# MICROWAVE POWER GaN HEMT
# TGI5964-120L

## FEATURES

·**BROAD BAND INTERNALLY MATCHED HEMT**

·**HIGH POWER**

Pout= 51.0dBm at Pin= 43dBm

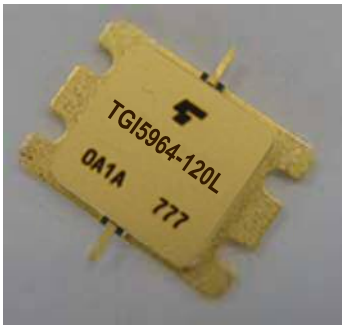
·**HIGH GAIN**

GL= 13.5dB at Pin= 20dBm

·**LOW INTERMODULATION DISTORTION**

IM3= -25dBc(Min.) at Pout= 44dBm (Single Carrier Level)

·**HERMETICALLY SEALED PACKAGE**




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

| CHARACTERISTICS | SYMBOL | CONDITIONS | UNIT | MIN. | TYP. | MAX. |
|---|---|---|---|---|---|---|
| Output Power | Pout | VDS= 24V<br>IDSset= 4.0A<br>f= 5.9 to 6.4GHz<br>@Pin= 43dBm | dBm | 50.0 | 51.0 | — |
| Drain Current | IDS1 | | A | — | 10.0 | 12.0 |
| Power Added Efficiency | ηadd | | % | — | 44 | — |
| Linear Gain | GL | @Pin= 20dBm | dB | 12.5 | 13.5 | — |
| Gain flatness | ΔG | | dB | — | — | ±0.8 |
| 3rd Order Intermodulation Distortion | IM3 | Two-Tone Test<br>Po= 44dBm, Δf= 5MHz<br>(Single Carrier Level) | dBc | -25 | -30 | — |
| Drain Current | IDS2 | | A | — | — | 8.0 |
| Channel Temperature Rise | ΔTch | (VDS × IDS + Pin − Pout) × Rth(c-c) | °C | — | 120 | 140 |

**Recommended Gate Resistance(Rg): 28 Ω**

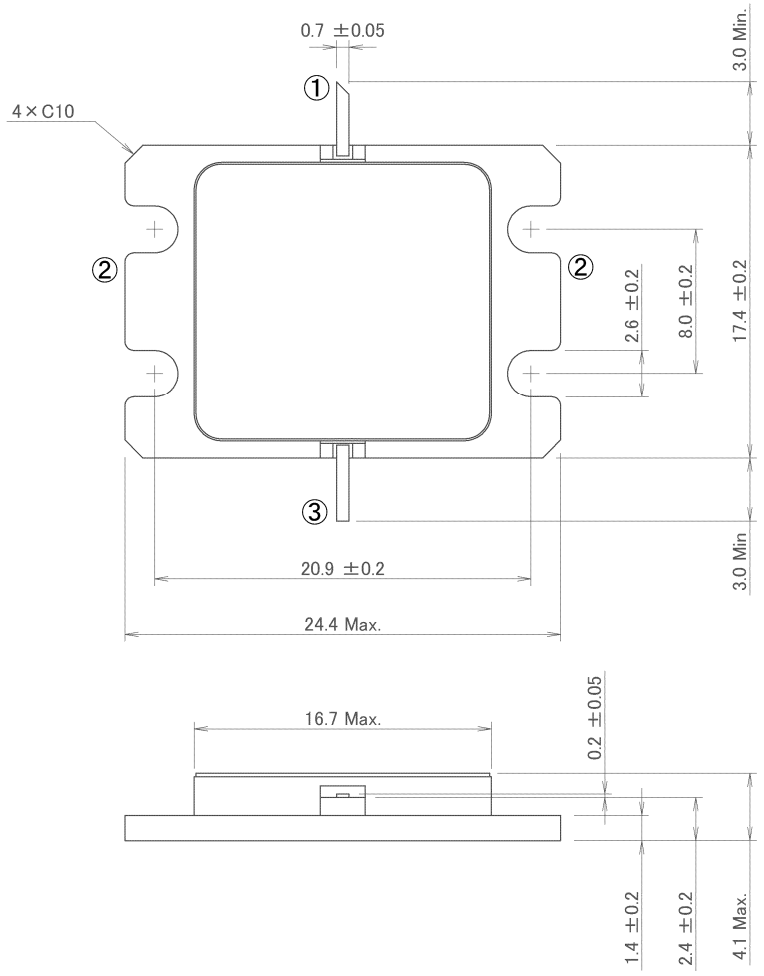
## ELECTRICAL CHARACTERISTICS ( Ta= 25°C )

