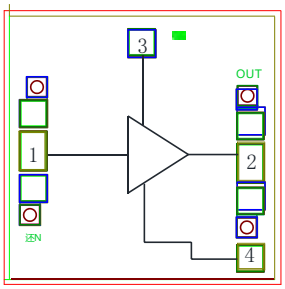
TFLN1017-H
2.5~4.5 GHz GaAs MMIC Low Noise Amplifier

★1.Product Features

- Frequency range: 2.5~4.5 GHz
- Noise figure: 0.9 dB
- Small signal gain: 20 dB
- Output P-1dB: 17 dBm
- Input return loss: -20 dB
- Output return loss: -20 dB
- Operating current: 36 mA @ +3 V
- Chip size: 1.1 mm × 1.1 mm × 0.075 mm
- Replacement for: HMC716

Functional Block Diagram



★2.Product Introduction

The TFLN1017-H is a low noise amplifier chip operating in the 2.5~4.5 GHz frequency range with a supply voltage of +3 V to +5 V. At +3 V, it provides a gain of 20 dB, a noise figure of 0.9 dB and an output P-1dB of 17 dBm. At +5 V, it provides a gain of 21 dB, a noise figure of 0.75 dB and an output P-1dB of 22 dBm. It is available as a replacement for the foreign model HMC716.

The chip backside is metallized and is suitable for conductive adhesive die attachment or eutectic bonding. The chip adopts an on-chip metallized via-hole process to ensure good grounding, which makes it easy to use without additional grounding measures.

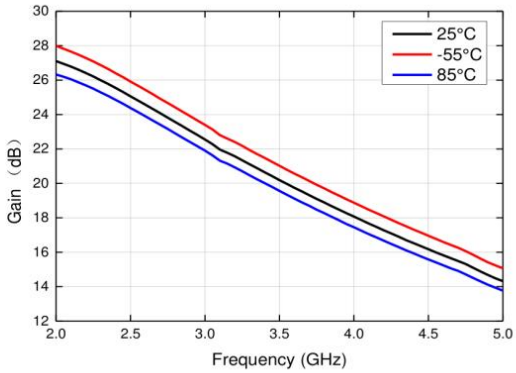
★3.Electrical Characteristics (TA=+25℃, 50Ω System)

Parameter	Symbol	VD=+3V			VD=+5V			Unit
		Min	Typ	Max	Min	Typ	Max	
Operating Frequency	Freq	2.5	—	4.5	2.5	—	4.5	GHz
Gain	Gain	14	20	27	15	21	28	dB
Noise Figure	NF	—	0.9	1	—	0.75	1.1	dB
Output P-1dB	OP1dB	—	17	—	—	22	—	dBm
Saturated Output Power	OP3dB	—	19	—	—	22	—	dBm
Input Return Loss	RL_in	—	-20	—	—	-20	—	dB
Output Return Loss	RL_out	—	-20	—	—	-25	—	dB
Output Third-Order Intercept	OIP3	—	26	—	—	30	—	dBm
Quiescent Current	IDQ	—	36	45	—	83	100	mA

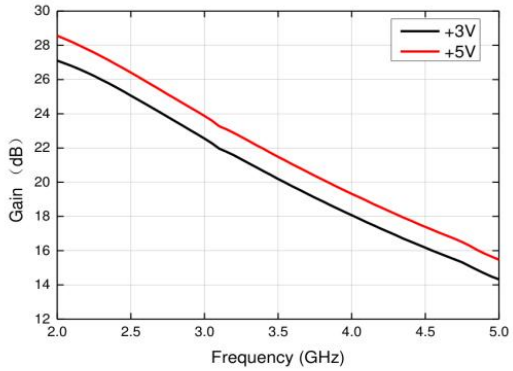
Email: ttf@ttfelectronic.com
Website:ttfelectronic.com
Address: Building 16, Area C, Entrepreneurship and R&D Park, Xi'an High-tech Industrial Development Zone, China

