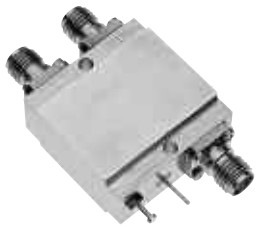
# 8 TO 10 GHz ULTRA-HIGH LEVEL FET MIXER

## MODELS: SBF0810HI3A AND SBF0810HI3B

## FEATURES

- **RF/LO coverage ..... 8 to 10 GHz**
- **IF operation ..... 20 to 2000 MHz**
- **LO power range ..... +20 to +23 dBm**
- **Input IP$^3$ ..... +33 dBm typical**
- **Packaging ..... Hermetically sealed**



MITEQ's Model SBF0810HI3 utilizes high-level MESFETs in a single-balanced mixer configuration to provide truly state-of-the-art dynamic range performance. Through MITEQ's unique balun design, the SBF0810H Series is able to surpass the performance of any Schottky device by supporting 10 dB of separation between the LO power and third-order intercept point. Applications for this type of device span any dense signal environment system or any extremely high dynamic receiver, such as a phase coherent receiver utilizing high-gain low-noise amplifiers.

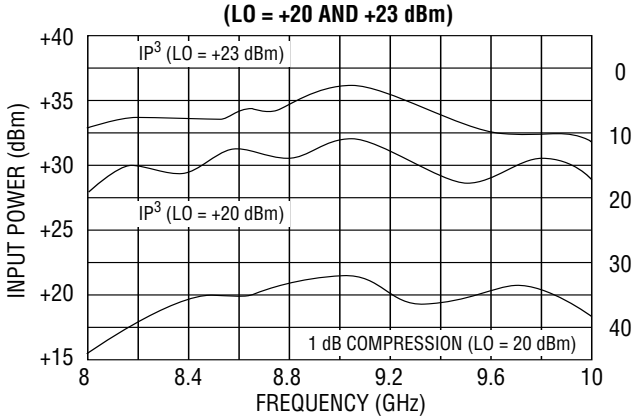


## ELECTRICAL SPECIFICATIONS

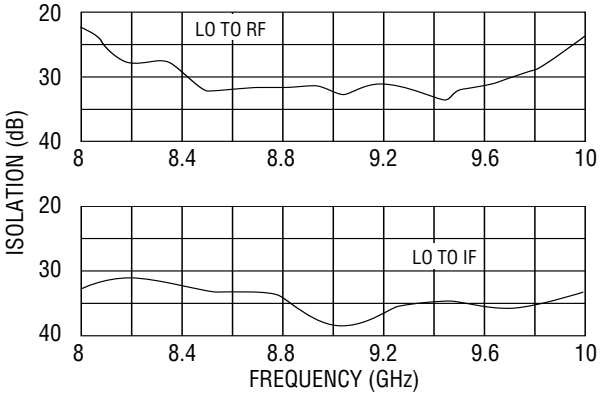
| INPUT PARAMETERS | CONDITION | UNITS | MIN. | TYP. | MAX. |
|---|---|---|---|---|---|
| RF frequency range | | GHz | 8 | | 10 |
| RF VSWR (IF = -10 dBm, LO = +23 dBm) | | Ratio | | 2.5:1 | |
| LO frequency range | SBF0810HI3A | GHz | 8 | | 10 |
| LO < RF, only | SBF0810HI3B | GHz | 6 | | 10 |
| LO power range | | dBm | +20 | | +23 |
| LO VSWR (RF = -10 dBm, LO = +23 dBm) | | Ratio | | 3.5:1 | |
| DC bias -12 VDC | | mA | | 25 | |
| **TRANSFER CHARACTERISTICS** | **CONDITION** | **UNITS** | **MIN.** | **TYP.** | **MAX.** |
| Conversion loss | IF = 1 GHz | dB | | 8 | 9 |
| LO-to-RF isolation | | dB | 20 | 30 | |
| LO-to-IF isolation | | dB | | 20 | |
| RF-to-IF isolation | | dB | | 30 | |
| Input power at 1 dB compression | LO = +23 dBm<br>LO = +20 dBm | dBm<br>dBm | | +23<br>+20 | |
| Input two-tone third-order intercept point | LO = +23 dBm<br>LO = +20 dBm | dBm<br>dBm | 30 | +33<br>+30 | |
| Input two-tone second-order intercept point | LO = +23 dBm | dBm | | +45 | |
| **OUTPUT PARAMETERS** | **CONDITION** | **UNITS** | **MIN.** | **TYP.** | **MAX.** |
| IF frequency range (3 dB bandwidth) | SBF0810HI3A<br>SBF0810HI3B | MHz<br>MHz | 200<br>1400 | | 1200<br>2000 |
| IF VSWR (IF = -10 dBm, LO = +23 dBm) | | Ratio | | 2:1 | |

