

Features

- Frequency: 5.5GHz~6GHz
- Gain: 22dB
- Output P₁dB: 36dBm
- Supply Voltage: +5~8V
- Power-Added Efficiency: 40%@+5V
- Die Size: 2.96mm×2.57mm×0.1mm
- Packaged: Bare Die

Typical Applications

- Microwave radio including point to point communication
- Telecommunication
- Weather radar
- Optical communication
- Test instrumentation
- SatCom
- VSAT
- Military and Aerospace

General Description

The XT3119 is a C-band GaAs MMIC power amplifier. The XT3119 provides 22 dB of gain, and +36 dBm of output power for 1 dB compression and 40% PAE from a +5V~+8V supply.

The chip has surface passivation for protection and backside via holes and gold metallisation to allow a conductive epoxy die attach process. This device is well suited for communications, Point to Point radio and radar applications.

Electrical Performance I ($T_A=25^{\circ}\text{C}$, $V_D=+5\text{V}$, $I_D=0.9\text{A}$, $Z_0=50\Omega$)

Parameter	Min.	Typ.	Max.	Units
Frequency Range	5.5~6			GHz
Small Signal Gain	17	23	—	dB
Small Signal Gain Flatness	—	±1.5	—	dB
Reverse Isolation	—	-40	—	dB
Input Return Loss	—	-12	—	dB
Power-Added Efficiency	—	40	—	%
Output Power for 1 dB Compression (OP ₁ dB)	31	33	—	dBm
Drain Voltage(V_D)	—	5	—	V
Supply Current(I_D)	—	1.1	1.7	A

Electrical Performance II ($T_A=25^{\circ}\text{C}$, $V_D=+8\text{V}$, $I_D=1\text{A}$, $Z_0=50\Omega$)

Parameter	Min.	Typ.	Max.	Units
Frequency Range	5.5~6			GHz
Small Signal Gain	19	21	—	dB
Small Signal Gain Flatness	—	±1.5	—	dB
Reverse Isolation	—	-40	—	dB
Input Return Loss	—	-12	—	dB
Power-Added Efficiency	—	40	—	%
Output Power for 1 dB Compression (OP ₁ dB)	35.5	36	—	dBm
Drain Voltage(V_D)	—	8	—	V
Supply Current(I_D)	—	1.5	2	A

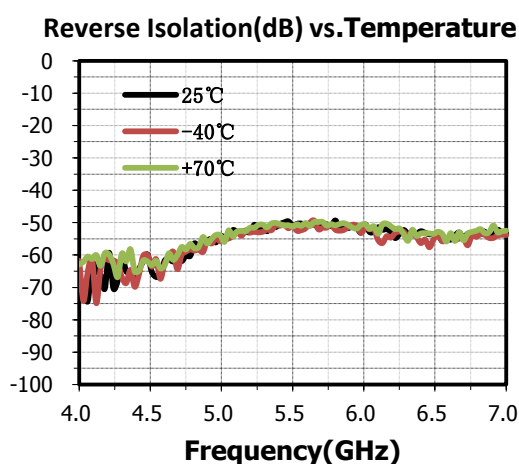
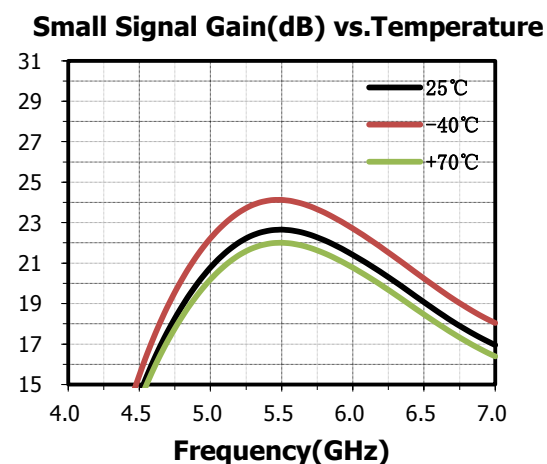
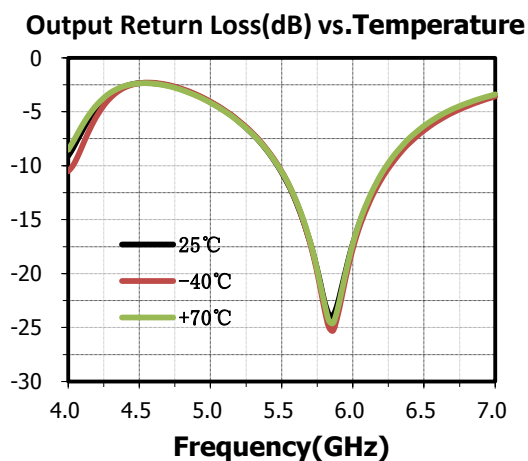
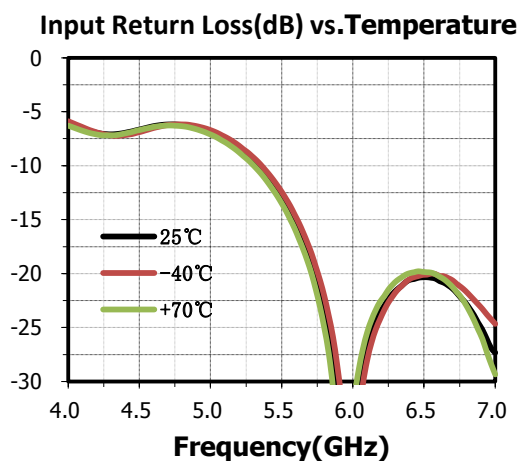
Absolute Maximum Ratings

