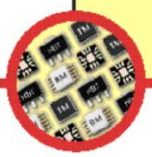
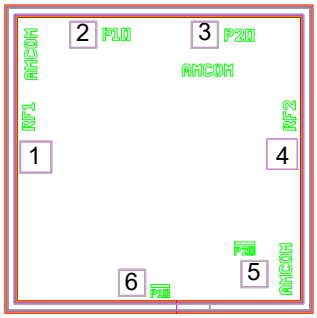
GaAs 2-Bit Digital attenuator
DC – 22 GHz

AM000220D2WM-00-R
August 2025
Rev 0



DESCRIPTION

AMCOM's AM000220D2WM-00-R is a 2-bit digital attenuator fabricated using GaAs process. It operates at frequencies from DC-22 GHz. The attenuator bit values are 10 dB and 20 dB, for a total attenuation of 30 dB .The part is offered in Bare Die form and requires very small amount of control current to operate. The Part is matched to 50 ohms.



FEATURES

- Broadband from DC to 22 GHz
- Power handling : 25 dBm CW
- Insertion loss: 3dB @ 10GHz ,
  5dB @ 20 GHz
- Attenuation range : 30dB

APPLICATIONS

- Radar
- Commercial communication systems
- Test instruments
- Phase Arrays

TYPICAL PERFORMANCE *

Parameters	Minimum	Typical **	Maximum
Frequency	-	DC -22 GHz	
Insertion loss 10GHz	-	3dB	
Insertion loss 20GHz		5dB	
P0.1dB	-	23dBm	
P0.5dB	23dBm	25dBm	
Input Return Loss		15dB	
Output Return Loss		15dB	
Number of bits		2	
Attenuation range		30dB	
Switching speed (ns)		100 ns	
Control Voltages (V)		0V/-5 V	

* Specifications subject to change without notice.

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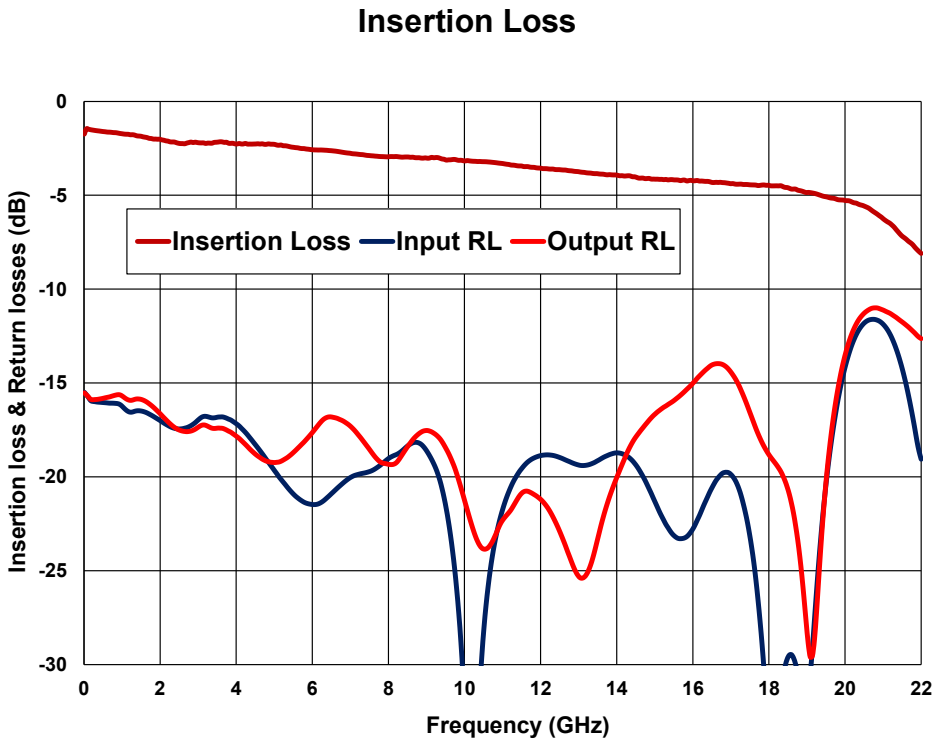
ABSOLUTE MAXIMUM RATING

