

Surface Mount Voltage Variable Attenuator

VACC-09+

50Ω 600 to 1200 MHz

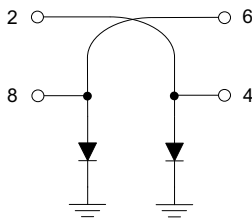
Maximum Ratings

Operating Temperature	-45°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Max. Control Current	10mA
Absolute Max. RF Input Level	+15 dBm

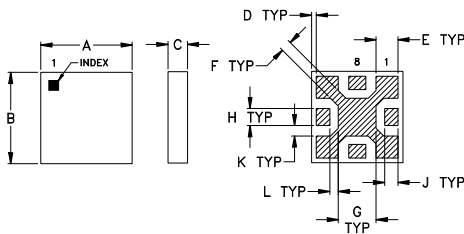
Pin Connections

RF IN	2
V CONTROL 1	8
V CONTROL 2	4
RF OUT	6
GROUND	1,3,5,7

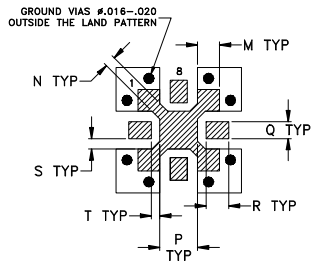
Equivalent schematic of DUT



Outline Drawing



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	
.150	.150	.065	.008	.036	.018	.062	.028	.022	
3.81	3.81	1.65	0.20	0.91	0.46	1.57	0.71	0.56	
K	L	M	N	P	Q	R	S	T	WT.
.017	.014	.036	.018	.062	.028	.037	.017	.014	GRAM
0.43	0.36	0.91	0.46	1.57	0.71	0.94	0.43	0.36	.06

Features

- frequency range, 600-1200 MHz
- IP3, 48 dBm typ.
- minimum current at min. attenuation
- low insertion loss
- protected by US patent 7,030,713

Applications

- variable gain amplifier
- feed forward amps
- ALC circuits



CASE STYLE: GF995
PRICE: \$3.95 ea. QTY (25)

**+ RoHS compliant in accordance
with EU Directive (2002/95/EC)**

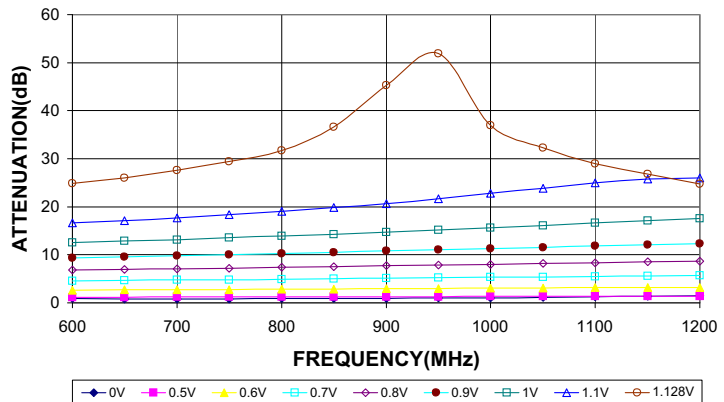
The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Electrical Specifications

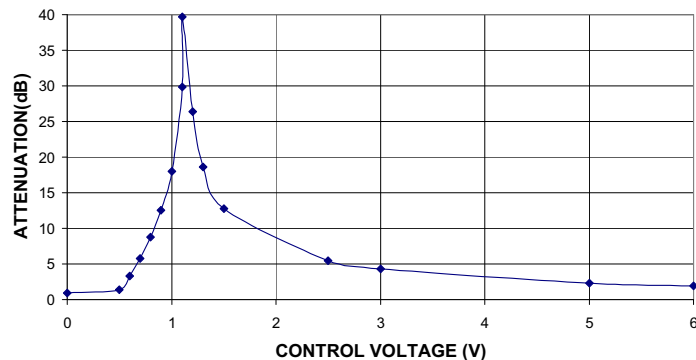
FREQ (MHz)	INSERTION LOSS (dB)		ATTENUATION (dB)		IP3* (dBm)		RETURN LOSS (dB)		CONTROL VOLTAGE** (V)
	Min.	Max.	Typ.	Min.	Typ.	Min.	Input Typ.	Output Typ.	
600-1200			1.0	2.2	25	20	48	40	0-6

* Input IP3 tested with two tones separated by 1 MHz at 7 dBm each and 0V control voltage.
** Using recommended control port biasing.

