

## Voltage-Controlled Attenuator Module 5 to 2000 MHz

Rev. V4

### Features

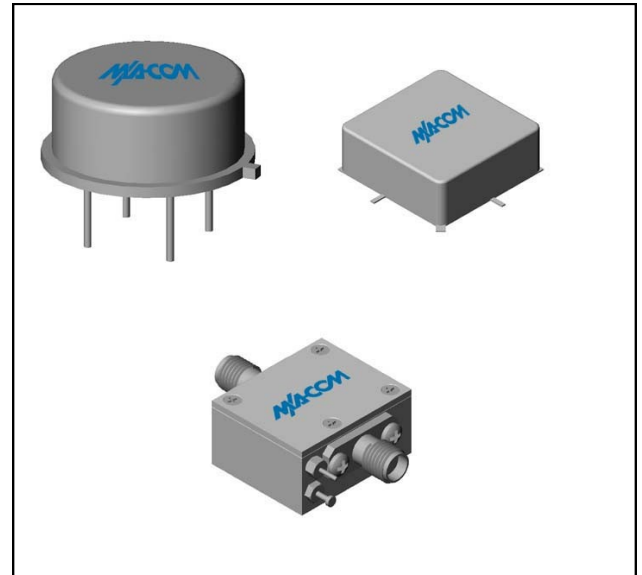
- AVAILABLE IN SURFACE MOUNT
- LOW VSWR: < 1.8:1 (TYP.)
- LOW INSERTION LOSS: 2.0 dB TO 1000 MHz (TYP.)
- LOW DISTORTION: -25 dBc (TYP.) AT  $V_{control} = +15 V$

### Description

The G1 attenuator is a discrete hybrid design, which uses thin film manufacturing processes for accurate performance and high reliability.

This design uses three pin diodes to provide a non linear attenuation response across a broadband frequency range. Both TO-8 and Surface Mount packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

### Product Image



### Ordering Information

Part Number	Package
G1	TO-8
SMG1	Surface Mount
CG1 **	SMA Connectorized

\*\* The connectorized version is not RoHs compliant.

