



**RF Double Balanced Mixer**

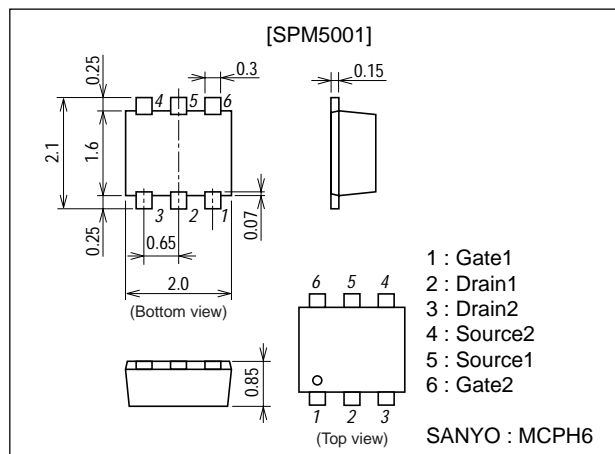
**Features**

- Wide band double balanced mixer.
- Low distortion.
- The chip surface is covered with highly reliable protection film.
- Automatic surface mounting is available.
- MCPH6 package.

**Package Dimensions**

unit : mm

2211



**Specifications**

**Absolute Maximum Ratings** at Ta=25°C

| Parameter                   | Symbol           | Conditions | Ratings     | Unit |
|-----------------------------|------------------|------------|-------------|------|
| Drain-to-Source Voltage     | V <sub>DS</sub>  |            | 6           | V    |
| Gate-to-Source Voltage      | V <sub>GS</sub>  |            | -4          | V    |
| Drain Current               | I <sub>D</sub>   |            | 60          | mA   |
| Allowable Power Dissipation | P <sub>D</sub>   |            | 200         | mW   |
| Junction Temperature        | T <sub>J</sub>   |            | 150         | °C   |
| Storage Temperature         | T <sub>stg</sub> |            | -55 to +150 | °C   |

**Electrical Characteristics** at Ta=25°C

| Parameter                       | Symbol | Conditions  | Ratings |     |     | Unit |
|---------------------------------|--------|---|---------|-----|-----|------|
|                                 |        |   | min     | typ | max |      |
| Gate-to-Source Leakage Current  | IG1S1O | V <sub>G1S1</sub> =-5V  |         |     | -10 | μA   |
|                                 | IG2S1O | V <sub>G2S1</sub> =-5V  |         |     | -10 | μA   |
|                                 | IG2S2O | V <sub>G2S2</sub> =-5V  |         |     | -10 | μA   |
|                                 | IG1S2O | V <sub>G1S2</sub> =-5V  |         |     | -10 | μA   |
| Zero-Gate Voltage Drain Current | ID1S1S | V <sub>D</sub> 1=3V, V <sub>G1S1</sub> =0, V <sub>G2</sub> =-4V | 20      | 40  | 60  | mA   |
|                                 | ID2S1S | V <sub>D</sub> 2=3V, V <sub>G2S1</sub> =0, V <sub>G1</sub> =-4V | 20      | 40  | 60  | mA   |
|                                 | ID1S2S | V <sub>D</sub> 1=3V, V <sub>G2S2</sub> =0, V <sub>G1</sub> =-4V | 20      | 40  | 60  | mA   |
|                                 | ID2S2S | V <sub>D</sub> 2=3V, V <sub>G1S2</sub> =0, V <sub>G2</sub> =-4V | 20      | 40  | 60  | mA   |

Continued on next page.

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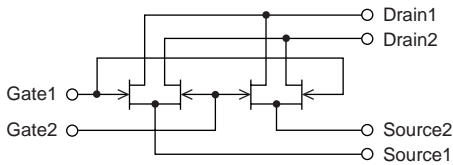
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# SPM5001