| CHARACTERISTICS | SYMBOL | CONDITIONS | UNIT | MIN. | TYP. | MAX. |
|---|---|---|---|---|---|---|
| Transconductance | gm | VDS= 5V<br>IDS= 10.0A | S | — | 8.0 | — |
| Pinch-off Voltage | VGSoff | VDS= 5V<br>IDS= 46mA | V | -2.0 | -4.0 | -6.0 |
| Saturated Drain Current | IDSS | VDS= 5V<br>VGS= 0V | A | — | 28 | — |
| Gate-Source Breakdown Voltage | VGSO | IGS= -20mA | V | -10 | — | — |
| Thermal Resistance | Rth(c-c) | Channel to Case | °C/W | — | 0.6 | 0.8 |

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

| CHARACTERISTICS | SYMBOL | UNIT | RATING |
|---|---|---|---|
| Drain-Source Voltage | VDS | V | 50 |
| Gate-Source Voltage | VGS | V | -10 |
| Drain Current | IDS | A | 18 |
| Total Power Dissipation (Tc= 25°C) | PT | W | 280 |
| Channel Temperature | Tch | °C | 250 |
| Storage Temperature | Tstg | °C | -65 to +175 |

## PACKAGE OUTLINE ( 7-AA06A )



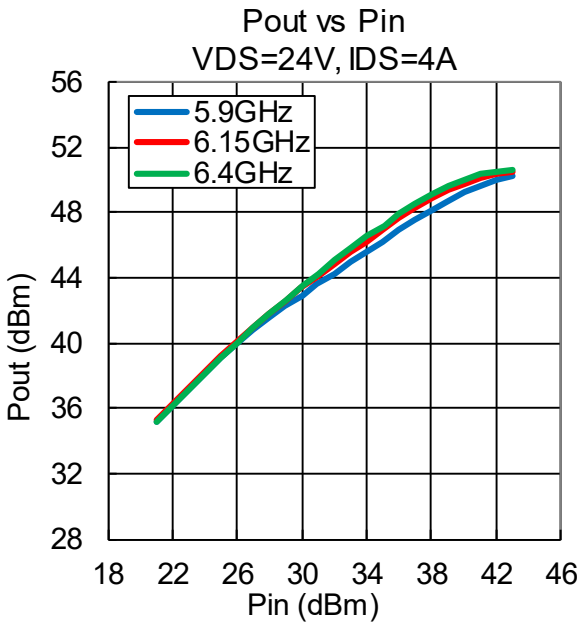

## HANDLING PRECAUTIONS FOR PACKAGE MODEL

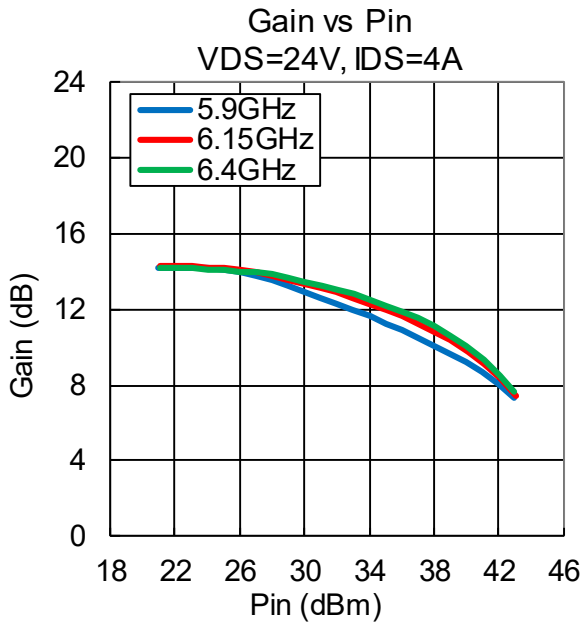
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C or 3 seconds at 350°C.

