

## Features

- Frequency: 1MHz~3000MHz
- Gain: 25.5dB
- Output P<sub>1dB</sub>: 30dBm
- Supply Voltage: +10~+12V
- Die Size: 1.39mm×0.63mm×0.1mm

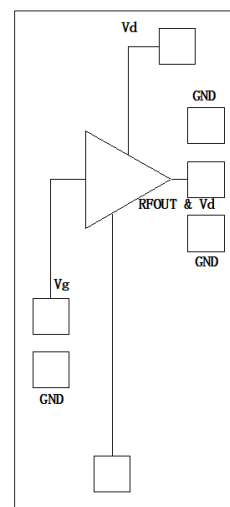
## Typical Applications

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

## General Description

SAC3122 is a wideband medium power amplifier which operates between 1MHz~3000MHz. The amplifier provides 25.5dB of gain, 30dBm P<sub>1dB</sub> power and 40% PAE from a +10~+12V supply voltage, making it an ideal driver amplifier for high efficiency applications.

## Functional Diagram



## Electrical Performance

T<sub>A</sub>=25°C, V<sub>D</sub>=+12V, I<sub>D</sub>=0.24A, Z<sub>0</sub>=50Ω, CW

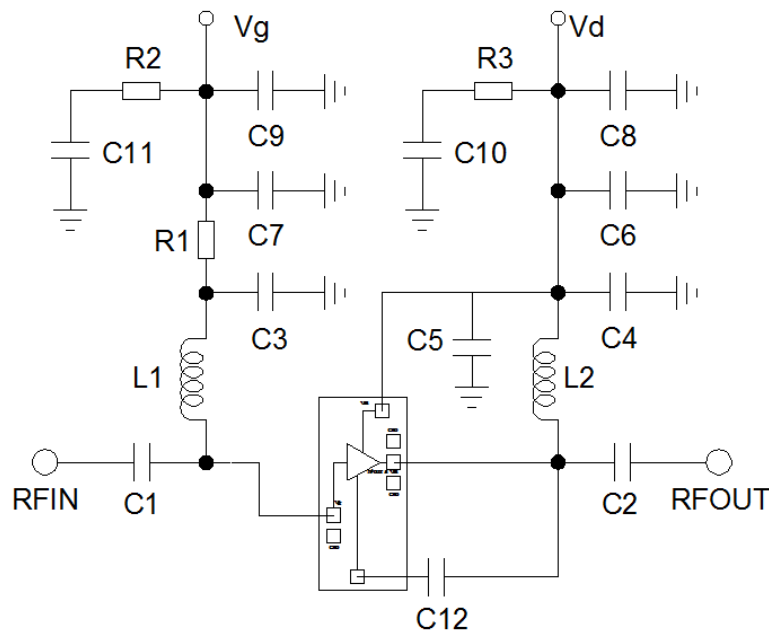
Parameter	Min.	Typ.	Max.	Units
Frequency Range	1~3000			MHz
Small Signal Gain	—	25.5	—	dB
Small Signal Gain Flatness	—	±0.5	—	dB
Reverse Isolation	—	-28	—	dB
Input VSWR	—	2	—	:1
Output VSWR	—	2.5	—	:1
Power-Added Efficiency	—	40	—	%
Output Power for 1 dB Compression (OP <sub>1dB</sub> )	—	31	—	dBm
Drain Voltage(V <sub>D</sub> )	10	—	12	V
Supply Current(I <sub>D</sub> )	—	240	—	mA

V<sub>g</sub>=-1~0V

## Absolute Maximum Ratings

Maximum Input Power	+20dBm	Operating Temperature	-55°C~+85°C
Channel Temperature	150°C	Storage Temperature	-65°C~+150°C
Maximum V <sub>b</sub>	+15V		

