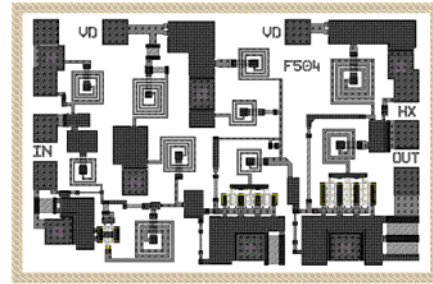


Product Features

- Frequency: 6–18GHz
- High Gain: 20.0 dB Typ.
- Output P_{1dB} : 21.0 dBm Typ.
- Input /Output VSWR: <2.0
- Operation from Single Supply: 5V@128mA



Chip Size: 920×1400 um (36.2×55.1 mils)

Chip Thickness: 100±10 um (4±0.4 mils)

Pad Dimensions: 80×80 um

Product Description

F504 is a high efficiency three stages broadband MMIC amplifier that can work between 6GHz and 18GHz. It can provide high efficiency and flat gain by using GaAs PHEMT technics. The typical operation state is +5V from single power supply. And the front and back amplifiers are both placed in class A operation condition. It offers good linearity.

The output and input are matching in 50Ω system. In order to improve amplifier's reliability, the media is used for protecting chip. It is intended to be used in Driver for Microwave Communication System, Buffer Amplifier, Cascadable Gain Module for ECM System, Phased Array Radar and Transmission Amplifier.

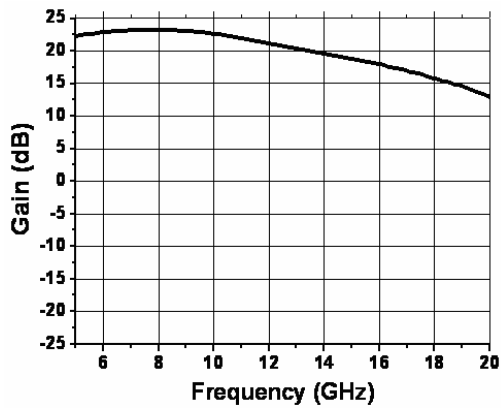
Typical Electrical Characteristic

($T = 25^{\circ}\text{C}$, $V_{DD} = 5\text{V}$, $I_{DD} = 128\text{mA}$, $Z_0 = 50\Omega$)

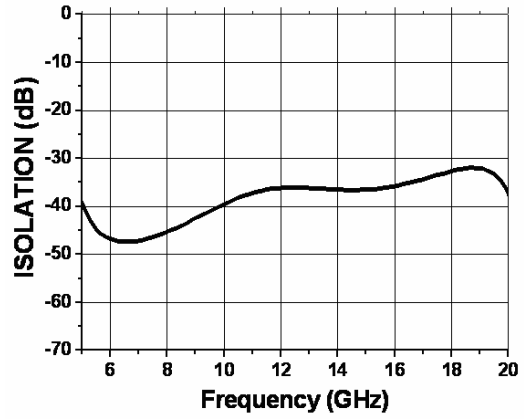
Symbol	Unit	Test Condition	Min.	Typ.	Max.
Gain	dB	18GHz	14.0	16.0	
Output P_{1dB}	dBm	$P_{1dB}@18\text{GHz}$	19.0	20.5	
Output P_{sat}	dBm	$P_{sat}@18\text{GHz}$	18.5	20.7	
Input VSWR	Ratio	6~18GHz		1.5	
Output VSWR	Ratio	6~18GHz		1.5	
NF	dB	$\text{NF}@18\text{GHz}$		6	7.5
S12	dB	6~18GHz		-40	-30

Notes: Test the small signal for the IC only. Test power and noise on the whole machine.

