

1. DIMENSIONS ARE IN INCHES
2. TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
3. WEIGHT: APPROX. 3.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -20 $^{\circ}$ C TO +70 $^{\circ}$ C (OPERATING)
-65 $^{\circ}$ C TO +125 $^{\circ}$ C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



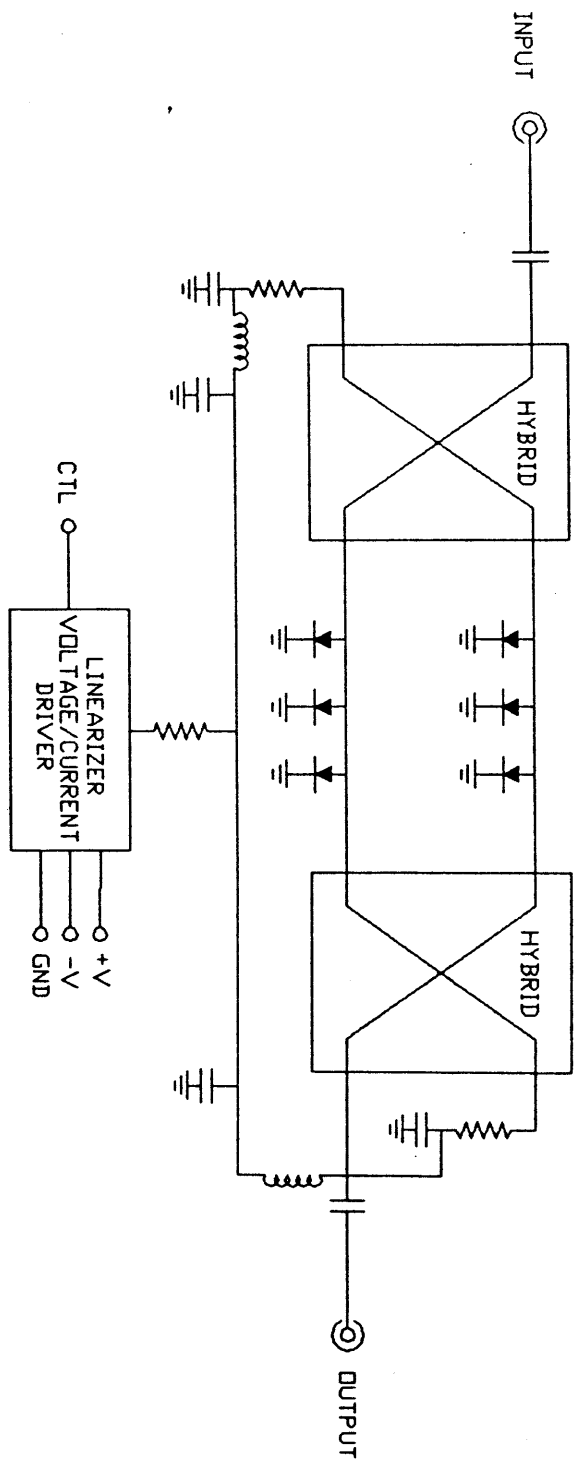
AMERICAN MICROWAVE CORPORATION
7311G GROVE RD., FREDERICK, MD. 21701
TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
WSP	6/16/93
WSP	6/16/93

PRODUCT FEATURE		
AGH-1020-60D-SF	SF (STANDARD)	
1-2 GHz, VOLTAGE CONTROLLED, HIGH SPEED, VARIABLE ATTENUATOR/MODULATOR	VF (VERY FAST)	
	UF (ULTRA FAST)	

SIZE A
SHEET 1 OF 2
DWG. # 100-3170

FUNCTIONAL SCHEMATIC



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 7311G GROVE RD., FREDERICK, MD. 21701
 TEL: (301) 662-4700 FAX: (301) 662-4938

APPROVALS	DATE
DESIGNED WJG	6/18/83
CHECKED	

PRODUCT FEATURE		SP (STANDARD)
1-2 GHz VOLTAGE CONTROLLED, HIGH SPEED, VARIABLE ATTENUATOR/MODULATOR		VF (VERY FAST)
SIZE A	SHEET 2 OF 2	DWG. # 100-3170

DESCRIPTION

AMC MODEL AGH-0510-60D IS AN OCTAVE BAND VOLTAGE CONTROLLED VARIABLE ATTENUATOR MODULE WITH BUILT IN DRIVER/LINEARIZER CIRCUITRY, DESIGNED FOR HIGH DYNAMIC RANGE AND HIGH ACCURACY APPLICATIONS.