Maximum Input Power	+19dBm	Operating Temperature	-55℃~+85℃
Junction Temperature	+150℃	Storage Temperature	-65℃~+150℃
Maximum V_D	+9V	Maximum V_G	-1.2V

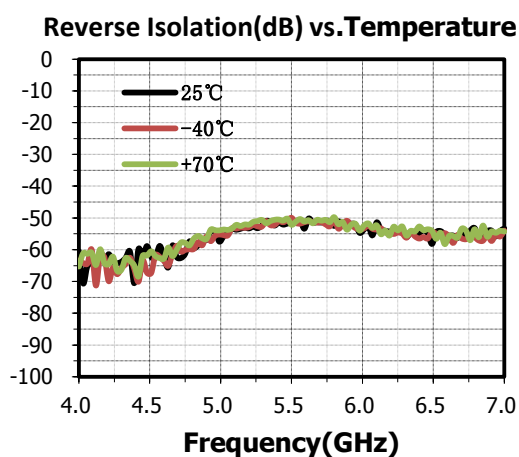
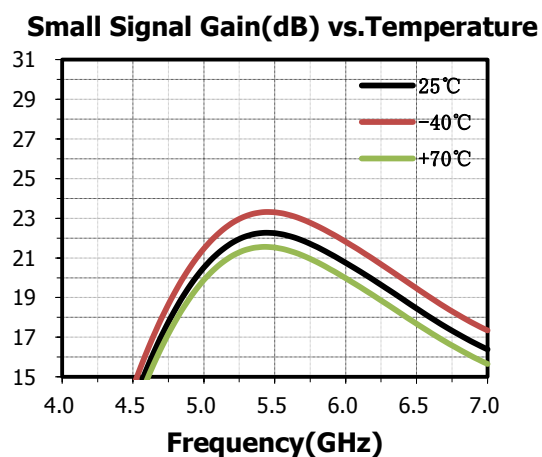
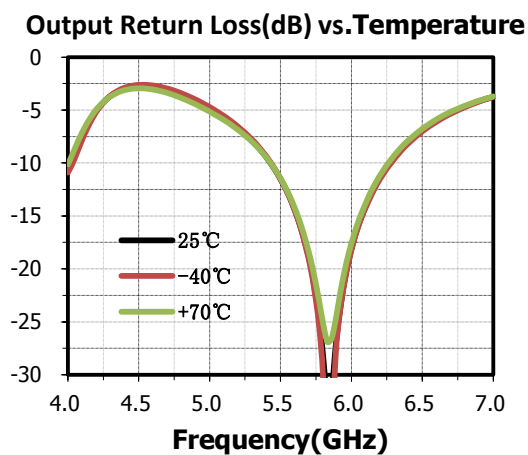
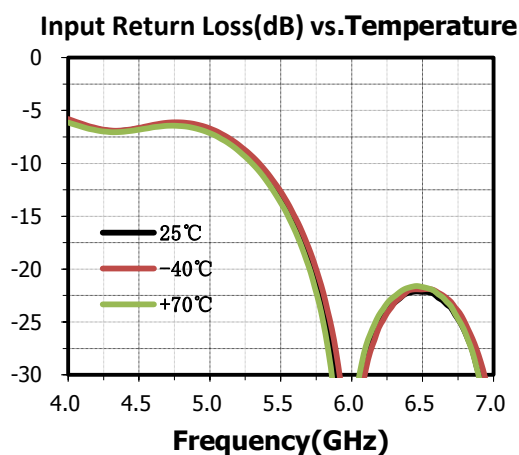
Typical Performance Curve