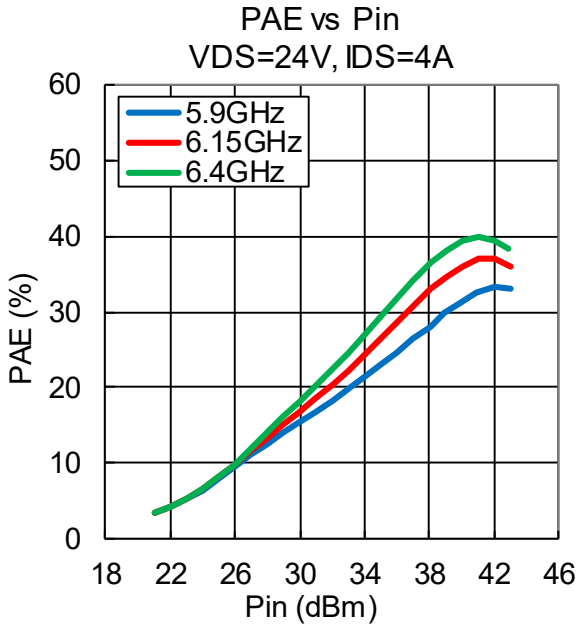
## TYPICAL RF PERFORMANCE

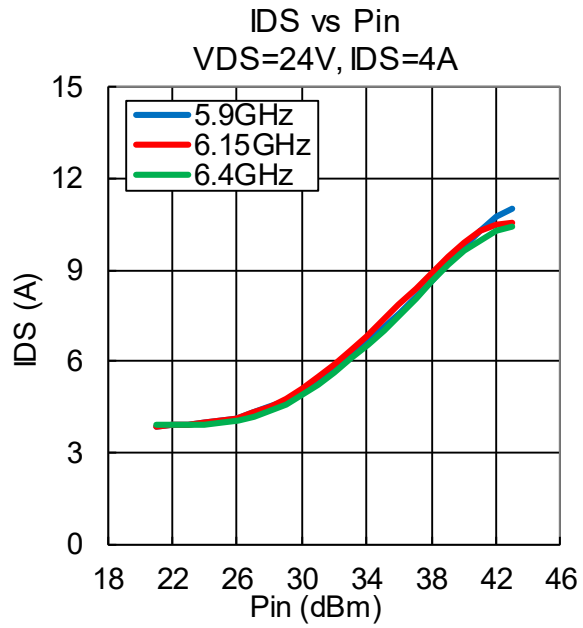
**·Pout , Gain , PAE , IDS vs. Pin**

VDS= 24 V, IDSset= 4.0 A, f= 5.9, 6.15, 6.4 GHz, Ta= +25 ℃



