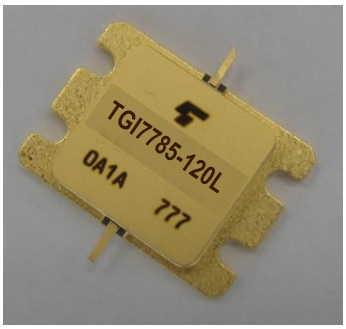
# MICROWAVE POWER GaN HEMT

# TGI7785-120L




## FEATURES

- **BROAD BAND INTERNALLY MATCHED HEMT**
- **HIGH POWER**
  Pout= 51.0dBm at Pin= 44.0dBm
- **HIGH GAIN**
  GL= 11.0dB at Pin= 20.0dBm
- **LOW INTERMODULATION DISTORTION**
  IM3(Min.)= -25dBc at Pout= 44.0dBm
  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 = 7.7 to 8.5GHz<br>@Pin= 44dBm | dBm | 50.0 | 51.0 | — |
| Drain Current | IDS1 | | A | — | 10.0 | 12.0 |
| Power Added Efficiency | ηadd | | % | — | 42 | — |
| Linear Gain | GL | @Pin= 20dBm | dB | 10.0 | 11.0 | — |
| Gain flatness | ΔG | | dB | — | — | ±0.8 |
| 3rd Order Intermodulation Distortion | IM3 | Two-Tone Test<br>Po= 44.0dBm, Δf= 5MHz<br>(Single Carrier Level) | dBc | -25 | -30 | — |
| Drain Current | IDS2 | | A | — | — | 8.0 |
| Channel Temperature Rise | ΔTch | (VDS X IDS + Pin – Pout)<br>X 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 | -1 | -4 | -6 |
| Gate-Source Breakdown Voltage | VGSO | IGS= -20mA | V | -10 | — | — |
| Thermal Resistance | Rth(c-c) | Channel to Case | °C/W | — | 0.6 | 0.8 |



