Surface Mount

Voltage Variable Attenuator

VACC-09+

50Ω 600 to 1200 MHz

CASE STYLE: GF995

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

Permanent damage may occur if any of these limits are exceeded.

Pin Connections

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

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

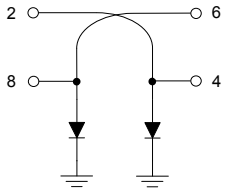
Applications

- variable gain amplifier
- feed forward amps
- ALC circuits

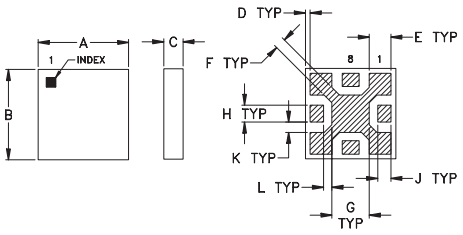
+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

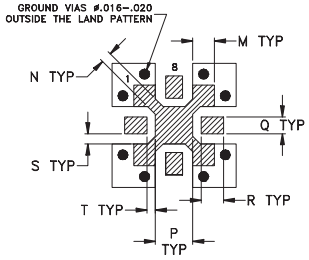
Equivalent schematic of DUT



Outline Drawing



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

A	B	C (Max)	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

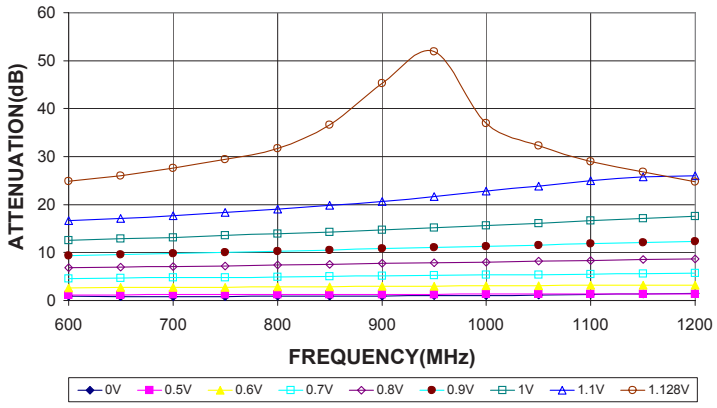
K	L	M	N	P	Q	R	S	T	WT.
.017	**.014**	**.036**	**.018**	**.062**	**.028**	**.037**	**.017**	**.014**	**GRAM**
0.43	0.36	0.91	0.46	1.57	0.71	0.94	0.43	0.36	.06

Electrical Specifications

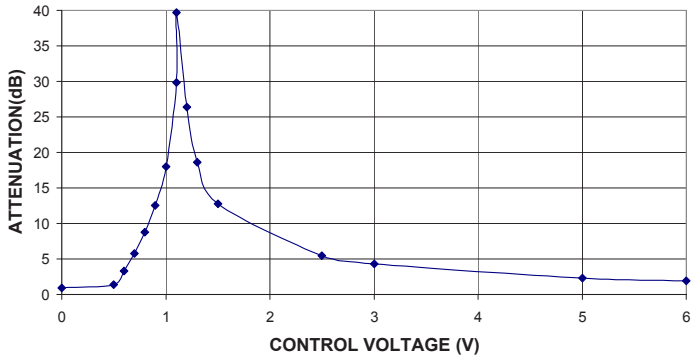
FREQ (MHz)		INSERTION LOSS (dB) 0V control voltage		ATTENUATION (dB)		IP3* (dBm)		RETURN LOSS (dB)		CONTROL VOLTAGE** (V)
								Input	Output	
Min.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Typ.	
600-1200		1.0	2.2	25	20	48	40	20	20	0-6

* 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



Notes

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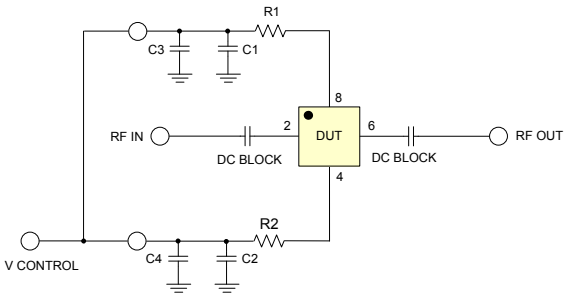
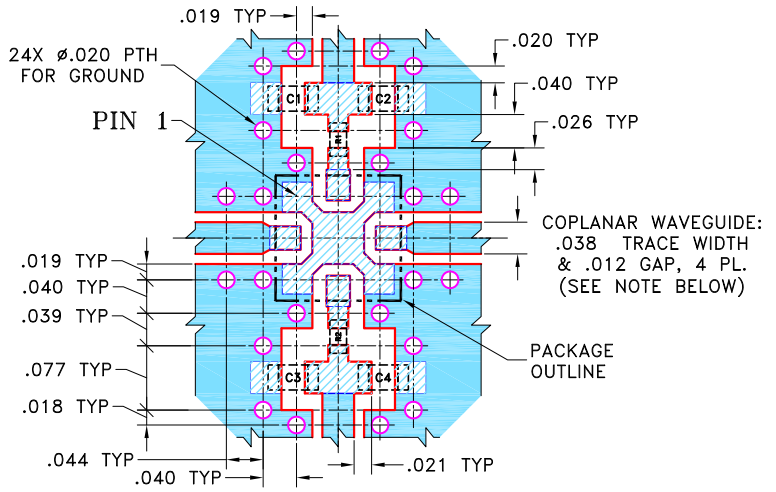
Recommended control port biasing configuration