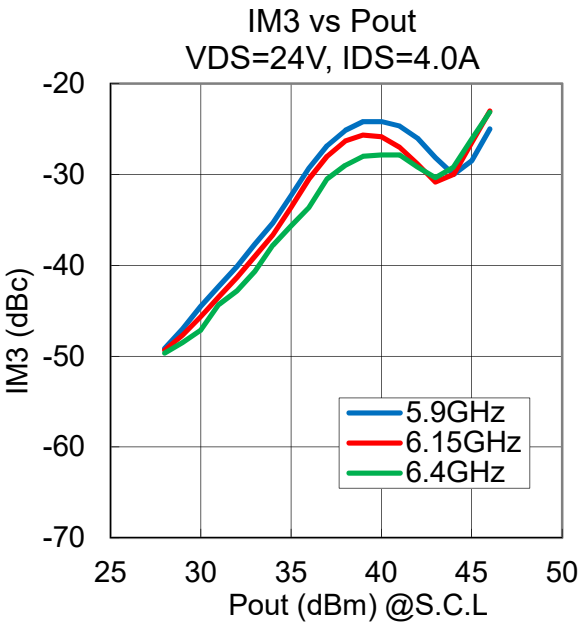



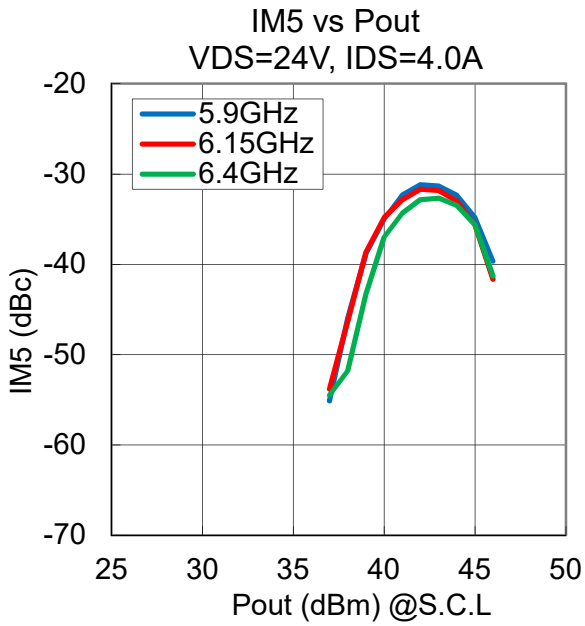



**·IM3, IM5 vs. Pout**

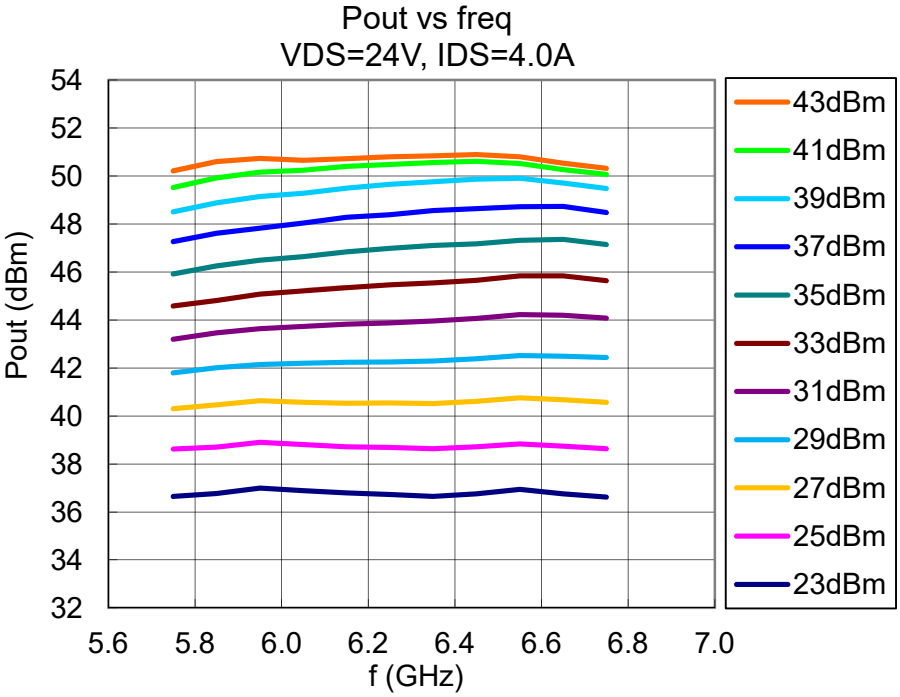
VDS= 24 V, IDSset= 4.0 A, f= 5.9, 6.15, 6.4 GHz, Δf= 5 MHz , Ta= +25 ℃