VACC-09+ ATTENUATION Vs. FREQUENCY Vs. CONTROL VOLTAGE



VACC-09+ TYPICAL ATTENUATION AT 900MHz



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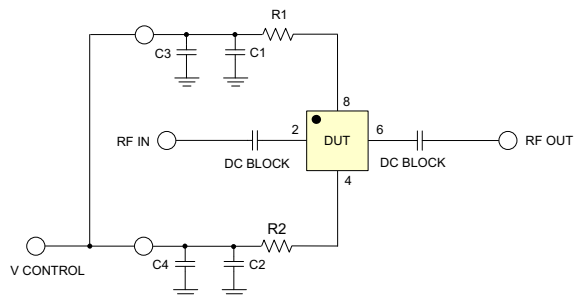


The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

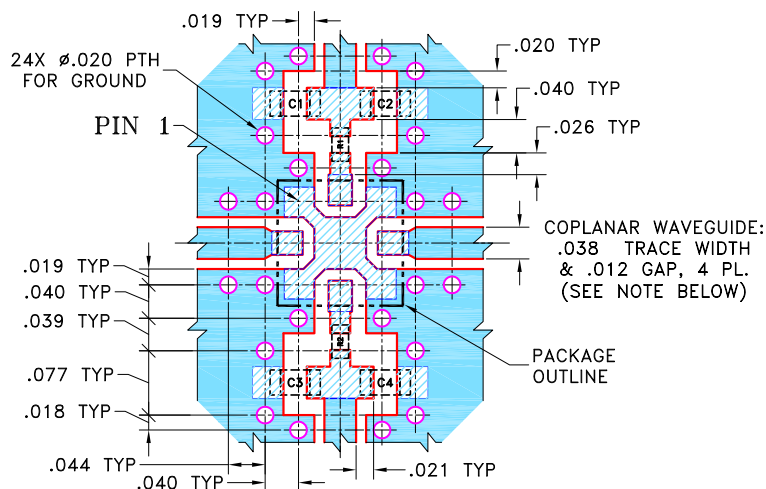
REV. B
M108294
VACC-09+
EDB-040303
BCELL/RS/CP
080228
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Recommended control port biasing configuration



R1, R2: 2K OHM CHIP RESISTOR (0402, AS CLOSE AS POSSIBLE TO THE DEVICE)
C1, C2: 0.01 UF CHIP CAPACITOR (0603)
C3 C4: 6.8 PF CHIP CAPACITOR (0603)

Demo Board MCL P/N: TB-250 Suggested PCB Layout (PL-148)

