**TOSHIBA**

***MICROWAVE SEMICONDUCTOR***

TECHNICAL DATA

**MICROWAVE POWER GaAs FET**

# TIM5053-4SL

## FEATURES

- **LOW INTERMODULATION DISTORTION**
  IM3=-45 dBc at Pout= 25.5dBm
  Single Carrier Level
- **HIGH POWER**
  P1dB=36.5dBm at 5.0GHz to 5.3GHz
- **HIGH GAIN**
  G1dB=9.5dB at 5.0GHz to 5.3GHz
- **BROAD BAND INTERNALLY MATCHED FET**
- **HERMETICALLY SEALED PACKAGE**

## RF PERFORMANCE SPECIFICATIONS ( Ta= 25°C )

| CHARACTERISTICS | SYMBOL | CONDITIONS | UNIT | MIN. | TYP. | MAX. |
|---|---|---|---|---|---|---|
| Output Power at 1dB Gain Compression Point | P1dB | VDS=10V<br>f= 5.0 to 5.3GHz | dBm | 35.5 | 36.5 | — |
| Power Gain at 1dB Gain Compression Point | G1dB | | dB | 8.5 | 9.5 | — |
| Drain Current | IDS1 | | A | — | 1.1 | 1.3 |
| Gain Flatness | ΔG | | dB | — | — | ±0.6 |
| Power Added Efficiency | ηadd | | % | — | 36 | — |
| 3rd Order Intermodulation Distortion | IM3 | Two-Tone Test<br>Po=25.5dBm<br>(Single Carrier Level) | dBc | -42 | -45 | — |
| Drain Current | IDS2 | | A | — | 1.1 | 1.3 |
| Channel Temperature Rise | ΔTch | (VDS X IDS + Pin – P1dB) X Rth(c-c) | °C | — | — | 80 |

**Recommended Gate Resistance(Rg) : 150 Ω(Max.)**

## ELECTRICAL CHARACTERISTICS ( Ta= 25°C )

| CHARACTERISTICS | SYMBOL | CONDITIONS | UNIT | MIN. | TYP. | MAX. |
|---|---|---|---|---|---|---|
| Transconductance | gm | VDS= 3V<br>IDS= 1.5A | mS | — | 900 | — |
| Pinch-off Voltage | VGSoff | VDS= 3V<br>IDS= 15mA | V | -1.0 | -2.5 | -4.0 |
| Saturated Drain Current | IDSS | VDS= 3V<br>VGS= 0V | A | — | 2.6 | — |
| Gate-Source Breakdown Voltage | VGSO | IGS= -50μA | V | -5 | — | — |
| Thermal Resistance | Rth(c-c) | Channel to Case | °C/W | — | 4.5 | 6.5 |