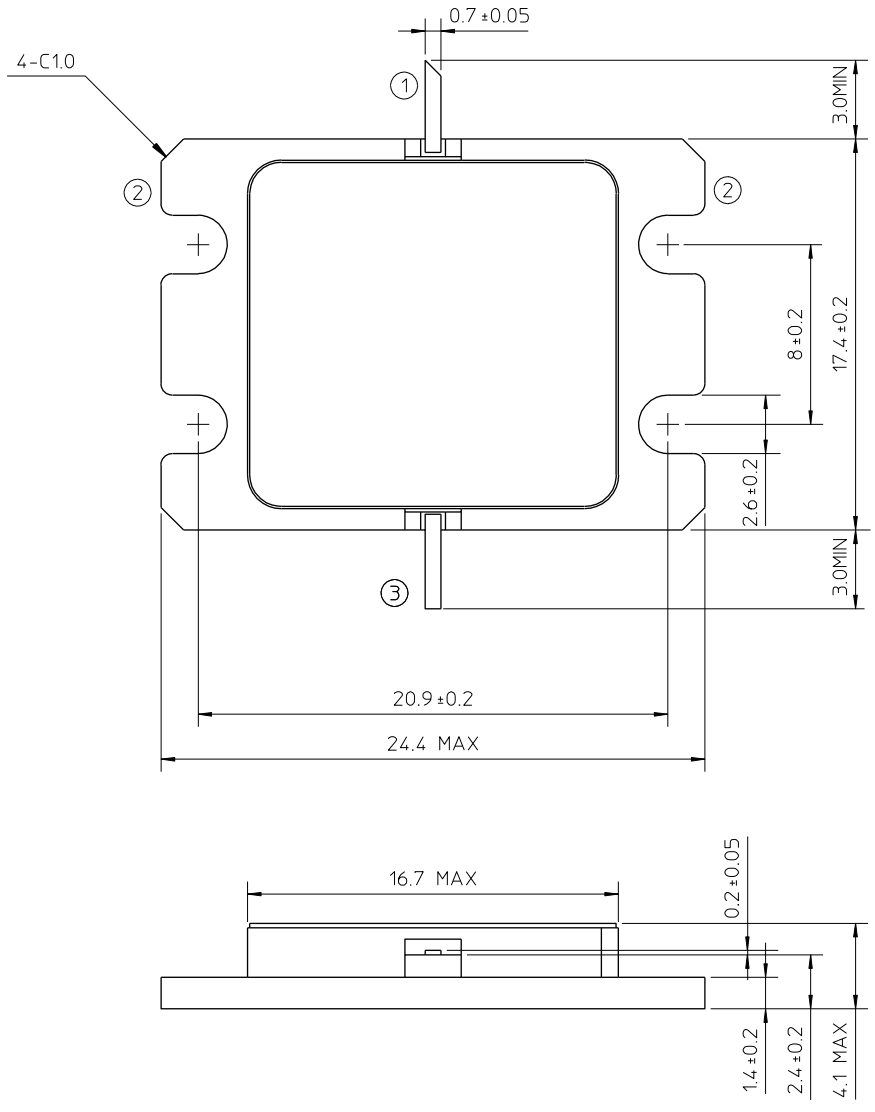


## ABSOLUTE MAXIMUM RATINGS ( Ta= 25°C )

| 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)




Unit in mm

① Gate
② Source
③ Drain

## HANDLING PRECAUTIONS FOR PACKAGE MODEL

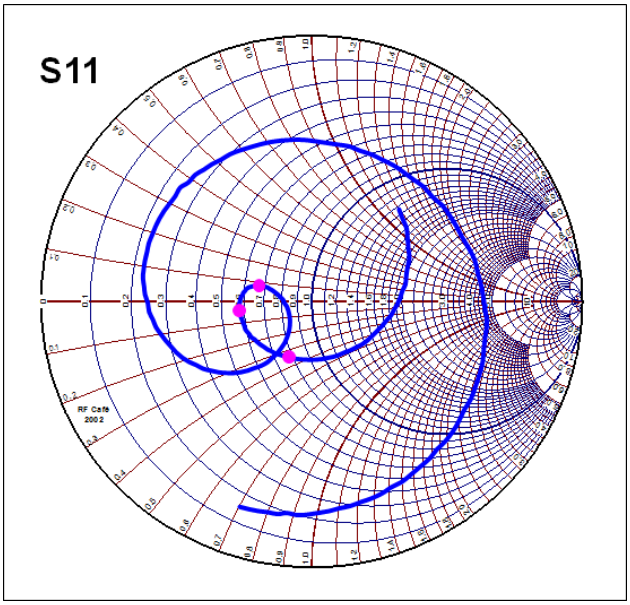
Soldering iron should be grounded and the operating time should not exceed 10 seconds at 260°C or 3 seconds at 350°C.

