BIASABLE MIXERS

FEATURES:

- DC biasable
- 3 dBm local oscillator drive level
- Broadband LO and RF
- IF bandwidths up to 18 GHz

APPLICATIONS:

- Receiver subsystems
- Broadband downconverters
- Test equipment
- EW/ELINT

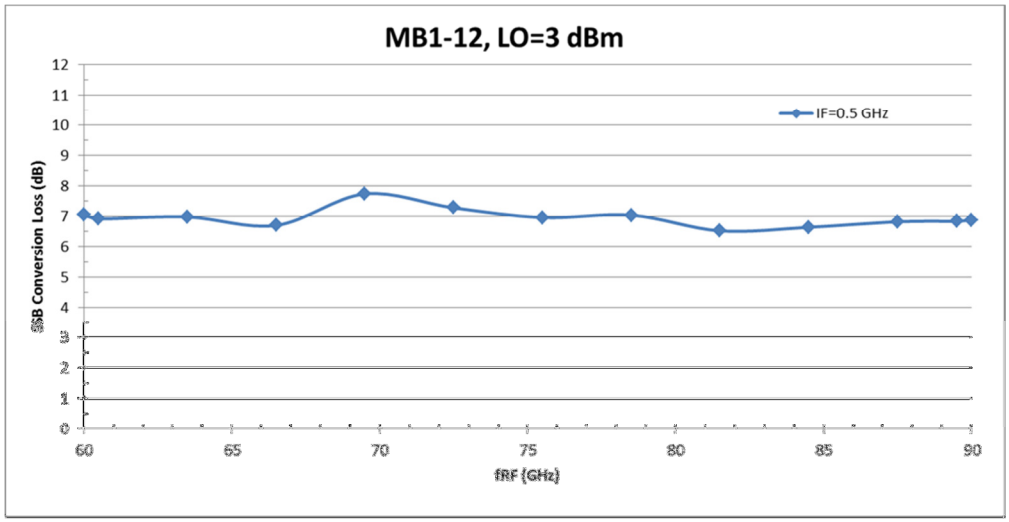
DESCRIPTION

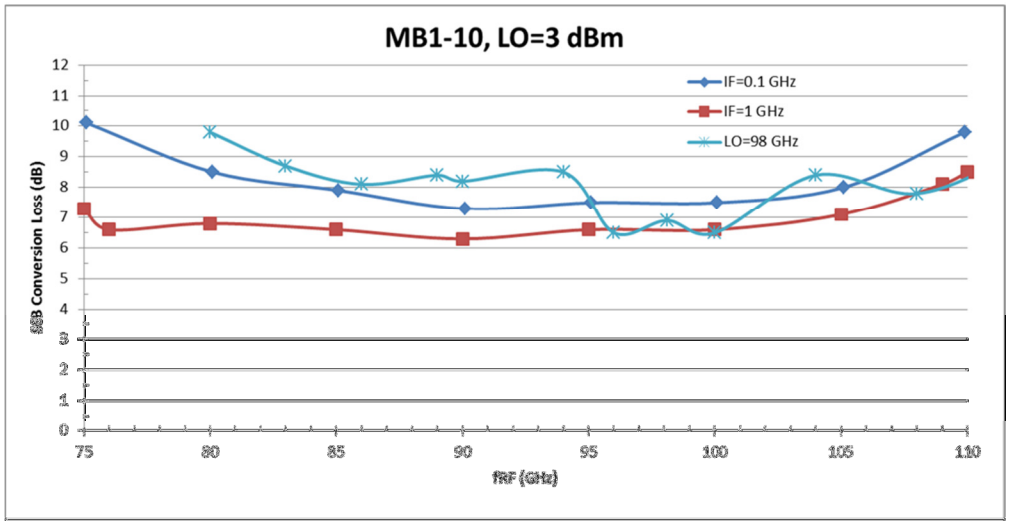
Millitech series MB1 mixers are DC biased to operate with low local oscillator power levels on the order of +3 dBm. These are balanced mixers with low conversion loss over broad RF and LO bandwidths and an IF range which extends up to 18 GHz.