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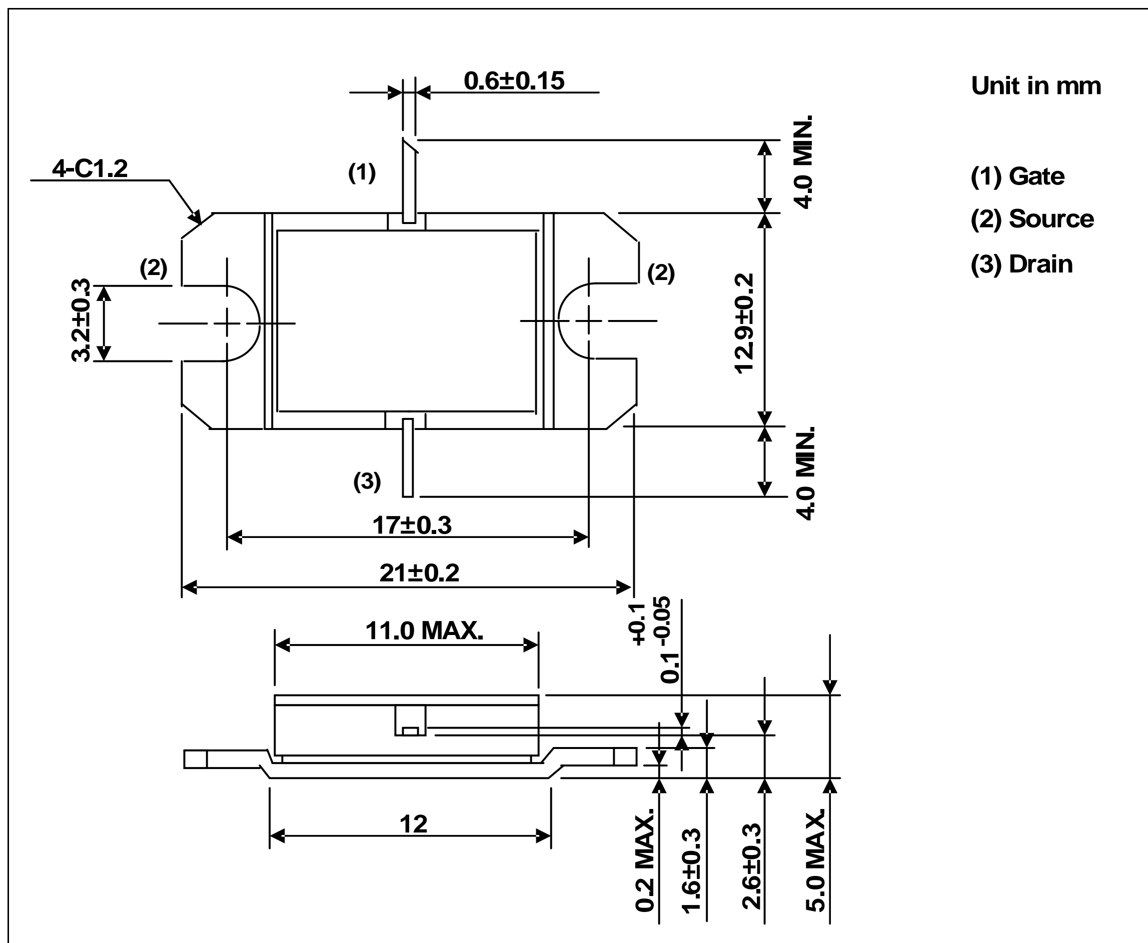
## ABSOLUTE MAXIMUM RATINGS ( Ta= 25°C )

| CHARACTERISTICS | SYMBOL | UNIT | RATING |
|---|---|---|---|
| Drain-Source Voltage | VDS | V | 15 |
| Gate-Source Voltage | VGS | V | -5 |
| Drain Current | IDS | A | 3.5 |
| Total Power Dissipation (Tc= 25 °C) | PT | W | 23.1 |
| Channel Temperature | Tch | °C | 175 |
| Storage Temperature | Tstg | °C | -65 to +175 |

