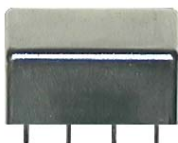




CM-1  
 Low Cost  
 Miniature  
 Double  
 Balanced  
 Mixer  
 .5-500 MHz



**DESCRIPTION**

CM-1 is a low cost double balanced mixer offering excellent performance to 500 MHz in a miniature package. The performance/cost ratio of this mixer makes the application of advanced mixer technology available to equipment designers who previously were cost-restricted to compromise designs. The wide bandwidth, low conversion loss and outstanding isolation performance greatly simplifies the designer's task. Like all double balanced mixers it has multiple applications over the same wide bandwidth, such as phase detector, electronic attenuator and modulator.

The circuitry consists of four precisely matched Schottky diodes and two rugged transmission line transformers. Each CM-1 mixer is individually tested to S.M.D.I.'s demanding quality and performance specifications.

**GUARANTEED MINIMUM PERFORMANCE DATA**

**TEST CONDITION:**

LO + 7 dBm (High side LO)  
 RF - 10 dBm  
 IF 100 MHz

**NOTE:**

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

**OVERALL FREQUENCY RANGE IN MHz:**

L	R	X
.5-500	.5-500	DC-500

**FREQUENCY BANDS IN MHz:**

	.5-100	100-300	300-500
Conversion Loss	7.0	7.5	8.5
L-R Isolation	35	30	20
L-X Isolation	30	25	20
R-X Isolation	25	20	10

**ABSOLUTE MAXIMUM RATINGS:**

Operating Temp. - 54 to +100°C  
 X-port Input Current 50 mA  
 Total Input Power 200 mW @ +25°C  
 Derate linearly to 50 mW @ 100°C

**DC POLARITY:**

Negative with L and R port signals in-phase.

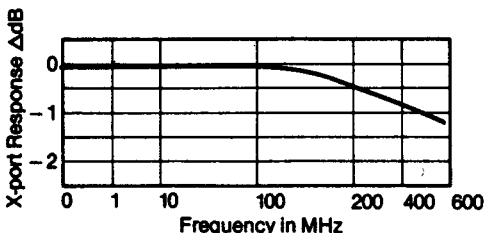
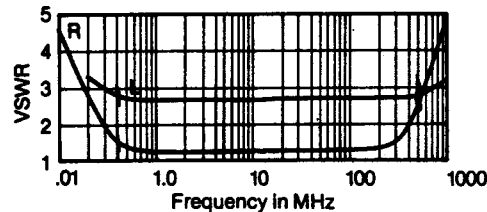
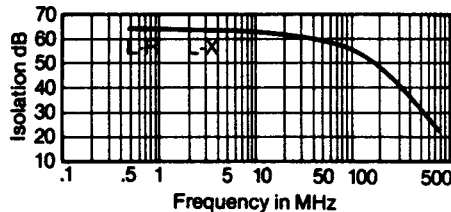
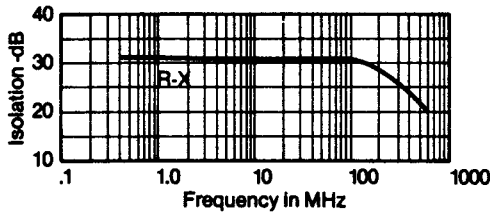
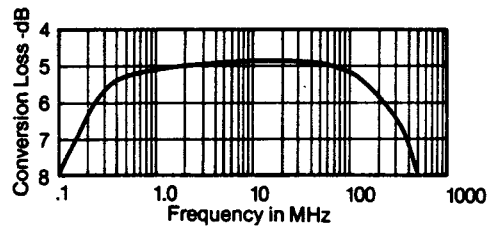
Specifications subject to change without notice.

CM-1  
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**TYPICAL PERFORMANCE**

Impedance: All ports 50 ohms  
 1 dB Compression Point: 0 dBm  
 1 dB Desensitization Point: -2 dBm  
 3rd Order Intercept Point: +13 dBm  
 Noise Figure is within 1 dB of conversion loss  
 LO Power Range: +4 to +13 dBm



Specifications subject to change without notice.

**ENVIRONMENTAL CONDITIONS**

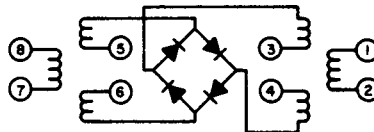
**GUARANTEED ENVIRONMENTAL PERFORMANCE:**

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**



Pin Connections:

- LO 8
- RF 1
- IF 3,4
- Ground 2,5,6,7
- Case Ground 2

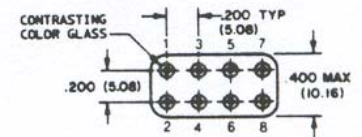
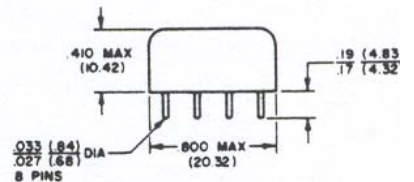
NOTE: PINS 3 AND 4 MUST BE CONNECTED TOGETHER.  
 ALL GROUND PINS MUST BE GROUNDED.

**PACKAGE MATERIAL:**

Header: 1010 CRS  
 Pins: #52 Alloy  
 Seals: Glass  
 Cover: 18% Grade A Nickel Silver per ASTM B112-66, Alloy 2; QQ-C-585-1, Comp. 2, CDA-752 (65% Copper, 18% Nickel, 17% Zinc)

**FINISH:**

Cover: Nickel Silver  
 Header: Bright Tin Dip Per MIL-T-10727 Class II  
 Pins: Bright Tin Dip Per MIL-T-10727 Class II



DIMENSIONS ARE IN INCHES AND (MILLIMETERS)

TOLERANCES  
 .XXX ± .010  
 (.XX ± .25)