## Application Circuit Configuration—1 to 1000MHz

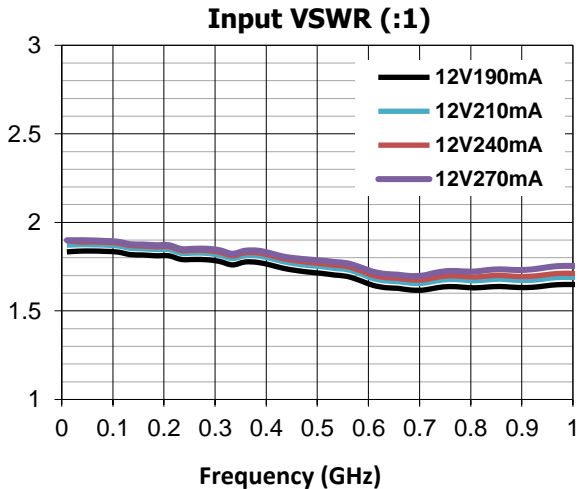
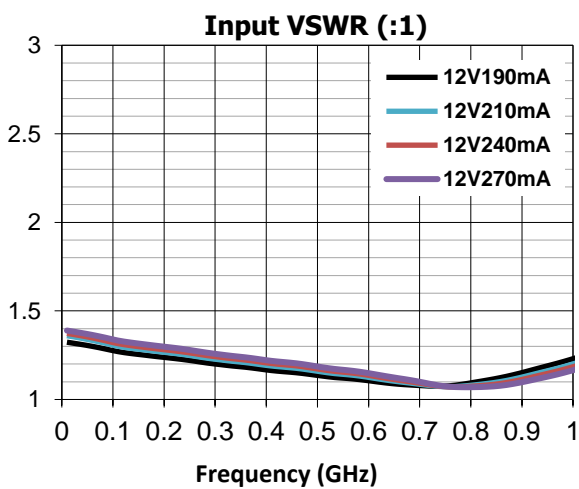
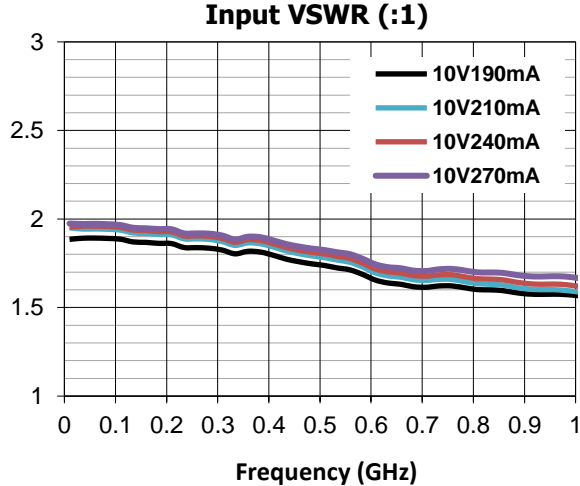
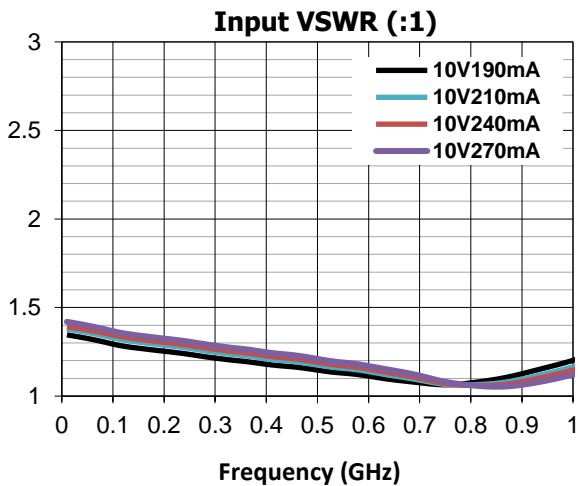
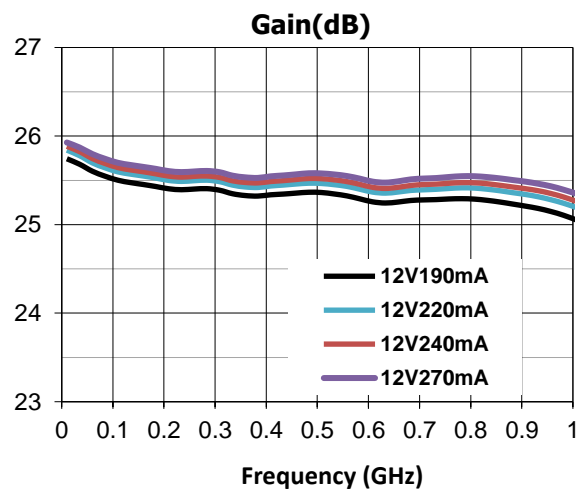
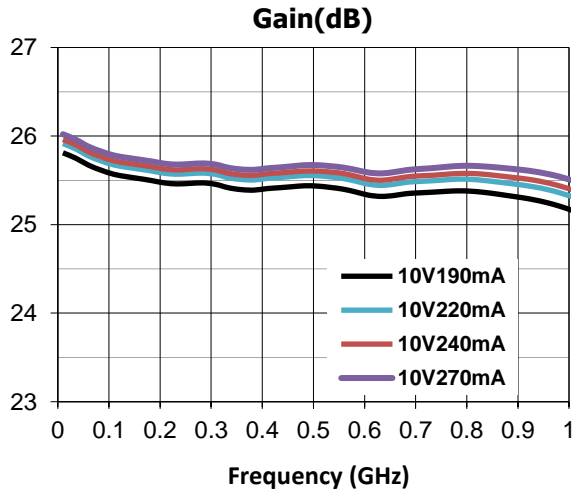