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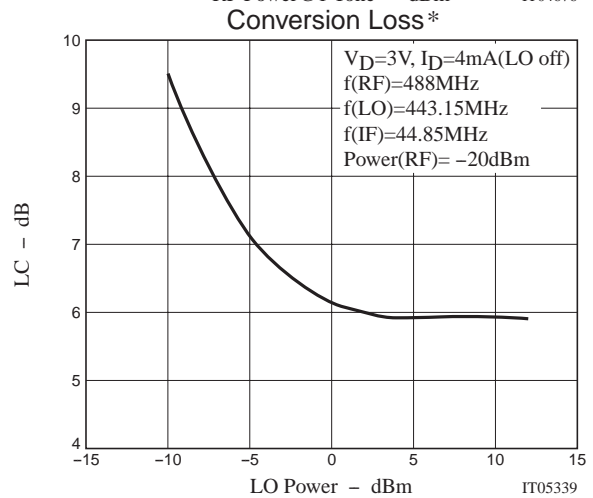
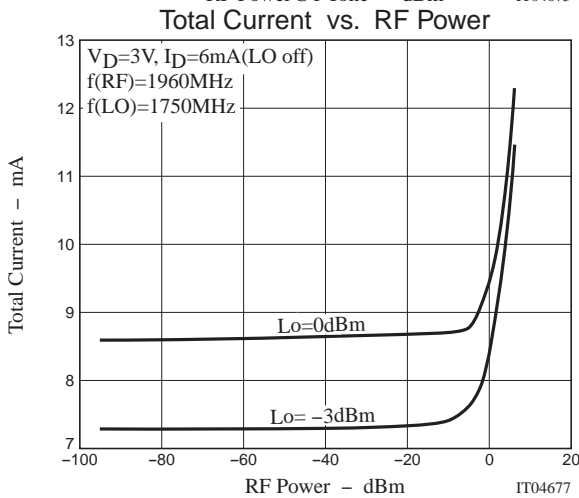
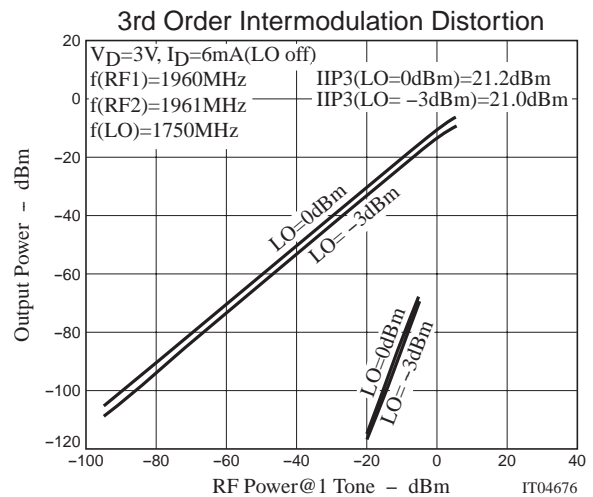
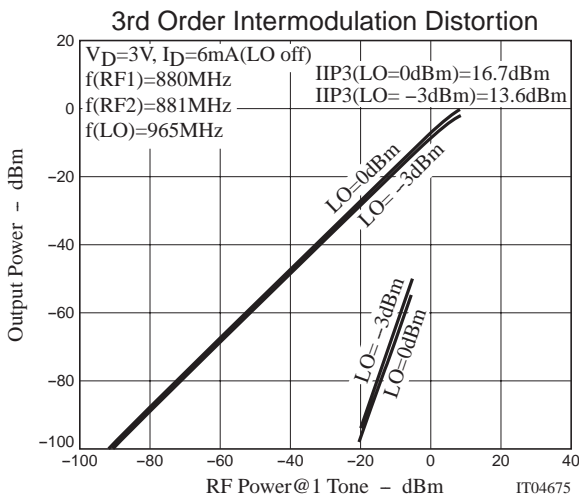
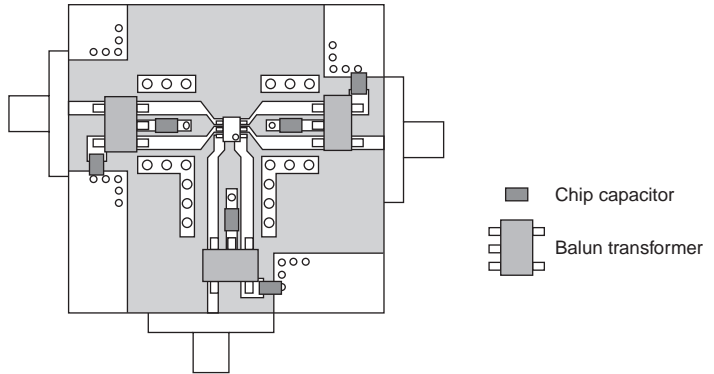
| Parameter                     | Symbol     | Conditions                | Ratings |      |      | Unit |
|-------------------------------|------------|---------------------------|---------|------|------|------|
|                               |            |                           | min     | typ  | max  |      |
| Gate-to-Source Cutoff Voltage | VG1S1(off) | $V_{D1}=3V, I_D=100\mu A$ | -0.5    | -1.0 | -1.5 | V    |
|                               | VG2S1(off) | $V_{D2}=3V, I_D=100\mu A$ | -0.5    | -1.0 | -1.5 | V    |
|                               | VG2S2(off) | $V_{D1}=3V, I_D=100\mu A$ | -0.5    | -1.0 | -1.5 | V    |
|                               | VG1S2(off) | $V_{D2}=3V, I_D=100\mu A$ | -0.5    | -1.0 | -1.5 | V    |

