

Features

- Frequency : 14GHz~18GHz
- Gain: 19dB
- Output P_{1dB}: 31dBm
- Supply Voltage: +5V~+6V
- Power-Added Efficiency:40%
- Die Size: 2.14mm×1.25mm×0.1mm

Typical Applications

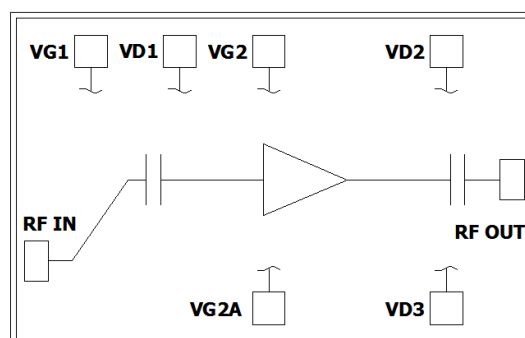
- Point-to-Point Radios
- SATCOM
- Military and Space
- Test and Measurement
- Radar

General Description

The XT3914 is a wideband GaAs MMIC driver amplifier which operates between 14GHz~18GHz. The amplifier has high PAE at output P_{1dB} power making it an ideal driver amplifier for high efficiency applications.

The XT3914 offers full passivation for increased reliability and moisture protection.

Functional Diagram



Electrical Performance (T_A=25°C, V_D=+6V, I_D=500mA, Z₀=50Ω)

Parameter	Min.	Typ.	Max.	Units
Frequency Range	14~18			GHz
Small Signal Gain	-	19	—	dB
Small Signal Gain Flatness	—	± 2	—	dB
Reverse Isolation	—	-40	—	dB
Input Return Loss	—	-10	—	dB
Power-Added Efficiency	—	40	—	%
Output Power for 1 dB Compression (OP _{1dB})	—	31	—	dBm
Drain Voltage(V _D)	5	-	6	V
Supply Current(I _D)	—	500	750	mA

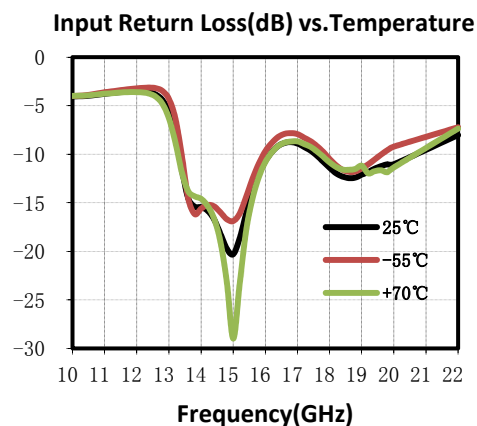
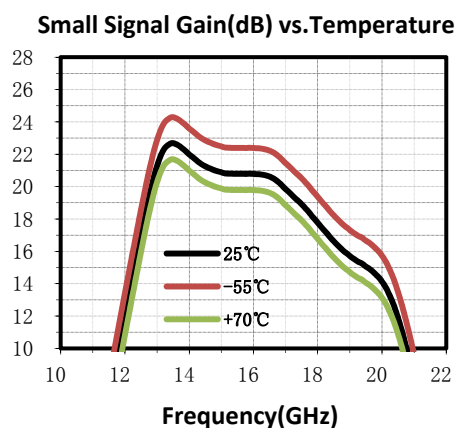
Absolute Maximum Ratings

