

# 4 TO 40 GHz EVEN HARMONIC (1/2 LO) BALANCED MIXER

## MODEL: SBE0440LW1

### FEATURES

- RF coverage..... 4 to 40 GHz
- LO coverage ..... 2 to 20 GHz
- IF operation..... DC to 1.5 GHz
- LO power range..... +10 to +15 dBm
- High carrier rejection of 30 dB typical when used as an upconverter



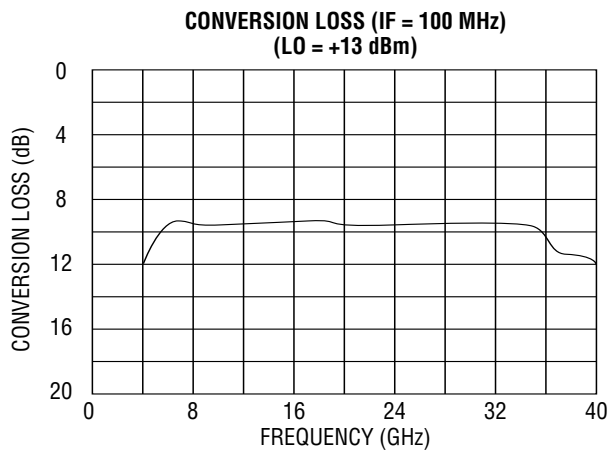
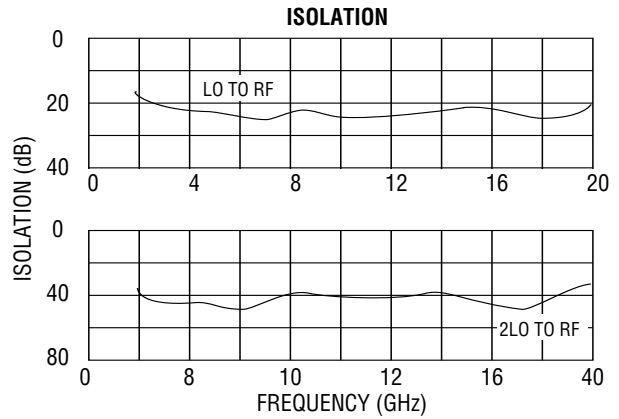
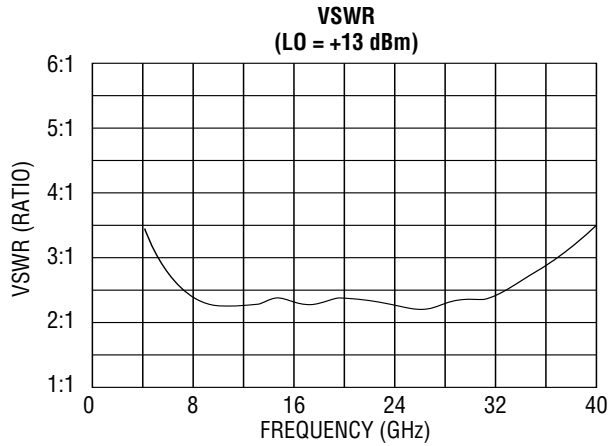
The SBE Series of mixers employs antiparallel ring diodes to achieve efficient RF-to-IF or IF-to-RF conversion using an LO at 1/2 the normal frequency. These units are particularly useful in miniature transceivers as upconverters, where high carrier rejection is desired without costly tunable filters or isolators.

### ELECTRICAL SPECIFICATIONS

INPUT PARAMETERS	CONDITION	UNITS	MIN.	TYP.	MAX.
RF frequency range		GHz	4		40
RF VSWR (RF = -10 dBm, LO = +13 dBm)	6 to 30 GHz 4 to 40 GHz	Ratio Ratio		2.5:1 3.5:1	
LO frequency range		GHz	2		20
LO power range		dBm	+10	+13	+15
LO VSWR (LO = +13 dBm)	2 to 20 GHz	Ratio		2.75:1	
TRANSFER CHARACTERISTICS	CONDITION	UNITS	MIN.	TYP.	MAX.
Conversion loss (IF = 100 MHz, LO = +13 dBm)	6 to 30 GHz 4 to 40 GHz	dB dB		9 10	11 12
LO-to-RF isolation	2 to 20 GHz	dB		20	
2LO-to-RF isolation	4 to 40 GHz	dB	30	40	
LO-to-IF isolation	2 to 20 GHz	dB		20	
RF-to-IF isolation	2 to 20 GHz	dB		15	
Input power at 1 dB compression	LO = +13 dBm	dBm		0	
Input two-tone third-order intercept point	LO = +13 dBm	dBm		+10	
OUTPUT PARAMETERS	CONDITION	UNITS	MIN.	TYP.	MAX.
IF frequency range	3 dB bandwidth	GHz	DC		1.5
IF VSWR (IF = -10 dBm, LO = +13 dBm)		Ratio		2.75:1	



# SBE0440LW1 TYPICAL TEST DATA



**SINGLE-TONE (m) RF x (n) LO RELATIVE SPUR LEVEL (dBc)**  
(AVERAGE MIDBAND RF, LO, IF FREQUENCIES,  
RF = -10 dBm, LO = +13 dBm)

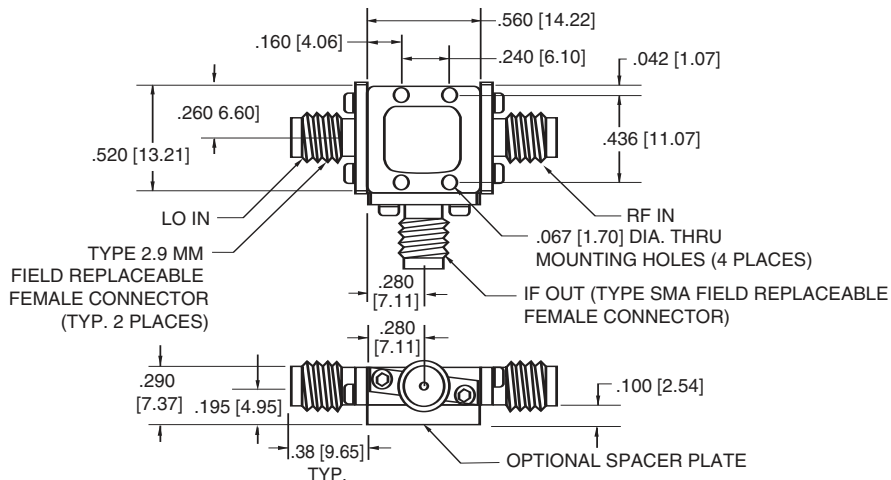
SPUR (m) RF x (n) LO	RF TEST FREQ. (GHz)	LO TEST FREQ. (GHz)	SPUR LEVEL (dBc)
1 x 1	10.75	11.25	-33
1 x 2	14.5	7.5	REF
1 x 3	16.36	5.62	-30
2 x 1	7.16	14.8	-45
2 x 2	10.87	11.12	-50
2 x 3	13.1	8.9	-45
3 x 1	5.37	16.6	-40
3 x 2	8.7	13.3	-40
3 x 3	10.91	11.08	-50

## MAXIMUM RATINGS

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

NOTE: Test data supplied at 25°C; conversion loss and 2LO-to-RF isolation.

## OUTLINE DRAWING



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