Data obtained from 3.5-mm connector based test fixture,
and this data includes connector loss and board loss

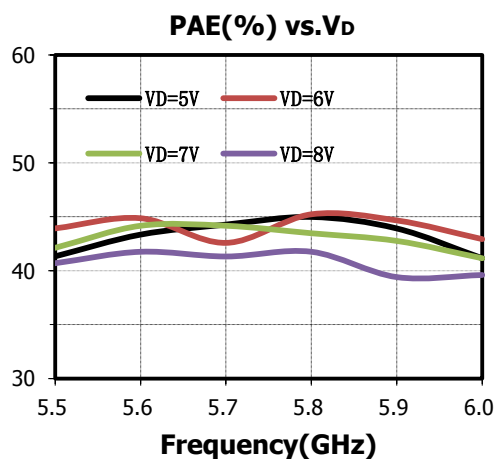
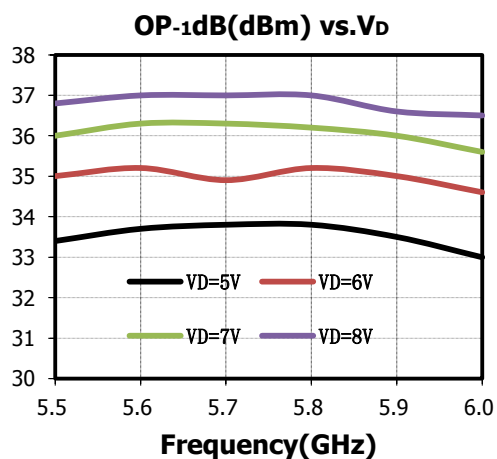
$V_D=5V$, $I_{DQ}=1000mA$



$V_D=8V$, $I_{DQ}=1000mA$



Power and PAE Performance Curve



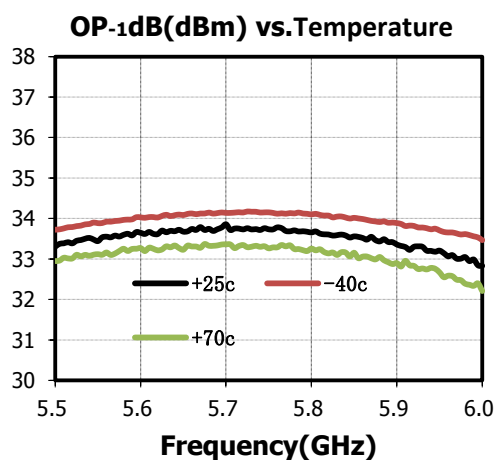
XT3119



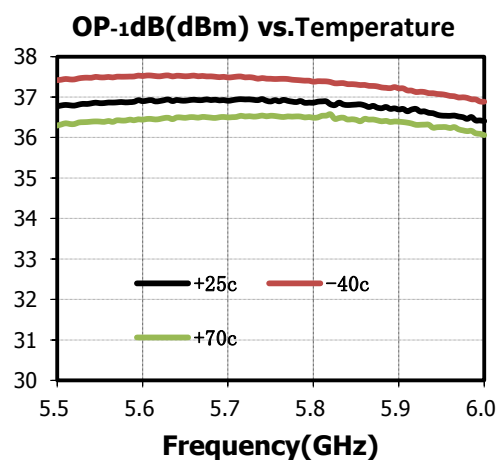
GaAs MMIC Power Amplifier
5.5GHz~6GHz 36dBm

