



HMC121G8

GaAs MMIC SMT VOLTAGE-VARIABLE ATTENUATOR DC - 8 GHz

FEBRUARY 2001

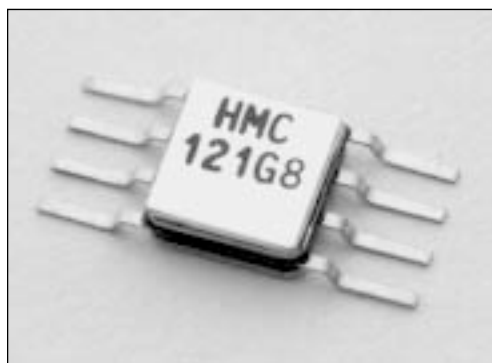
Features

WIDE BANDWIDTH: DC - 8 GHz

LOW PHASE SHIFT VS. ATTENUATION

30 dB ATTENUATION RANGE

SIMPLIFIED VOLTAGE CONTROL



General Description

The HMC121G8 is an absorptive voltage variable attenuator provided in a surface-mount hermetic package. It features an on-chip reference attenuator for use with an external op-amp to provide simple single voltage attenuation control. The device is ideal in designs where an analog control signal must control RF signal levels over a 30 dB amplitude range, such as in AGC circuits and in temperature compensation of multiple gain stages. Applications include military ECM and communications as well as commercial microwave radios and VSAT.

Guaranteed Performance, 50 ohm system, -55 to +85 deg C

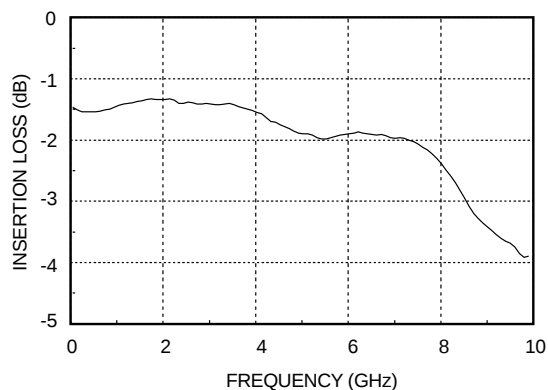
Parameter		Min.	Typ.	Max.	Units
Insertion Loss	DC - 4 GHz:		1.5	3.0	dB
	DC - 8 GHz:		2	3.5	dB
Attenuation Range		25	30		dB
Return Loss	DC - 4 GHz:	10	15		dB
	DC - 8 GHz:	7	10		dB
Switching Characteristics	tRISE, tFALL (10/90% RF):		3		ns
	tON, tOFF (50% CTL to 10/90% RF):		6		ns
Input Power for 0.25dB Comp. (0.5 - 8GHz)	Min. Atten:		+10		dBm
	Atten. > 2dB:		-2		dBm
Input Third Order Intercept (two - 8 dBm signals)	Min. Atten:		+25		dBm
	Atten. > 2dB:		+10		dBm



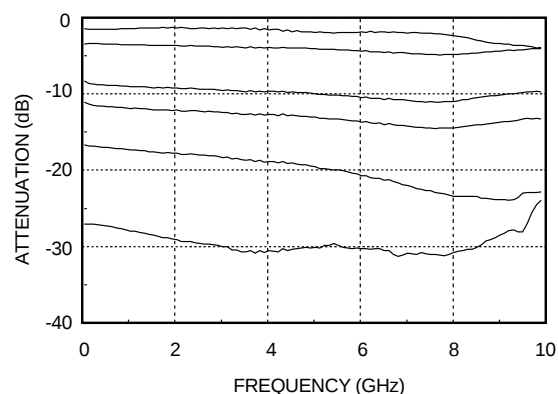
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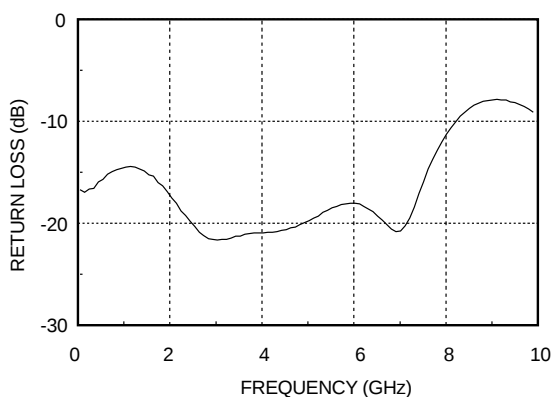
Insertion Loss



