

Features

- Frequency : 26GHz~38GHz
- Gain: 16dB
- Balanced Amplifier
- Output P_{1dB}: 26dBm
- Supply Voltage: +5~+6V
- Power-Added Efficiency: 20%
- Die Size: 2.14mm×1.25mm×0.1mm

General Description

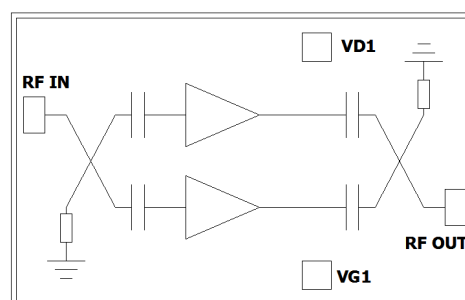
The XT3907 is a wideband GaAs MMIC driver amplifier which operates between 26GHz~38GHz. The XT3907 is a balanced amplifier that has good input and output return loss when amplifier is turn off or on.

The XT3907 offers full passivation for increased reliability and moisture protection.

Typical Applications

- T/R Module
- SATCOM
- Military and Space
- Test and Measurement
- Radar

Functional Diagram



Electrical Performance (T_A=25°C, V_D=+6V, I_D=450mA, Z₀=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range	26~38			GHz
Small Signal Gain	-	16	—	dB
Small Signal Gain Flatness	—	± 2	—	dB
Reverse Isolation	—	-45	—	dB
Input Return Loss	—	-12	—	dB
Output Return Loss	—	-15	—	dB
Power-Added Efficiency	—	20	—	%
Output Power for 1 dB Compression (OP _{1dB})	—	26	—	dBm
Drain Voltage(V _D)	5	-	6	V
Supply Current(I _D)	—	400	600	mA

Absolute Maximum Ratings

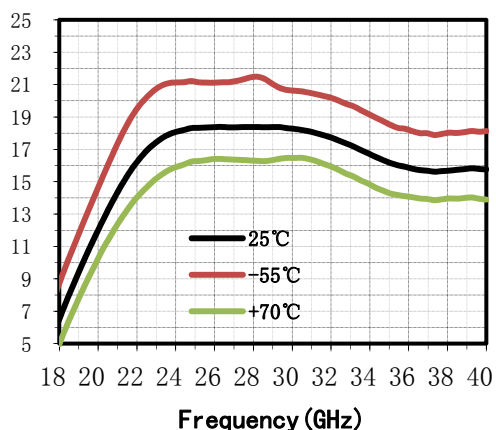
Maximum Input Power	+17dBm	Operating Temperature	-55°C~+85°C
Junction Temperature	+150°C	Storage Temperature	-65°C~+150°C
Maximum V _D	+6.3V	Maximum V _G	-1.2V

Typical Performance Curve

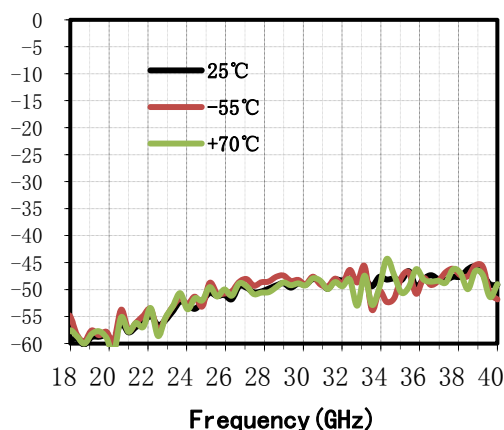
Data Based on the On-Wafer RF Probe Test Results