### Electrical Specifications: $Z_0 = 50\Omega$ , $V_{CC} = +15 V_{DC}$

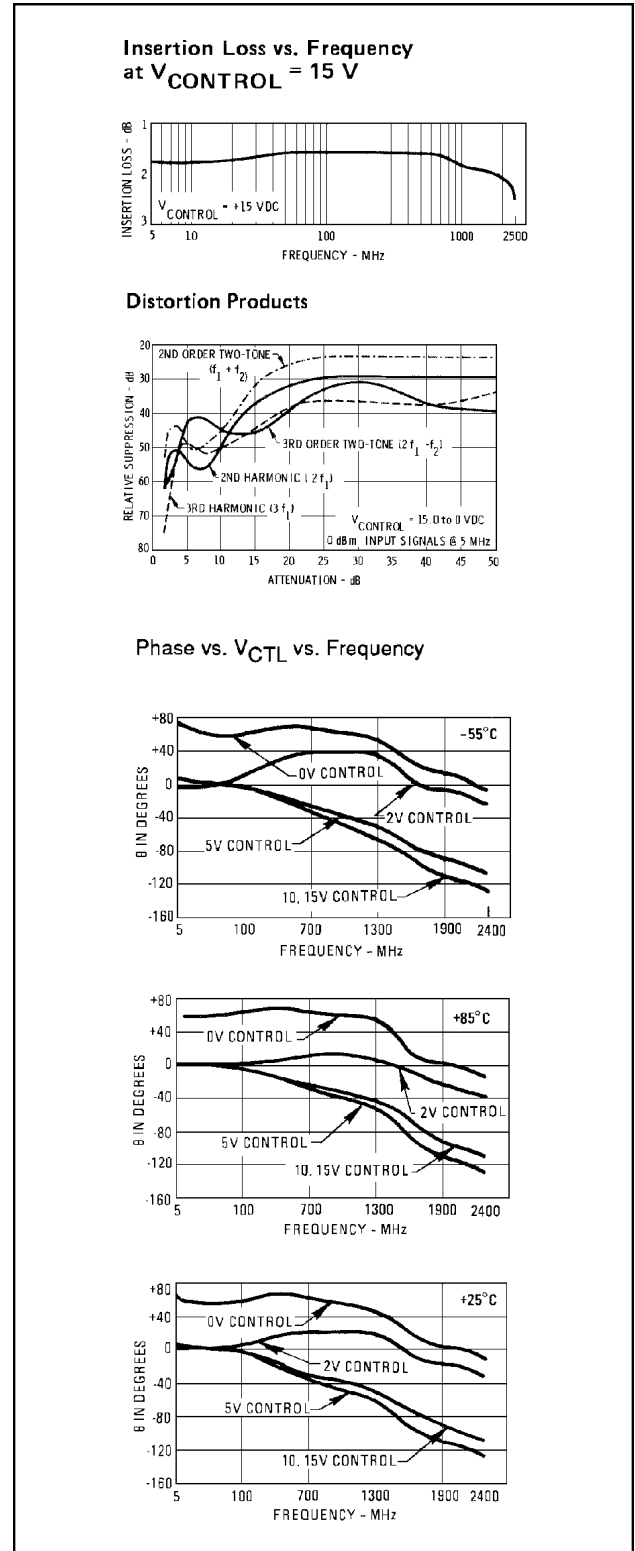
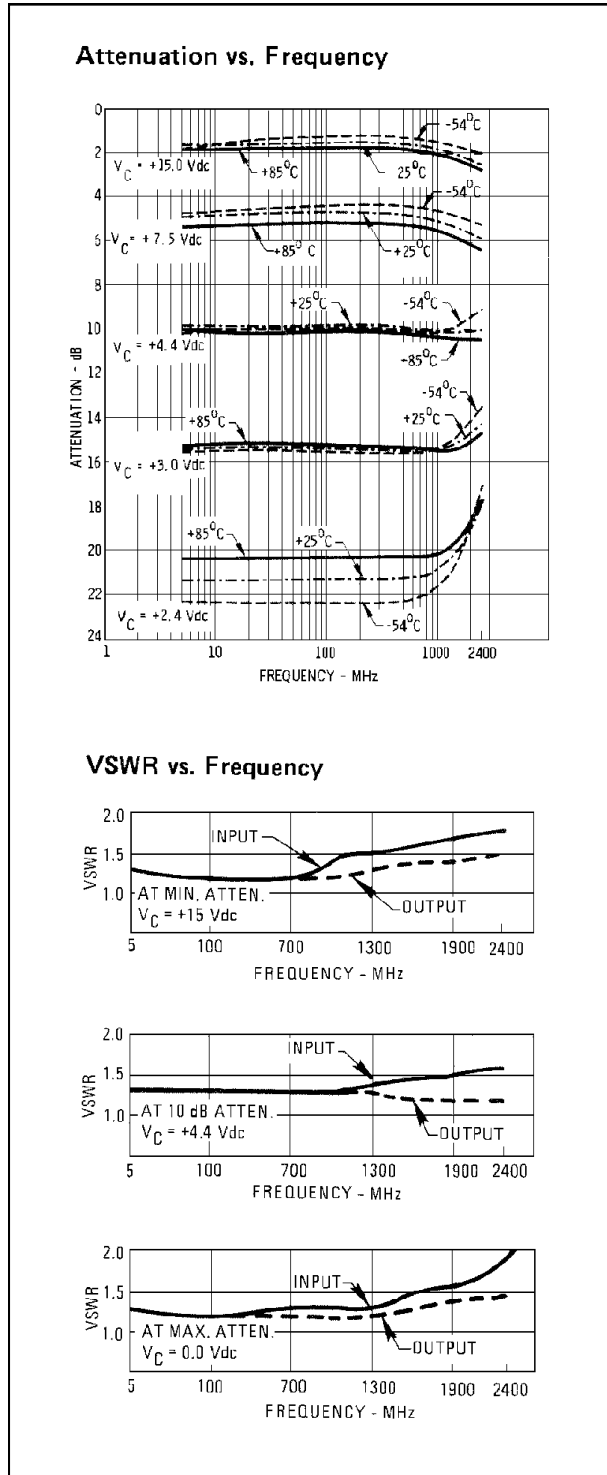
Parameter	Units	Typical	Guaranteed	
		25°C	0° to 50°C	-54° to +85°C*
Frequency	MHz	5-2200	5-2000	5-2000
Maximum Attenuation Available (min)	5-500 MHz	36	31	30
	500-1000 MHz	30	25	24
	1000-2000 MHz	23	18	17
Insertion Loss ( $V_{ctrl} = +15 V$ ) (max)	5-1000 MHz	2.0	2.5	2.8
	1000-2000 MHz	2.5	3.0	3.3
VSWR (worst case in attenuation range)	dB	<1.8:1	2.2:1	2.3:1
Flatness Over Frequency (max) (Attenuation = min to 15 dB, 5-1000 MHz)		+/-0.5	+/-1.0	+/-1.2
Switching Speed (max.)	10% - 90%	60	120	140
	0% - 100%	75	125	140
Bias Voltage	Volts	+15	+15	+15
Bias Current	mA	10	15	15
Control Voltage	Volts	0 to +15	0 to +15	0 to +15
Control Current (max)	mA	4	7	7

1 \*Over temperature performance limits for part number CG1, guaranteed from 0°C to +50°C only.