SPECIFICATIONS

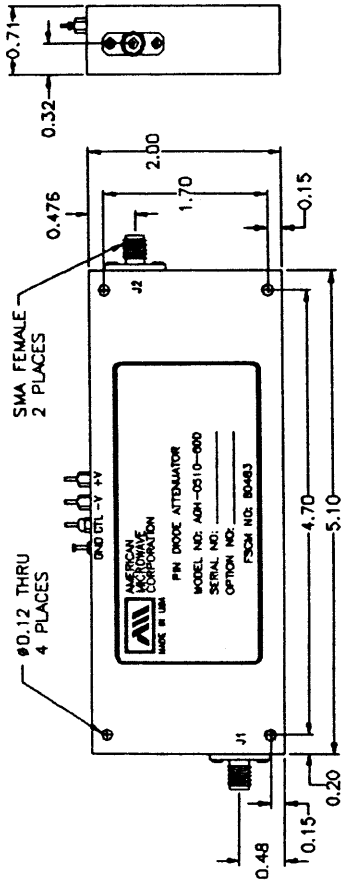
- FREQUENCY RANGE 0.5-1.0 GHz MINIMUM
- INSERTION LOSS 4.0 dB MAXIMUM
- FREQUENCY FLATNESS 0-40 dB \pm 2.0 dB MAXIMUM
40-60 dB \pm 2.5 dB MAXIMUM
- ATTENUATION DYNAMIC RANGE 70 dBc MINIMUM
- ATTENUATION ACCURACY 0-40 dB \pm 1.5 dB MAXIMUM
(DEVIATION FROM
NOMINAL ATTENUATION)
- MONOTONICITY GUARANTEED
- TEMPERATURE COEFFICIENT \pm 0.025 dB/ $^{\circ}$ C MAXIMUM
- SWITCHING TIME 1.5 μ S MAXIMUM
- VSWR (ALL ATTENUATION LEVELS) 1.7:1 MAXIMUM
- POWER RATINGS +20 dBm MAXIMUM
- CONTROL VOLTAGE CONTROLLED (0-6VOLTS)
10 dB/VOLT TRANSFER FUNCTION SLOPE
- POWER SUPPLY +12VDC \pm 5% @ 100 mA MAXIMUM
-12VDC \pm 5% @ 20 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA FEMALE
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 5.10" x 2.0" x 0.71"

AVAILABLE OPTIONS

- A01 J1 SMA MALE, J2 SMA FEMALE
- A02 TWO SMA MALE CONNECTORS
- A03 \pm 15VDC SUPPLIES
- A04 SMC MALE CONTROL CONNECTOR
- A05 SMA FEMALE CONTROL CONNECTOR
- A06 5 dB/VOLT TRANSFER FUNCTION SLOPE
(CONSULT FACTORY FOR OTHER
AVAILABLE TRANSFER FUNCTION SLOPES)

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 10479	01/23/83	<i>[Signature]</i>

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
- 3) WEIGHT: APPROX. 4.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55 $^{\circ}$ C TO +125 $^{\circ}$ C (OPERATING)
-65 $^{\circ}$ C TO +125 $^{\circ}$ C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