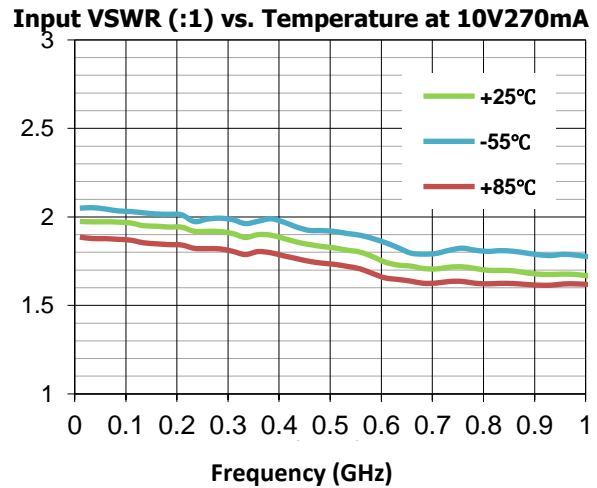
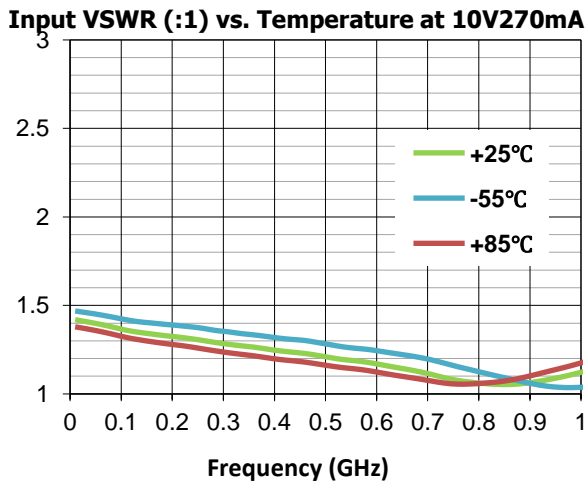
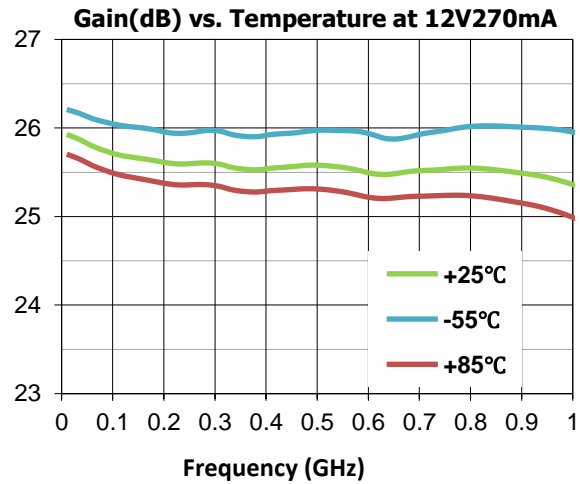
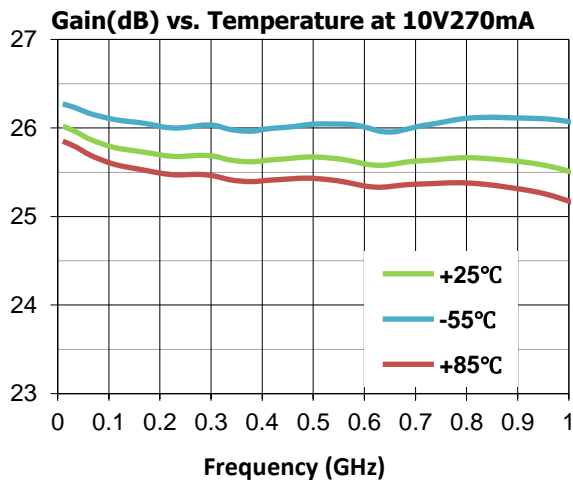
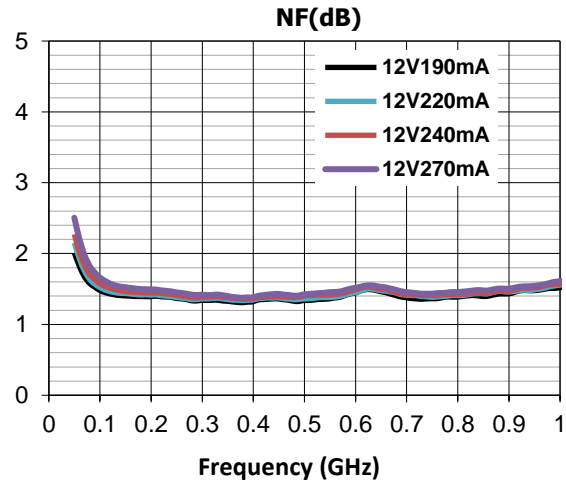
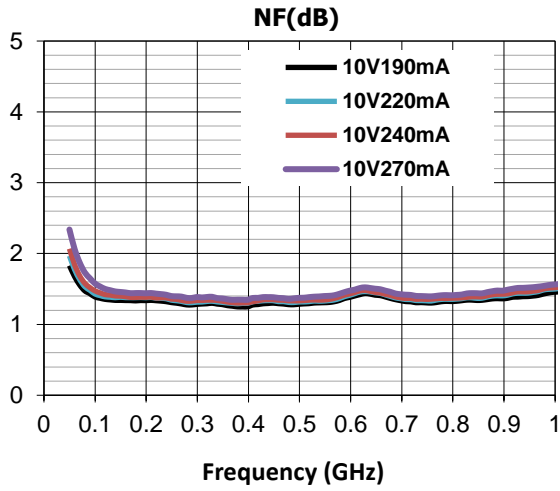
## Bill of Material - SAC3122Q4—1 to 1000MHz