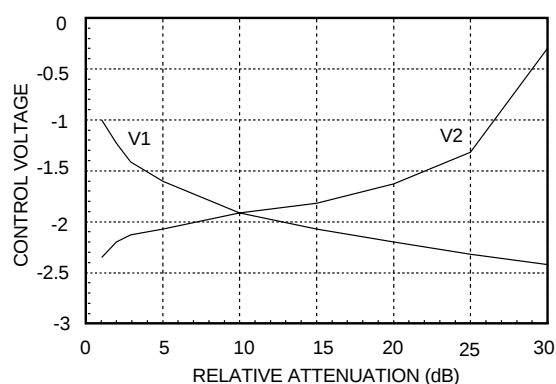
Relative Attenuation



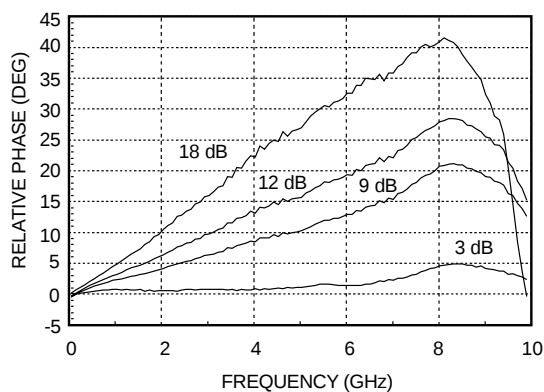
Return Loss



Relative Attenuation vs. Control Voltage



Relative Phase



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ATTENUATORS

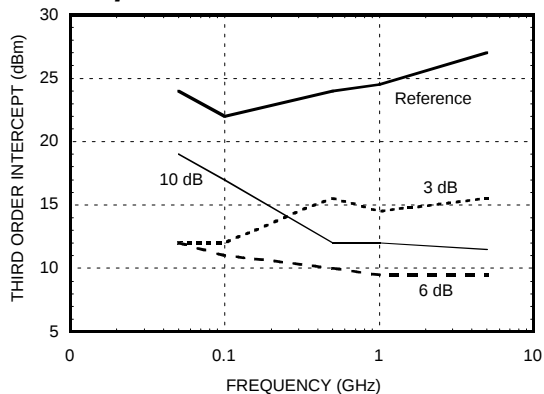
SMT



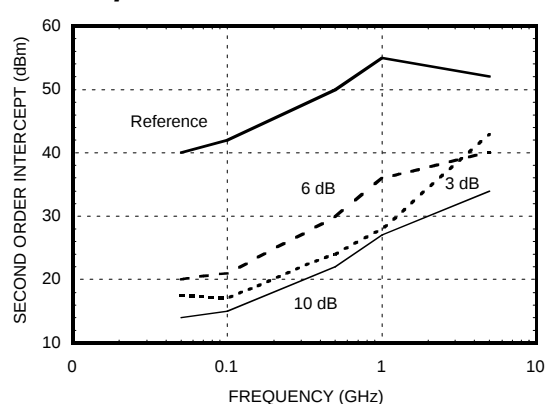
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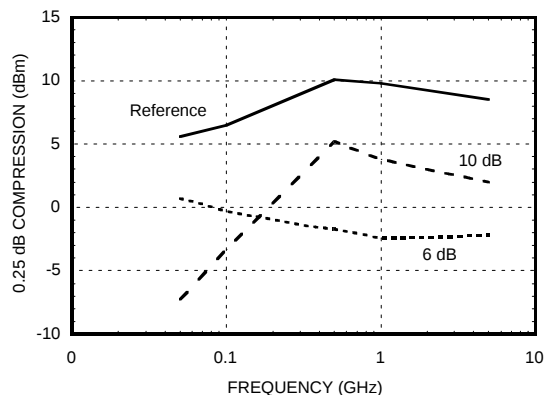
Input Third Order Intercept vs. Attenuation



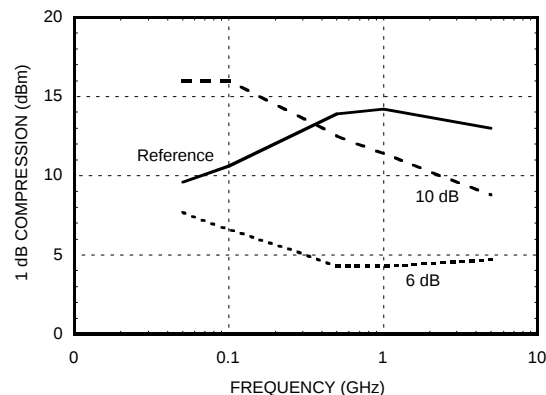
Input Second Order Intercept vs. Attenuation