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)



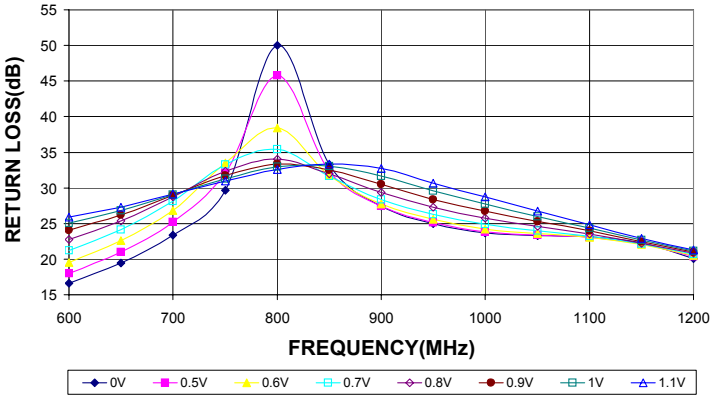
CAPACITORS C1,C3: .01 uF, 0603 SIZE
CAPACITORS C2,C4: 6.8 pF, 0603 SIZE
RESISTORS R1,R2: 2 KOhm, 0402 SIZE

NOTES: 1. COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .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.

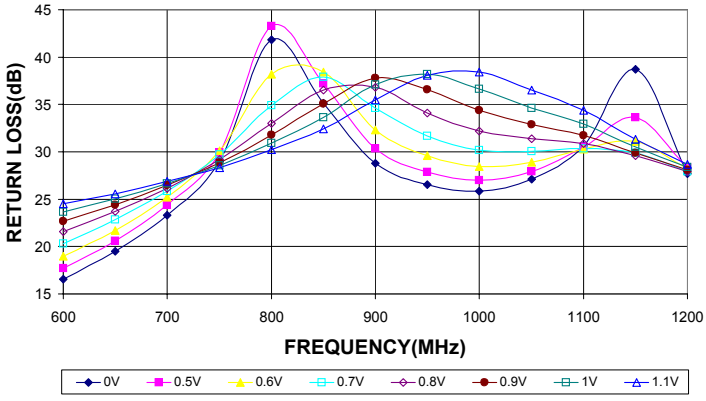
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER).

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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



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



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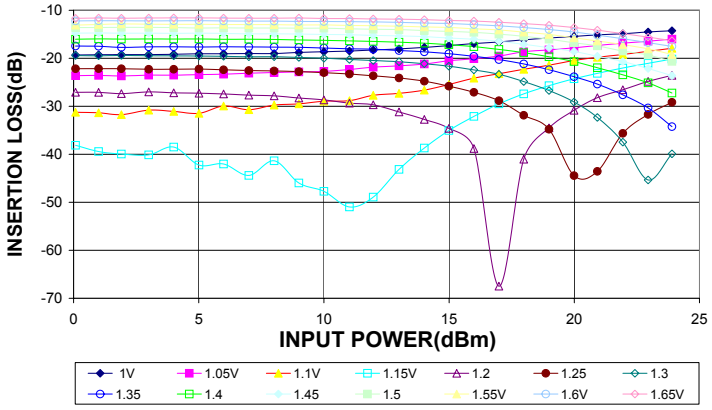
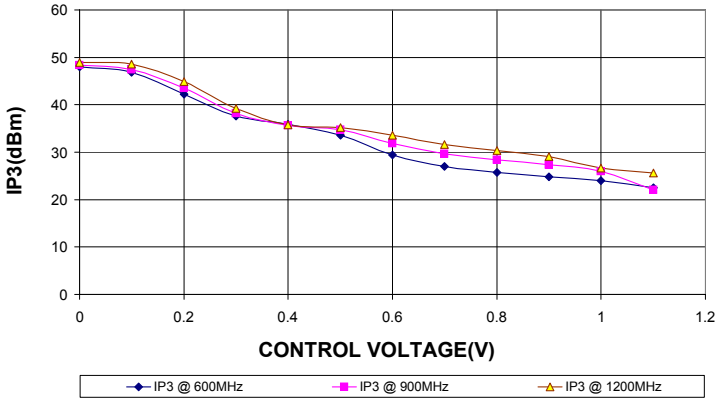
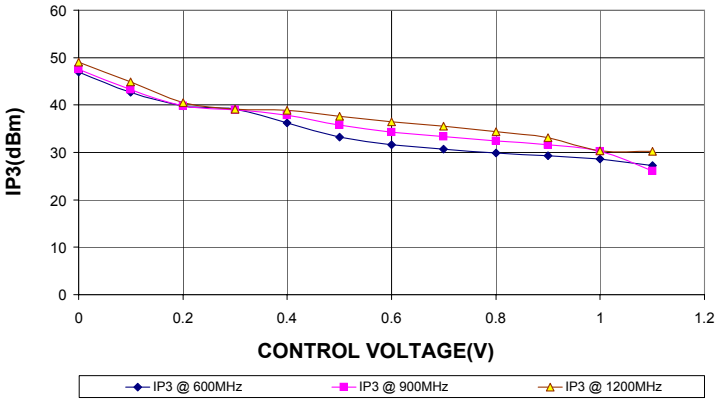
VACC-09+
INSERTION LOSS Vs. INPUT POWER @ 900MHz