★4.Typical Test Curve

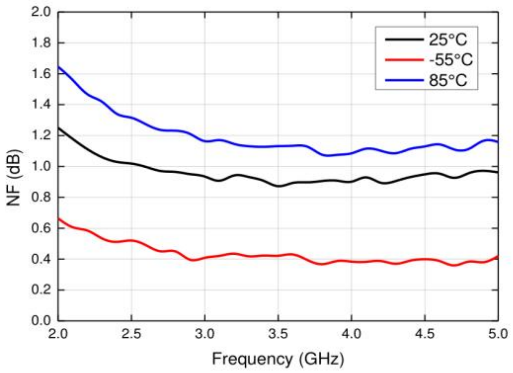
Gain vs. Frequency (Vd=+3V)



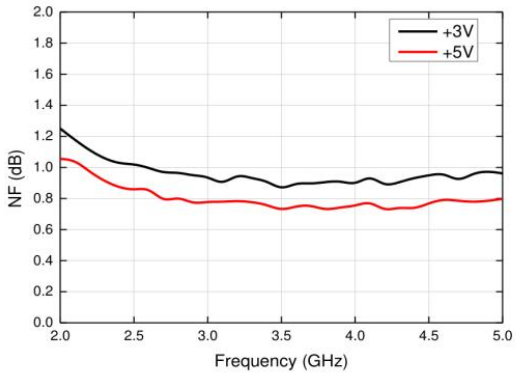
Gain vs. Frequency (Vd=+5V)



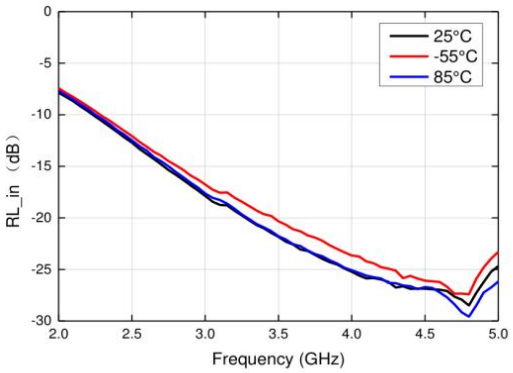
Noise Figure vs. Frequency (Vd=+3V)



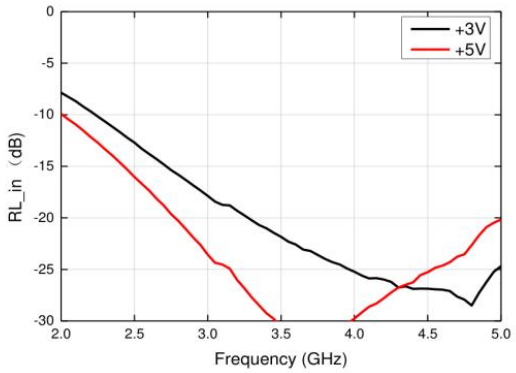
Noise Figure vs. Frequency (Vd=+5V)



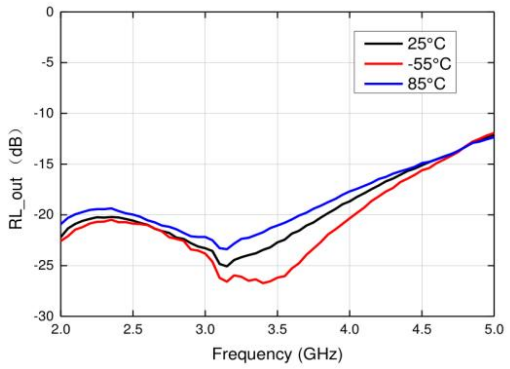
Input Return Loss vs. Frequency (Vd=+3V)