## Equivalent Circuit



## [Reference Data]

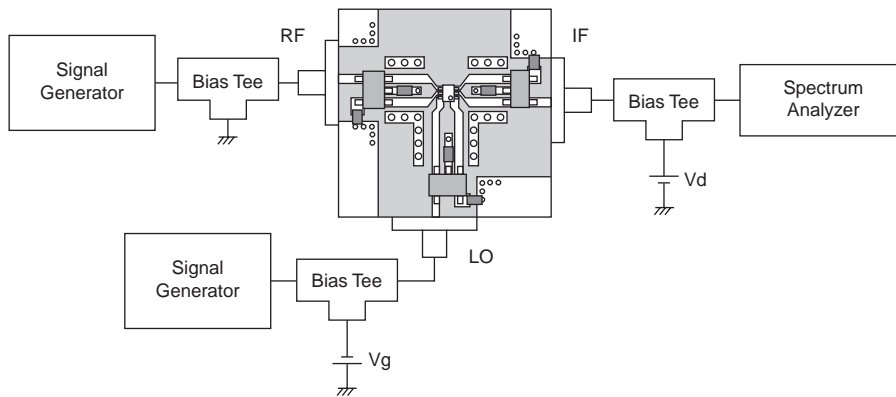
### Mixer Characteristics Measured by the Evaluation Board for SPM5001



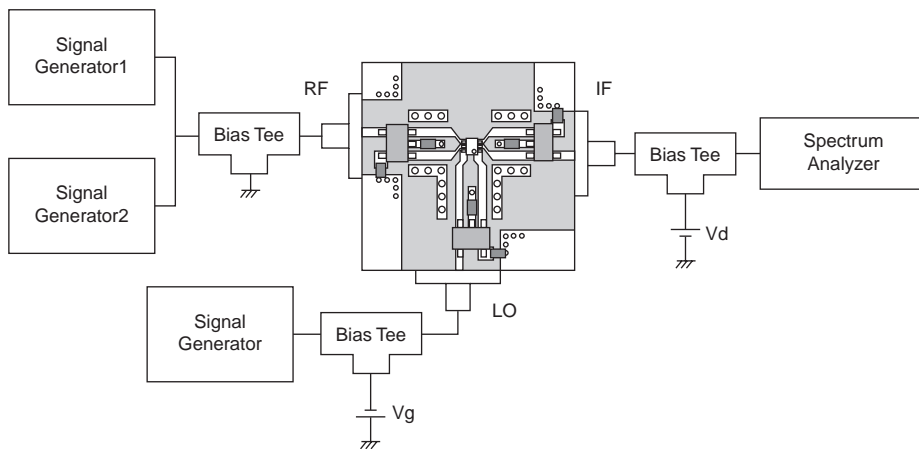
\* This Conversion Loss characteristic includes the loss of the test board and the Balun Transformer.

## Measurement System

- IF output power vs. RF input power



- IM3, IM2 vs. RF input power



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