泰莱微波
Talent Microwave

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# D-Band X6 MMIC Multiplier

## X6/110-170GHz/0dBm Output Power

## Model: TLRDX-2319A

TLRDX-2319A is a D-band broadband sextupler chip which operates from 110GHz to 170 GHz.When the input power is 8dBm to 12dBm, the typical value of the in-band output power is 0dBm, and the typical value of the adjacent sub-harmonic suppression is 25dBc.

## Features:

- Output Frequency Range: 110-170GHz
- Input Power: 8~12dBm
- Output Power: 0dBm Typ
- Harmonics: -25dBc
- Chip area: TBD

## 电气特性 Electrical Characteristics:

| 参数 Parameter | | Min | Typ | Max | 单位 Units |
|---|---|---|---|---|---|
| Output Frequency | | 110 | | 170 | GHz |
| Output Power | | -3 | 0 | 3 | dBm |
| Input Frequency | | 18.3 | | 28.3 | GHz |
| Input Power | | 8 | 10 | 12 | dBm |
| Multiply Factor | | | 6 | | |
| Harmonics Suppression | 5 x F0 | 25 | | | dBc |
| | 7 x F0 | 25 | | | |
| Input Return Loss | | | -10 | | dB |
| Output Return Loss | | | -8 | | dB |
| Drain Voltage | | | 3 | | V |
| Gate Voltage | | | -0.2 | | V |
| DC Power Consumption | | | 280 | | mW |

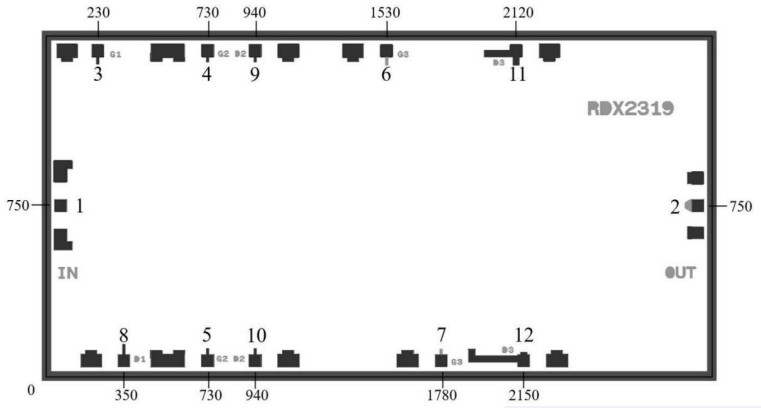
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## Absolute Maximum Ratings:

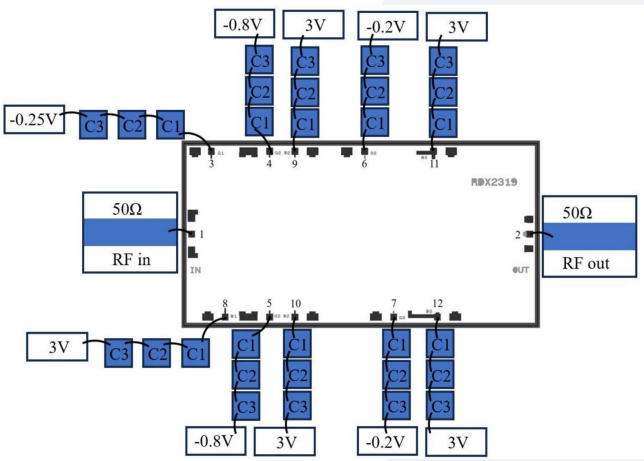
| Parameter | Value |
|---|---|
| Input Power | 14dBm |
| Positive Drain Voltage | 4V |
| Negative Gate Voltage | -1V |
| Operating Temperature | -55℃ ~ +85℃ |
| Non-operating Temperature | -65℃ ~ +150℃ |

## Outline and Port size:

Unit: μm




## Suggested Assembly Drawing:




Notes:
The capacitance value of peripheral capacitance C1 is 100 PF. C2 is 10000 pF and C3 is 1uF. C1 it is recommended to use a single-layer capacitor and try to be close to the bonding point of the chip.