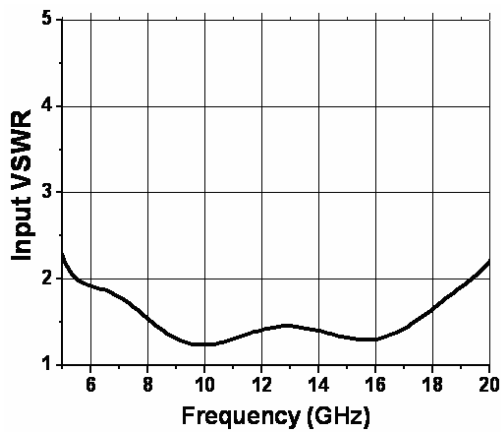
Typical Electrical Characteristics (T=25°C, VDD=5V, IDD=128mA, Z0=50Ω)



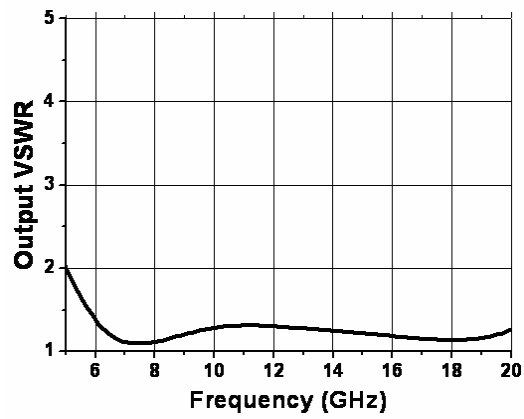
Small Signal Gain



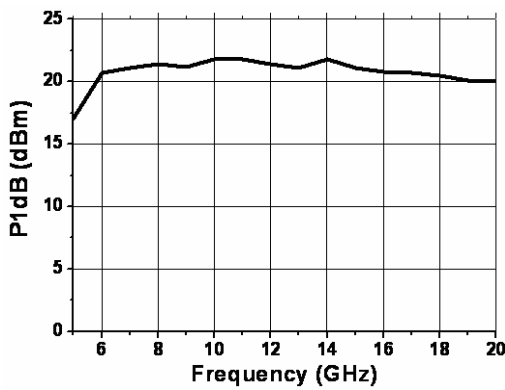
Isolation



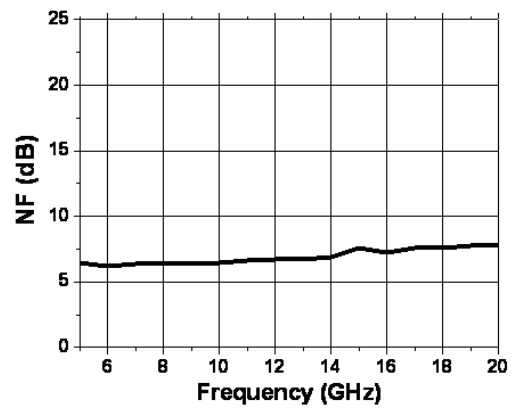
Input VSWR



Output VSWR

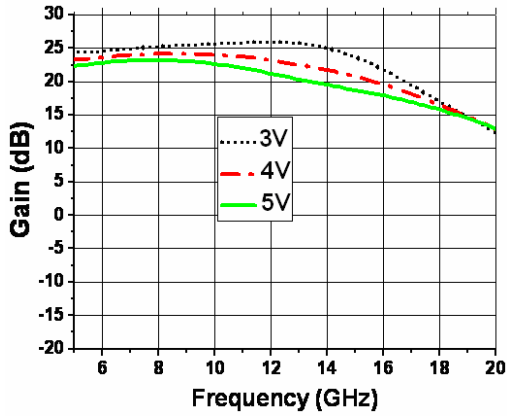


P1dB

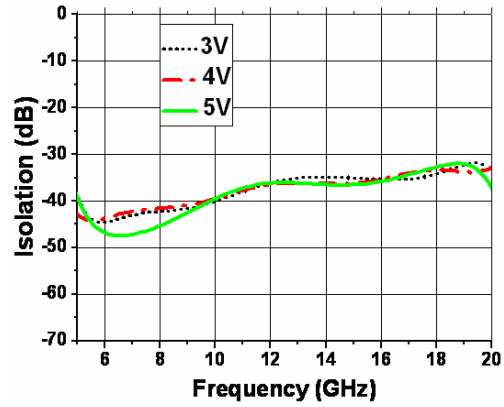


Noise Figure

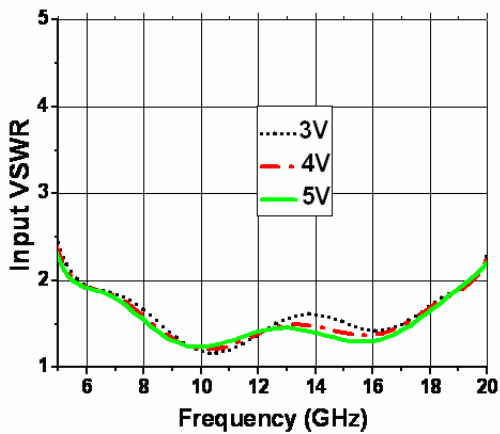
Typical Characteristics Under Different Drive Voltage ($T=25^{\circ}\text{C}$, $Z_0=50\ \Omega$)



