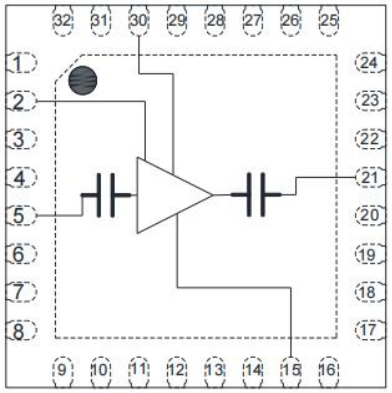
★1.Product Features

- Frequency range: 2 ~ 20 GHz
- Noise figure: 2.5 dB
- Gain: 15 dB
- Output P1dB: 14 dBm
- Operating current: 65 mA @ +5 V
- Package size: 5.0 mm × 5.0 mm
- Replacement for HMC463LP5

Functional Block Diagram



★2.Product Introduction

The TFLN1014-HP is a low noise amplifier in a QFN plastic package with a package size of 5 mm × 5 mm. The device operates from 2 GHz to 20 GHz. At +5 V it provides a gain of 15 dB and an output P1dB of 14 dBm, with a typical noise figure of 2.5 dB. A gain control port is provided for AGC applications.

The chip is fabricated domestically to meet localization requirements and can replace the imported type HMC463LP5.

The center pad on the backside is the reference ground pad and shall be well grounded in use.

★3.Electrical Characteristics

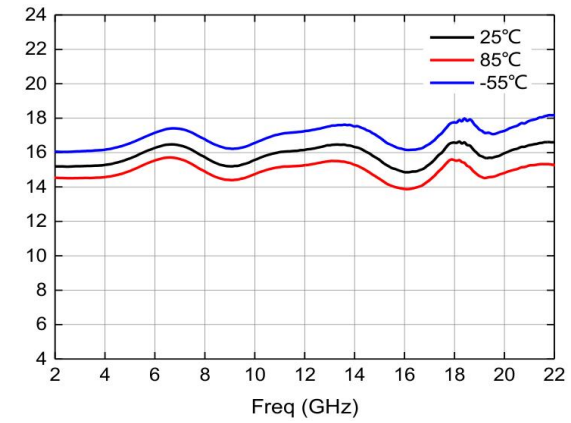
TA=+25℃, 50Ω System，VD=+5V

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	Freq	2	—	20	GHz
Gain	Gain	—	15	—	dB
Output P-1dB	OP1dB	—	14	—	dBm
Input Return Loss	RL_in	—	-10	—	dB
Output Return Loss	RL_out	—	-10	—	dB
Noise Figure	NF	—	2.5	—	dB
Output IP3	OIP3	20	25	—	dBm
Quiescent Current*	IDQ	—	65	80	mA
* Default VG1 = -0.42 V. In practice VG1 may be adjusted so that IDQ = 65 mA					

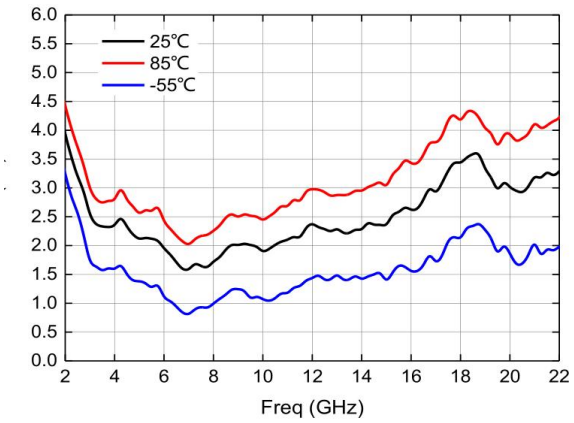
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★4.Typical Test Curve