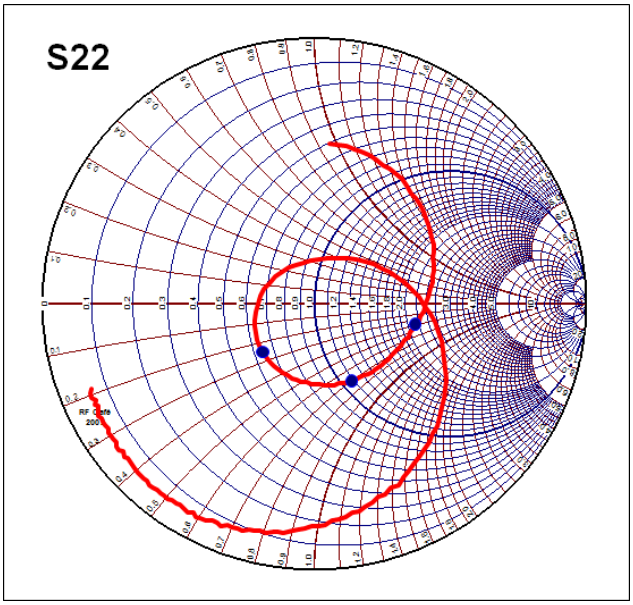
## TYPICAL RF PERFORMANCE

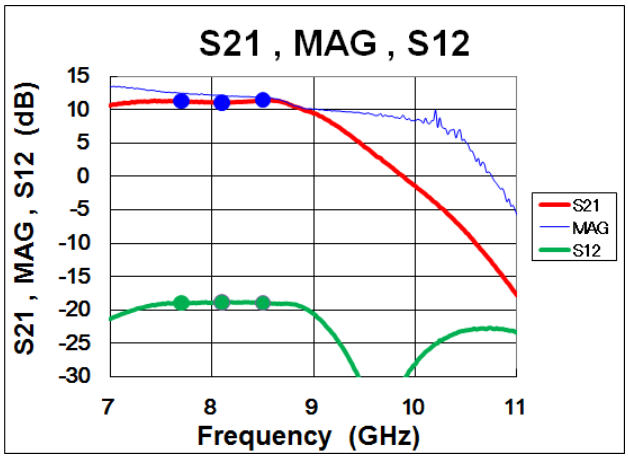
### ·S-Parameters

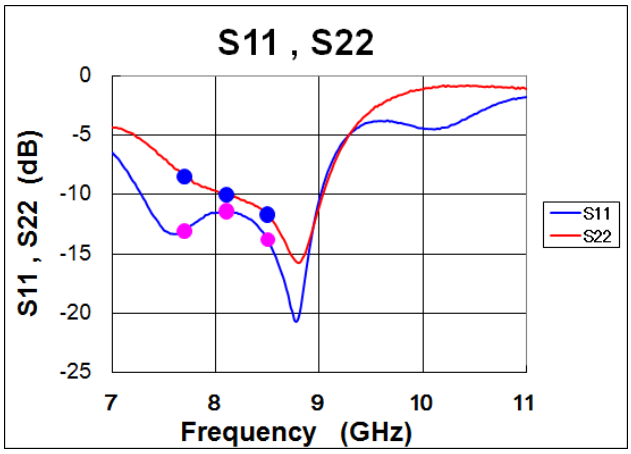
VDS= 24 (V) , IDSset= 4.0 (A) , f=7.0 to 11.0 (GHz)

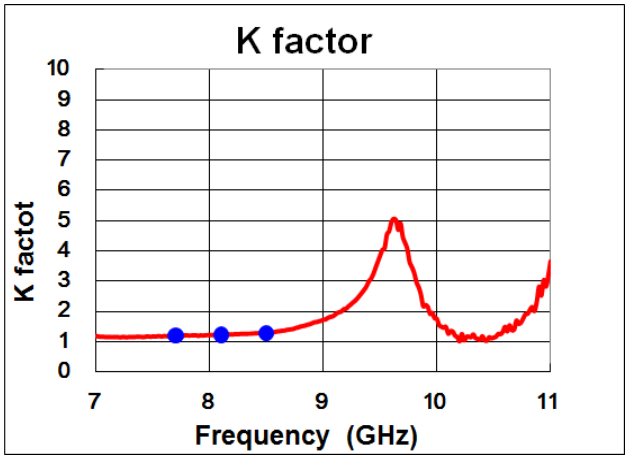
Marker : 7.7 , 8.1 , 8.5 (GHz)