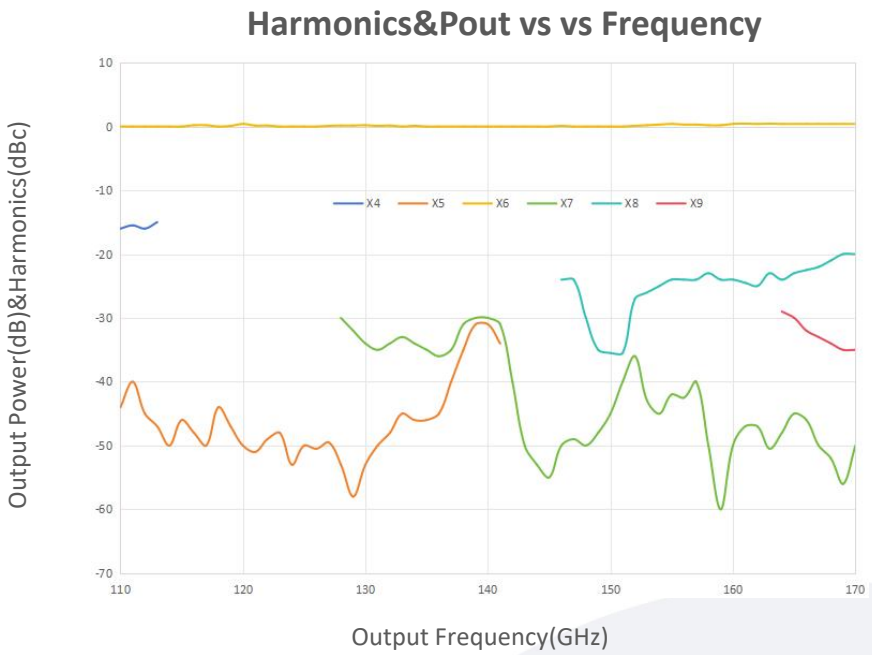
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## Definition of Bonding Point:

| PAD | Symbol | Description | Dimension(μm²) | Opreating Voltage |
|---|---|---|---|---|
| 1 | RFin | 50 Ohm, open circuit for DC | 50x50 | |
| 2 | RFout | 50 Ohm, open circuit for DC | 50x50 | |
| 3 | VG1 | Gate voltage,Need 100pF and 10000pF bypass capacitor. | 50x50 | -0.25V |
| 4 | VG2 | Gate voltage,Need 100pF and 10000pF bypass capacitor. | 50x50 | -0.8V |
| 5 | VG2 | Gate voltage,Need 100pF and 10000pF bypass capacitor. | 50x50 | -0.8V |
| 6 | VG3 | Gate voltage,Need 100pF and 10000pF bypass capacitor. | 50x50 | -0.2V |
| 7 | VG3 | Gate voltage,Need 100pF and 10000pF bypass capacitor. | 50x50 | -0.2V |
| 8 | VD1 | Drain voltage,Need 100pF and 10000pF bypass capacitor. | 50x50 | 3V/30mA |
| 9 | VD2 | Drain voltage,Need 100pF and 10000pF bypass capacitor. | 50x50 | 3V/1mA |
| 10 | VD2 | Drain voltage,Need 100pF and 10000pF bypass capacitor. | 50x50 | 3V/1mA |
| 11 | VD3 | Drain voltage,Need 100pF and 10000pF bypass capacitor. | 50x50 | 3V/95mA |
| 12 | VD3 | Drain voltage,Need 100pF and 10000pF bypass capacitor. | 50x50 | 3V/155mA |

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## Typical Performance Data:




Note: Above data is for ref only, actual data may vary from unit to unit depending on operating environment and other factors like material lots etc.

## Application Information:

1、 Storage: The chip must be placed in a container with electrostatic protection function and stored in nitrogen environment.
2、Cleaning: The bare chip must be operated and used in a purified environment. It is forbidden to use liquid detergent to clean the chip.
3、 Electrostatic protection: Please strictly comply with ESD protection requirements to avoid electrostatic damage.
4、 Routine operation: Please use vacuum chuck or precision pointed tweezers to take the chip. Avoid touching the chip surface with tools or fingers during operation.
5、 Power on sequence: when power on, apply gate voltage first and then Drain voltage; When de energizing, remove the Drain voltage first and then the gate voltage.
6、 Mounting operation: The chip can be installed by AuSn solder eutectic sintering or conductive adhesive bonding process. The installation surface must be clean and flat, and the gap between the chip and the input / output RF connecting line substrate shall be as small as possible.
Sintering process: 80 / 20 AuSn shall be used for sintering. The sintering temperature shall not exceed 300 ℃, the sintering time shall be as short as possible, not more than 20 seconds, and the friction time shall not exceed 3 seconds.
Bonding process: The dispensing amount of conductive adhesive shall be minimized during bonding, and the curing conditions shall refer to the data provided by the conductive adhesive manufacturer.
7、 Bonding operation:
Unless otherwise specified, two bonding wires (diameter 25um gold wire) are used for RF input and output, and the bonding wire shall be as short as possible.
The thermal ultrasonic bonding temperature is 150 ℃, and the ultrasonic energy is as small as possible. The pressure of spherical bonding cleaver is 40 ~ 50gf, and the pressure of wedge bonding cleaver is 18 ~ 22gf.
8、 If you have any questions, please contact the supplier.