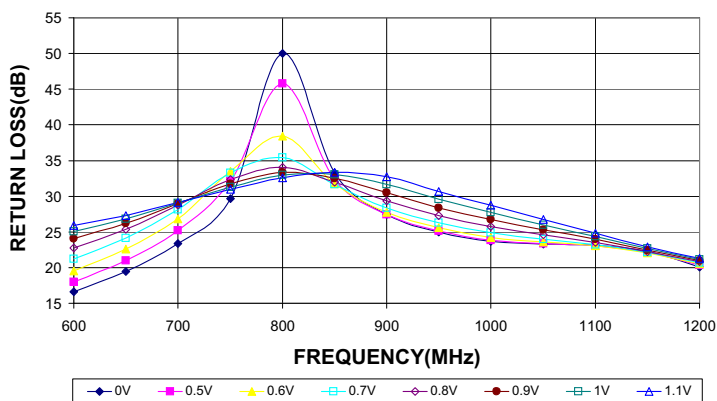


CAPACITORS C1,C3: .01 uF, 0603 SIZE
CAPACITORS C2,C4: 6.8 pF, 0603 SIZE
RESISTORS R1,R2: 2 KOhm, 0402 SIZE

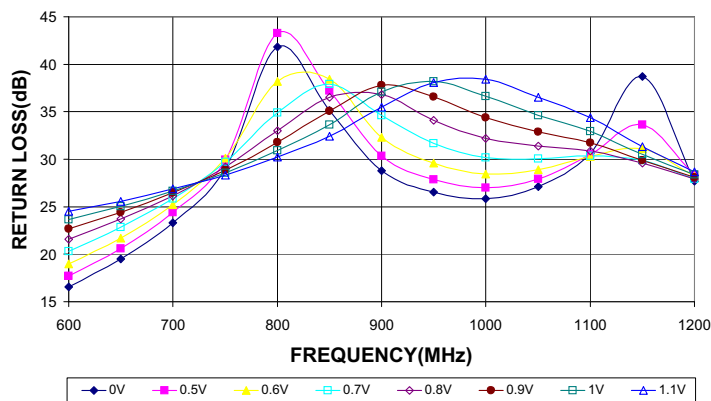
- NOTES:**
1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" $\pm$.0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
 2. IF YOUR PCB DESIGN RULES ALLOW, GROUND VIAS SHOULD BE PLACED UNDER THE LAND PATTERN FOR BETTER RF PERFORMANCE.
 3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).
■ DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Performance Curves

