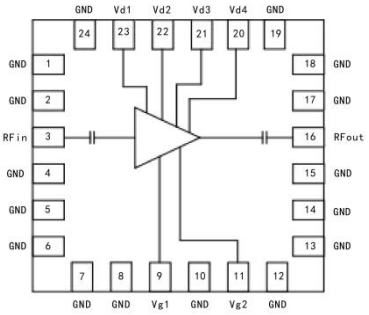
★1.Product Features

- Frequency range: 18 ~ 38 GHz
- Gain: 15.5 dB (@30 GHz)
- Output P1dB: 21 dBm (@30 GHz)
- Saturated output p ower Psat: 22 dBm (@30 GHz)
- Supply voltage / quiescent current: +5 V / 272 mA
- Package: PQFN 4 × 4 mm-16L

Functional block diagram



★2.Product Introduction

TFPA1840P is a wideband driver amplifier in a packaged MMIC. It covers 18 ~ 38 GHz and provides about 15 dB typical gain, an output power at the 1 dB compression point of 21 dBm and a saturated output power of 22 dBm. The device is housed in a PQFN 4 × 4 mm-16L package, is compatible with reflow soldering, and can be used in a wide range of RF systems.

★3.Microwave Electrical Parameters

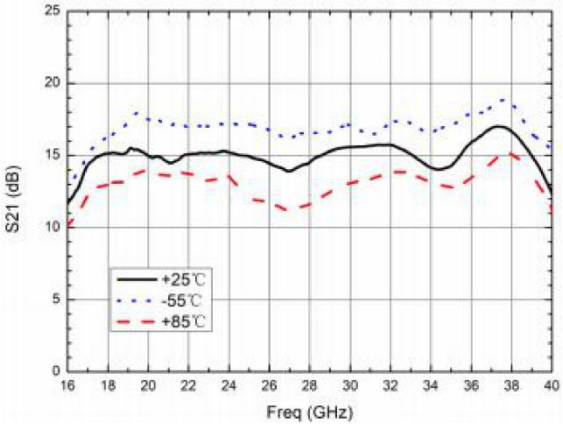
TA=+25℃, VD=+5V, Vg=-0.56V (Packaging and Testing)

Parameter	Min.	Typ.	Max.	Unit
Frequency range	18	—	38	GHz
Gain	—	15	—	dB
Gain flatness	—	±2.3	—	dB
Input return loss	—	-17	—	dB
Output return loss	—	-12	—	dB
Output P1dB	—	21	—	dBm
Saturated output power Psat	—	22	—	dBm
Quiescent current	—	272	—	mA

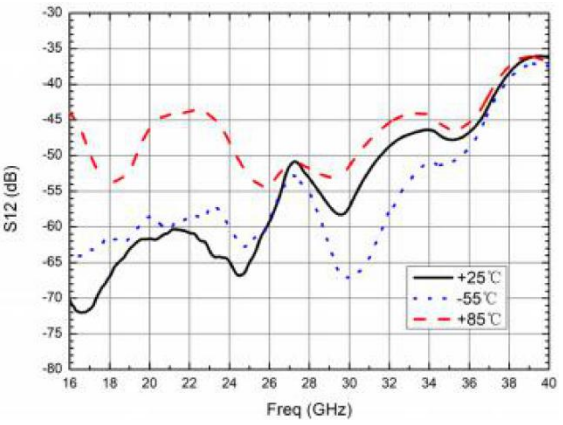
Email: ttf@ttfelectronic.com
Address: Building 16, Area C, Entrepreneurship and R&D Park, Xi'an High-tech Industrial Development Zone, China
Website:ttfelectronic.com

★4.Package test results (de-embedded)