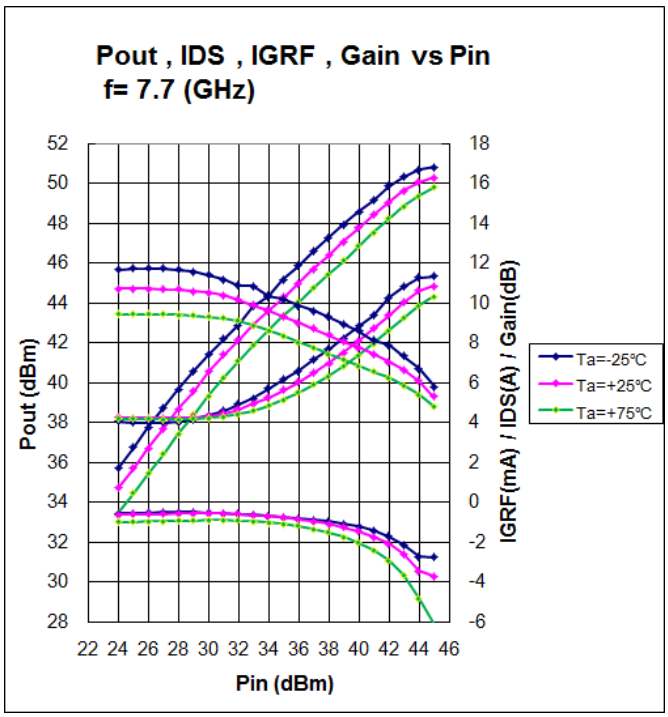



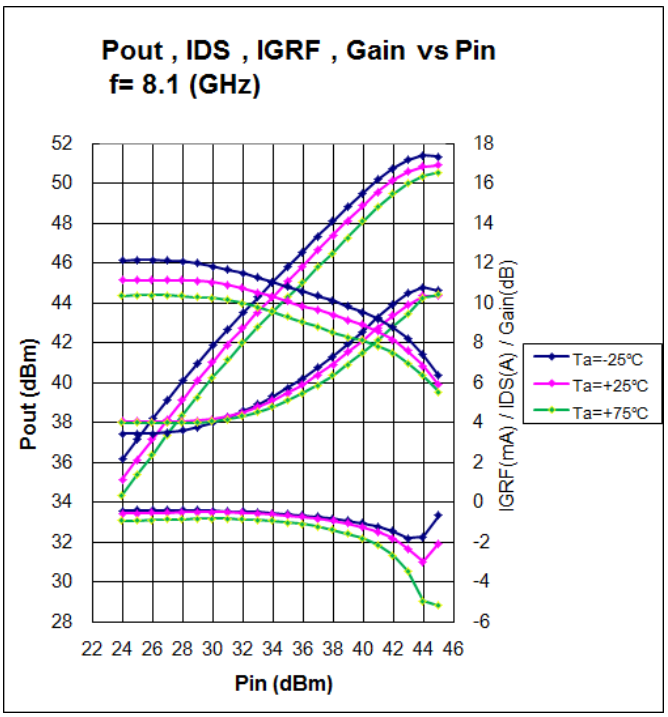



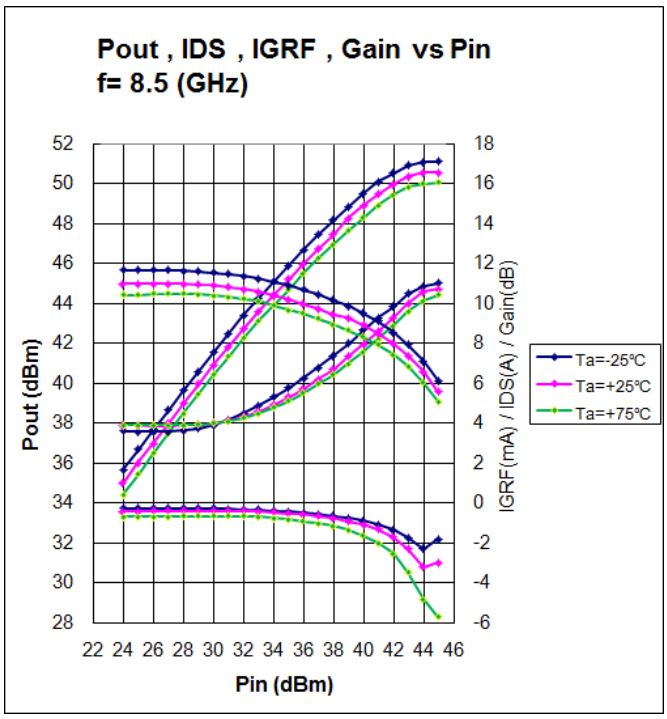



## ·Pout , IDS , IGRF , Gain vs. Pin vs. Temperature

VDS= 24 (V) , IDSset= 4.0 (A) , f= 7.7 , 8.1 , 8.5 (GHz)

