

## 0.5 TO 2 GHz DOUBLE-BALANCED MIXER

### MODELS: DM0052LA2 AND DM0052HA2

#### FEATURES

- RF/LO coverage..... 0.5 to 2 GHz
- IF operation..... DC to 0.5 GHz
- LO power range
  - L..... +7 to +13 dBm
  - H..... +17 to +23 dBm
- Conversion loss ..... 5.5 dB typical
- LO-to-RF isolation..... 40 dB typical

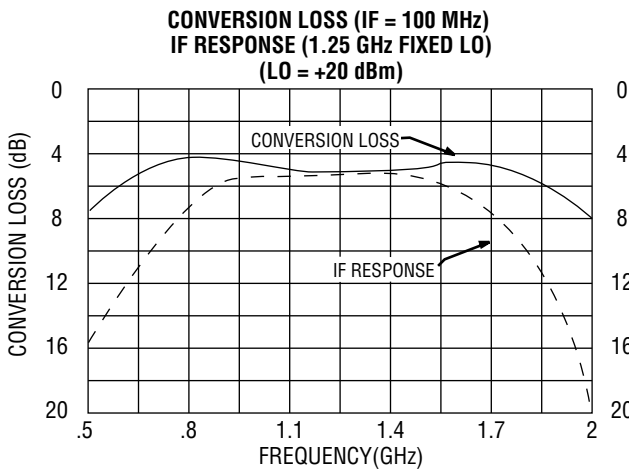
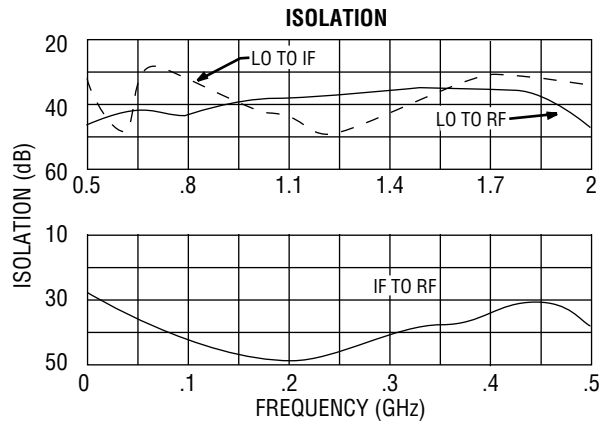
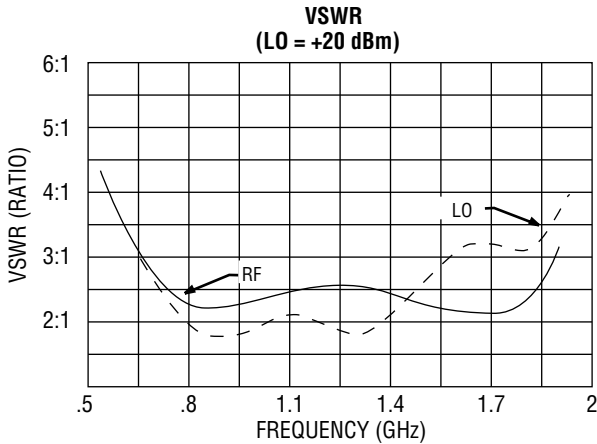


MITEQ's DM0052H and DM0052L mixers are constructed using a new microwave double-tuned RF/LO balun (patent pending) that yields an IF response from DC to the lowest RF frequency. This design also produces unusually high port-to-port isolation and further rejects out-of-band input signals with a "filter like" skirt selectivity. This device performs as an up- or downconverter covering most PCN and communication applications requiring high input signal levels (H version). The DM0052HA2 also makes an excellent high-level biphas test modulator or detector with low DC offset voltage.