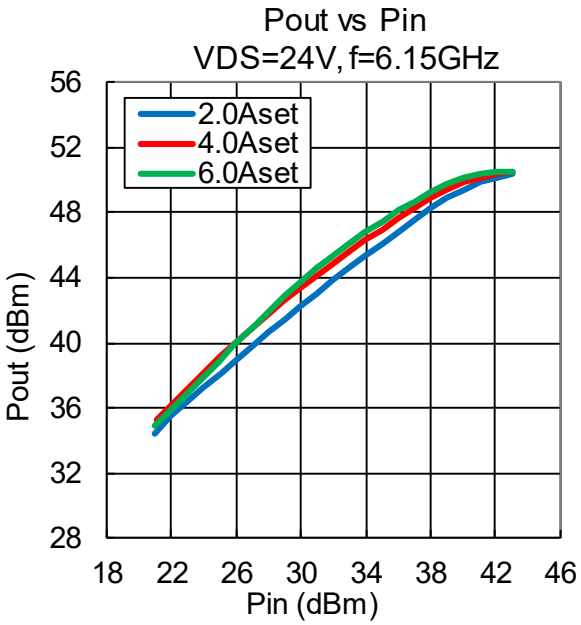

**·Pout vs. Frequency**

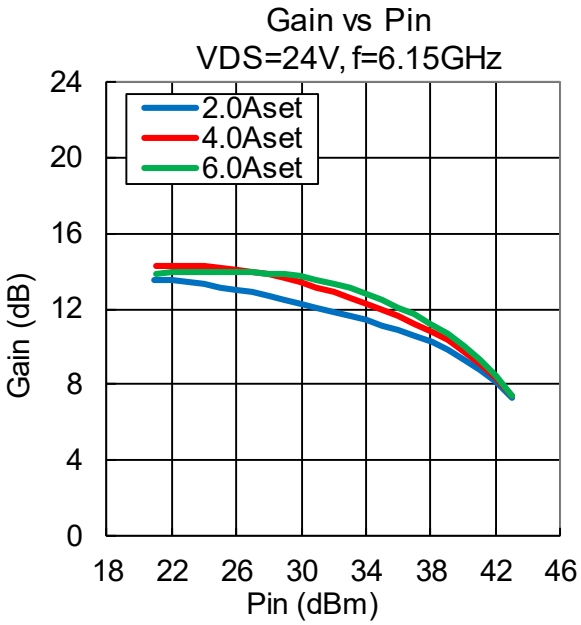
VDS= 24 V, IDSset= 4.0 A, Ta= +25 ℃

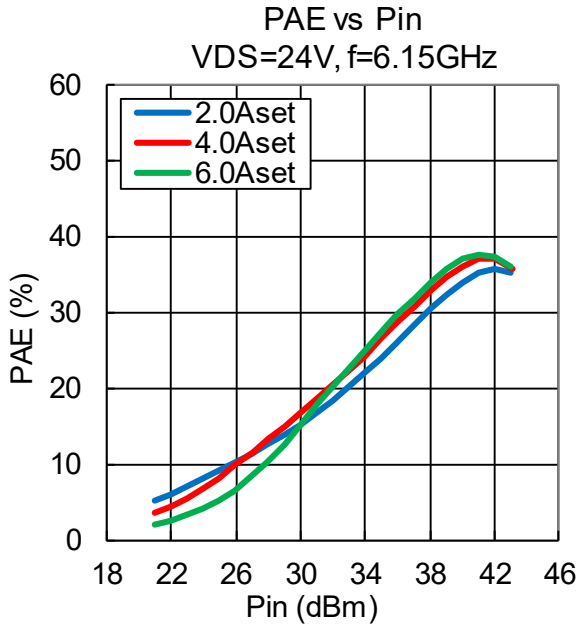


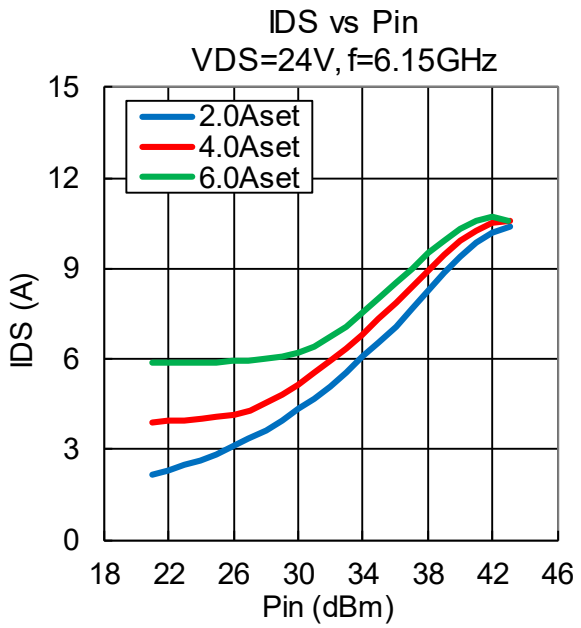
**·Pout , Gain , PAE , IDS vs. Pin vs. IDSset**