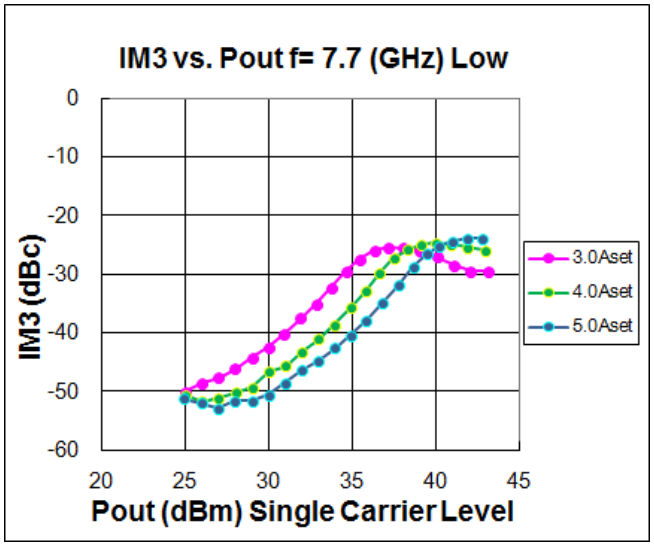


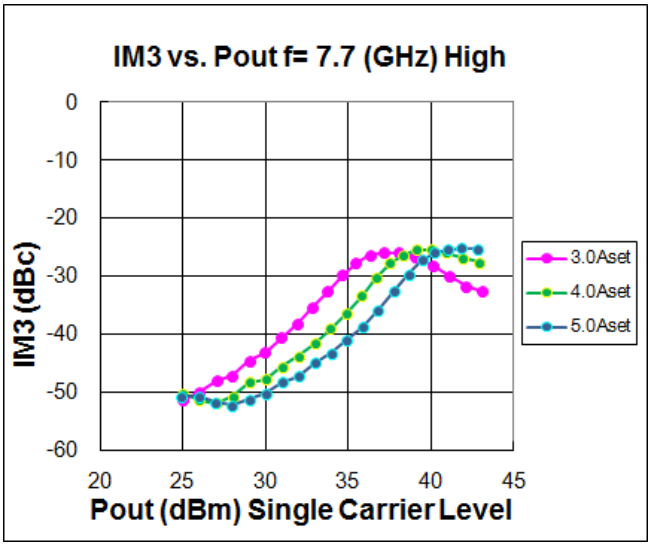



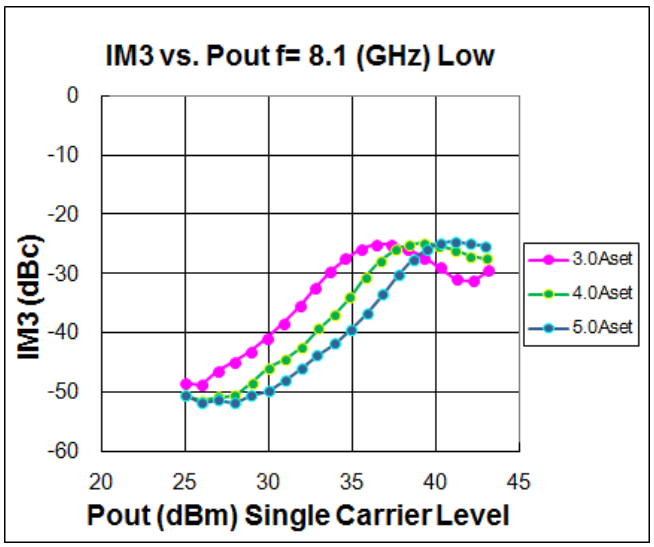



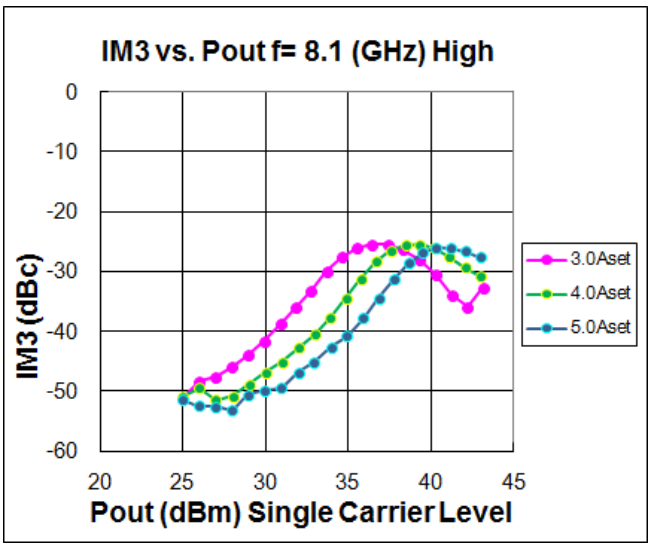