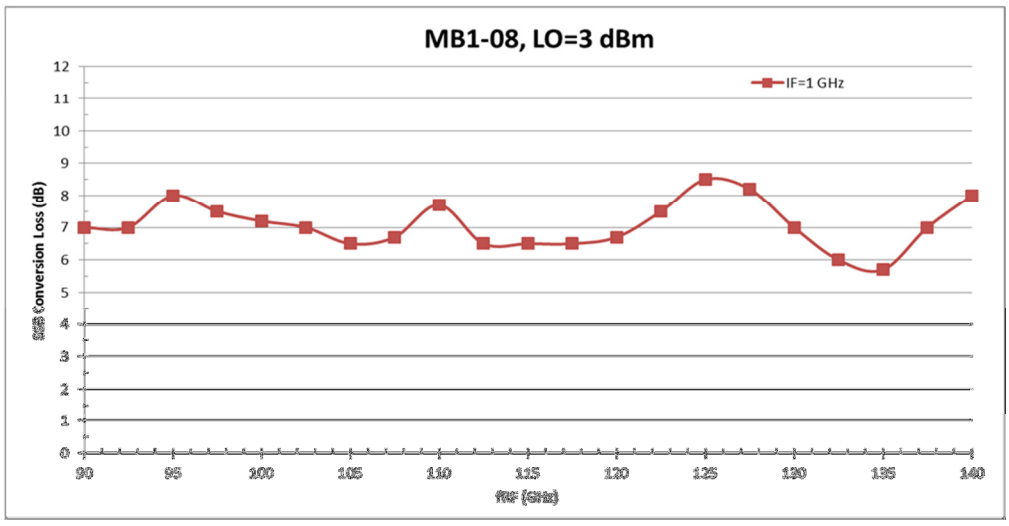
Series MB1 mixers are offered in three waveguide bands from 60 to 140 GHz with full waveguide band RF signal coverage. For narrow IF range (up to 2 GHz), the local oscillator frequency can be anywhere within the band. This broadband capability makes these mixers ideally suited for EW receivers, instrumentation and swept receiver applications, particularly where local oscillator power is at a premium and available only at approximately the 3 dBm level.

External low noise IF preamplifiers can be provided with these mixers for specific IF ranges. The standard product uses the same waveguide band for both LO and RF ports. MXP balanced mixers with integral filters are offered for higher performance applications where reasonable LO power levels (+10 to +15 dBm) are available.

TYPICAL PERFORMANCE







ELECTRICAL SPECIFICATIONS

Model Number		MB1-12	MB1-10	MB1-08
Frequency Band and Range (GHz)		E 60-90	W 75-110	F 90-140
Conversion Loss (dB) (max)*1 (without IF preamplifier) (SSB)	0.1-10 GHz IF	10.0	11.0	13.0
Noise Figure (dB) (DSB max) *1 (with IF preamplifier)	100-500 MHz IF	9.0	10.0	12.0
	100-1000 MHz IF	9.5	10.5	12.5
	1-2 GHz IF	10.0	11.0	13.0
	2-4 GHz IF	10.0	11.0	13.0
	1-12 GHz IF	11.0	12.0	14.0
	1-18 GHz IF	11.0	12.0	14.0
RF Frequency		Full waveguide		
RF Bandwidth		Full waveguide		
RF Input Return Loss (typ)		6 dB	6 dB	5 dB
LO Frequency		Full waveguide		
LO Bandwidth (GHz) (min)	IF up to 2 GHz	Full waveguide		
	IF up to 5 GHz	10% of LO center frequency		
LO Drive Power (biased) (dBm)*2		3	3	3
LO to IF Isolation (dB) (typ)		20	20	20
LO to RF Isolation (dB) (typ)		20	20	20
RF to IF Gain (dB) (with IF preamplifier) (min)		20	20	20
RF and LO Combined Input Power (dBm) (max)		17	17	17
IF Output Impendence (ohm) (nom)		50	50	50
DC Input Voltage (V) (IF amp) (typ)		12 to 15	12 to15	12 to 15
DC Input Current (mA) (IF amp) (typ)		200	200	200
DC Bias Voltage (V) (LO) (typ)		15	15	15
Operating Temperature (℃) (specs apply at 25℃)		0 to 50	0 to 50	0 to 50