## PACKAGE OUTLINE (2-11D1B)




### HANDLING PRECAUTIONS FOR PACKAGE MODEL

**Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C.**



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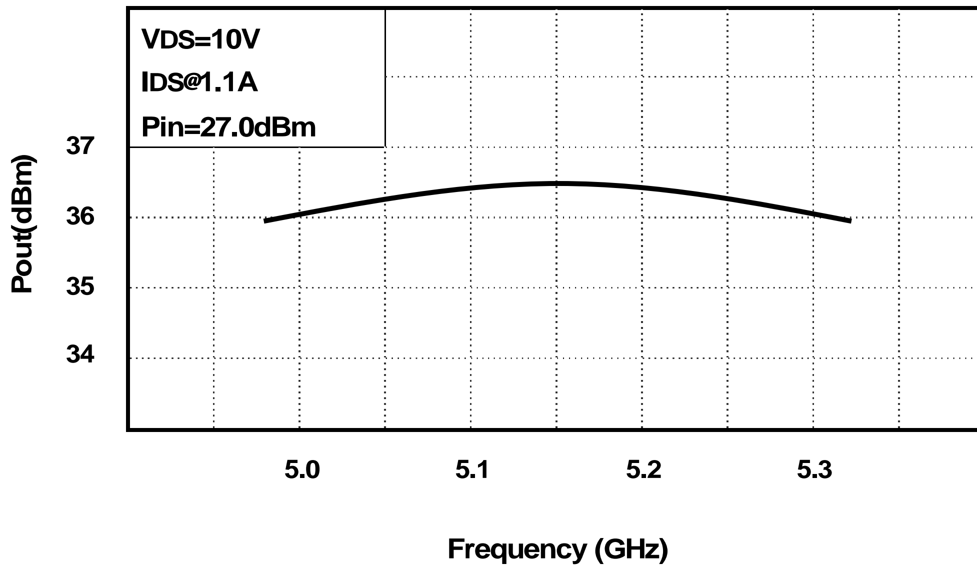
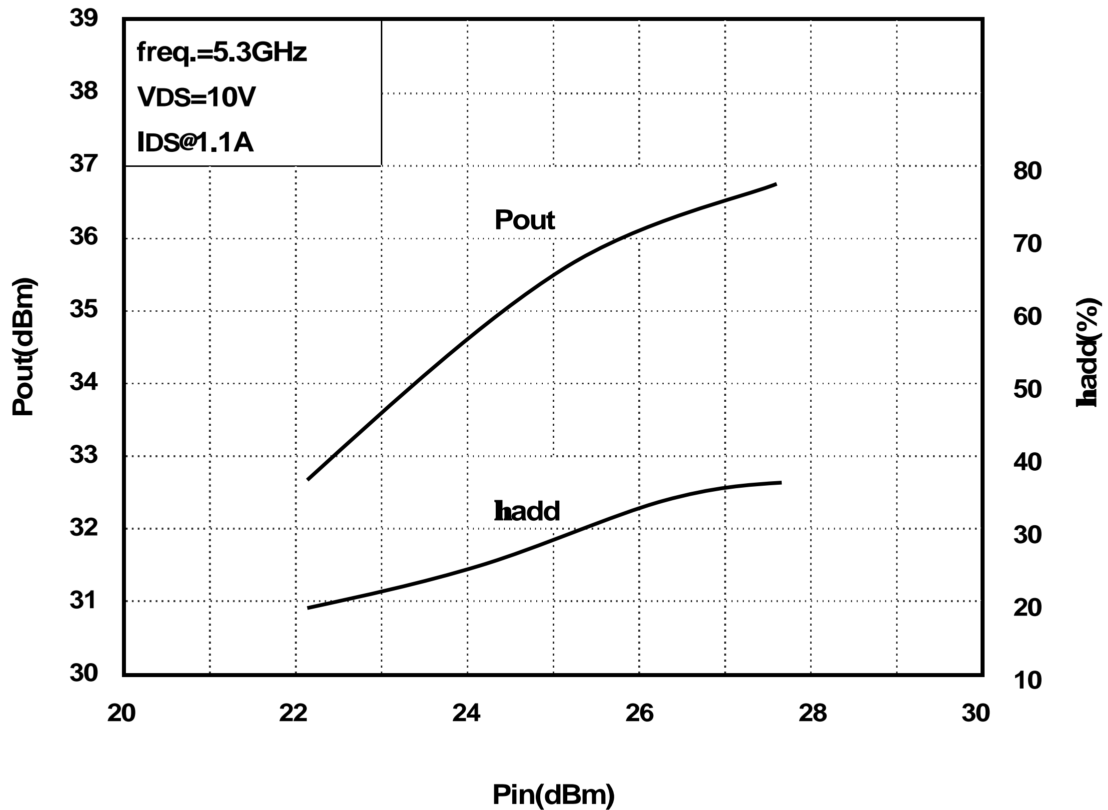
## RF PERFORMANCE