**·IM3 vs. Pout**

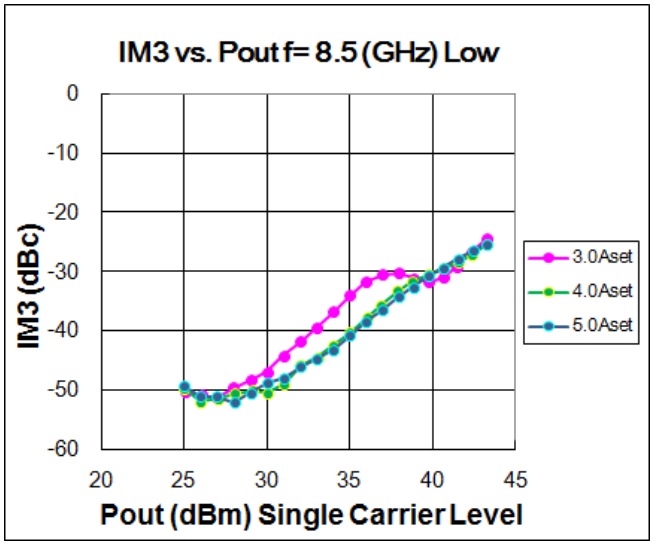
VDS= 24 (V) , IDSset= 3.0 , 4.0 , 5.0 (A) , f= 7.7 , 8.1 , 8.5 (GHz)

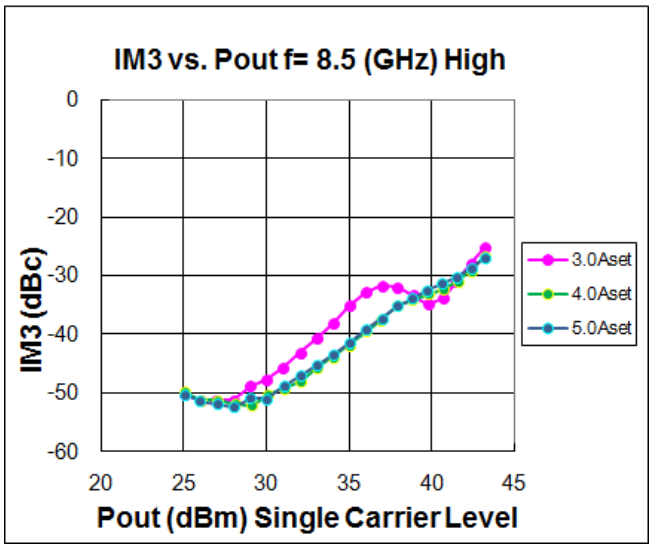


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