

# Broad Band Voltage Variable Attenuator

## RVA-33+

50Ω 20 to 3000 MHz

### Maximum Ratings

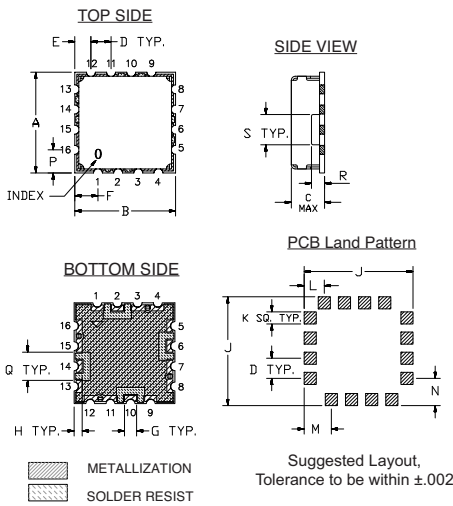
Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 85°C
Absolute Max. Supply Voltage(V+)	6.0V
Absolute Max. Control Voltage(Vctrl)	5.5V
Absolute Max. RF Input Level	+23dBm

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

### Pin Connections

RF IN	2
RF OUT	10
V CONTROL	6
V+	14
GROUND	1,3,4,5,7,8,9,11,12,13,15,16

### Outline Drawing



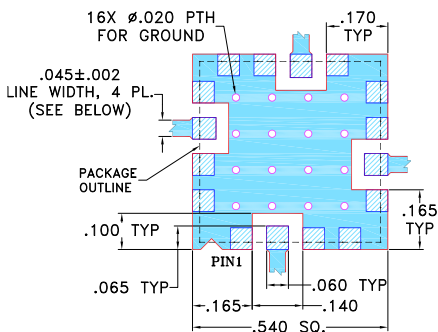
### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J
.500	.500	.195	.100	.080	.115	.060	.040	.540
12.70	12.70	4.95	2.54	2.03	2.92	1.52	1.02	13.72

K	L	M	N	P	Q	R	S	wt.
.060	.100	.135	.135	.115	.140	.070	.150	grams
1.52	2.54	3.43	3.43	2.92	3.56	1.78	3.81	1.0

### Demo Board MCL P/N: TB-163 Suggested PCB Layout (PL-040)



NOTES:

- TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS 0.025" ± 0.0025"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS THE TRACE WIDTH MAY NEED TO BE MODIFIED
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

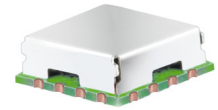
■ DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### Features

- Broadband, 20-3000 MHz
- 40 dB attenuation @1500 MHz
- IP3, +50 dBm typ.
- IP2, +85 dBm typ.
- Minimal phase deviation over attenuation range
- No external bias and RF matching network required
- Shielded case
- Aqueous washable

### Applications

- WiMAX 2.5GHz
- Power level control
- Feed forward amplifier
- Test equipment



CASE STYLE: DV874  
PRICE: \$11.95 ea. QTY (10-49)

+ 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.

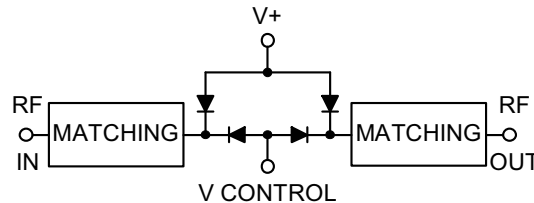
### Electrical Specifications (T<sub>AMB</sub> = 25°C)

FREQ. (MHz)	MIN. INSERTION LOSS, dB (+5V)		MAX. ATTEN. dB (0V)		INPUT POWER (dBm)	CONTROL Voltage Current (V) (mA)		IP3* (dBm)	IP2* (dBm)	RETURN LOSS (dB)	POWER SUPPLY Voltage Current (V) (mA)	
	Typ.	Max.	Typ.	Min.		Max.	Max.				Typ.	Typ.
20 - 500	3.7	4.5	65	40	+23	0 - 5	45	50	75	17	+5	5
500 - 1500	3.2	4.1	43	35	+23	0 - 5	45	55	92	17	+5	5
1500 - 3000	3.7	5.5	37	30	+23	0 - 5	45	50	90	12	+5	5

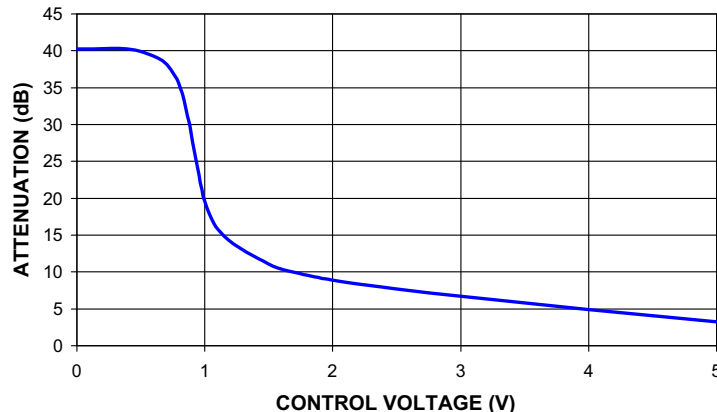
### Notes:

- Rise/Fall time: 12 / 21 μSec Typ.
- Switching Time & turn on/off time: 13 / 25 μSec. Typ.
- \* Typical IP2 & IP3 @ Vc = 5V