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PRODUCT FEATURE

AGH-0510-60D

0.5-1.0 GHz, VOLTAGE CONTROLLED VARIABLE ATTENUATOR MODULE

APPROVALS

DATE: 01/23/83

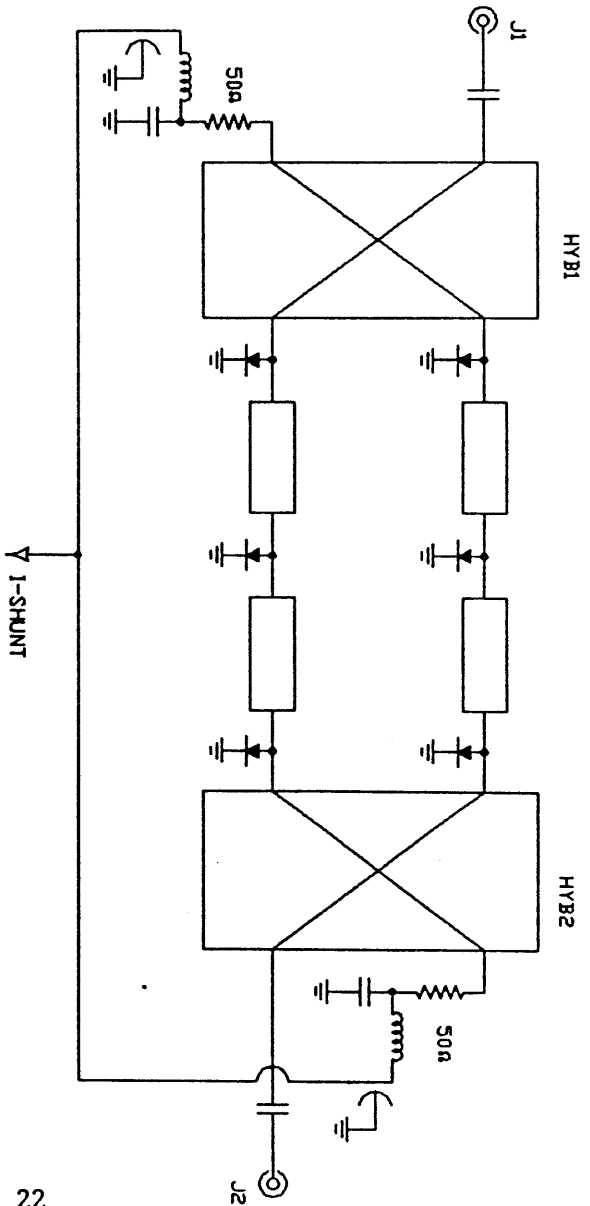
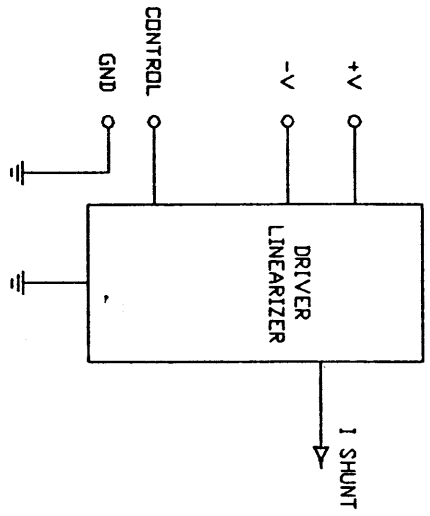
APPROVED: *[Signature]* 1/23/83


SIZE: A SHEET 1 OF 2 DWG. # 100-2934

LINEARIZER

FUNCTIONAL SCHEMATIC

RF SECTION



		AMERICAN MICROWAVE CORPORATION 7311G GROVE RD., FREDERICK, MD. 21701 TEL: (301) 662-4700 FAX: (301) 662-4938	
APPROVALS WGP 9/1/23/03	DATE 9/1/23/03	PRODUCT FEATURE AGH-0510-60D 0.5-1.0 GHz, VOLTAGE CONTROLLED VARIABLE ATTENUATOR MODULE	
SIZE A	SHEET 2 OF 2	DWG. # 100-2934	

DESCRIPTION

AMC MODEL AGH-2856-70D IS A VOLTAGE CONTROLLED VARIABLE ATTENUATOR MODULE WITH BUILT IN LINEARIZER/DRIVER CIRCUITRY DESIGNED FOR HIGH DYNAMIC RANGE AND HIGH ACCURACY APPLICATIONS.