Reference Designation	Part Number	Description	Manuf.
U1	XT3122Q4	XT3122Q4	—
C1,C2,C3,C4,C5,C10,C11	GRM1555C1H102JA01D	0.047uF ,Cap,0402	AVX
C6,C7	08053C105K4Z2A	1uF,Cap,0805	AVX
C8,C9	1206YD226KAT2A	22uF,Cap,0805	AVX
C12	04025C472JAT2A	4700pF,Cap,0402	AVX
L1	1812LS223	Ind,22uH,1812	COILCRAFT
L2	1812LS123	Ind,12uH,1812	COILCRAFT
R1,R2,R3	CRCW080551R0FKEA	Res,0805	Vishay

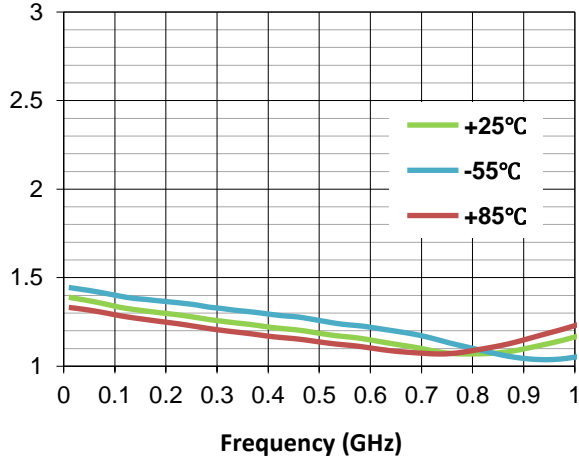
## Typical Performance Curve

1 to 1000 MHz

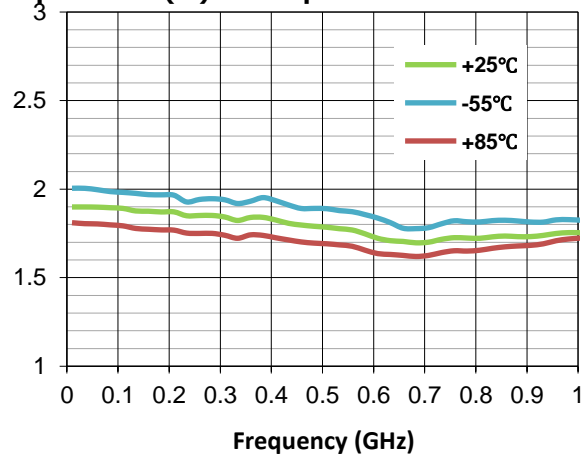




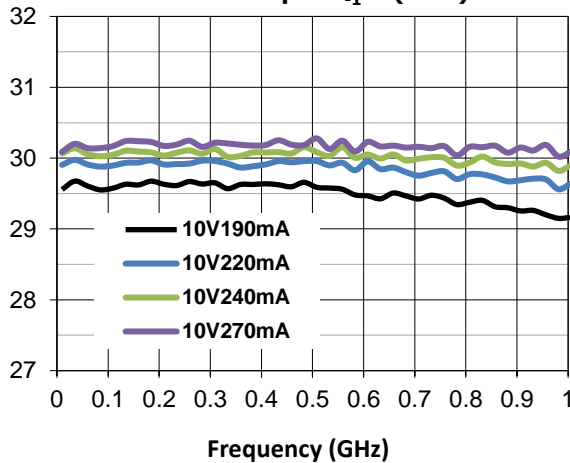
**Input VSWR (:1)vs. Temperature at 12V270mA**