VDS= 24 V, IDSset= 2.0, 4.0, 6.0 A, f= 6.15 GHz, Ta= +25 ℃



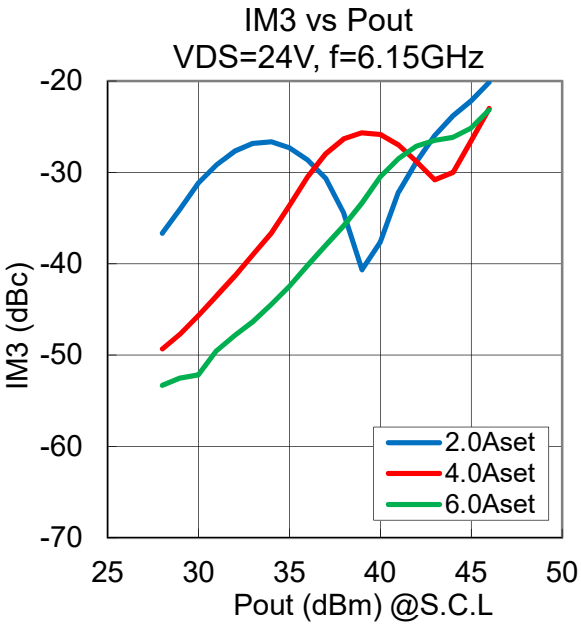



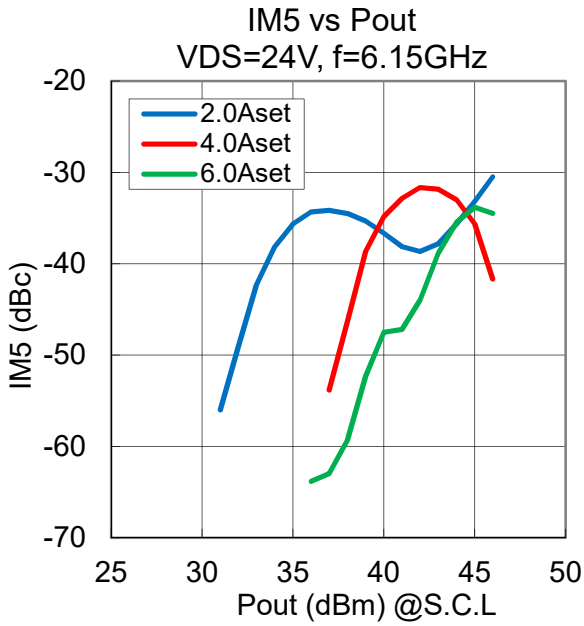



**·IM3, IM5 vs. Pout vs. IDSset**

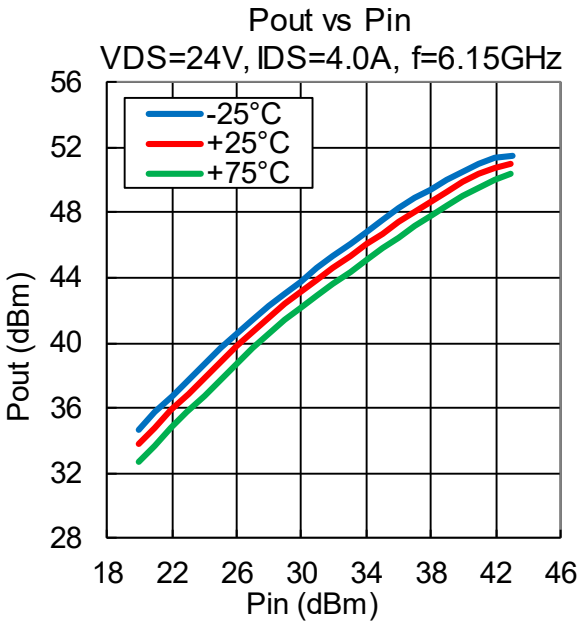
VDS= 24 V, IDSset= 2.0, 4.0, 6.0 A, f= 6.15 GHz, Δf= 5 MHz, Ta= +25 ℃

