

BSTMX42-0205

2-4.5 GHz I/Q Mixer

Data Sheet

I. Product Introduction

BSTMX42-0205 is an I/Q mixer chip with RF and LO frequencies of 2 to 4.5 GHz, an IF frequency of DC to 1.5 GHz, and a conversion loss of 8.5 dB.

II. Application Areas

- Radar
- Communications
- Instruments

III. Key Technical Indicators

- RF & LO frequency: 2~4.5GHz
- IF frequency: DC~1.5GHz
- Local oscillator power: 16dBm
- Conversion loss: 8.5dB
- LO/RF isolation: 40dB
- Image suppression: 30dBc
- Input 1dB compression point: 14dBm
- Chip size: 2.06mm x 1.66mm

IV. Electrical properties (T_A=25 °C)

Table 1

INDEX	MINIMUM	TYPICAL VALUES	MAXIMUM
RF & LO frequency (GHz)	2 ~ 4.5		
IF frequency (GHz)	DC ~ 1.5		
Conversion loss (dB)	—	8.5	—

INDEX	MINIMUM	TYPICAL VALUES	MAXIMUM
Image rejection (dBc)	—	30	—
LO~RF isolation (dB)	—	40	—
LO~IF isolation (dB)	—	25	—
RF~IF isolation (dB)	—	40	—
Input 1dB compression point (dBm)	—	14	—

V. Absolute Maximum Ratings

Table 2

PARAMETER	LIMIT VALUE
Maximum input power	+20dBm
Operating temperature	-55 °C ~ +125 °C
Storage temperature	-65 °C ~ +150 °C

VI. Typical test curves where $f_F = 0.5\text{GHz}$ unless otherwise specified

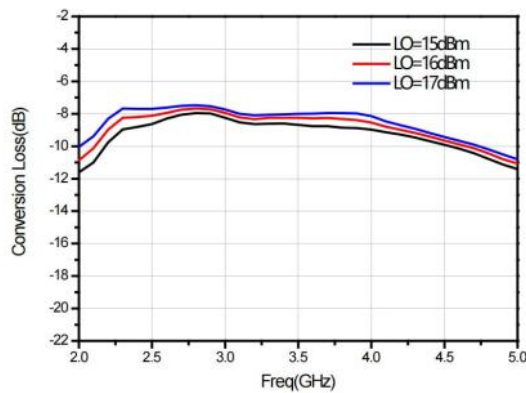


Figure 1. Conversion loss

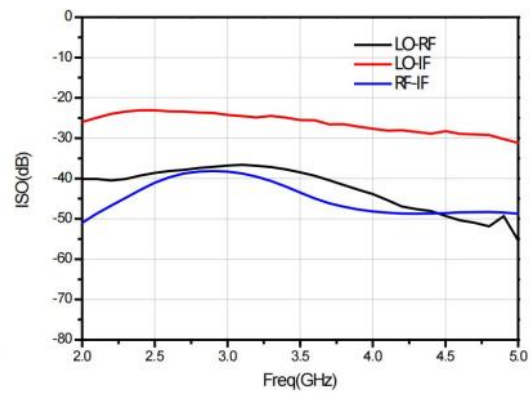


Figure 2. Isolation ($L_O = 16\text{dBm}$)