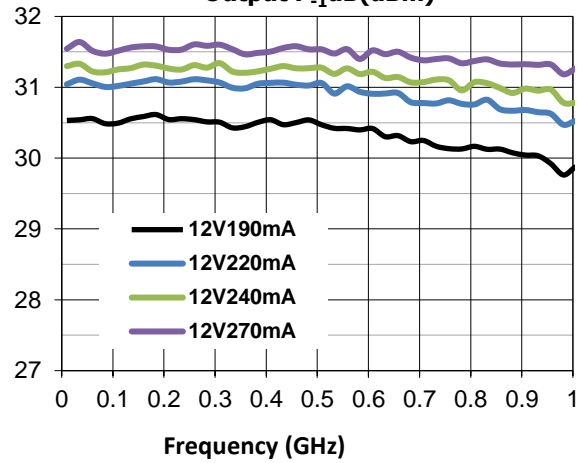
**Input VSWR (:1)vs. Temperature at 12V270mA**



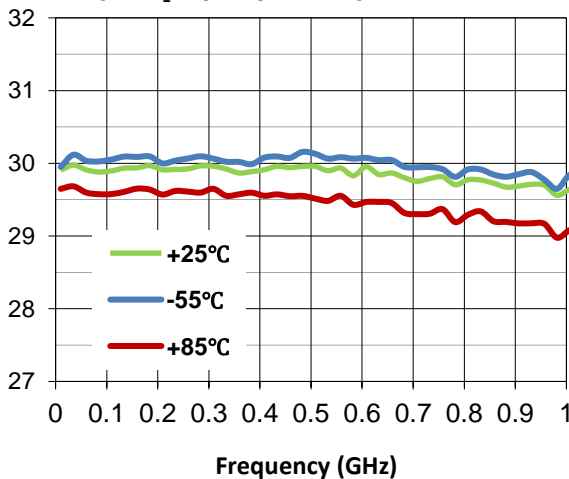
**Output P<sub>1</sub>dB(dBm)**



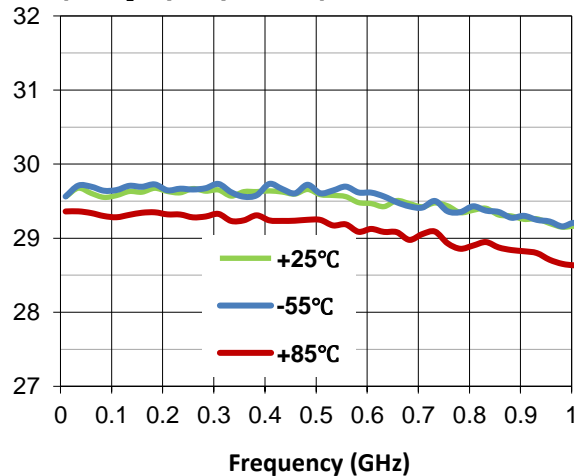
**Output P<sub>1</sub>dB(dBm)**



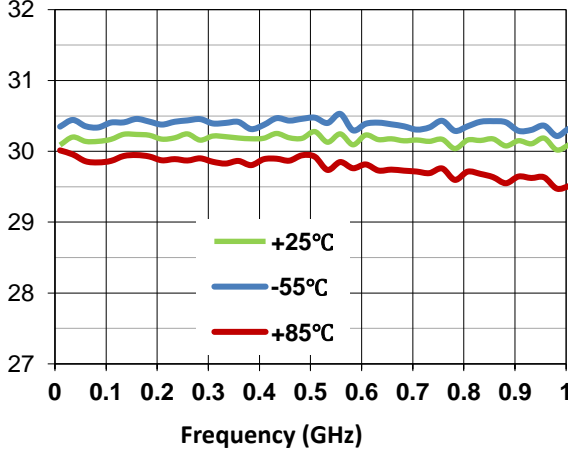
**Output P<sub>1</sub>dB(dBm) vs. Temperature at 10V220mA**



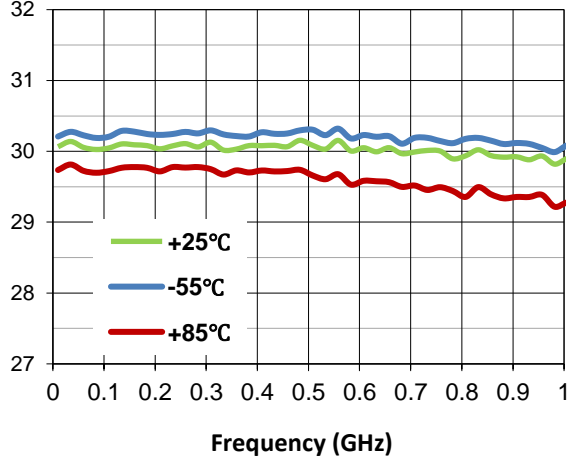
**Output P<sub>1</sub>dB(dBm) vs. Temperature at 10V190mA**