### Equivalent Schematic



### RVA-33+ TYPICAL ATTENUATION AT 1500 MHz



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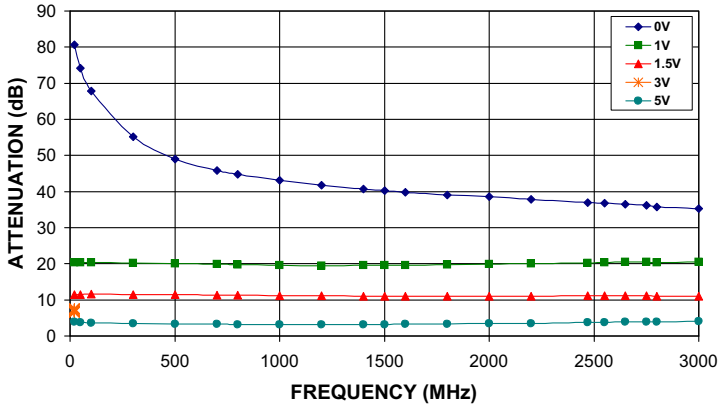
For detailed performance specs & shopping online see web site

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

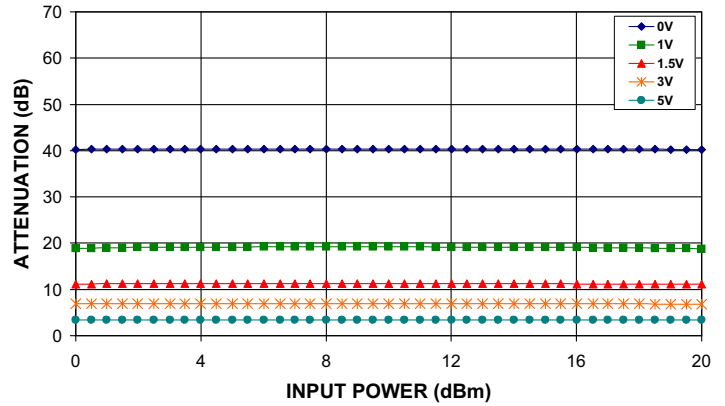
Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp).

REV. OR  
M124523  
EDR-8601AUF1  
RVA-33+  
URJ/RAV  
090916  
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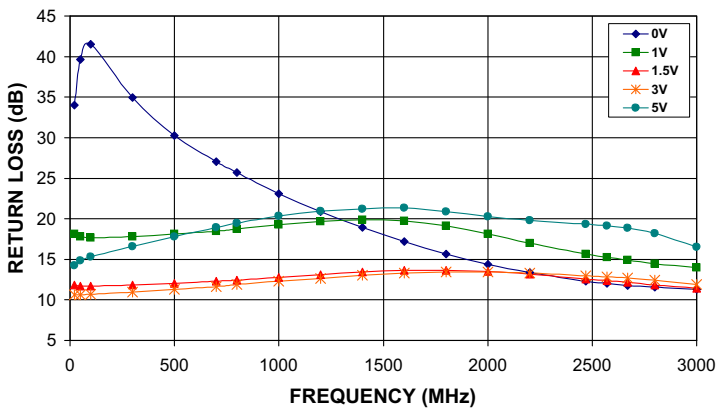
**RVA-33+  
ATTENUATION Vs. FREQUENCY  
OVER CONTROL VOLTAGES**



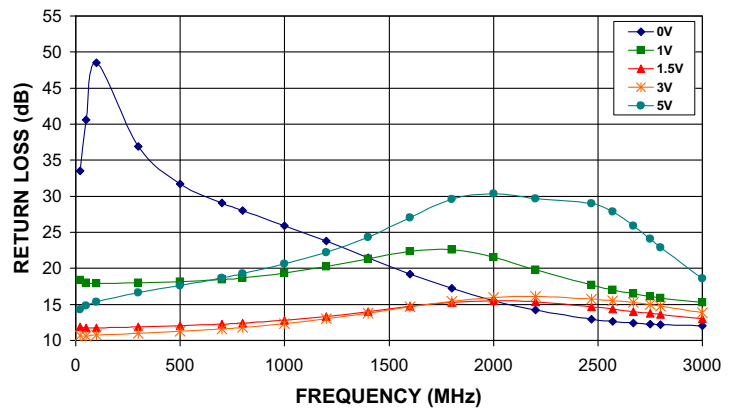
**RVA-33+  
ATTENUATION Vs. INPUT POWER  
OVER CONTROL VOLTAGES AT 1500 MHz**



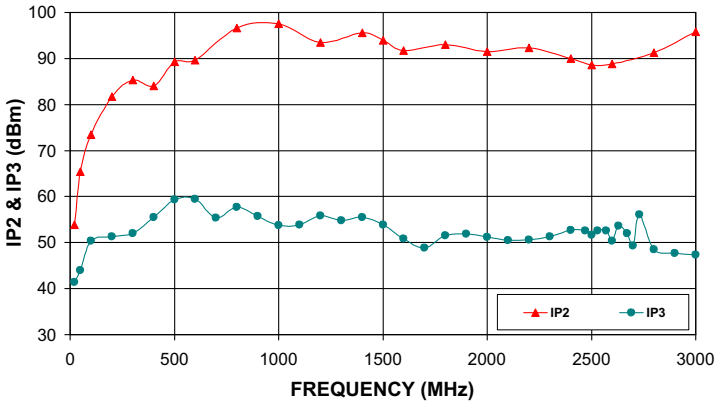
**RVA-33+  
INPUT RETURN LOSS Vs. FREQUENCY  
OVER CONTROL VOLTAGES**



**RVA-33+  
OUTPUT RETURN LOSS Vs. FREQUENCY  
OVER CONTROL VOLTAGES**



**RVA-33+  
IP2 & IP3 Vs. FREQUENCY  
@ Vc=5V**



**RVA-33+  
PHASE SHIFT Vs. FREQUENCY  
OVER CONTROL VOLTAGES**