Parameters	Symbol	Rating
Control Voltage	VC	-7V
Control Current	IC	3mA
RF input	RF_{in}	26 dBm
Channel temperature	T_{ch}	175°C
Operating temperature	T_{op}	-55°C to +85°C
Storage temperature	T_{sto}	-55°C to +135°C

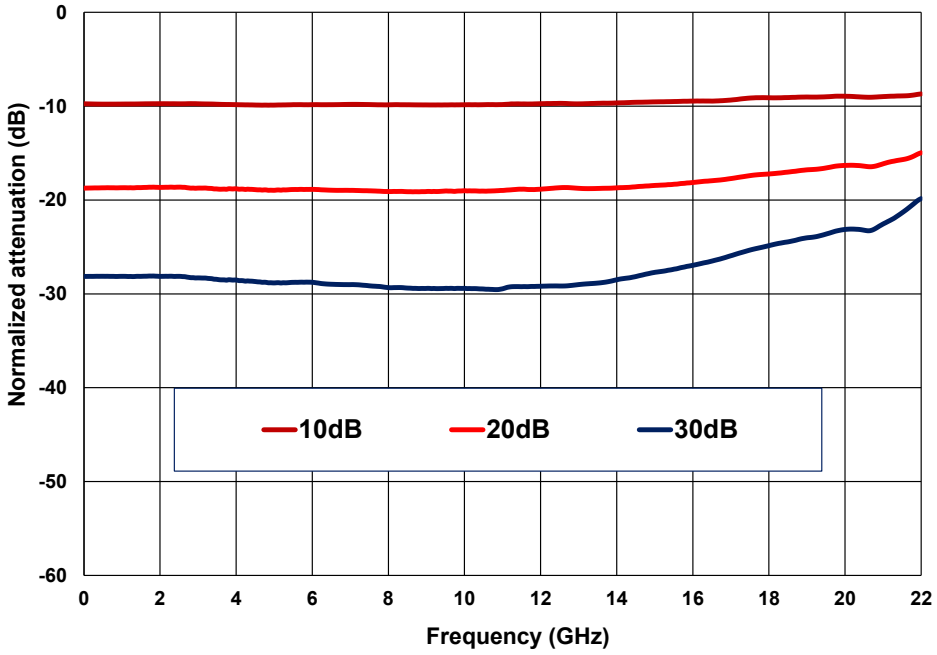
FUNCTION TABLE

Pin No.	STATE	P10	$\overline{P10}$	P20	$\overline{P20}$
RF1 to RF2	Reference	0V	-5V	0V	-5V
RF1 to RF2	10dB	-5V	0V	0V	-5V
RF1 to RF2	20dB	0V	-5V	-5V	0V
RF1 to RF2	30dB	-5V	0V	-5V	0V