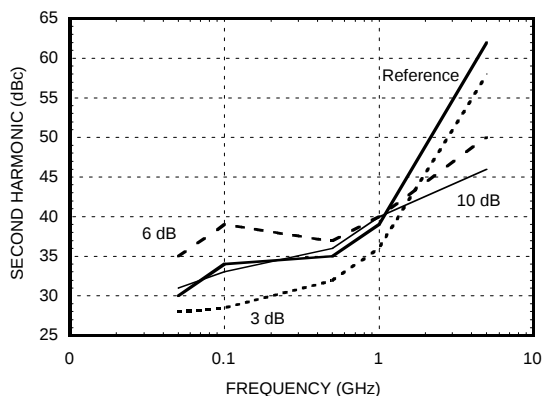
0.25 dB Compression vs. Attenuation



1 dB Compression vs. Attenuation



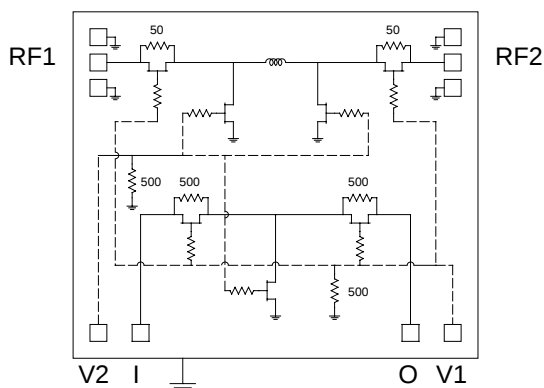
Second Harmonic vs. Attenuation



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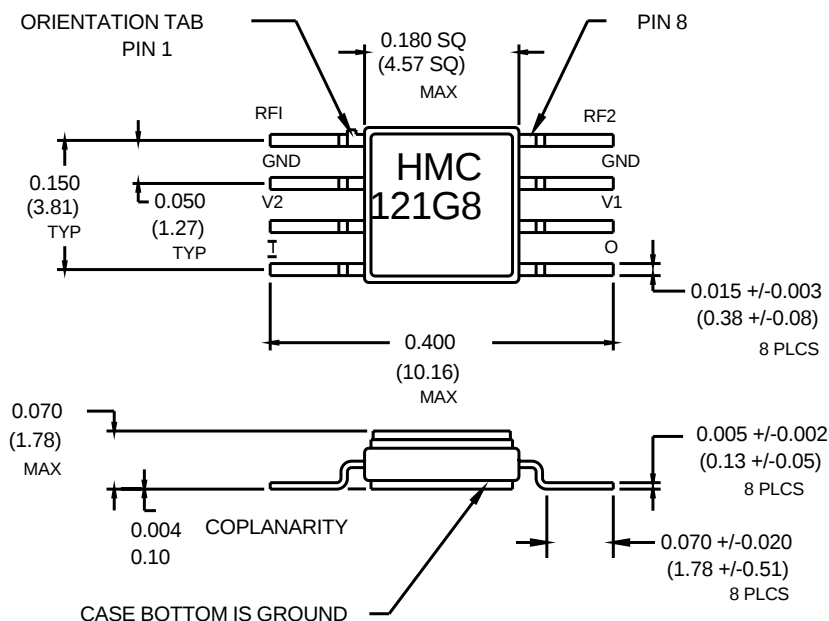
Schematic



Absolute Maximum Ratings

RF Input	+16dBm
Control Voltage Range	+1.0 to -6.0 Vdc
Storage Temperature	-65 to +150 deg C
Operating Temperature	-55 to +125 deg C

Outline Drawing



- MATERIAL:
A) PACKAGE BODY - ALUMINA LOADED BOROSILICATE GLASS
B) LEADS, BASE, & COVER - ASTM F - 15 ALLOY
- PLATING: ELECTROLYTIC GOLD 50 MICRO INCHES MINIMUM
- DIMENSIONS ARE IN INCHES (MILLIMETERS), UNLESS OTHERWISE SPECIFIED
TOL. ARE $\pm 0.005 (\pm 0.13)$

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ATTENUATORS

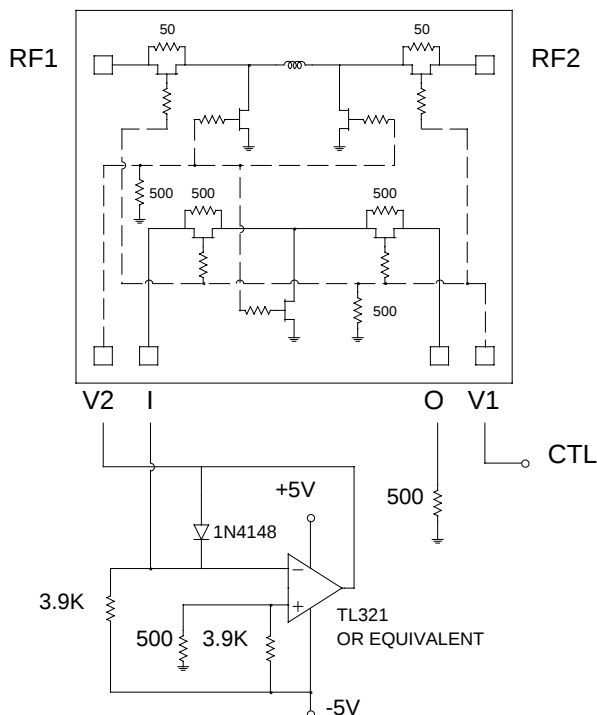
SMT



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Single-Line Control Driver



External op-amp control circuit maintains impedance match while attenuation is varied. Input control ranges from 0 Volts (min. attenuation) to -2.5 Volts (max. attenuation.)

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NOTES:

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