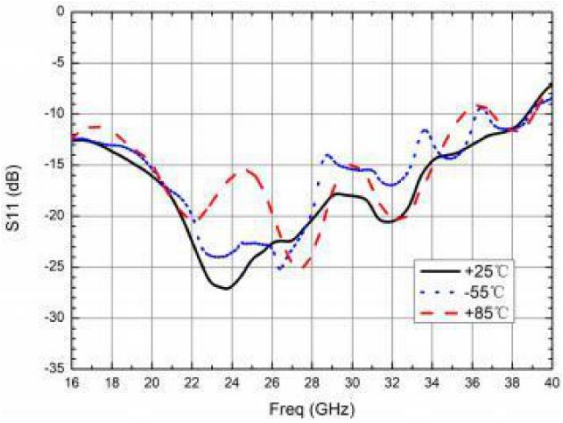
Gain vs. frequency



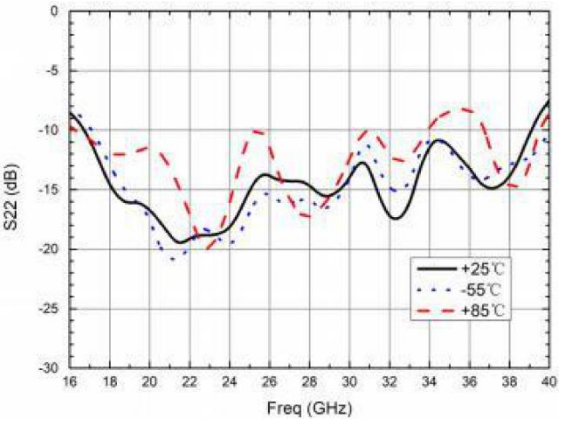
Isolation vs. frequency



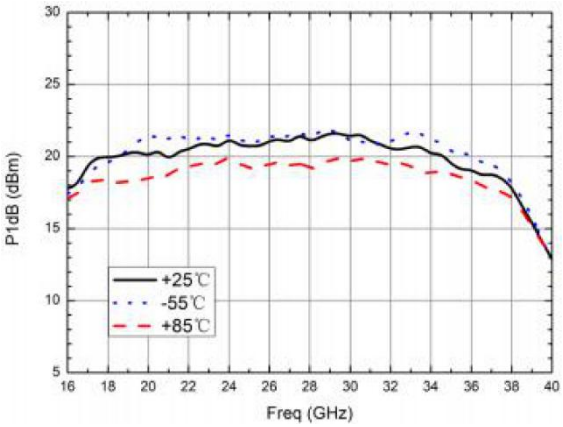
Input return loss vs. frequency



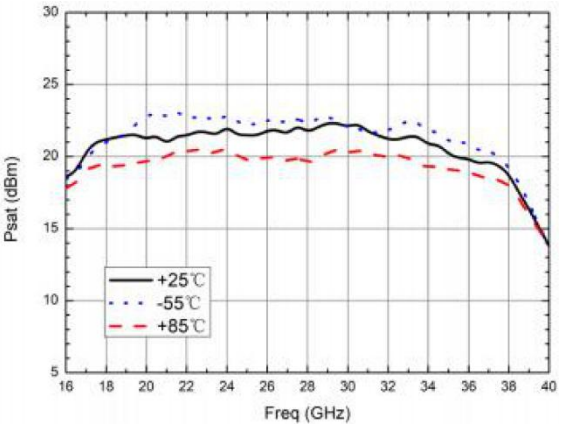
Output return loss vs. frequency



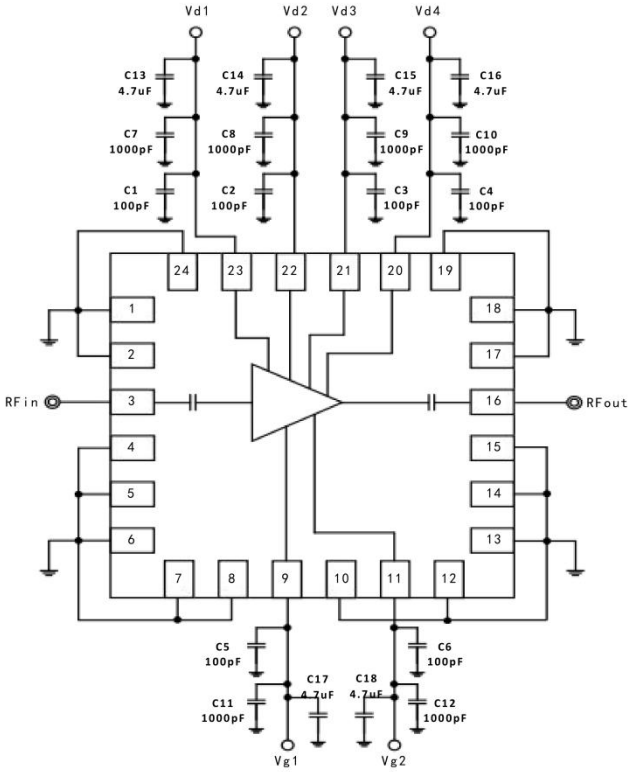
P1dB vs. frequency



Psat vs. frequency



★5.Application Circuit



★6.Pin Description

Pin No.	Symbol	Description
3	RFIN	RF signal input, internally DC-blocked
16	RFOUT	RF signal output, internally DC-blocked
20, 21, 22, 23	Vd1, Vd2, Vd3, Vd4	Positive supply of the amplifier
9, 11	Vg1, Vg2	Negative supply of the amplifier
Others, exposed paddle	GND	Ground

★7.Power-on sequence

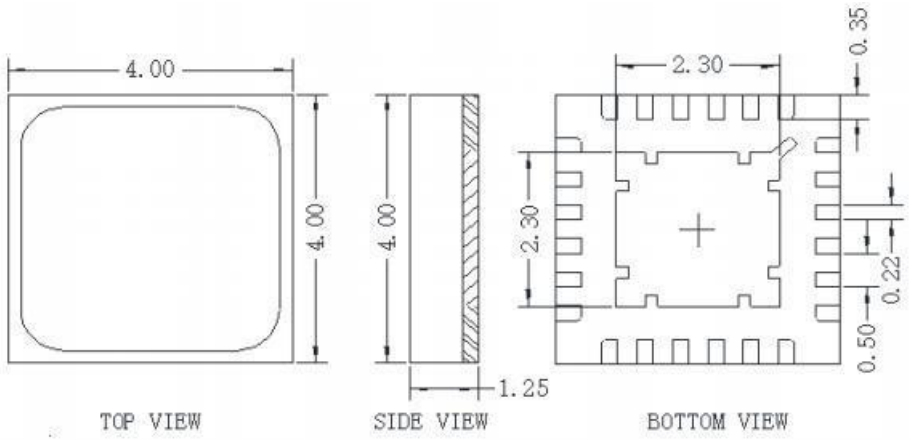
Recommended bias sequence during power-up:

1. Ground the device;
2. Set the gate bias voltage to -2 V;
3. Set all drain bias voltages: VD1/VD2/VD3/VD4 = +5 V;
4. Raise the gate bias voltage (to the operating voltage, approx. -0.56 V) until the quiescent current IDS ≈ 272 mA;
5. Apply the RF signal.

Recommended bias sequence during power-down:

1. Turn off the RF signal;
2. Lower the gate bias voltage to -2 V so that IDS = 0 mA (approximately);
3. Reduce all drain bias voltages to 0 V;
4. Raise the gate bias voltage to 0 V.

★8.Package Outline



★9.Absolute Maximum Ratings

Parameter	Numerical value
Maximum drain voltage	+5.5 V
Minimum gate voltage	-2.5 V
Maximum input power	+10 dBm
Moisture sensitivity level	MSL3
ESD class	Class 0
Operating temperature	-55 ℃ ~ +85 ℃
Storage temperature	-65 ℃ ~ +150 ℃

Notes：

1. The limits above are judged from normal operating conditions only and are for reference.
2. If the actual operating conditions exceed any one of the maximum limits, permanent damage to the product may occur.



This product is an ESD-sensitive device.
Appropriate ESD precautions shall be taken to avoid degradation of performance or loss of function.