#### ELECTRICAL SPECIFICATIONS

INPUT PARAMETERS	CONDITION	UNITS	MIN.	TYP.	MAX.
RF frequency range		GHz	0.5		2
RF VSWR L (RF = -10 dBm, LO = +10 dBm) H (RF = -10 dBm, LO = +20 dBm)	0.65 to 1.85 GHz	Ratio Ratio		2.5:1 3:1	
LO frequency range		GHz	0.5		2
LO power range L H		dBm dBm	+7 +17		+13 +23
LO VSWR	0.65 to 1.85 GHz	Ratio		3:1	
TRANSFER CHARACTERISTICS	CONDITION	UNITS	MIN.	TYP.	MAX.
Conversion loss (IF = 100 MHz, LO = +10 dBm)	0.5 to 2 GHz	dB		6.5	8.5
Single-sideband noise figure	0.5 to 2 GHz	dB		8.5	
LO-to-RF isolation	0.5 to 2 GHz	dB	25	40	
LO-to-IF isolation	0.5 to 2 GHz	dB		25	
IF-to-RF isolation	DC to 1 GHz	dB		30	
Input power at 1 dB compression L/H	LO = +10/+20 dBm	dBm	0	+3/+13	
Input two-tone third-order intercept point L/H	LO = +10/+20 dBm	dBm	+10/+20	+13/+23	
OUTPUT PARAMETERS	CONDITION	UNITS	MIN.	TYP.	MAX.
IF frequency range	3 dB bandwidth	GHz	DC		0.5
IF VSWR (IF = -10 dBm, LO = +10 dBm)		Ratio		2.5:1	

# DM0052HA2 TYPICAL TEST DATA



**SINGLE-TONE (m) RF x (n) LO RELATIVE SPUR LEVEL (dBc)**  
**AVERAGE MIDBAND RF, LO, IF FREQUENCIES,**  
**RF = -10 dBm, LO = +10 dBm (L), +20 dBm (H)**

SPUR (m) RF x (n) LO	RF TEST FREQ. (GHz)	LO TEST FREQ. (GHz)	SPUR LEVEL (dBc)	
			L	H
1 x 1	1.12	1.37	0	0
1 x 2	1.6	1.92	-46	-40
1 x 3	1.8	.69	-12	-12
2 x 1	.75	1.75	-55	-63
2 x 2	1.19	1.31	-57	-60
2 x 3	1.45	1.05	-46	-60
3 x 1	.56	1.93	-50	-70
3 x 2	.95	1.55	-70	-75
3 x 3	1.20	1.32	-57	-70

**MAXIMUM RATINGS**

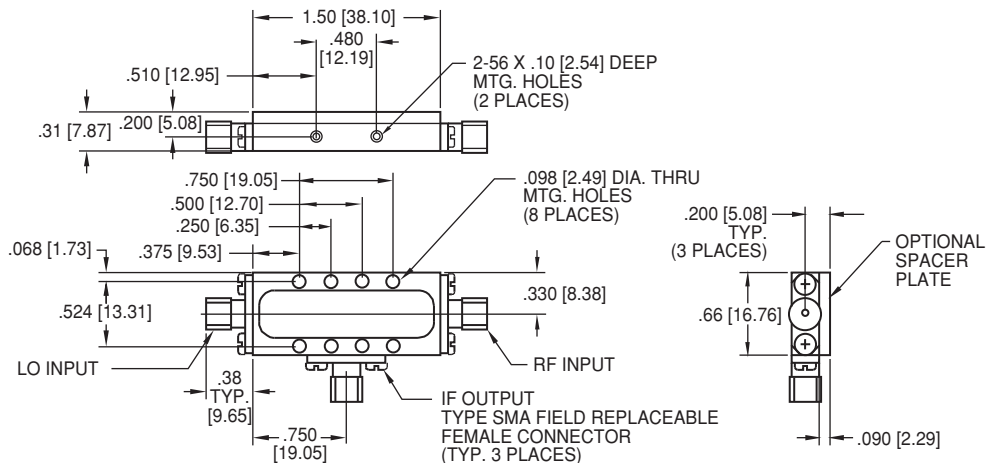
Specification temperature ..... +25°C  
 Operating temperature ..... -54 to +85°C  
 Storage temperature ..... -65 to +125°C

**AVAILABLE OPTION**

Medium/high dynamic range options  
 M (LO = +13 to +17 dBm), (IP<sup>3</sup> = +18 dBm typ.)  
 Conversion loss = 9.5 dB max.

NOTE: Test data supplied at 25°C; conversion loss and LO-to-RF isolation.

## OUTLINE DRAWING



NOTE: All dimensions shown in brackets [ ] are in millimeters.