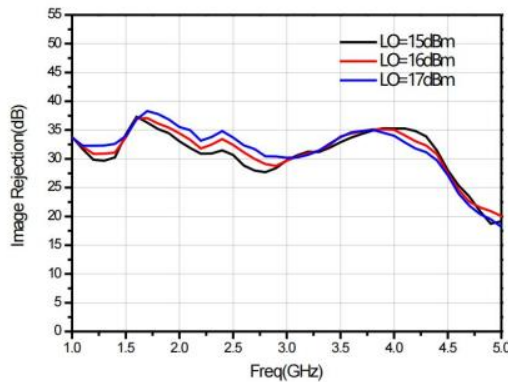


Figure 3. Image rejection

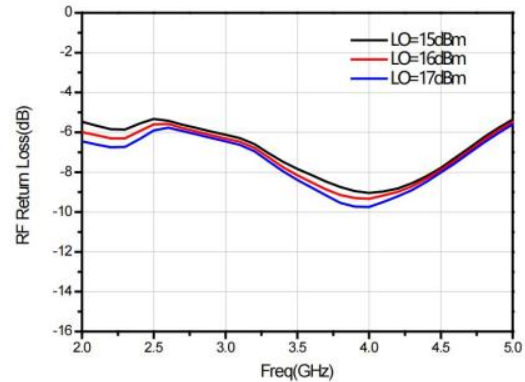


Figure 4. RF return loss

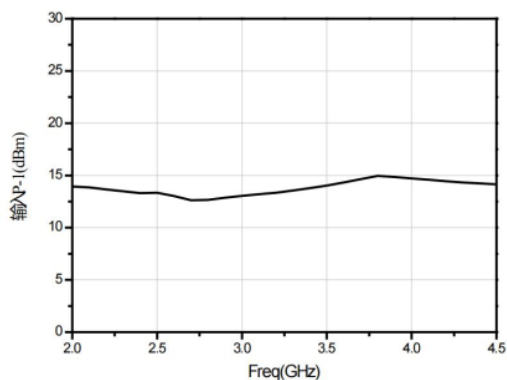


Figure 5. Input 1dB compression point

VII. Overall and Port Dimensions (mm)

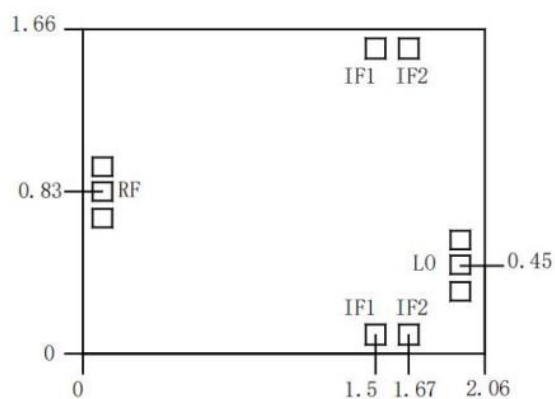


Figure 6

VIII. Assembly package Diagram

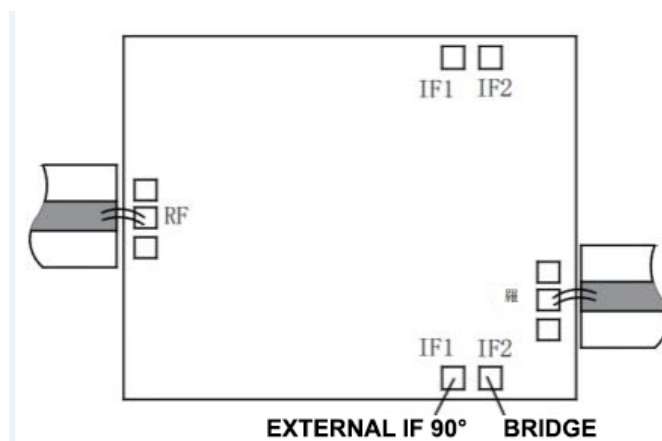


Figure 7

IX. Schematic

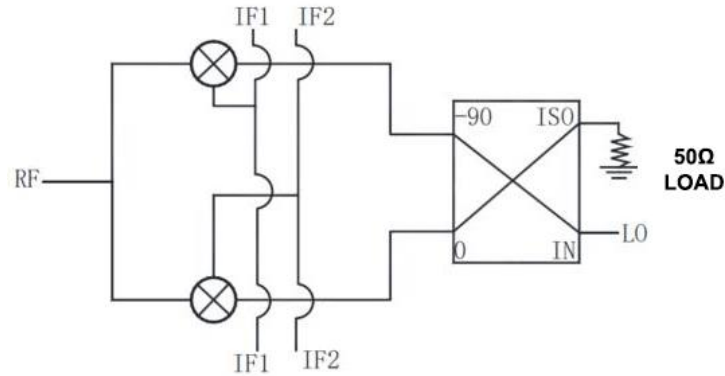


Figure 8.

X. Precautions

- The chip should be stored in a dry, nitrogen-filled environment and used in an ultra-clean environment;
- GaAs material is brittle and the chip surface cannot be touched. Be careful when using it;
- Sinter the chip with conductive glue or alloy (the alloy temperature cannot exceed 300 °C and the time cannot exceed 30 seconds) to ensure that it is fully grounded;
- The gap between the chip microwave port and the substrate should not exceed 0.05mm. Use 25μm double gold wire bonding. The recommended gold wire length is 250 to 400μm;
- The chip has a DC-blocking capacitor on the RF side, but not on the LO and IF sides.
- The chip is sensitive to static electricity; please use anti-static measures during storage and use.