Maximum Input Power	+18dBm	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

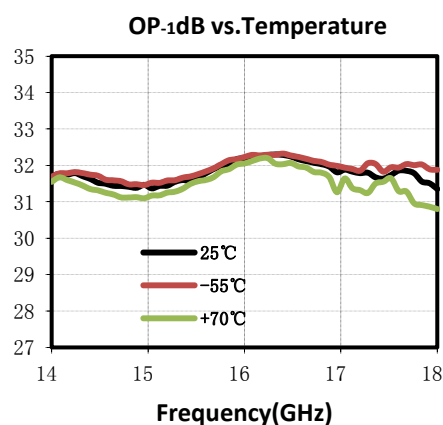
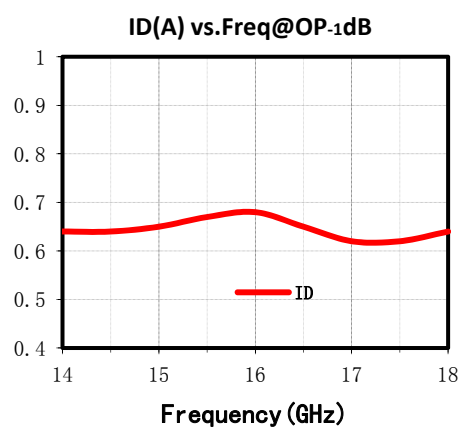
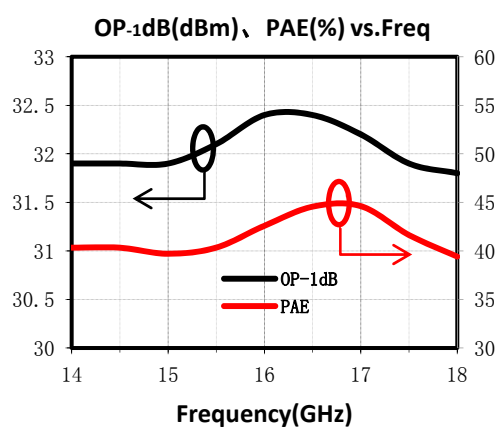
Data Based on the On-Wafer RF Probe Test Results

*Bias Conditions: $V_D = 6V$, $I_D = 500mA$

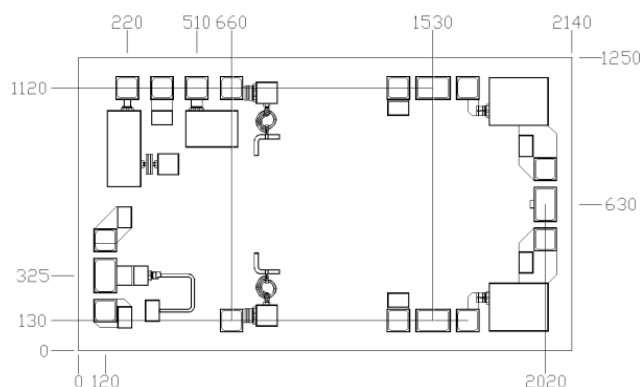


Data Based on the Connector Based Fixture Test Results

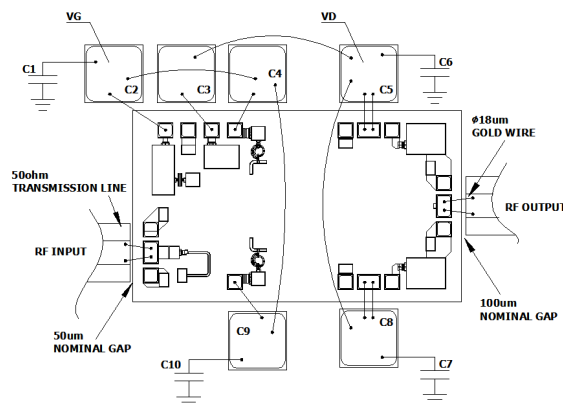
*Bias Conditions: $V_D = 6V$, $I_D = 500mA$



Die Outline
(all dimensions in μm)



Assembly Diagram



VD2, VD3, RF Bonding pad size:100x150 μm
VG1, VD1, VG2, VG2A Bonding pad size:100x100 μm

Components List

Reference Des.	Value	Part Number	Manuf.	Size
C1, C6, C7, C10	1 μF	GRM155R61A105KE15D	Murata	0402
C2~C5, C8, C9	300pF	-	ANY	SLC

Notes

1. The XT3914 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 -0.5~-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 XT3914 is RF ground. Die attach should be accomplished with electrically and thermally conductive epoxy only.
4. Bypass caps C1, C6, C7, C10 should be placed no farther than 1.5mm from the amplifier.

Attention:

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