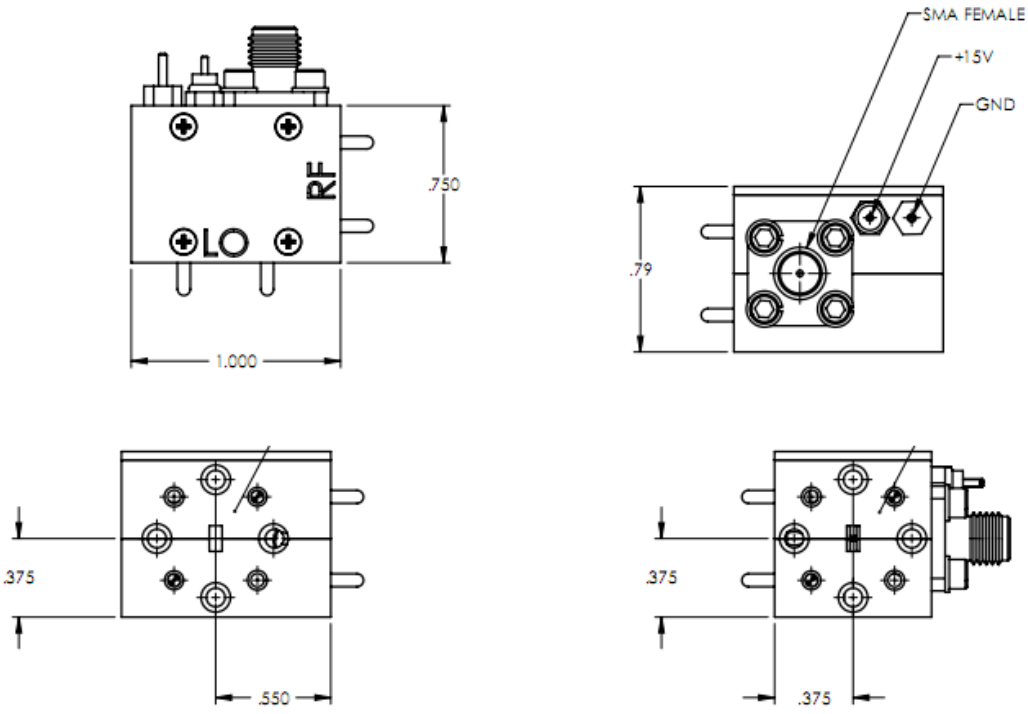
*1 - Tested with +3 dBm LO drive. Tested at a fixed LO frequency.
*2 - An isolator is recommended at local oscillator input for optimum performance.

MECHANICAL SPECIFICATIONS

Model Number	MB1-12	MB1-10	MB1-08
Flange MIL-DTL-3922	/67B-009	/67B-010	Flange Pattern Compatible with MIL-DTL-3922/67C. Refer to IS000131.

OUTLINE DRAWINGS

Series MB1



HOW TO ORDER

Specify Model Number MB1-XX-ABCDE
XX = Waveguide Band **WR** – number
A = Flange Type **R** – round
B = Local Oscillator Waveguide Band **R** – same as RF band
C = IF Range **0** – 100-500 MHz **1** – 100-1000 MHz **2** – 1-2 GHz **3** – 2-4 GHz **4** – 1-12 GHz **5** – 1-18 GHz **R** – other range (please specify)
D = IF Amplifier Options **A** – IF amplifier included **W** – without IF amplifier
E = LO Range **F** – fullband (IF limited to 2 GHz) **S** – specified range* **X** – fixed frequency*
***Please specify IF, LO and RF frequency**

EXAMPLE:

To Order: a fullband biasable mixer in WR-10 with a 100 to 1000 MHz IF without an amplifier

Specify: MB1-10-RR1WF