

# 4 TO 5 GHz BIASABLE MESFET MIXER

MODELS: SBF0405LW2-A, SBF0405LW2-B

## FEATURES

- RF coverage..... 4 to 5 GHz
- IF operation
  - A..... 10 to 500 MHz
  - B..... 500 to 1000 MHz
- LO power range ..... +13 to +23 dBm
- Input IP<sup>3</sup> ..... +33 dBm typical  
(@ +23 dBm LO)
- Input 1 dB comp. .... +23 dBm typical  
(@ +23 dBm LO)



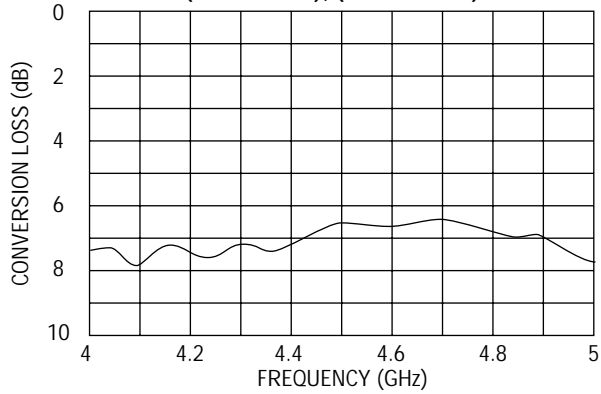
This FET mixer is designed to upgrade the dynamic range of existing systems that use a conventional ring type Schottky diode mixer, without changing the LO source. The input 1 dB compression and third-order intercept powers are typically 6 dB higher than a ring diode mixer of equal LO power. The balanced MESFET pair has low phase noise and high LO-to-RF isolation.

## ELECTRICAL SPECIFICATIONS

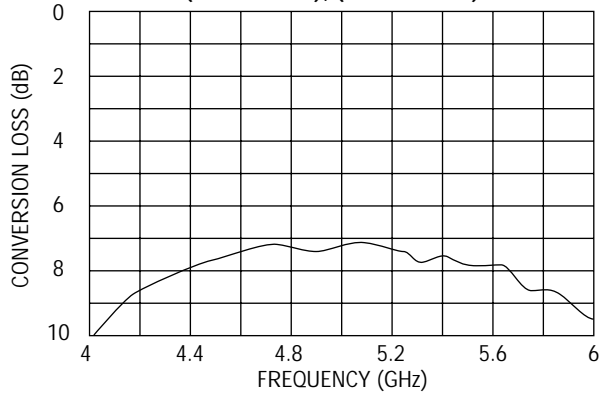
INPUT PARAMETERS	CONDITION	UNITS	MIN.	TYP.	MAX.
RF frequency range		GHz	4		5
RF VSWR (RF = 0 dBm, LO = +13 dBm)	4 to 5 GHz 4 to 6 GHz	Ratio Ratio		2.5:1 3:1	
LO frequency range -B, LO < RF only		GHz	3.5		5.5
LO power range		dBm	+13		+23
LO VSWR (RF = 0 dBm, LO = +13 dBm) (DC bias -15 V)	4 to 5 GHz 4 to 6 GHz	Ratio Ratio		3:1 3.5:1	
TRANSFER CHARACTERISTICS	CONDITION	UNITS	MIN.	TYP.	MAX.
Conversion loss -A (LO = +23 dBm)	IF = 100 MHz	dB		6.5	8
-B (LO = +23 dBm)	IF = 800 MHz	dB		8	10
Single-sideband noise figure (LO = +23 dBm)	IF = 100 MHz	dB		6.5	
Isolation – LO to RF		dB	20	25	
Isolation – LO to IF		dB	18	25	
Isolation – IF to RF		dB		20	
Input power at 1 dB compression	LO = +20 dBm	dBm		+20	
Input two-tone third-order intercept point	LO = +23 dBm	dBm	+30	+33	
OUTPUT PARAMETERS	CONDITION	UNITS	MIN.	TYP.	MAX.
IF frequency range -A	3 dB bandwidth	MHz	10		500
-B	3 dB bandwidth	MHz	500		1000

# SBF0405LW2-A/-B TYPICAL TEST DATA

**CONVERSION LOSS (OPTION A)**  
(IF = 100 MHz, (LO = +23 dBm)



**CONVERSION LOSS (OPTION B)**  
(IF = 800 MHz, (LO = +23 dBm)



**IP<sup>3</sup> VERSUS TEMPERATURE (OPTION A)**  
(IF = 200 MHz, (LO = +23 dBm)

RF (GHz)	LO (GHz)	INPUT IP <sup>3</sup> (dBm)		
		(+25°C)	(-20°C)	(+85°C)
4.4	4.6	+33	+32	+33
4.5	4.7	+34	+34	+34
4.6	4.8	+33	+34	+34

**IP<sup>3</sup> VERSUS TEMPERATURE (OPTION B)**  
(IF = 800 MHz, (LO = +23 dBm)

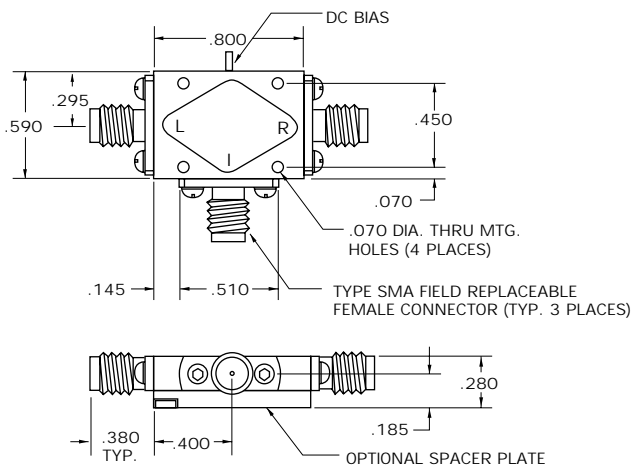
RF (GHz)	LO (GHz)	INPUT IP <sup>3</sup> (dBm)		
		(+25°C)	(-20°C)	(+85°C)
4.4	3.6	+31	+30	+32
5.0	4.2	+32	+31	+33
5.6	4.8	+33	+32	+33

**MAXIMUM RATINGS**

Specifications taken at ..... +25°C  
 Operating temperature ..... -54 to +85°C  
 Storage temperature ..... -65 to +125°C

**OUTLINE DRAWING**

**W2B HOUSING**



**SCHEMATIC**

