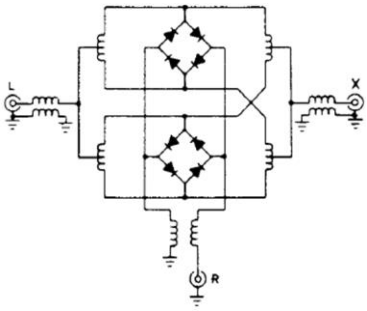
DBM-184

Subminiature Flatpack Double Balanced Mixer 2MHz to 3000MHz

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 2MHz to 3000MHz, while the R port covers 2MHz to 2500MHz, and the X port covers 5MHz to 1500MHz. 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 upconvertor, downconvertor, 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 RFMD 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 100dB with -30dBm 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.



Functional Schematic

Package: Flatpack

Features

- L Port: 2MHz to 3000MHz
- R Port: 2MHz to 2500MHz
- X Port: 5MHz to 1500MHz
- Consistent Low Mixer Noise Figures and Stable Isolations
- Constant Intermodulation Suppression Over Entire Operating Frequency Range

Applications

- Milcom
- Electronic Warfare
- Industrial, Scientific, Medical
- Aerospace Avionics
- Military and Civilian Radar
- Satellite Communications

Ordering Information

Contact RFMD authorized sales agent or factory.

RF Micro Devices Inc. 7628 Thorndike Road, Greensboro, NC 27409-9421
DS131104
For sales or technical support, contact RFMD at +1.336.678.5570 or customerservice@rfmd.com.

Absolute Maximum Ratings

Parameter	Rating	Unit
Operating Temperature Range	-54 to +100	°C
Total Input Power at 25°C	400	mW
otal Input Power (Derated Linearly) at 100°C	100	mW

Specifications guaranteed with IF from 5MHz to 100MHz. For higher IF frequencies, consult IF response curve for typical roll-off.

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

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

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

Caution! ESD sensitive device.

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

Nominal Operating Parameters

Parameter	Specification			Unit	Condition
	Min	Typ	Max		
General Performance					**LO +13dBm (High side LO), RF -10dBm, IF 100MHz**
Operating Frequency Range					
L Port	2		3000	MHz	
R Port	2		2500	MHz	
X Port	5		1500	MHz	

Specifications guaranteed with IF from 5MHz to 100MHz. For higher IF frequencies, consult IF response curve for typical roll-off.

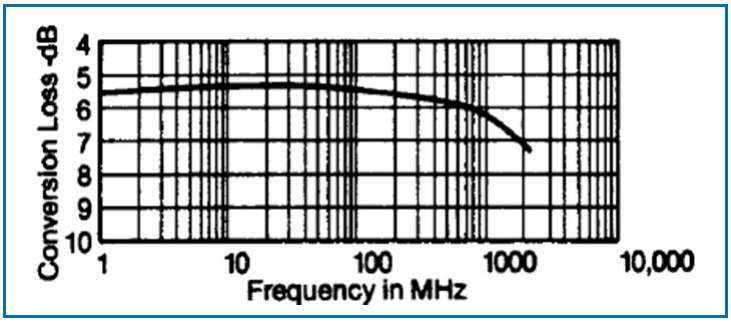
Frequency Bands

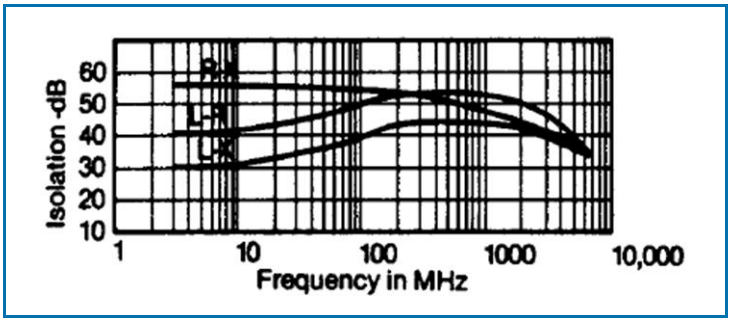
	2MHz to 1000MHz (dB)	1000MHz to 2500MHz (dB)	2500MHz to 3000MHz (dB)
Conversion Loss	8.0	8.0	-
L-R Isolation	30	20	15
L-X Isolation	30	25	20
R-X Isolation	30	20	-

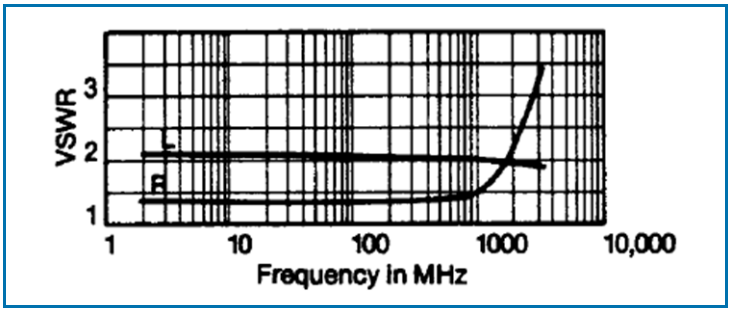
Specifications guaranteed with IF from 5MHz to 100MHz. For higher IF frequencies, consult IF response curve for typical roll-off.

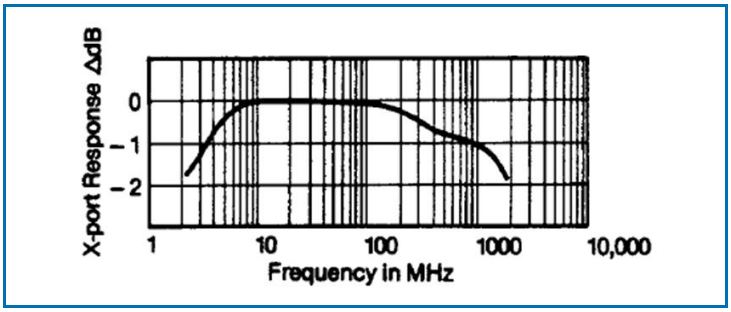
Typical Performance

Impedance: All ports 50Ω; 1dB compression point: +6dBm; 1dB desensitization point: +4dBm; 3rd order Intercept point: +20dBm; noise figure is within 1dB of conversion loss; LO power range: +10dBm to +20dBm









Package Drawing (Dimensions in millimeters)

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 1, grade A, class 1, over nickel per MIL-C-26074, class 1

Leads: Kovar per MIL-STD-1276, type K