*Bias Conditions: $V_D = 6V$, $I_D = 450mA$

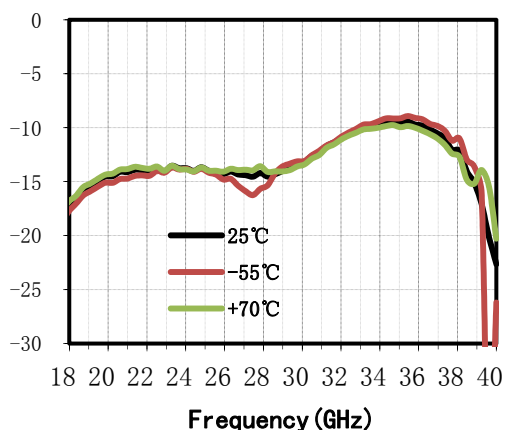
Small Signal Gain(dB) vs.Temperature



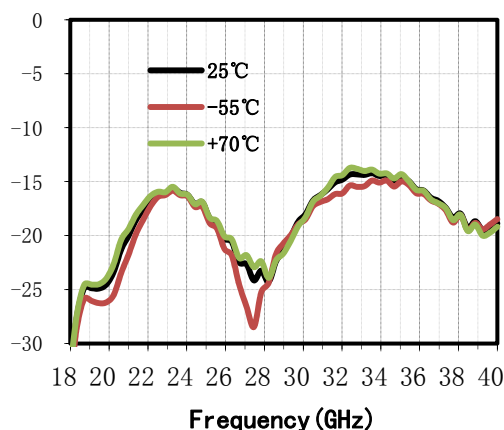
Reverse Isolation(dB) vs.Temperature



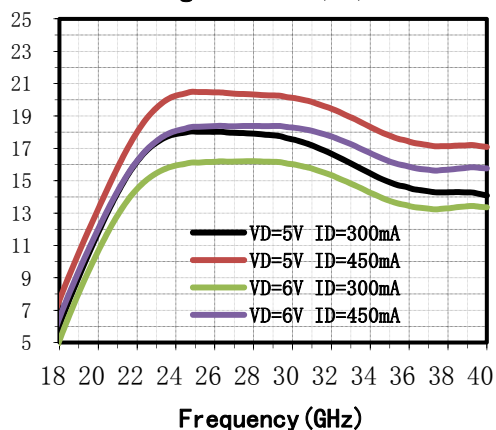
Input Return Loss(dB) vs.Temperature



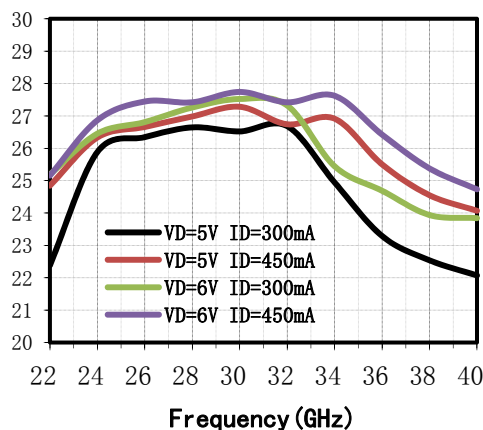
Output Return Loss(dB) vs.Temperature



Small Signal Gain(dB) vs. Bias

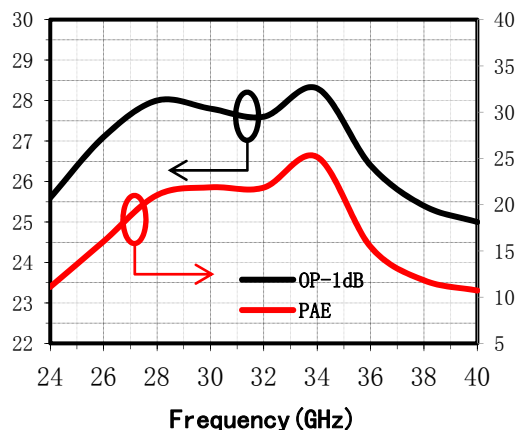


OP-1dB vs. V_D , I_D

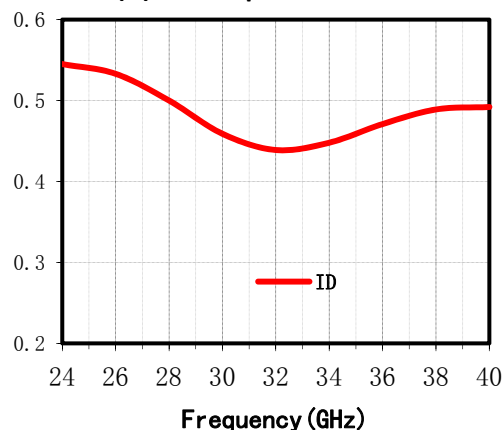


Data obtained from 3.5-mm connector based test fixture $T_A=25^\circ\text{C}$

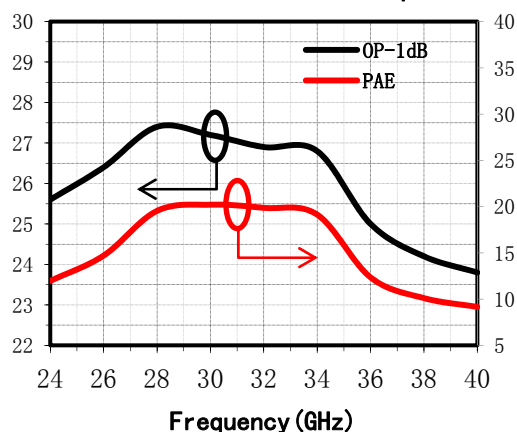
OP-1dB (dBm) 、 PAE (%) vs. Freq @ $V_D=6V$



