

**DBM-184**  
**Subminiature**  
**Flatpack**  
**Double**  
**Balanced**  
**Mixer**  
**2-3000 MHz**



**MIXERS**



**DESCRIPTION**

DBM-184 is a high performance subminiature double balanced mixer utilizing precision matched beam-lead Schottky barrier diodes. The L port has a bandwidth of 2 MHz to 3000 MHz, while the R port covers 2 MHz to 2500 MHz, and the X port covers 5 MHz to 1500 MHz. Inputs to any two ports within their specified frequency range will produce the sum and difference frequency at the third port, with a minimum of undesired harmonic modulation products. The double balanced mixer may be used as an up converter, down converter, spectrum inverter or for any other frequency changing application. Other uses are as a phase detector, double sideband suppressed carrier modulator bi-phase modulator, pulse modulator, or frequency doubler.

The combination of Vari-L broadband transformer techniques plus the use of beam-lead Schottky barrier diodes achieve consistent low mixer noise figures and stable isolations. Precise transformer and diode balance provide two-tone third order IM ratios of better than 100 dB with -30 dBm input signals. Unique transformer design allows almost constant intermodulation suppression over the mixer's entire operating frequency range.

The subminiature package is sealed, RFI shielded and internally constructed to withstand severe environments. The device configuration allows convenient microstrip or printed circuit board mounting and the leads are easily soldered or welded.

**LIMITED WARRANTY**

Vari-L Company, Inc. warrants its products against defects in parts and workmanship for a period of one year.

**GUARANTEED MINIMUM PERFORMANCE DATA**

**TEST CONDITION:**

LO + 13 dBm (High side LO)  
 RF - 10 dBm  
 IF 100 MHz

**NOTE:**

Specifications below, guaranteed with IF from 5 to 100 MHz. For higher IF frequencies, consult IF response curve for typical rolloff.

**OVERALL FREQUENCY RANGE IN MHz:**

L	R	X
2-3000	2-2500	5-1500

**FREQUENCY BANDS IN MHz:**

	2-1000	1000-2500	2500-3000
Conversion Loss	8.0	8.0	—
L-R Isolation	30	20	15
L-X Isolation	30	25	20
R-X Isolation	30	20	—

**ABSOLUTE MAXIMUM RATINGS:**

Operating Temp. - 54 to +100°C  
 Total Input Power 400 mW @ +25°C  
 Derate linearly to 100 mW @ 100°C

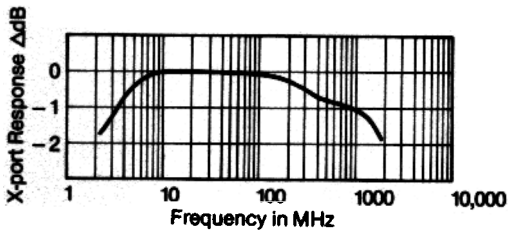
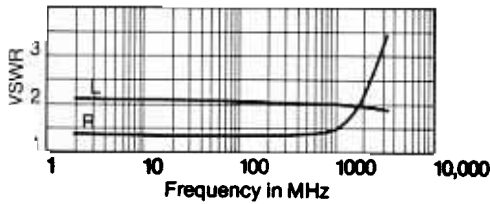
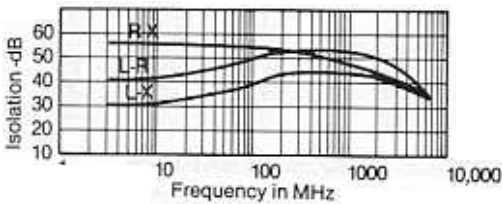
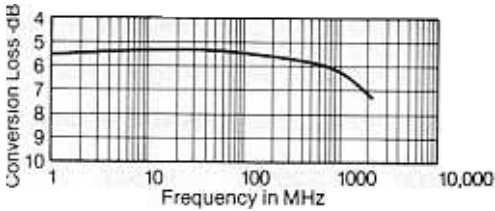
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**TYPICAL PERFORMANCE**

Impedance: All ports 50 ohms  
1 dB Compression Point: +6 dBm  
1 dB Desensitization Point: +4 dBm  
3rd Order Intercept Point: +20 dBm  
Noise Figure is within 1 dB of conversion loss  
LO Power Range: +10 to +20 dBm



**ENVIRONMENTAL CONDITIONS**

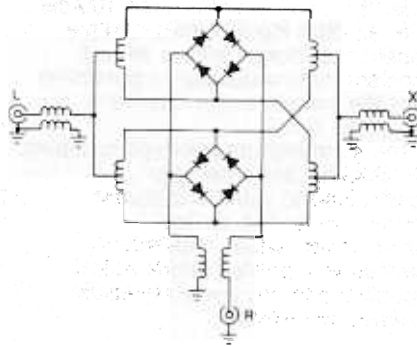
**GUARANTEED ENVIRONMENTAL PERFORMANCE:**

All units are designed to meet their specifications over -54°C to +100°C and after exposure to any or all of the following tests per MIL-STD-202E.

Exposure	Method	Test Condition
Thermal Shock	107D	B
Altitude	105C	G
H.F. Vibration	204C	D
Mechanical Shock	213B	C
Random Vibration	214	IIF
(15 minutes per axis)		
Solderability	208C	
Terminal Strength	211A	C
Resistance to Soldering Heat	210A	B

Sealed units, meet the requirements of Method 106D of MIL-STD-202E when exposed to humidity.

**FUNCTIONAL SCHEMATIC**



**PACKAGE**

**CASE MATERIAL:**

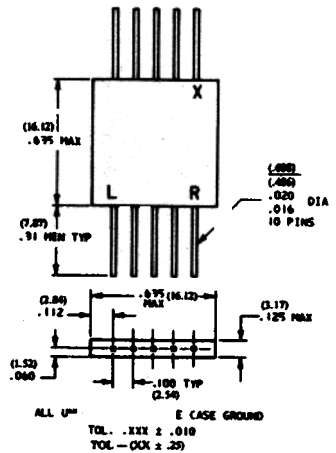
F15 Kovar per ASTM Standard F-15-68, (Chemical Composition per MIL-STD-1276, Type K)

**FINISH:**

Plating, all metal parts: gold per MIL-G-45204, Type I, Grade A, Class 1, over nickel per MIL-C-26074, Class 1

**LEADS:**

Kovar per MIL-STD-1276, Type K



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