

GaAs MMIC SMT VOLTAGE-VARIABLE ATTENUATOR, DC - 8 GHz

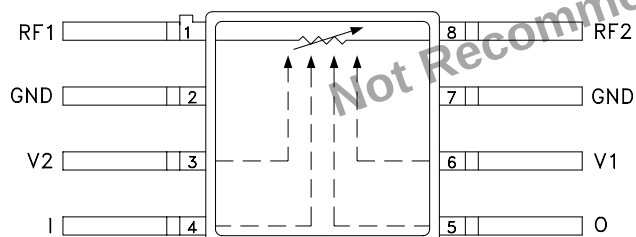
Typical Applications

- Base Station Infrastructure
- Portable Wireless CATV & DBS
- MMDS & Wireless LAN
- Wireless Local Loop
- Fiber Optics, Military, Space & Test Equipment

Features

- Wide Bandwidth: DC - 8 GHz
- Low Phase Shift vs. Attenuation
- 30 dB Attenuation Range
- Simplified Voltage Control

Functional Diagram



General Description

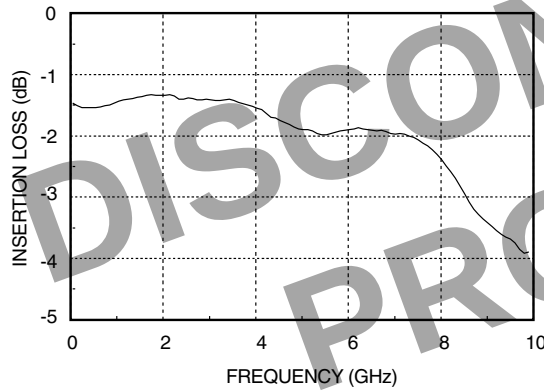
The HMC121G8 is an absorptive voltage variable attenuator provided in a surface-mount hermetic package. It features an on-chip reference attenuator for use with an external op-amp to provide simple single voltage attenuation control. The device is ideal in designs where an analog control signal must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

Electrical Specifications, $T_A = +25^\circ\text{C}$, 50 ohm system

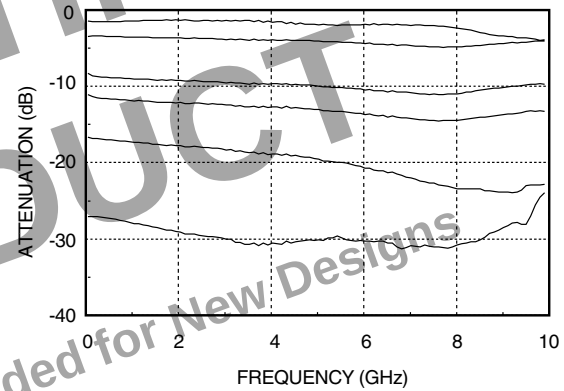
Parameter	Min.	Typ.	Max.	Units
Insertion Loss				
DC - 4 GHz:		1.5	3.0	dB
DC - 8 GHz:		2	3.5	dB
Attenuation Range	25	30		dB
Return Loss				
DC - 4 GHz:	10	15		dB
DC - 8 GHz:	7	10		dB
Switching Characteristics				
tRISE, tFALL (10/90% RF)		3		ns
tON, tOFF (50% CTL to 10/90% RF)		6		ns
Input Power for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

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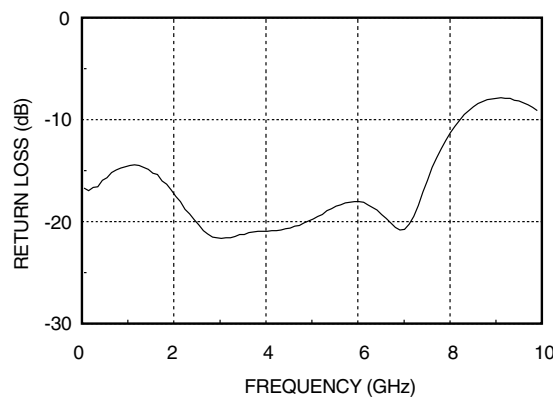
Insertion Loss