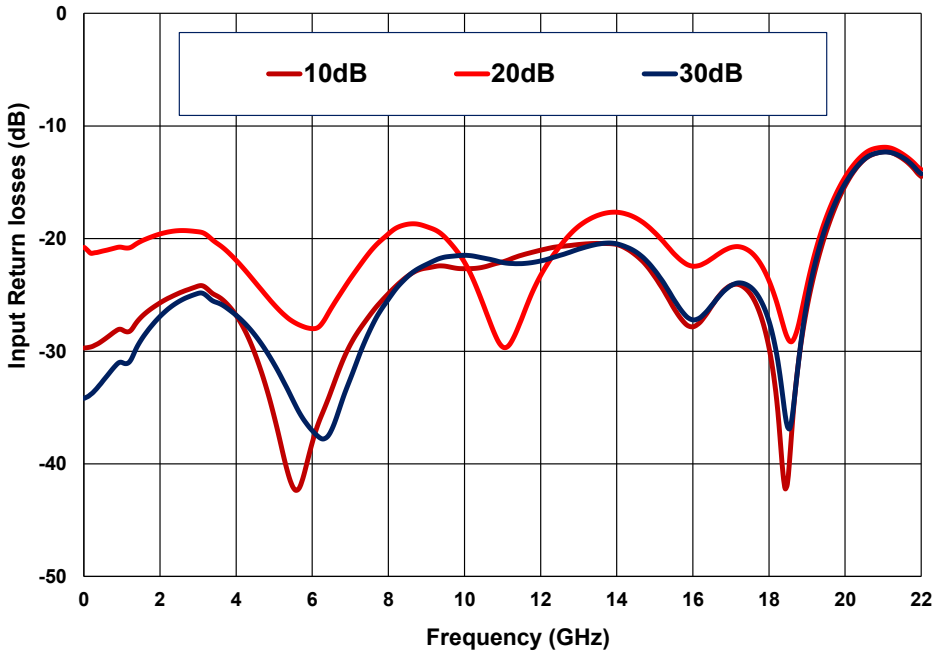
SMALL SIGNAL DATA



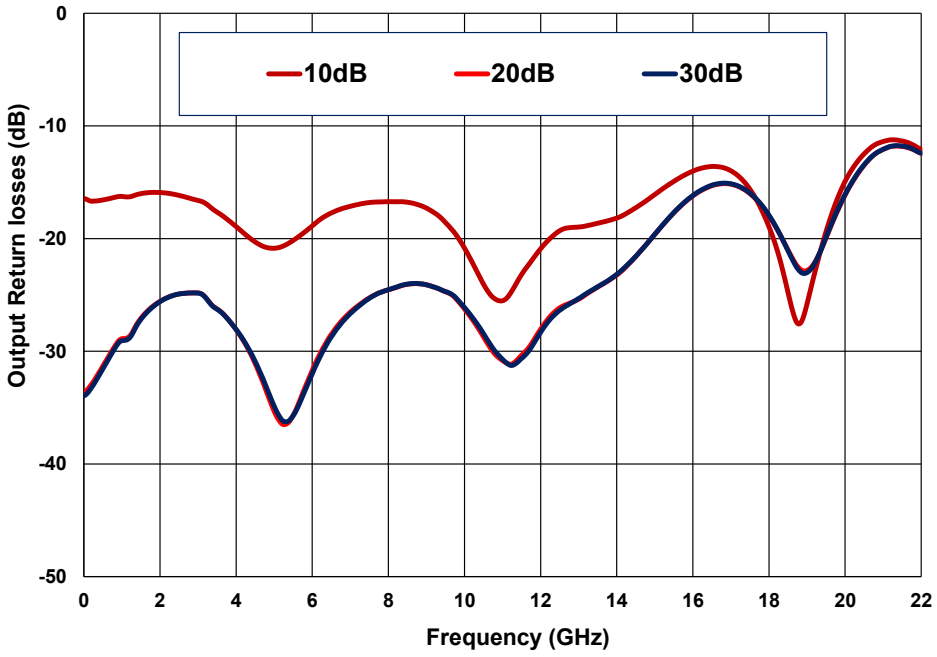
Normalized attenuation (All states)



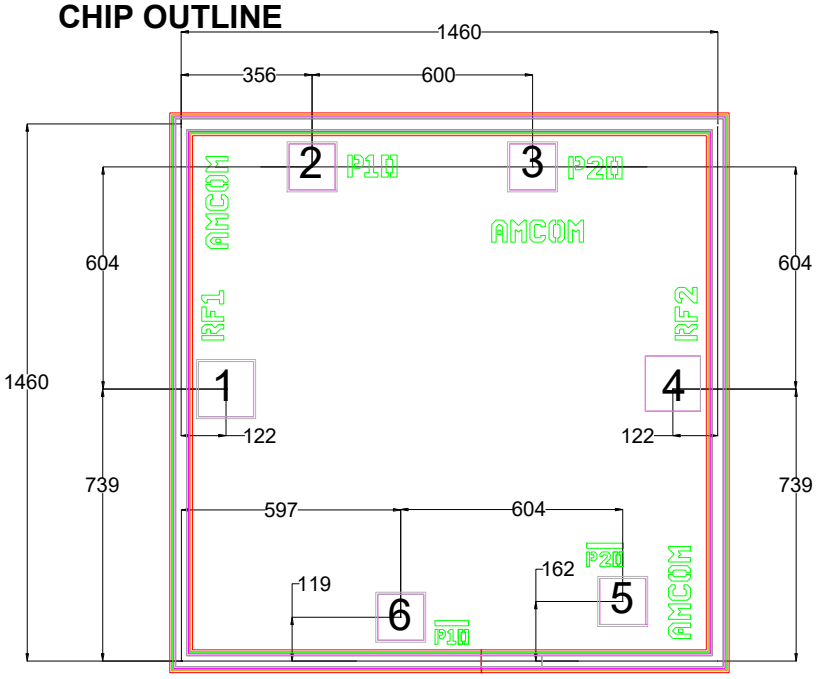
Input Return Losses (All states)