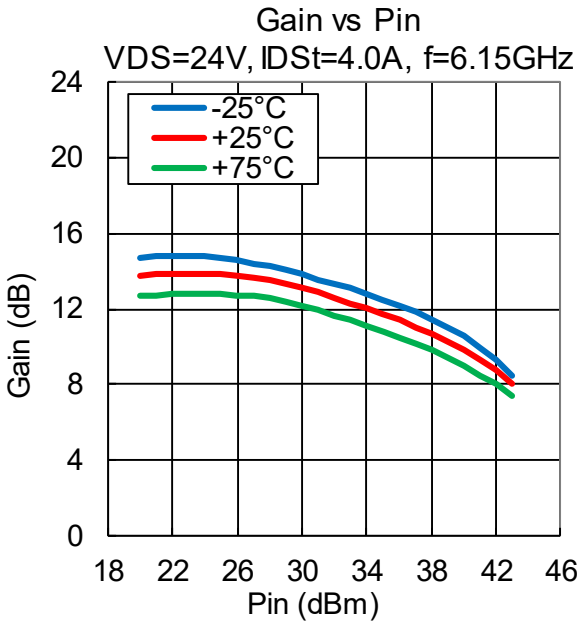


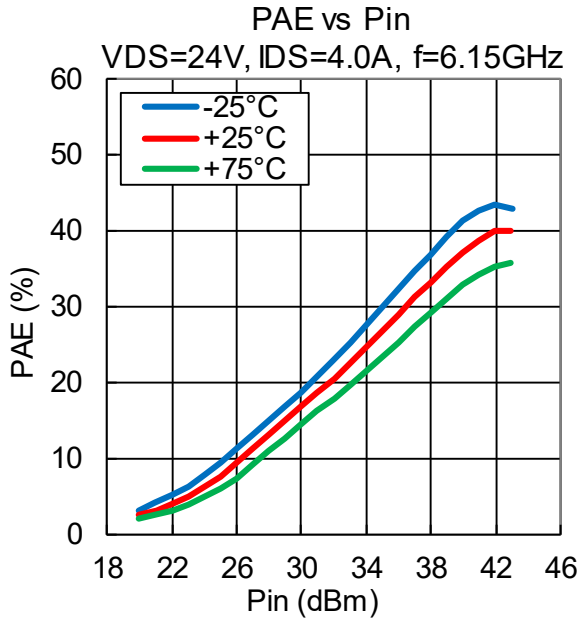



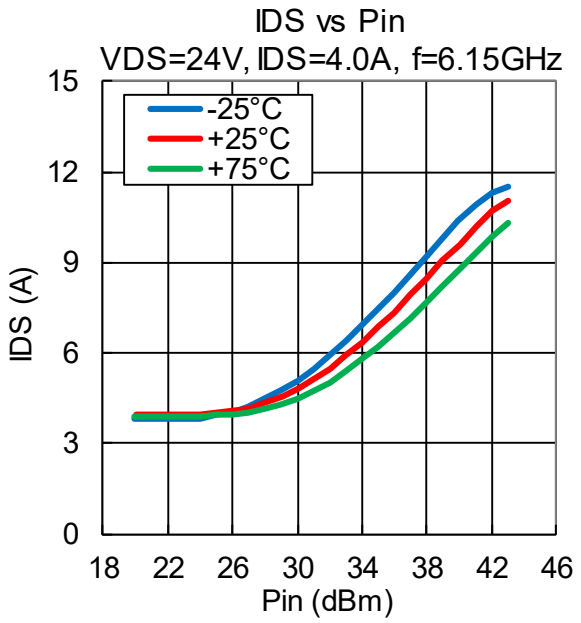
**·Pout , Gain , PAE , IDS vs. Pin vs. Temperature**