SPECIFICATIONS

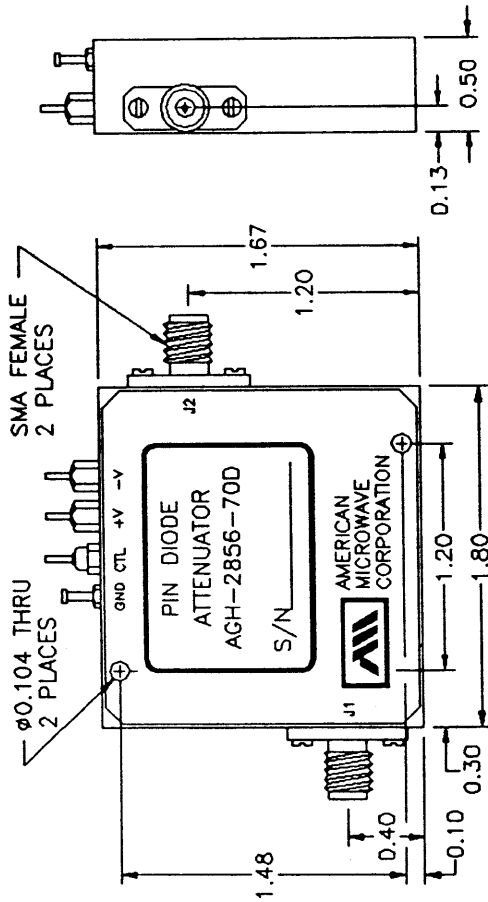
- FREQUENCY RANGE 4.2-4.4 GHz MINIMUM (CONSULT FACTORY FOR OTHER FREQUENCY RANGES)
- INSERTION LOSS 2.0 dB MAXIMUM
- FREQUENCY FLATNESS 0-30 dB \pm 0.3 dB MAXIMUM
30-50 dB \pm 0.4 dB MAXIMUM
50-70 dB \pm 0.5 dB MAXIMUM
- ATTENUATION DYNAMIC RANGE 70 dBc MINIMUM
- ATTENUATION ACCURACY (DEVIATION FROM NOMINAL ATTENUATION) 0-30 dB \pm 0.5 dB MAXIMUM
30-50 dB \pm 1.0 dB MAXIMUM
50-70 dB \pm 1.5 dB MAXIMUM
- MONOTONICITY GUARANTEED
- TEMPERATURE COEFFICIENT \pm 0.025 dB/ $^{\circ}$ C MAXIMUM
- SWITCHING TIME 1.5 μ S MAXIMUM
- VSWR (ALL ATTENUATION LEVELS) 2 : 1 MAXIMUM
- POWER RATINGS +20 dBm MAXIMUM
- CONTROL VOLTAGE CONTROLLED (0-4V)
17.5 dB/VOLT TRANSFER FUNCTION SLOPE
- POWER SUPPLY +12VDC \pm 5% @ 100 mA MAXIMUM
-12VDC \pm 5% @ 20 mA MAXIMUM
- CONNECTORS
RF INPUT/OUTPUT SMA FEMALE
POWER SOLDER PIN
CONTROL SOLDER PIN
- SIZE 1.8" x 1.67" x 0.50"

AVAILABLE OPTIONS

- A01 J1 SMA MALE, J2 SMA FEMALE
- A02 TWO SMA MALE CONNECTORS
- A03 \pm 15VDC SUPPLIES
- A04 SMC MALE CONTROL CONNECTOR
- A05 SMA FEMALE CONTROL CONNECTOR
- A06 10 dB/VOLT TRANSFER FUNCTION SLOPE (OTHER TRANSFER FUNCTION SLOPES AVAILABLE)

ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		ORIGINAL RELEASE, JOB # 10346	01/22/93	<i>[Signature]</i>

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
- 3) WEIGHT: APPROX. 2.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55 $^{\circ}$ C TO +125 $^{\circ}$ C (OPERATING)
-65 $^{\circ}$ C TO +125 $^{\circ}$ C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