## Voltage-Controlled Attenuator Module 5 to 2000 MHz

Rev. V4

### Typical Performance Curves at +25°C

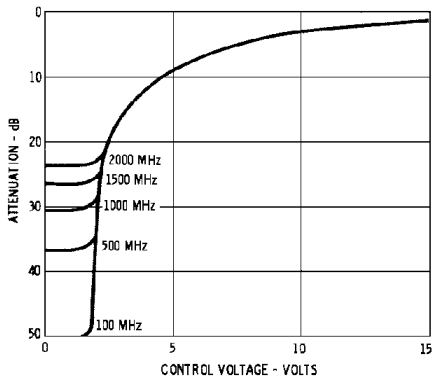


## Voltage-Controlled Attenuator Module 5 to 2000 MHz

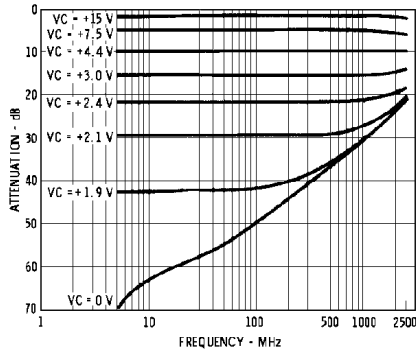
Rev. V4

### Typical Performance Curves at +25°C

Attenuation vs. Control Voltage



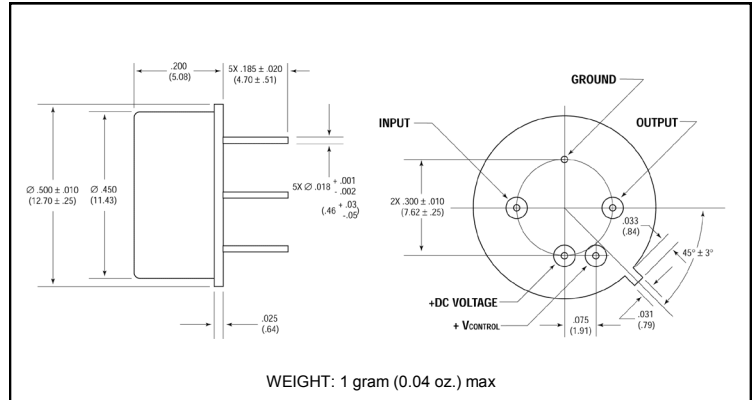
Attenuation vs.  $V_{CTL}$  vs. Frequency



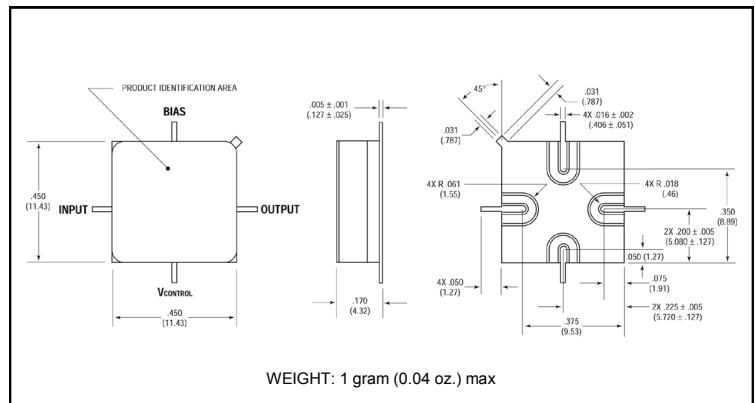
### Absolute Maximum Ratings

Parameter	Absolute Maximum
Storage Temperature	-62°C to +125°C
Case Temperature	125°C
DC Voltage	+18 V
Continuous Input Power	+20 dBm
Short Term Input power (1 minute max.)	200 mW
Peak Power (3 µsec max.)	1 W
"S" Series Burn-In Temperature (case)	125°C

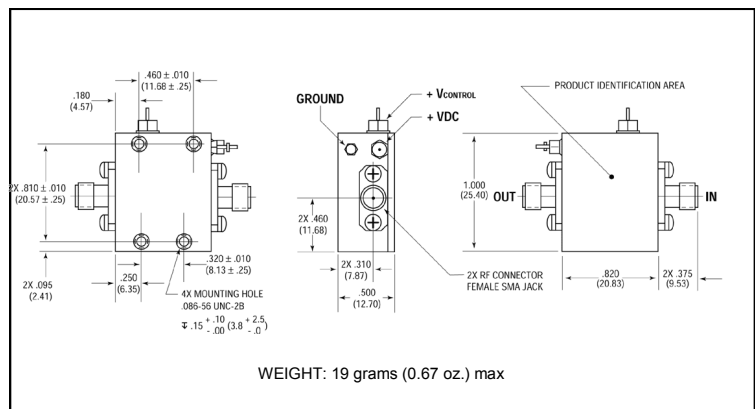
### Outline Drawing: TO-8 \*



### Outline Drawing: Surface Mount \*



### Outline Drawing: SMA Connectorized \*



\* Dimensions are inches (millimeters) ±0.015 (0.38) unless otherwise specified.

M/A-COM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with M/A-COM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM's Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.

4

---

M/A-COM Technology Solutions Inc. (MACOM) and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.  
Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.