Output Return Losses (All states)



CHIP OUTLINE



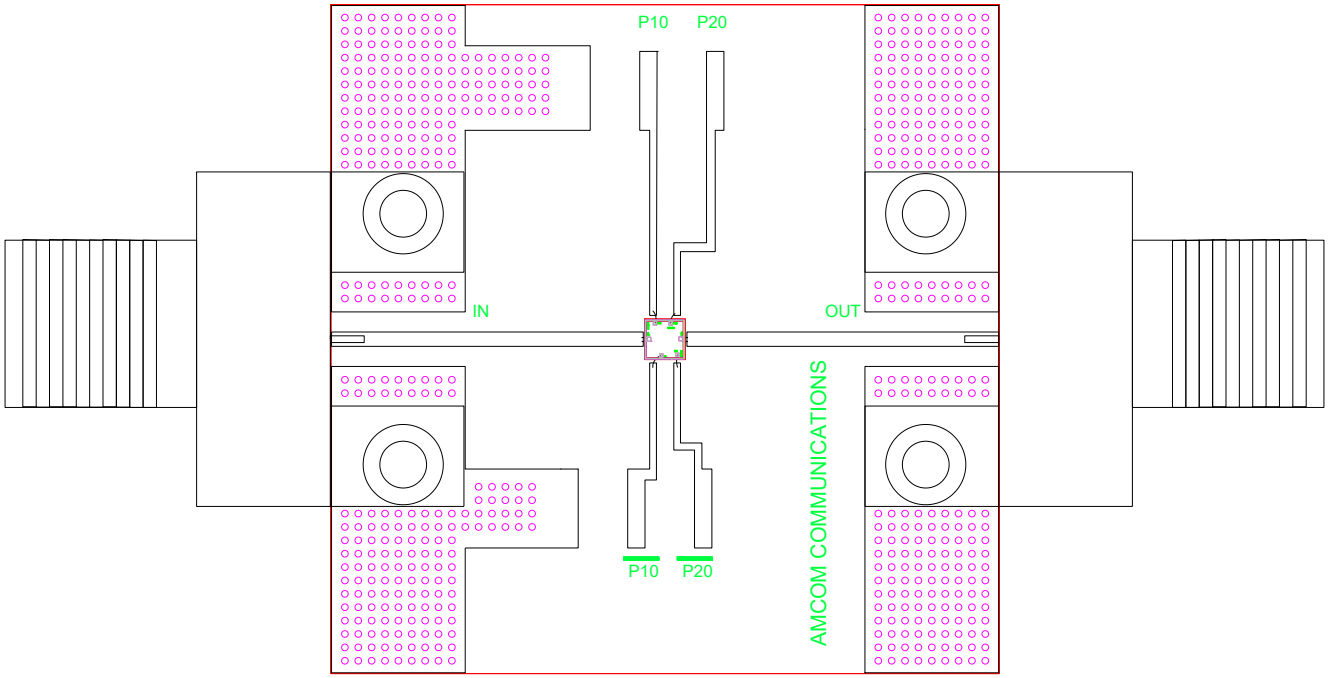
PIN LAYOUT

Pin No.	Function	Bias
1	RF1	-
2	P10	-5V/0V
3	P20	-5V/0V
4	RF2	-
5	$\overline{P10}$	-5V/0V
6	$\overline{P20}$	-5V/0V

Notes:

- Dimensions are in microns
- Pads 1 and 4 are 165 x 165
- Pads 2,3,5 and 6 are 140 x 140
- Die thickness is 4 mils

CHIP TEST CIRCUIT



Important Notes:

1- MMIC mounted on a carrier cut out area of the EVB

2- Board is RO4350 10 mils thick

3- Bond wires should be as short as possible

4- The data shown previously at the reference of the chip (Connectors and microstrip line effect de-imbedded)