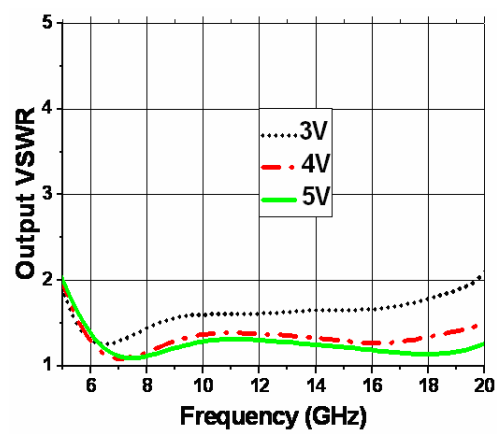
Gain vs Supply Voltage



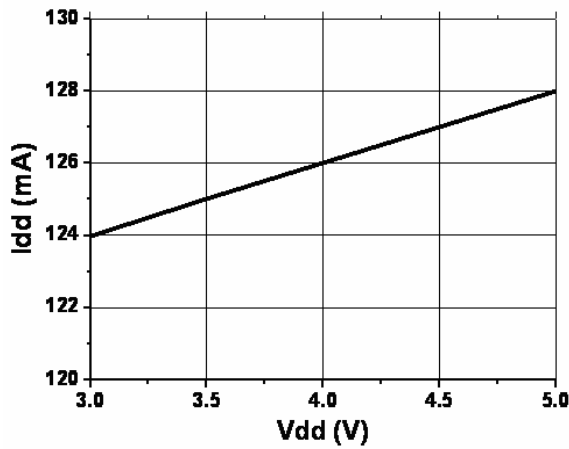
Isolation vs Supply Voltage



Input VSWR vs Supply Voltage



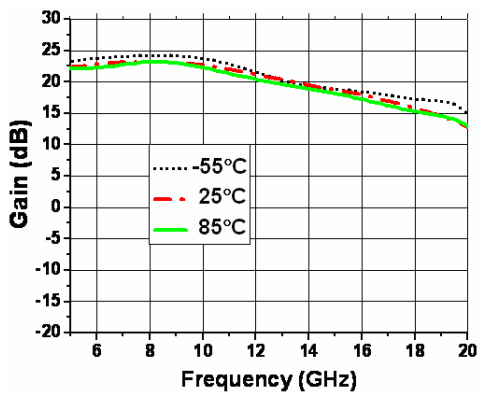
Output VSWR vs Supply Voltage



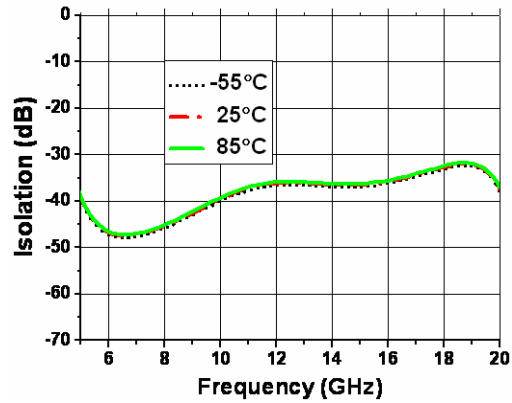
Idd vs Supply Voltage

Typical Characteristics Under Different Temperature

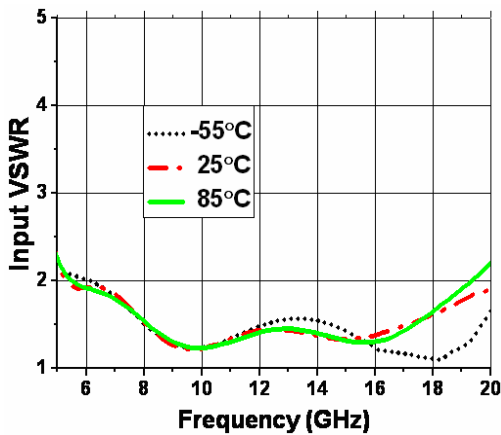
(VDD=5V,IDD=100mA,Z0=50Ω)



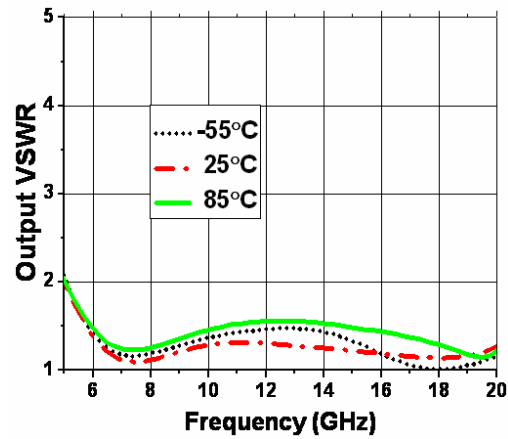
Gain vs Temp.



Isolation vs Temp.



Input VSWR vs Temp.

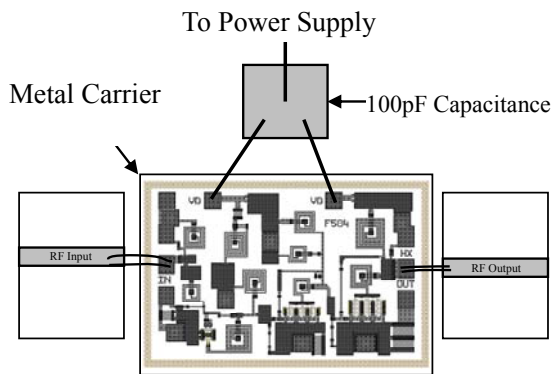


Output VSWR vs Temp.

Operating Ranges

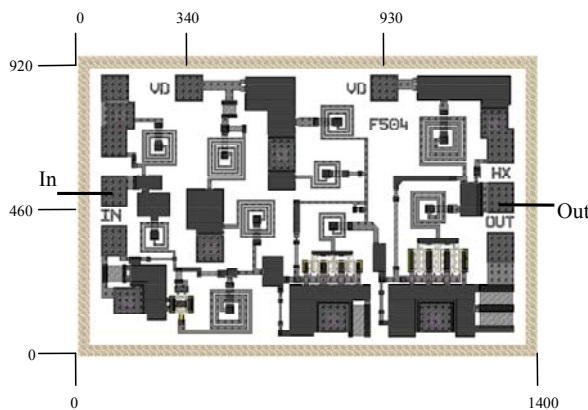
Symbol	Parameters	Unit	Min.	Max
V_{D1}, V_{D2}	Device Voltage	V		7
I_{DD}	Grid Voltage	mA		150
P_{in}	Device Current	dBm		20
T_{ch}	Input Power	°C		+150
T_L	Channel Temperature	°C		-55 到 +100
T_{max}	Operating Temp. range	°C		+300

Bias and Operating Stage



F504 is adopting the bias method of connecting V_{D1} and V_{D2} as above picture shown. The recommended operating voltage is 3~5V. All the ground are through the back hole of F504.

Assemble Suggestion



Pad Dimension(Unit: um)

Use 0.7mil diameter's spun gold for input,output and power on. F503 must precaution in handing,testing and packaging.

The spun gold press point is as the above picture shown.