### Output Power (Pout) vs. Frequency




### Output Power(Pout) vs. Input Power(Pin)



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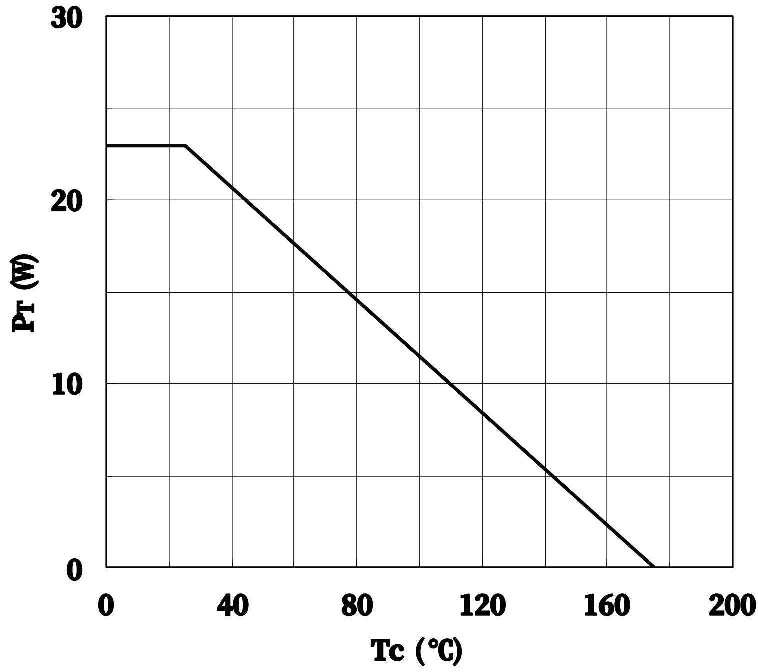


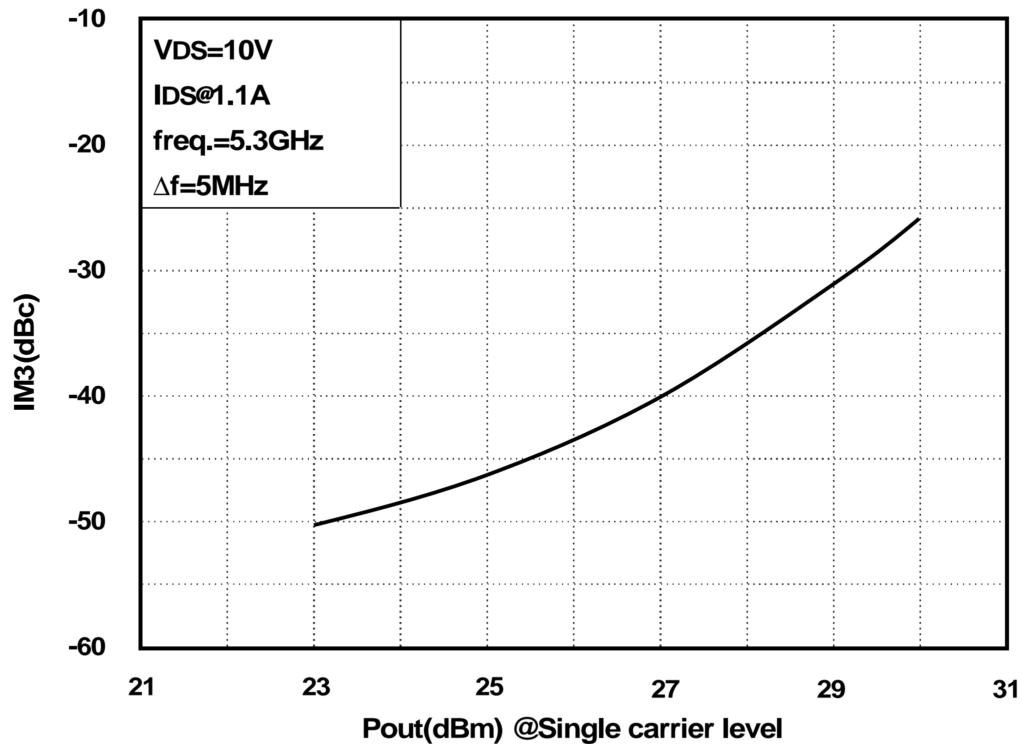




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