AMERICAN MICROWAVE CORPORATION

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PRODUCT FEATURE

AGH-2856-70D

APPROVALS

DATE

11/22/93

CHECKED

1/22/93

4.2-4.4 GHz, VOLTAGE CONTROLLED VARIABLE ATTENUATOR MODULE

SIZE A

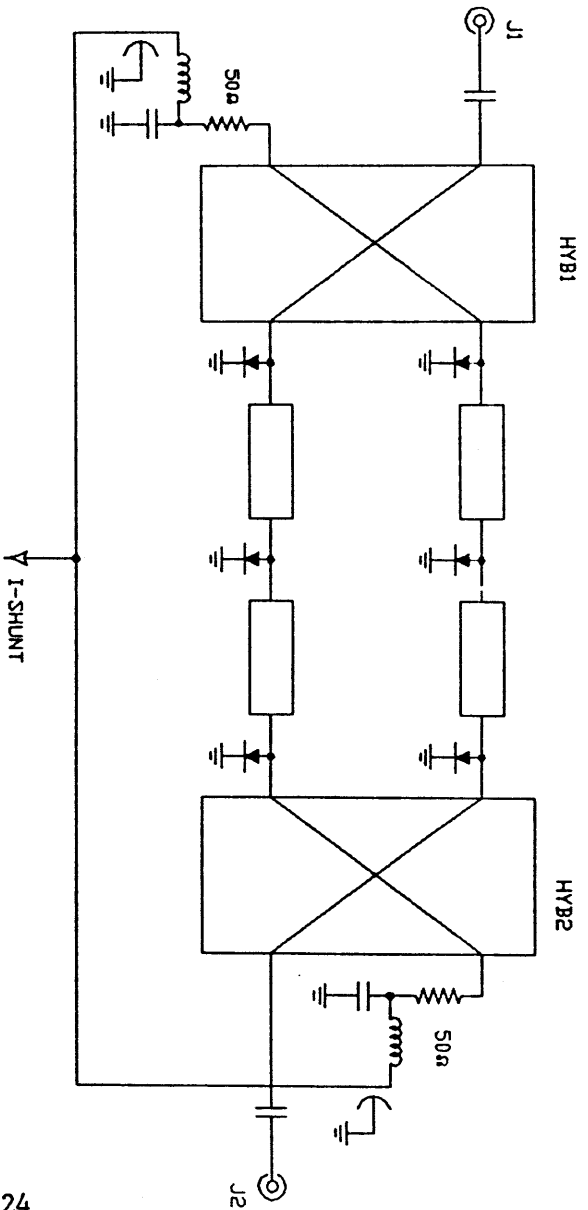
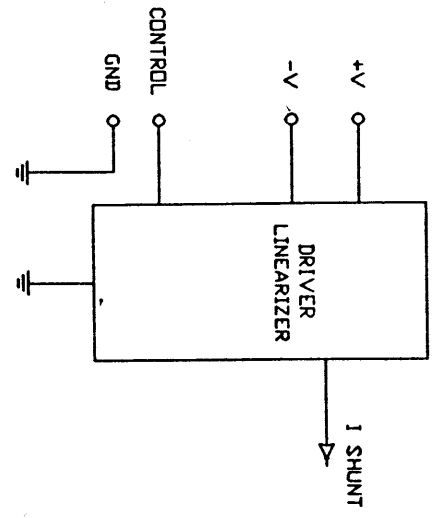
SHEET 1 OF 2

DWG. # 100-2933

LINEARIZER

FUNCTIONAL SCHEMATIC

RF SECTION



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PRODUCT FEATURE
AGH-2856-70D

4.2-4.4 GHz, VOLTAGE CONTROLLED VARIABLE ATTENUATOR MODULE

APPROVALS	DATE
DESIGNED BY <i>W/ggp</i>	01/22/89
CHECKED BY <i>[Signature]</i>	12/27/91

REVISIONS		DATE	APPROVED
ZONE	REV.	11/17/92	<i>[Signature]</i>
A			
DESCRIPTION			
ORIGINAL RELEASE			

DESCRIPTION

AMC MODEL AGC-0510 IS AN ABSORPTIVE CURRENT CONTROLLED ATTENUATOR MODULE CAPABLE OF HANDLING 1W OF CW RF POWER OVER 0.5-1.0 GHz FREQUENCY BAND.

SPECIFICATIONS

- FREQUENCY RANGE 0.5-1.0 GHz MINIMUM
- INSERTION LOSS 1.0 dB MAXIMUM
- VSWR 1.7:1 MAXIMUM
- FREQUENCY FLATNESS 0-10 dB ± 0.5 dB MAXIMUM
 10-20 dB ± 1.0 dB MAXIMUM
 20-40 dB ± 1.5 dB MAXIMUM
 40-50 dB ± 2.5 dB MAXIMUM

ATTENUATION VS CURRENT TRANSFER FUNCTION

10 dB	②	-0.28 mA (TYP)
20 dB	③	-0.77 mA (TYP)
30 dB	④	-1.68 mA (TYP)
40 dB	⑤	-3.48 mA (TYP)
50 dB	⑥	-7.94 mA (TYP)