Rev2.0

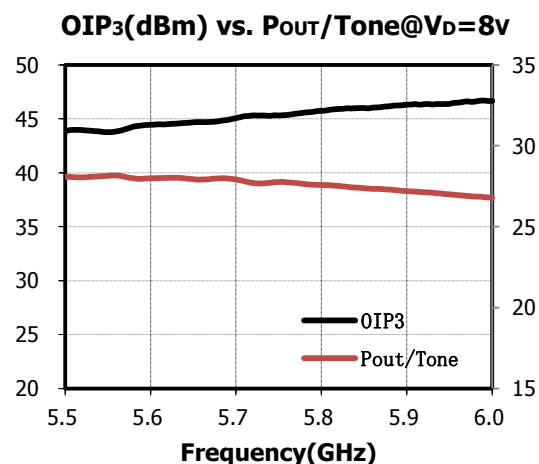
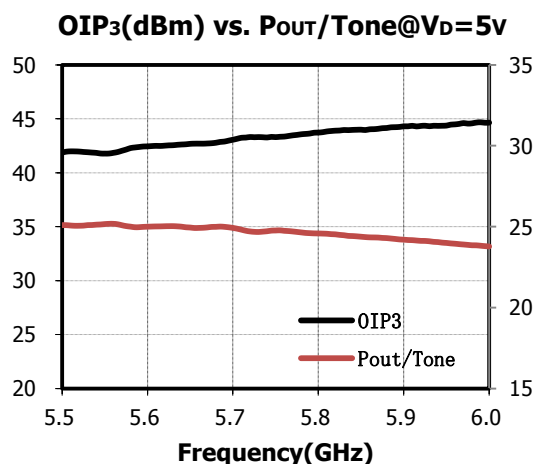
$V_D = +5V$



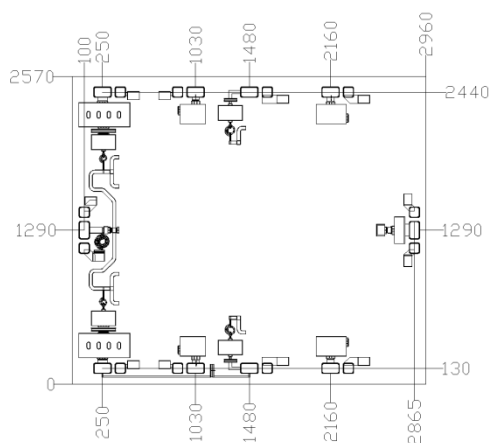
$V_D = +8V$



Output IP₃ vs. Supply Voltage Performance Curve

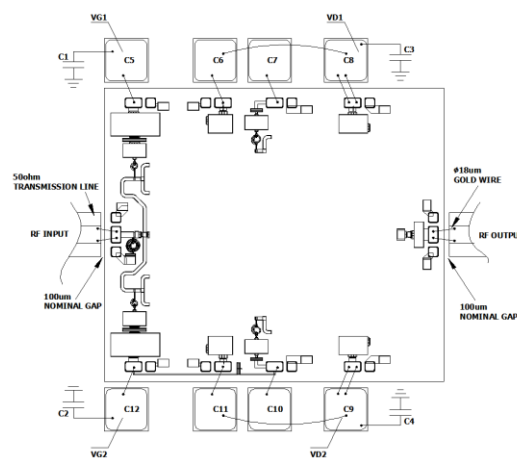


Die Outline (all dimensions in um)



Bonding pad size:130x80μm

Assembly Diagram



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Components List

Reference Des.	Value	Part Number	Manuf.	Size
C1~C4	1uF	GRM155R61A105KE15D	Murata	0402
C5~C12	300pF	—	ANY	SLC

Notes

1. The XT3119 is biased with a positive drain supply and negative gate supply. The recommended gate voltage is set to $-0.7 \sim -0.95V$.
2. RF connections should be made as short as possible to reduce the inductive effect of the bond wire. Use of a 0.8 mil thermosonic wedge bonding is highly recommended as the loop height will be minimized. The RF input and output require a double bond wire as shown.
3. The backside of the XT3119 is RF ground. Die attach should be accomplished with electrically and thermally conductive epoxy only.
4. Bypass caps C1~C4 should be placed no farther than 1.5mm from the amplifier.