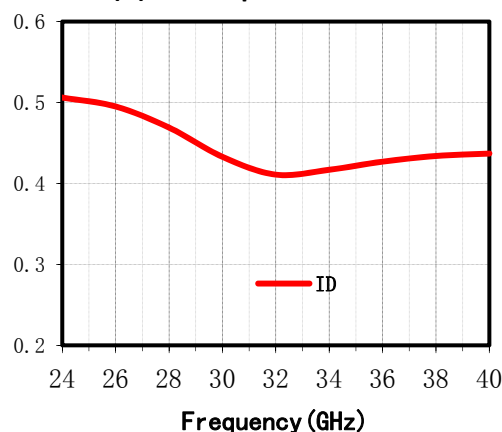
I_D (A) vs. Freq@OP-1dB $V_D=6V$



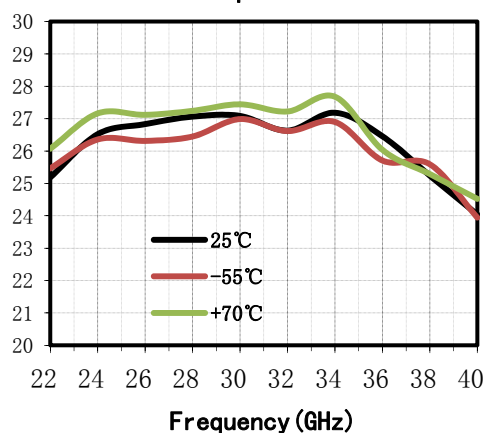
OP-1dB (dBm) 、 PAE (%) vs. Freq @ $V_D=5V$



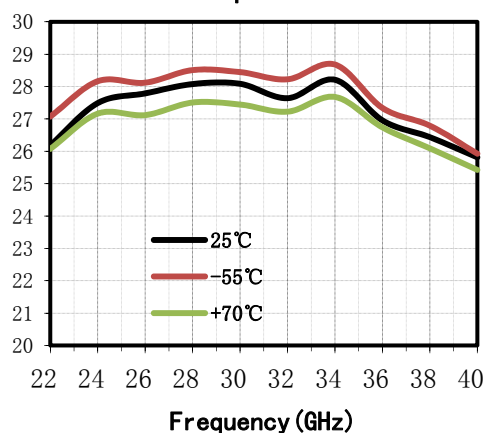
I_D (A) vs. Freq@OP-1dB $V_D=5V$



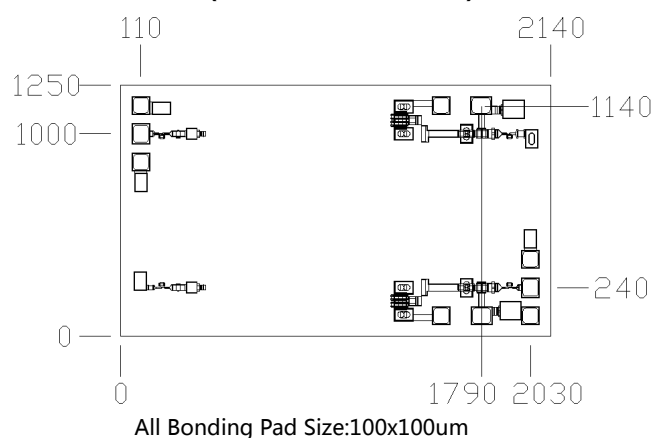
OP-1dB vs. Temperature @ $V_D=5V$



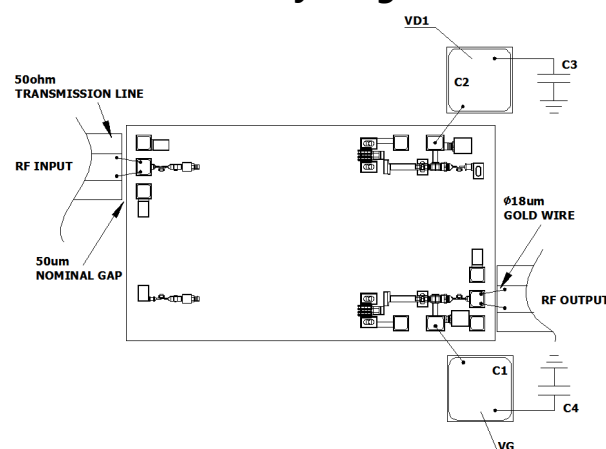
OP-1dB vs. Temperature @ $V_D=6V$



Die Outline
(all dimensions in μm)



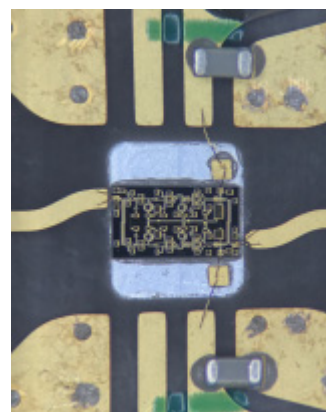
Assembly Diagram



Components List

Reference Des.	Value	Part Number	Manuf.	Size
C3、C4	1uF	GRM155R61A105KE15D	Murata	0402
C1、C2	300pF	-	ANY	SLC

Chip Test Fixture



Notes

1. The XT3907 is biased with a positive drain supply and negative gate supply.
when the drain voltage is set to 6 V. The recommended gate voltage is set to -0.4~-0.75 V.
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 XT3907 is RF ground. Die attach should be accomplished with electrically and thermally conductive epoxy only.
4. Bypass caps C3、C4 should be placed no farther than 1.8mm from the amplifier.

Attention:

GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.