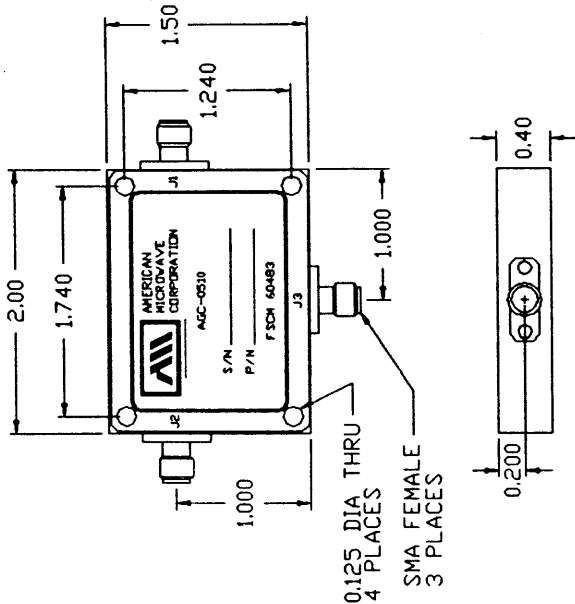
INSERTION LOSS AT 0 MA

- SWITCHING TIME
 RISE (10% RF TO 90% RF) 150 nS MAXIMUM
 FALL (90% RF TO 10% RF) 150 nS MAXIMUM
- RF POWER RATING 1W CW, MAXIMUM
- CONNECTORS
 RF INPUT/OUTPUT SMA (FEMALE)
 CONTROL SMA (FEMALE)
- SIZE 2.0" x 1.5" x 0.4"

AVAILABLE OPTIONS

- A01 ONE SMA MALE, ONE SMA FEMALE RF CONNECTORS
- A02 2 SMA MALE RF CONNECTORS
- A03 SOLDER PIN CONTROL CONNECTOR
- A04 SMC CONTROL CONNECTOR
- A05 REVERSE CONTROL CURRENT (POSITIVE)

MECHANICAL OUTLINE



NOTES:

- 1) DIMENSIONS ARE IN INCHES
- 2) TOLERANCES: X.XX ± 0.020
 X.XXX ± 0.010
- 3) WEIGHT: APPROX. 4 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55°C TO + 95°C (OPERATING)
 -65°C TO +125°C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. C



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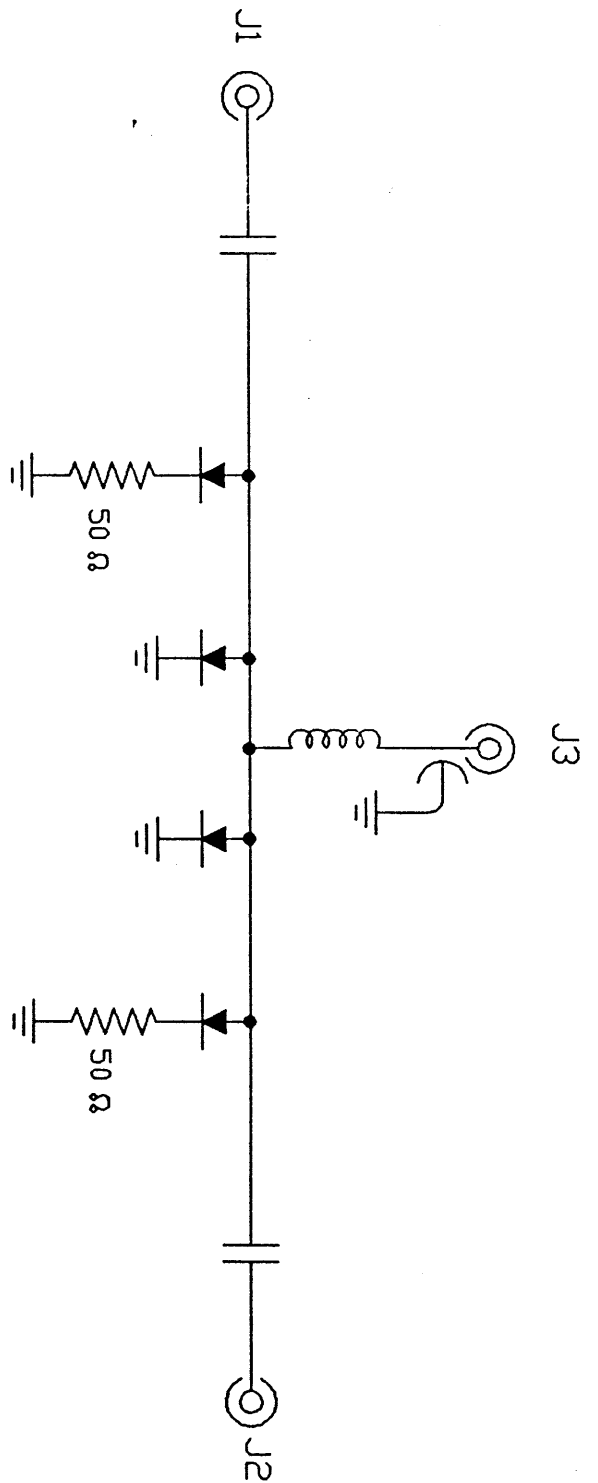
APPROVALS	DATE
<i>[Signature]</i>	11/17/92
<i>[Signature]</i>	11/22/92