# SBF0810HI3A/B TYPICAL TEST DATA

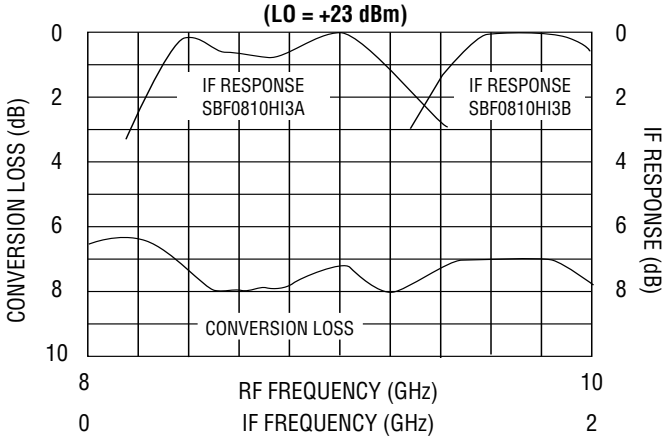
### INPUT IP$^3$ AND P 1 dB COMPRESSION (LO = +20 AND +23 dBm)




### ISOLATION




### CONVERSION LOSS IF RESPONSE (LO = +23 dBm)




### SINGLE-TONE (m) RF x (n) LO RELATIVE SPUR LEVEL (dBc) (RF = 0 dBm, LO = +23 dBm)

| (m) RF | x | (n) LO | SPUR LEVEL (dBc) |
|---|---|---|---|
| 2 | x | 2 | -50 |
| 3 | x | 3 | -65 |
| 3 | x | 4 | -70 |
| 4 | x | 5 | -90 |
| 5 | x | 6 | -100 |
| 6 | x | 7 | -130 |
| 6 | x | 8 | -135 |
| 7 | x | 8 | -155 |
| 7 | x | 9 | -150 |
| 8 | x | 9 | -170 |

### MAXIMUM RATINGS

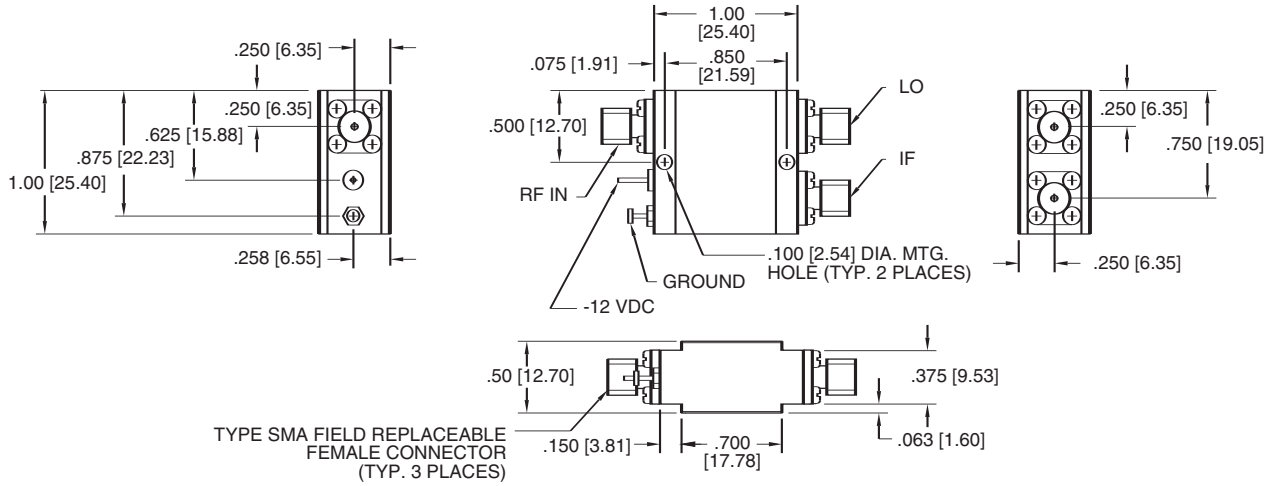
Specification temperature..... +25°C
Operating temperature ..... -54 to +85°C
Storage temperature ..... -65 to +125°C

### AVAILABLE OPTIONS

Alternate LO drive levels.
Alternate RF and IF frequencies.
Open substrate carrier versions.

NOTE: Test data supplied at 25°C; conversion loss, LO-to-RF isolation and IP$^3$.

## OUTLINE DRAWING




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

MIXER PRODUCTS