VDS= 24 V, IDSset= 4.0 A, f= 6.15 GHz, Ta= -25, +25, +75 ℃



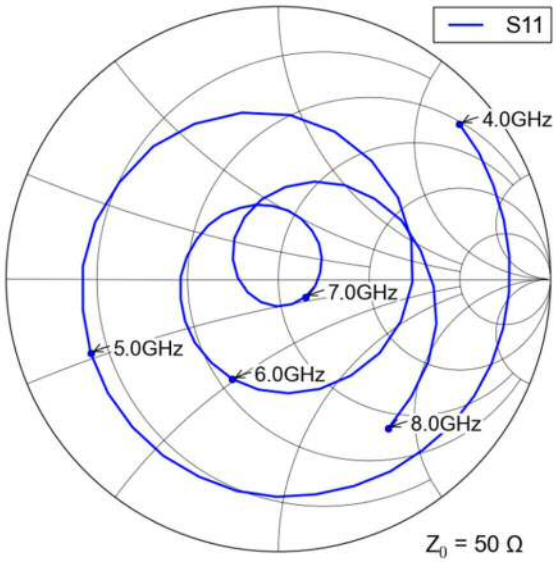



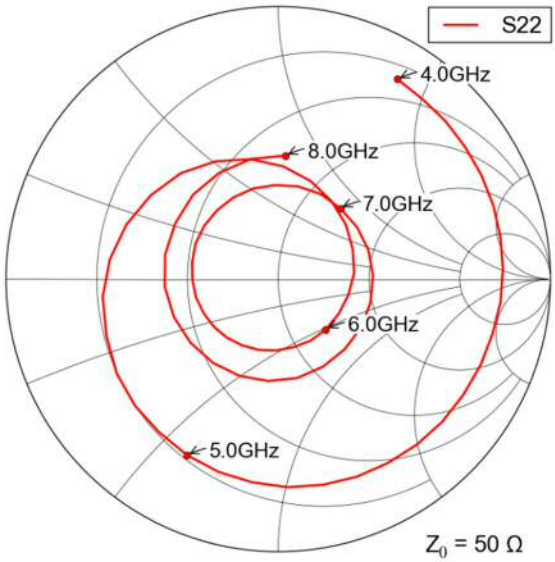



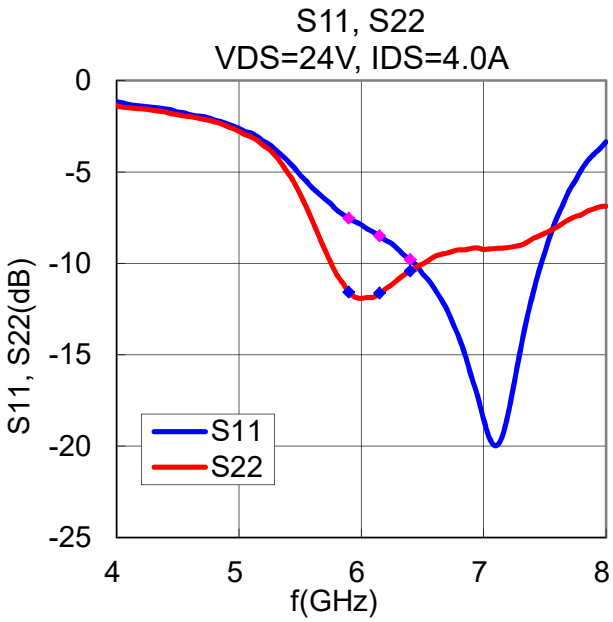



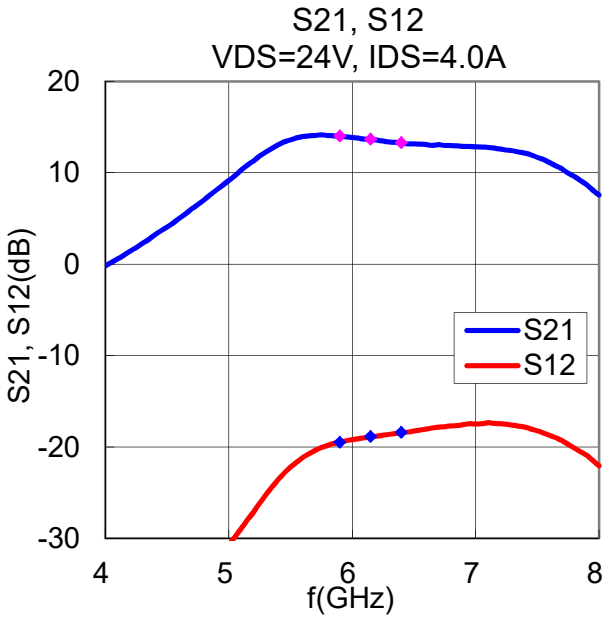
**·S-Parameters**

VDS= 24 V, IDSset= 4.0 A, f= =4.0 to 8.0 GHz, Ta= +25 ℃



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