PRODUCT FEATURE

AGC-0510

0.50-1.0 GHz CURRENT CONTROLLED PIN DIODE ATTENUATOR
 SIZE A SHEET 1 OF 2 DWG. # 100-2430

FUNCTIONAL SCHEMATIC



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APPROVALS	DATE	PRODUCT FEATURE	
<i>[Signature]</i>	11/17/82	AGC-0510	
DRAWN	CHECKED	0.50-1.0 GHz CURRENT CONTROLLED PIN DIODE ATTENUATOR	
<i>[Signature]</i>	<i>[Signature]</i>	SIZE	DWG. #
A	100-2430	SHEET 2 OF 2	

DESCRIPTION

AMC MODEL AGH-4080-N IS A CURRENT CONTROLLED, ABSORPTIVE/
NON-REFLECTIVE VARIABLE ATTENUATOR MODULATOR.

SPECIFICATIONS

- FREQUENCY RANGE 4-8 GHz MINIMUM
- INSERTION LOSS 2.0 dB MAXIMUM
- FREQUENCY FLATNESS 0-10 dB \pm 0.5 dB MAXIMUM
10-20 dB \pm 1.0 dB MAXIMUM
20-40 dB \pm 1.5 dB MAXIMUM
40-60 dB \pm 1.6 dB MAXIMUM
- MONOTONICITY GUARANTEED
- TEMPERATURE COEFFICIENT \pm 0.025 dB/ $^{\circ}$ C MAXIMUM
- SWITCHING TIME
RISE TIME (90% TO 10% RF) 1.5 μ s MAXIMUM
FALL TIME (10% TO 90% RF) 50 ns MAXIMUM
- VSWR (ALL ATTENUATION LEVELS) 2.0:1 MAXIMUM
- POWER HANDLING +20 dBm MAXIMUM CW OR PEAK
- CONTROL NEGATIVE BIAS VOLTAGE, CURRENT CONTROLLED
50 mA MAXIMUM FOR MINIMUM ATTENUATION
- CONNECTORS
RF INPUT/OUTPUT SMA FEMALE
CONTROL SOLDER PIN
- SIZE 1.3" x 1.4" x 0.50"

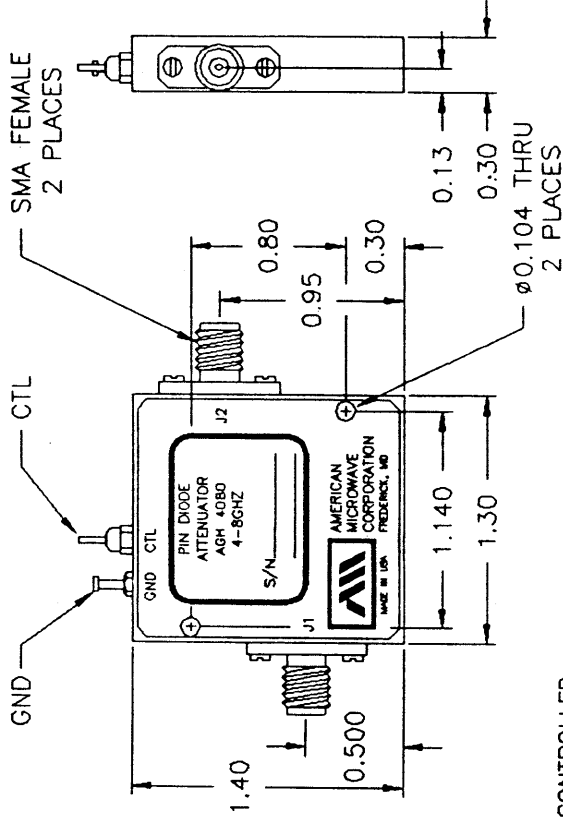
AVAILABLE OPTIONS

- A01 ONE SMA MALE, ONE SMA FEMALE RF CONNECTOR
- A02 TWO SMA MALE CONNECTORS RF CONNECTORS
- A03 SMA FEMALE CONTROL CONNECTOR
- A04 REMOVABLE SMA FEMALE RF CONNECTOR
- A05 3.0-9.0 GHz WITH INSERTION LOSS OF 2.1 dB,
VSWR OF 2.2:1 AND FREQUENCY FLATNESS OF
 \pm 0.5 dB @ 10 dB, \pm 1.4 dB @ 20 dB, \pm 3.0 dB
@ 40 dB, AND \pm 3.5 dB @ 60 dB.