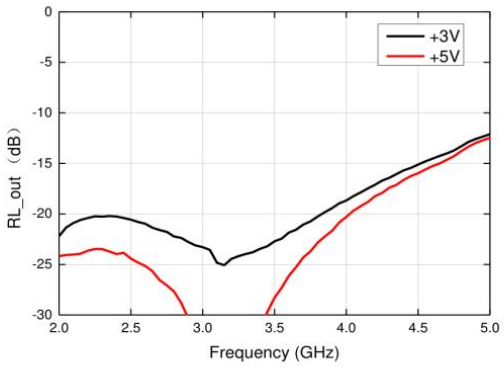
Input Return Loss vs. Frequency (Vd=+5V)



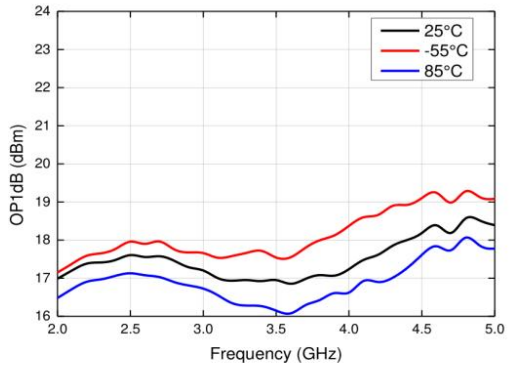
Output Return Loss vs. Frequency (Vd=+3V)



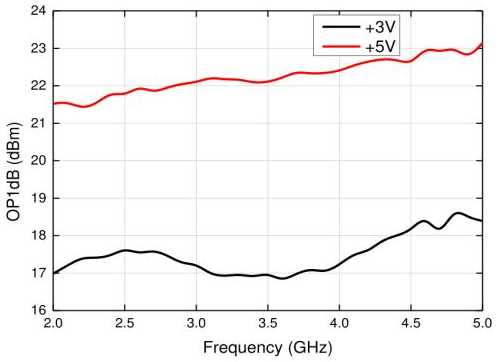
Output Return Loss vs. Frequency (Vd=+5V)



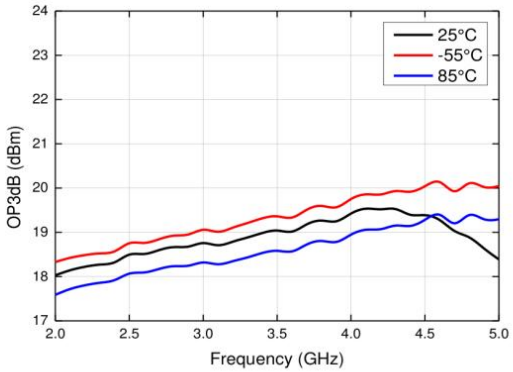
Output P-1dB vs. Frequency (Vd=+3V)



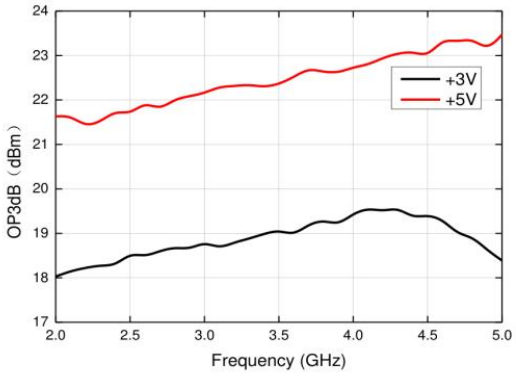
Output P-1dB vs. Frequency (Vd=+5V)



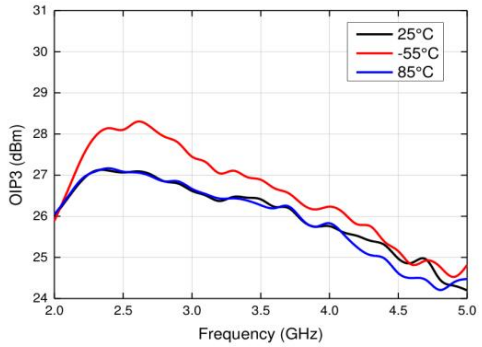
Output P3dB vs. Frequency (Vd=+3V)