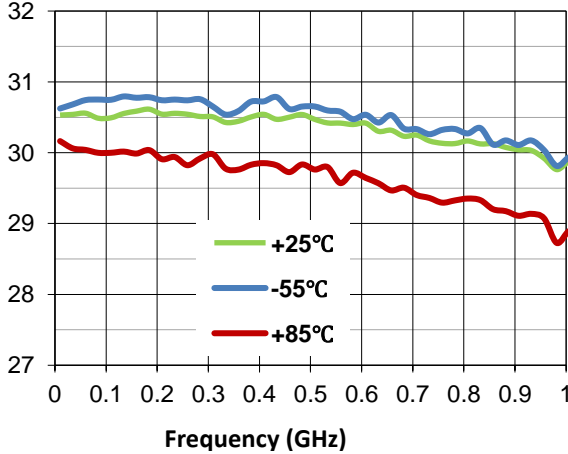
Output P<sub>1</sub>dB(dBm) vs. Temperature at 10V270mA



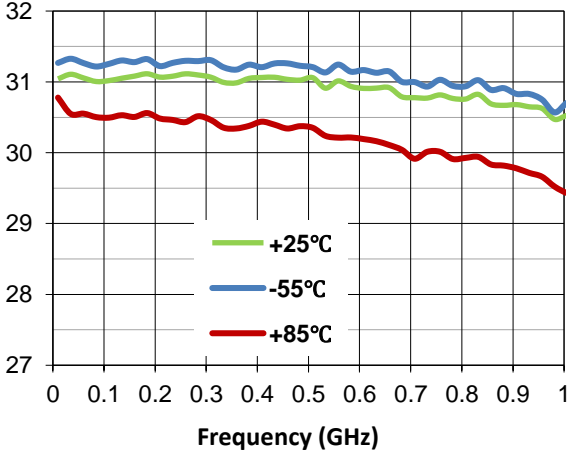
Output P<sub>1</sub>dB(dBm) vs. Temperature at 10V240mA



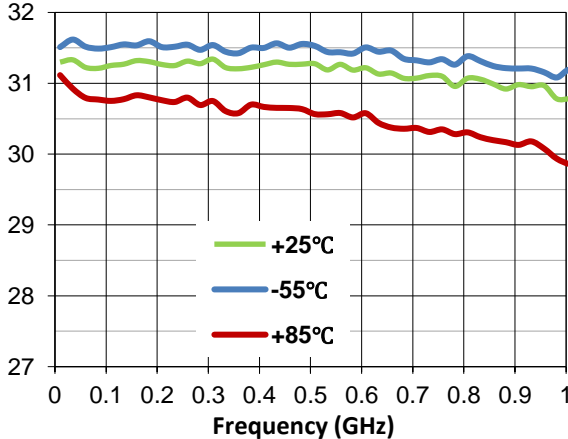
Output P<sub>1</sub>dB(dBm) vs. Temperature at 12V190mA



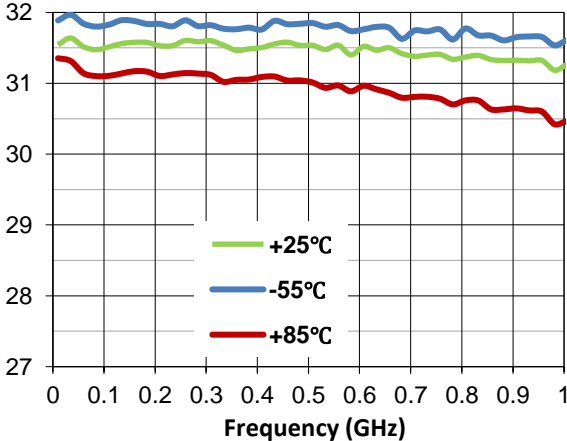
Output P<sub>1</sub>dB(dBm) vs. Temperature at 12V220mA