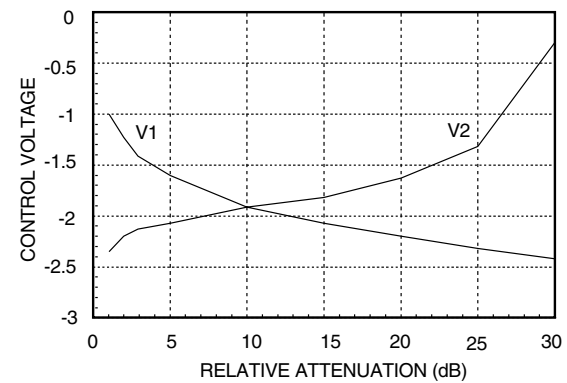
Relative Attenuation



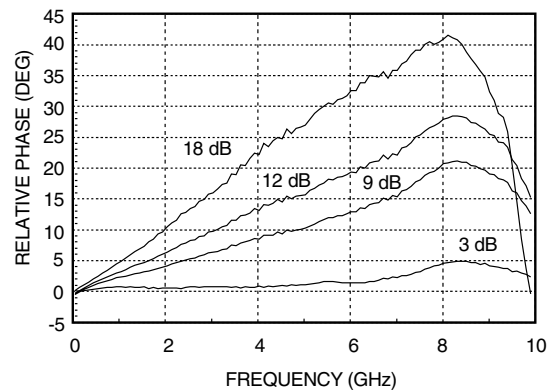
Return Loss



**Relative Attenuation vs.
Control Voltage**

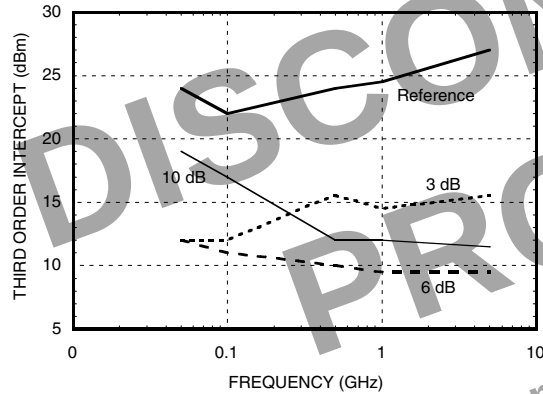


Relative Phase

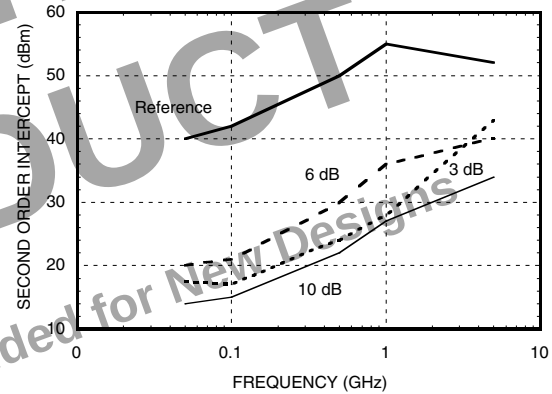


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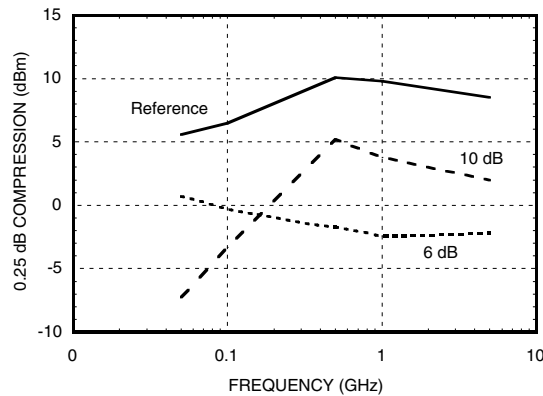
**Input Third Order
Intercept vs. Attenuation**



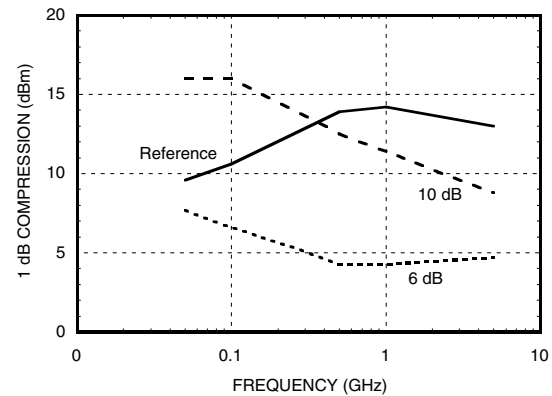
**Input Second Order
Intercept vs. Attenuation**