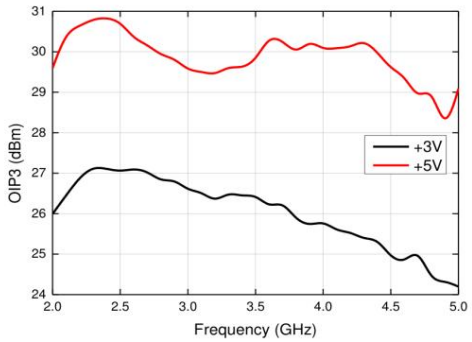
Output P3dB vs. Frequency (Vd=+5V)



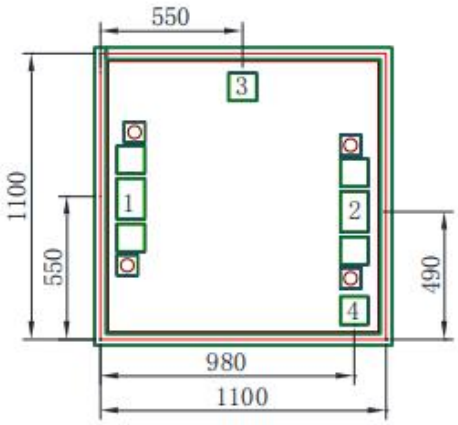
OIP3 vs. Frequency (Vd=+3V)



OIP3 vs. Frequency (Vd=+5V)



★5.Outline Dimensions

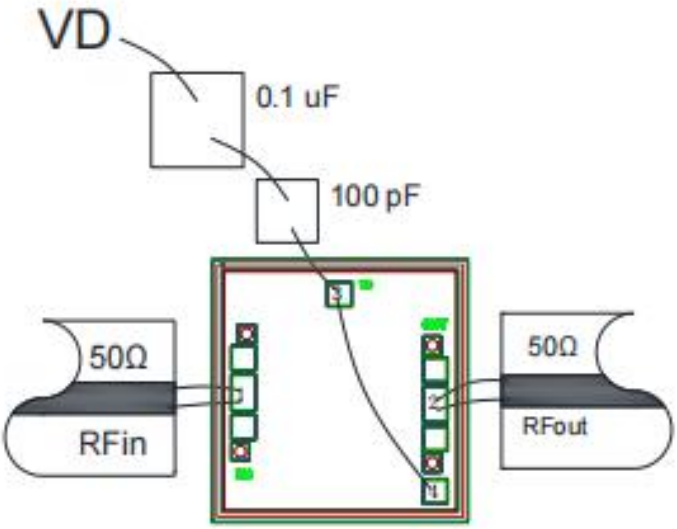


Notes:
1. Unit: μm
2. Chip backside is gold-plated for grounding.
3. I/O pad size: 150 μm × 100 μm.
4. GND pad size: 100 μm × 100 μm.
5. Outline dimension tolerance: ±50 μm.

★6.Bonding Pressure Point Definition

Pressure Point Number	Function Definition	Function Description
1	RFin	RF signal input port, connected to an external 50Ω system. No DC blocking capacitor inside the chip.
2	RFout	RF signal output port, connected to an external 50Ω system. DC-blocked inside the chip.
3	VD	+3 V/+5 V DC power supply port.
4	Bias	Bias port, which needs to be directly wire-bonded to VD.

★7.Suggested Assembly Drawing



★8.Precautions

Absolute Maximum Ratings	Numerical value
Input Power (Pin, 50Ω)	+15 dBm
Drain Voltage	+6 V
Storage Temperature	-65℃~+150℃
Operating Temperature	-55℃~+125℃
Sintering Temperature (30s, N_2 Protection)	300℃
ESD (HBM)	200 V
Exceeding any of the above maximum limits may cause permanent damage.	



This product is sensitive to static electricity.

Please take precautions against static electricity during use.