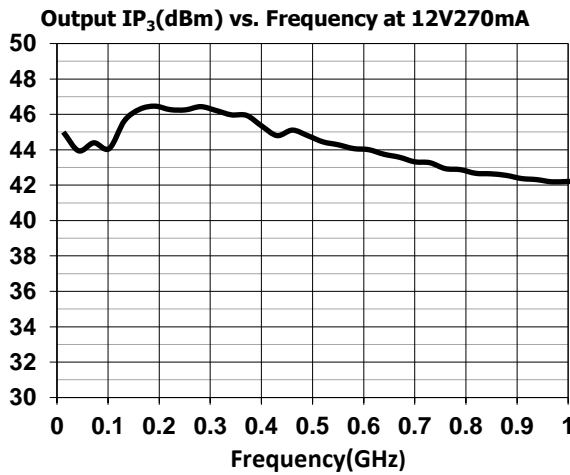
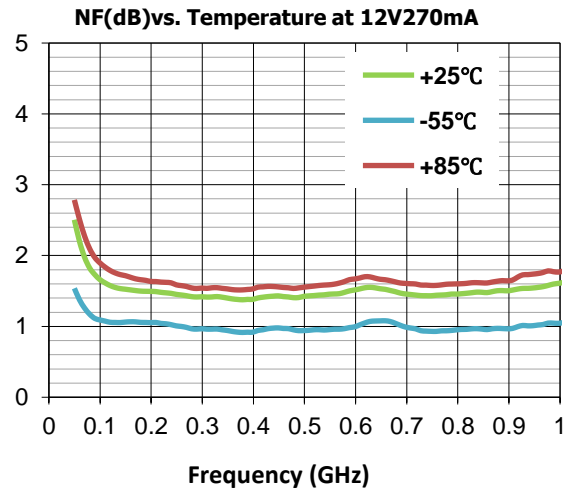
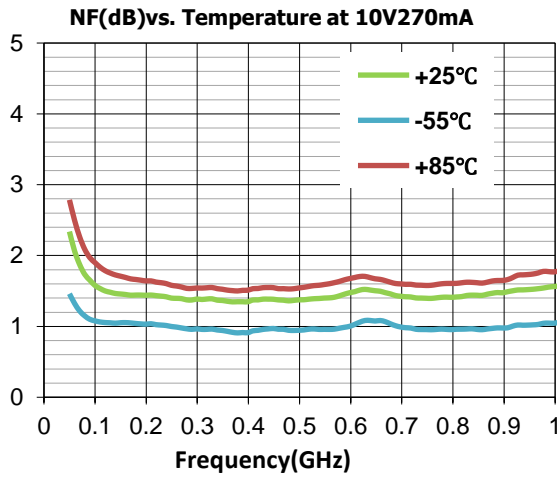