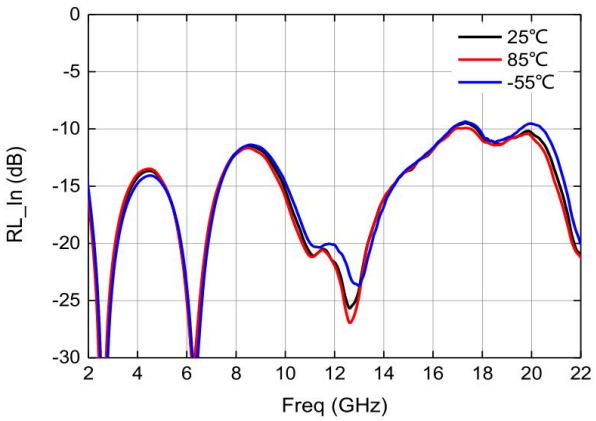
Gain vs. Frequency



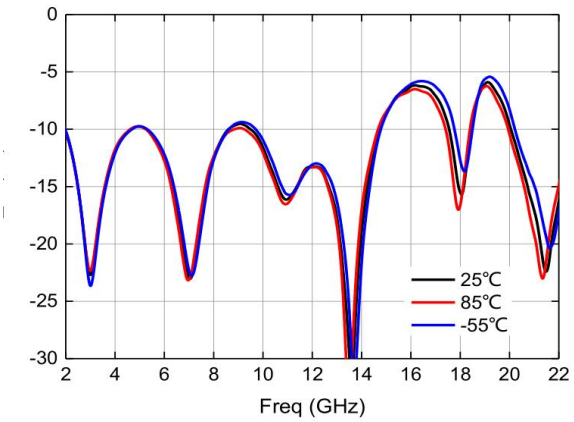
Noise Figure vs. Frequency



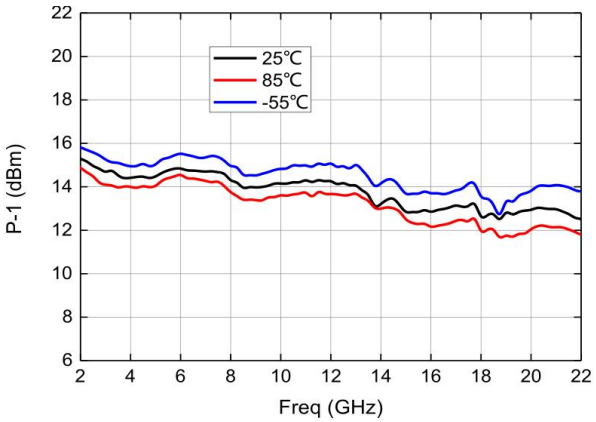
Input Return Loss vs. Frequency



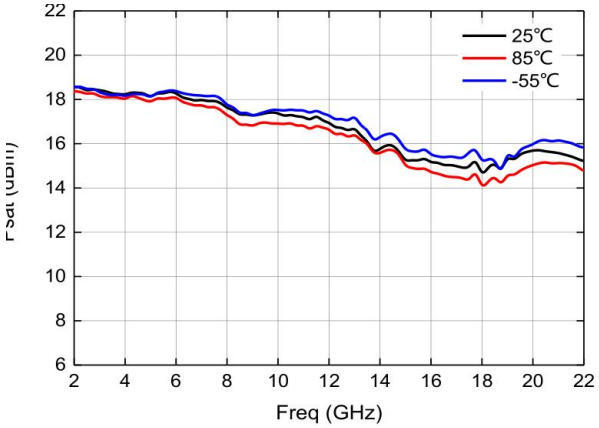
Output Return Loss vs. Frequency



Output P1dB vs. Frequency

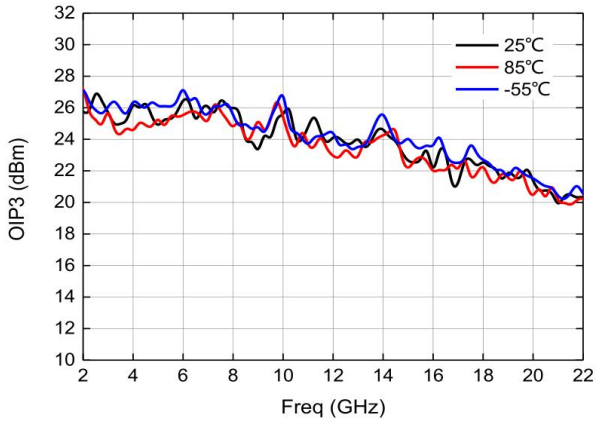


Saturated Output Power vs. Frequency

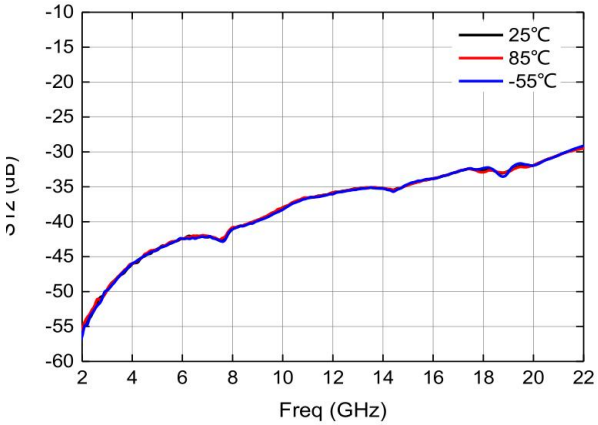


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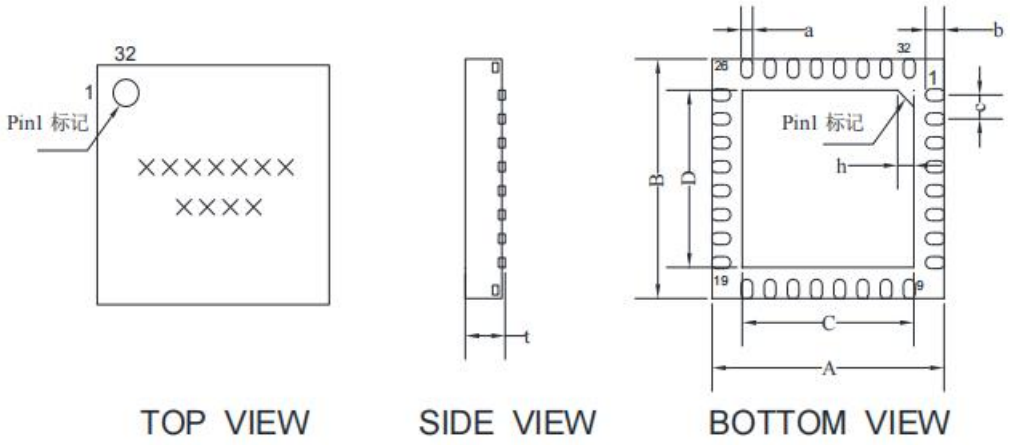
Output IP3 vs. Frequency



Reverse Isolation vs. Frequency



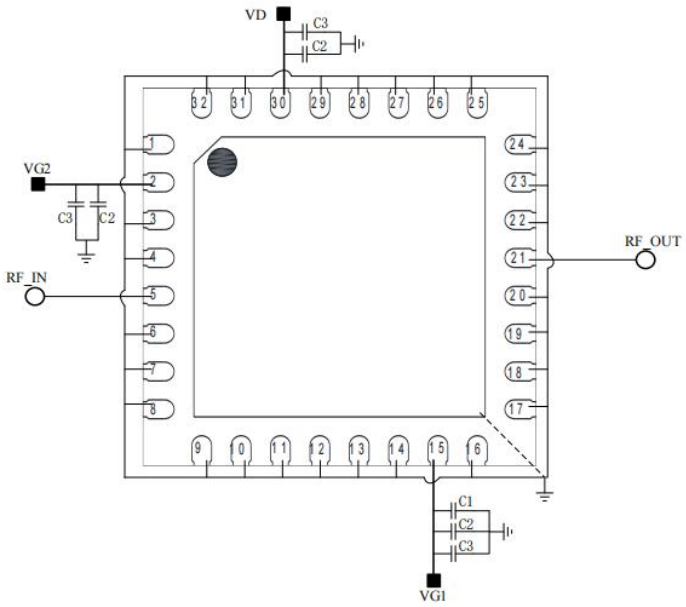
★5.Outline Dimensions



Identifier	Min	Nom.	Max
A, B	4.90	5.00	5.10
C, D	3.60	3.70	3.80
a	0.18	0.25	0.30
b	0.35	0.40	0.45
c	0.45	0.50	0.55
h	0.30	0.35	0.40
t	—	0.85	1.00

Email: ttf@ttfelectronic.com
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★6.Application Circuit



Identifier	Component	Value
C1	Chip capacitor	10 nF
C2	Chip capacitor	0.1 μF
C3	Chip capacitor	1 μF

Notes:

1. The bottom center pad is the AC and DC ground of the chip and shall be well grounded.
2. The pin material is Cu, with NiPdAu plating.
3. N/C pads are recommended to be grounded in use.

★7.Pin Definition

Pin No.	Function	Description
2	VG2	Gain control port, voltage range: -1.2 V ~ 0 V
5	RF_IN	RF signal input, connected to an external 50 Ω system, with internal DC block
15	VG1	Gate negative voltage supply port
21	RF_OUT	RF signal output, connected to an external 50 Ω system, with internal DC block
30	VD	Drain positive voltage supply port
—	GND	Bottom center pad, the AC and DC ground of the chip; shall be well grounded
Other	N/C	Unconnected pads, recommended to be grounded in use

★8.Precautions

Absolute maximum rating	Value
Input power Pin, 50 Ω	+15 dBm
Drain voltage	+8 V
Storage temperature	-65 ℃ ~ +150 ℃
Operating temperature	-55 ℃ ~ +85 ℃
Soldering temperature	250 ℃
Soldering time	10 s
Exceeding the above conditions may cause permanent damage to the chip	



This product is sensitive to static electricity.

Please take precautions against static electricity during use.