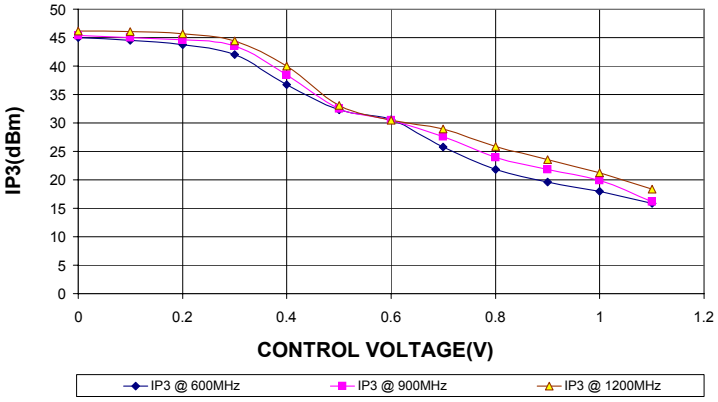
VACC-09+
IP3 Vs. CONTROL VOLTAGE
Vs. FREQUENCY @ 25°C



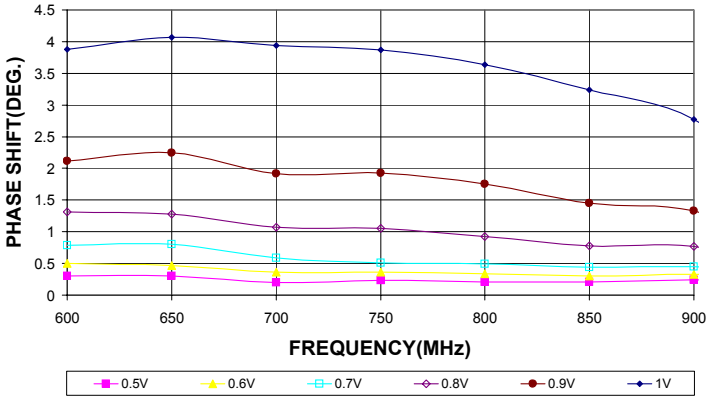
VACC-09+
IP3 Vs. CONTROL VOLTAGE
Vs. FREQUENCY @ 85°C



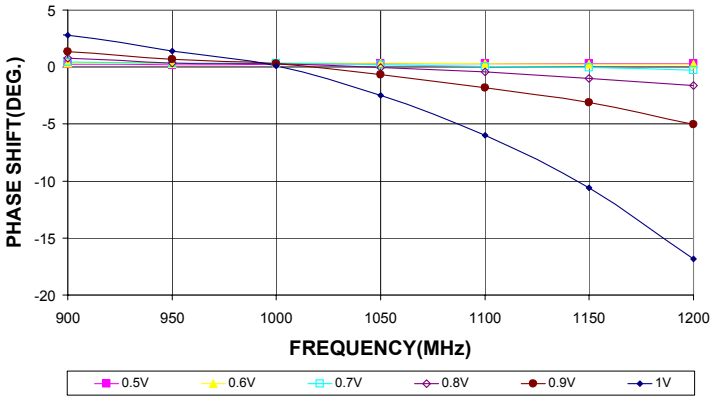
VACC-09+
IP3 Vs. CONTROL VOLTAGE
Vs. FREQUENCY @ -45°C



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)



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