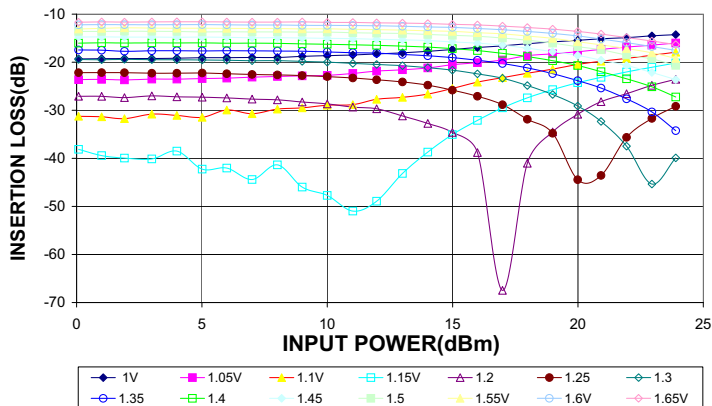
**VACC-09+
INPUT RETURN LOSS Vs. FREQUENCY
Vs. CONTROL VOLTAGE**



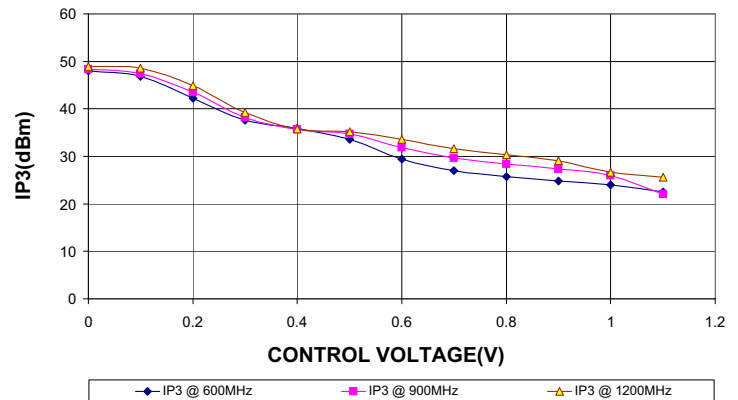
**VACC-09+
OUTPUT RETURN LOSS Vs. FREQUENCY
Vs. CONTROL VOLTAGE**



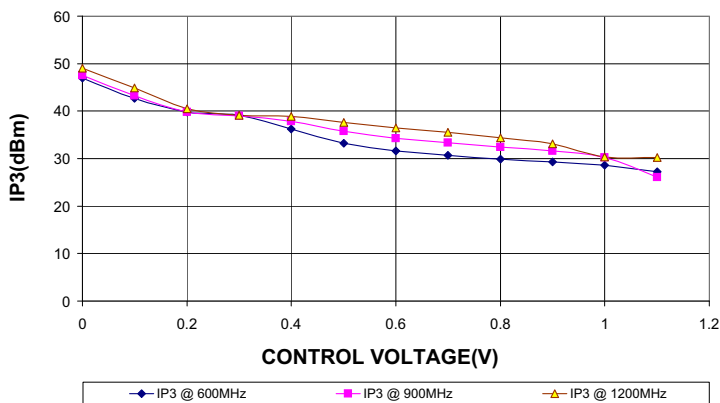
VACC-09+
INSERTION LOSS Vs. INPUT POWER @ 900MHz



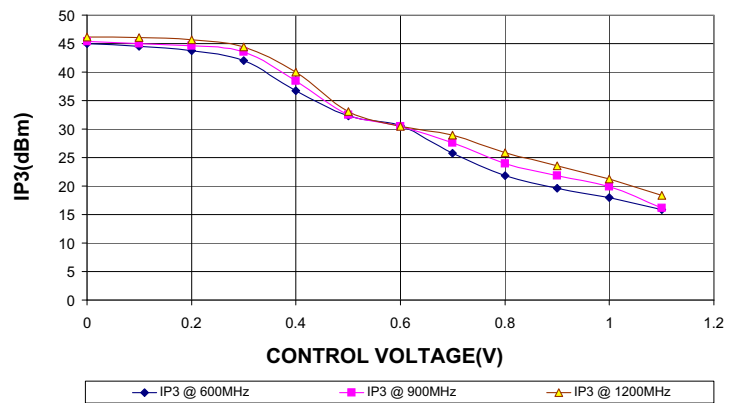
VACC-09+
IP3 Vs. CONTROL VOLTAGE Vs. FREQUENCY @ 25°C



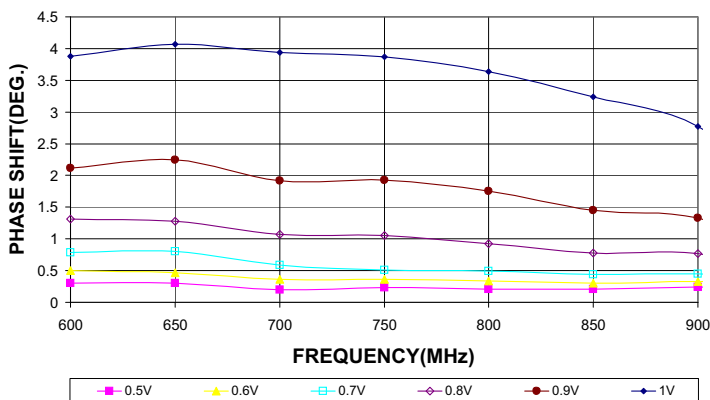
VACC-09+
IP3 Vs. CONTROL VOLTAGE Vs. FREQUENCY @ 85°C



VACC-09+
IP3 Vs. CONTROL VOLTAGE Vs. FREQUENCY @ -45°C



VACC-09+
PHASE SHIFT Vs. FREQUENCY Vs. CONTROL VOLTAGE 600-900MHz (WITH RELATION TO 0V CONTROL VOLTAGE)



VACC-09+
PHASE SHIFT Vs. FREQUENCY Vs. CONTROL VOLTAGE 900-1200MHz (WITH RELATION TO 0V CONTROL VOLTAGE)