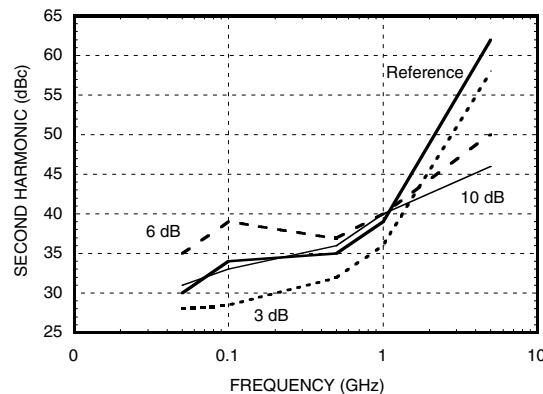
**0.25 dB Compression
vs. Attenuation**



**1 dB Compression
vs. Attenuation**



Second Harmonic vs. Attenuation

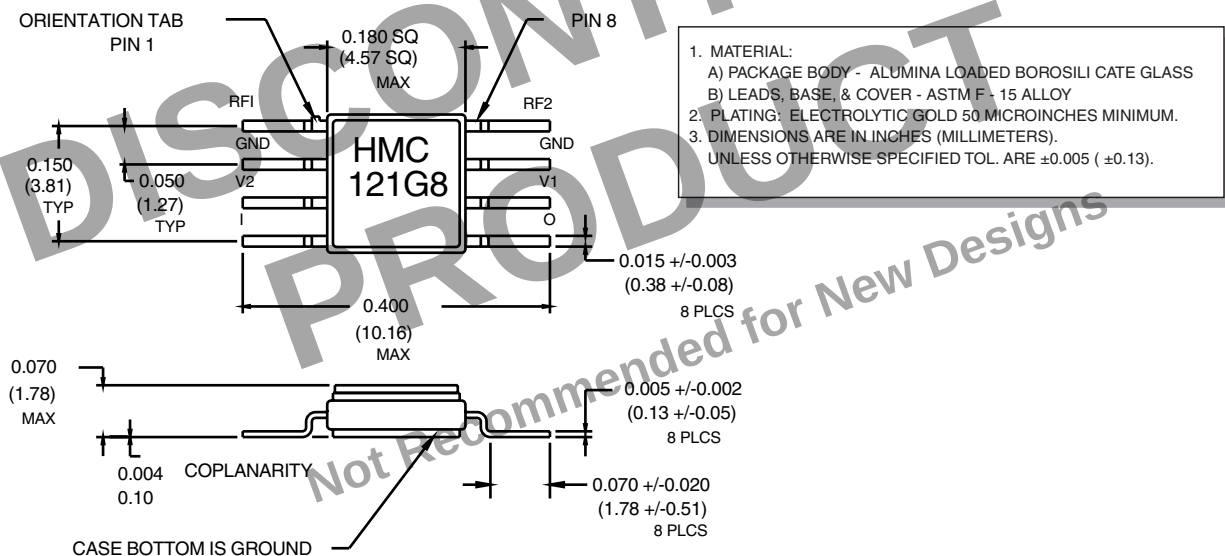


Absolute Maximum Ratings

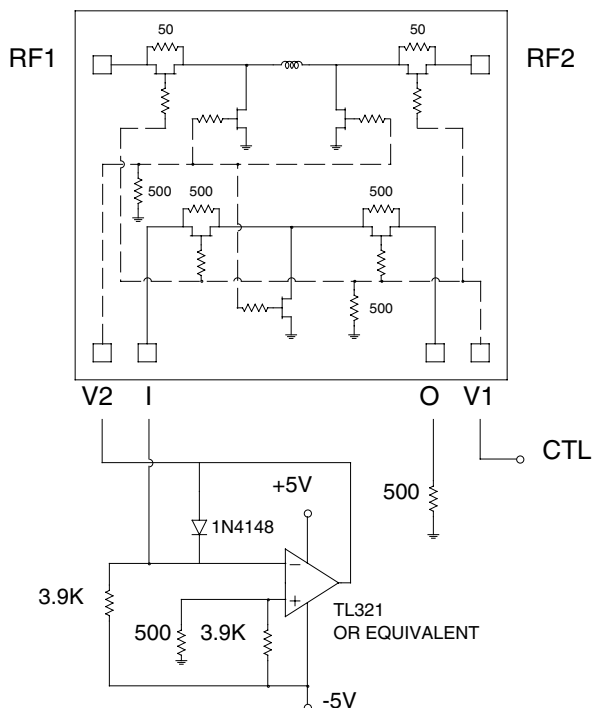
RF Input Power	+16 dBm
Control Voltage Range	+1.0 to -6.0 Vdc
Storage Temperature	-65 to +150 deg C
Operating Temperature	-55 to +125 deg C

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Outline Drawing



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).