ZONE REV. DESCRIPTION DATE APPROVED

A ORIGINAL RELEASE, JOB # 210262E | 6/16/93 | M.J.

MECHANICAL OUTLINE



NOTES:

1. DIMENSIONS ARE IN INCHES
2. TOLERANCES: X.XX \pm 0.020
X.XXX \pm 0.010
3. WEIGHT: APPROX. 1.0 OZ

ENVIRONMENTAL RATINGS

- TEMPERATURE -55 $^{\circ}$ C TO +125 $^{\circ}$ C (OPERATING)
-65 $^{\circ}$ C TO +125 $^{\circ}$ C (STORAGE)
- HUMIDITY MIL-STD-202F, METHOD 103B COND. B
- SHOCK MIL-STD-202F, METHOD 213B COND. B
- VIBRATION MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE MIL-STD-202F, METHOD 107D COND. A



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APPROVALS DATE

DRAWN 6/16/93

CHECKED 6/16/93

PRODUCT FEATURE

AGH-4080-N

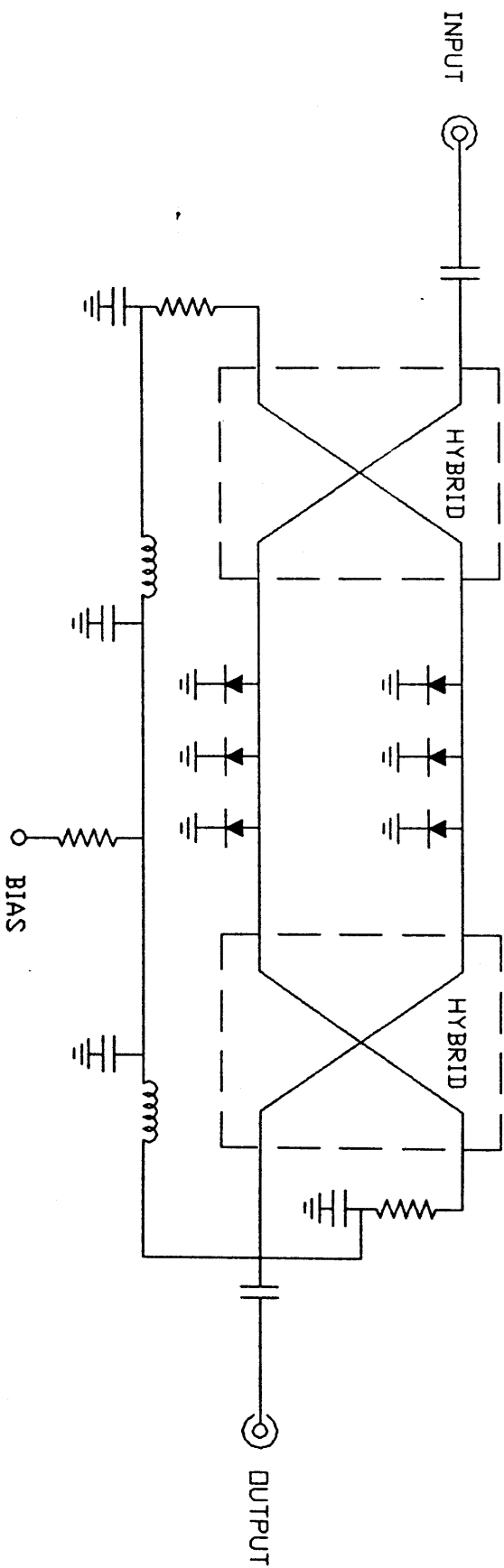
4-8 GHz, CURRENT CONTROLLED NON-REFLECTIVE VARIABLE ATTENUATOR MODULATOR


SIZE A

SHEET 1 OF 2

DWG. # 100-3171

FUNCTIONAL SCHEMATIC



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		PRODUCT FEATURE AGH-4080-N 4-8 GHz, CURRENT CONTROLLED NON-REFLECTIVE VARIABLE ATTENUATOR MODULATOR	
APPROVALS	DATE	SIZE	SHEET
DRAWN <i>WJG</i> CHECKED	8/18/93	A	2 OF 2
		DWG. #	100-3171



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