Output P<sub>1</sub>dB(dBm) vs. Temperature at 12V240mA

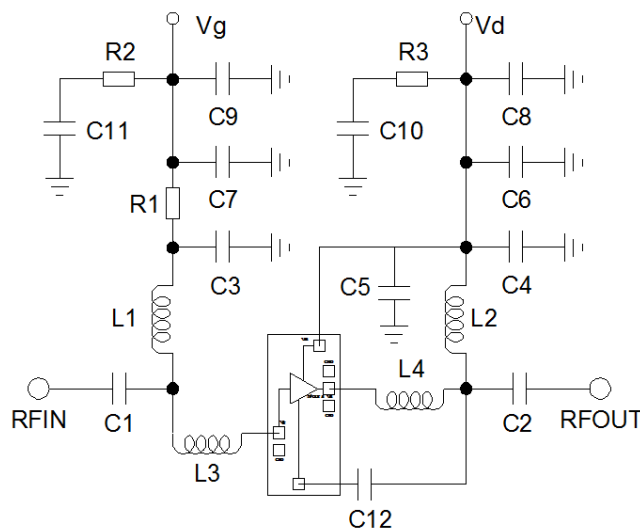


Output P<sub>1</sub>dB(dBm) vs. Temperature at 12V270mA





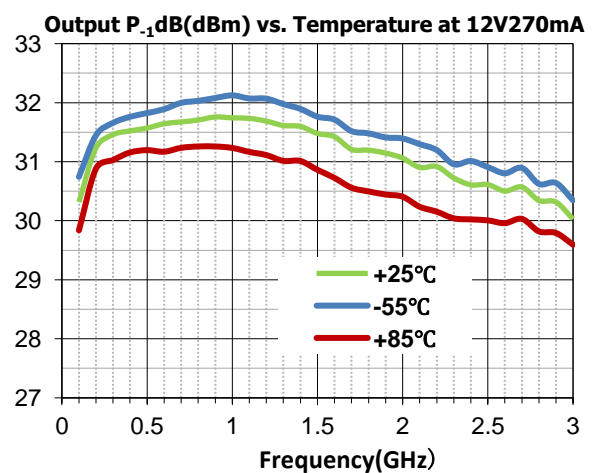
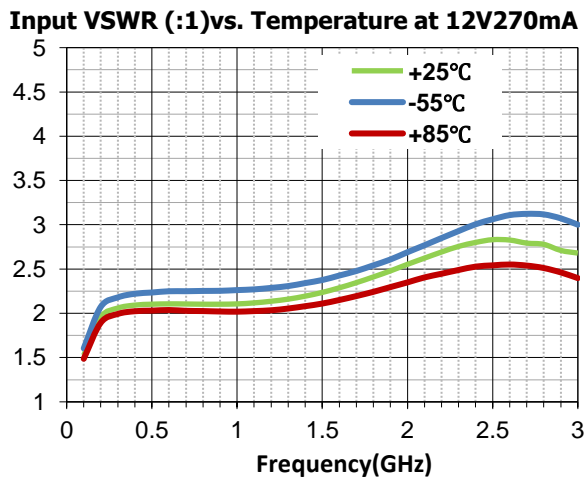
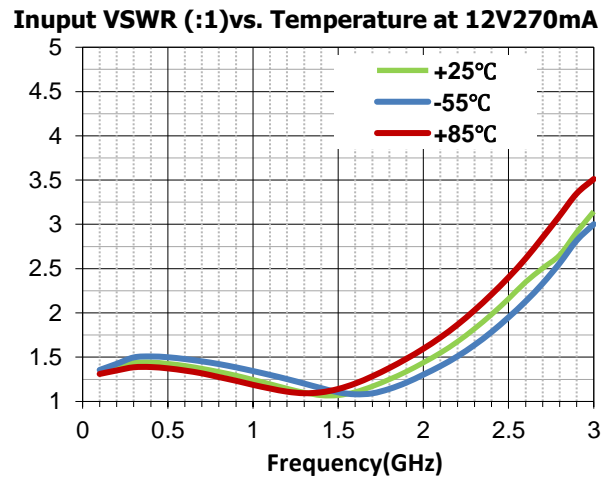
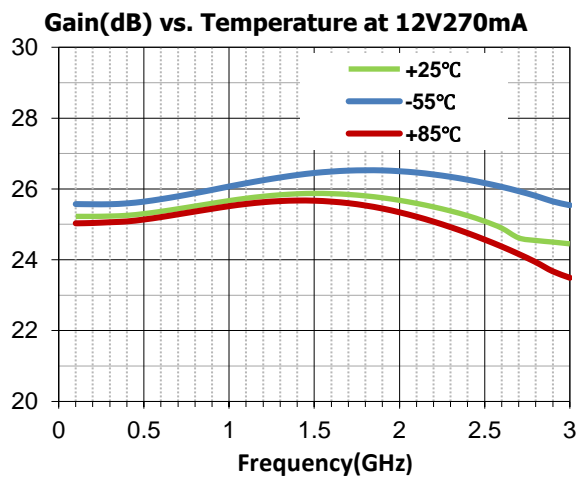
## Application Circuit Configuration—100 to 3000MHz



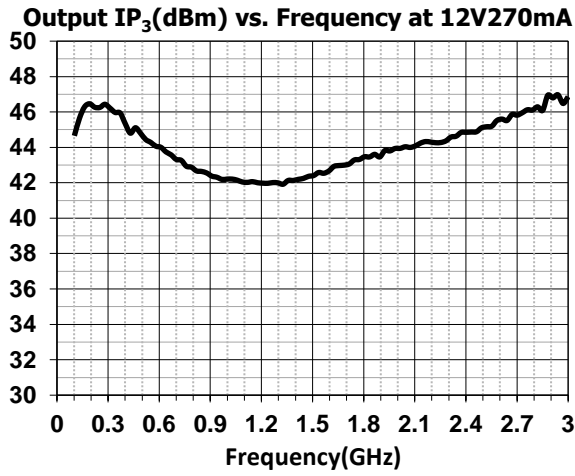
## Bill of Material —100 to 3000MHz

Reference Designation	Part Number	Description	Manuf.
U1	XT3122Q4	XT3122Q4	—
C1,C2,C3,C4,C5,C10,C11,C12	GRM1555C1H102JA01D	1000pF ,Cap,0402	AVX
C6,C7	08053C105K4Z2A	1uF,Cap,0805	AVX
C8,C9	1206YD226KAT2A	22uF,Cap,0805	AVX
L1,L2	0805CS-101XJLC	Ind,100nH,0805	COILCRAFT
L3	TBD		COILCRAFT
L4	TBD		COILCRAFT
R1,R2,R3	CRCW080551R0FKEA	Res,0805	Vishay

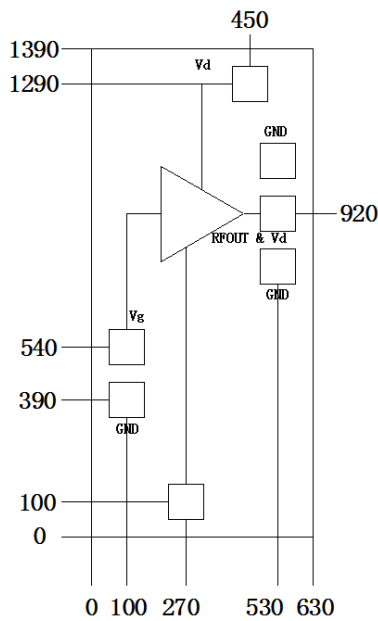
## Typical Performance Curve—100 to 3000MHz







**Outline Drawing**  
(all dimensions in  $\mu\text{m}$ )



**Attention:**

GaAs MMIC devices are vulnerable to ESD damage. Precautions should be taken during transportation, assembly and testing.