

## Features

- Frequency: 0.9~4GHz
- Gain: 32dB
- Noise Figure: 0.5dB Typ., 0.8dB Max.
- High Power-handling capability: 5W CW
- Recovery Time: 40nS
- Output P<sub>-1dB</sub>: 15dBm
- Supply Voltage: +4~5V/40~55mA
- Package Size: 4mmx4mmx1.3mm

## General Description

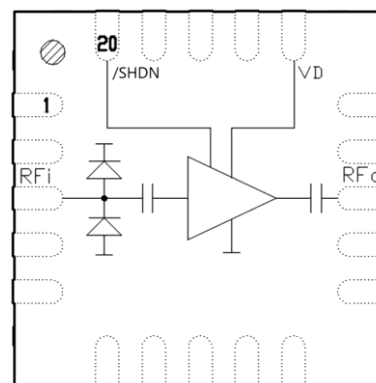
SAC4702QP4 is a PIN diode limiter low noise amplifier (Limiter-LNA) MMIC, The Limiter-LNA handles up to 37 dBm CW input power without failure.

Small-signal gain and noise figure (NF) are 32dB and 0.5dB, respectively over the 0.9to4GHz frequency range.

## Typical Applications

- Radar

## Functional Diagram



## Electrical Performance

T<sub>A</sub>=25°C, V<sub>D</sub>=+5V, I<sub>D</sub>=40mA, Z<sub>0</sub>=50Ω

| Parameter   | Min.  | Typ. | Max. | Units |
|---|-------|------|------|-------|
| Frequency Range   | 0.9~4 |      |      | GHz   |
| Gain  | 27    | 32   | —    | dB    |
| Gain Flatness   | —     | ±1.5 | —    | dB    |
| Input/Output VSWR                                       | —     | 1.5  | 2    | :1    |
| Noise Figure  | —     | 0.5  | 0.8  | dB    |
| Recovery Time*  | —     | 40   | —    | nS    |
| Reverse Isolation                                       | —     | 45   | —    | dB    |
| Output Power for 1 dB Compression (OP <sub>-1dB</sub> ) | 13    | 15   | —    | dBm   |
| Supply Current (I <sub>b</sub> )                        | —     | 55   | —    | mA    |

\* f=2000MHz, Pin=37dBm

## Absolute Maximum Ratings

|                     |                |   |              |
|---------------------|----------------|---|--------------|
| Maximum Input Power | +40dBm, CW,10s | Operating Temperature                   | -55°C~+85°C  |
| Channel Temperature | +150°C         | Storage Temperature                     | -55°C~+150°C |
| VD                  | +7V            | RF input port reverse withstand voltage | ±2V          |

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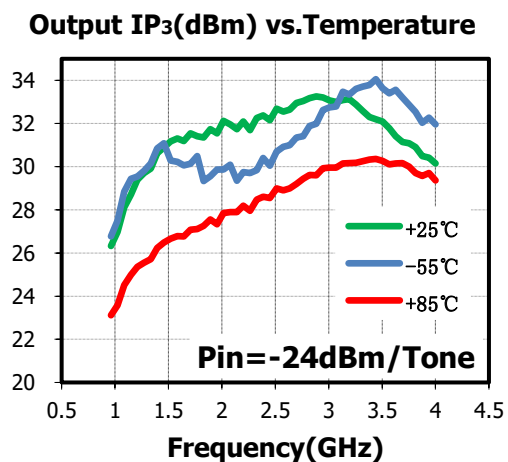
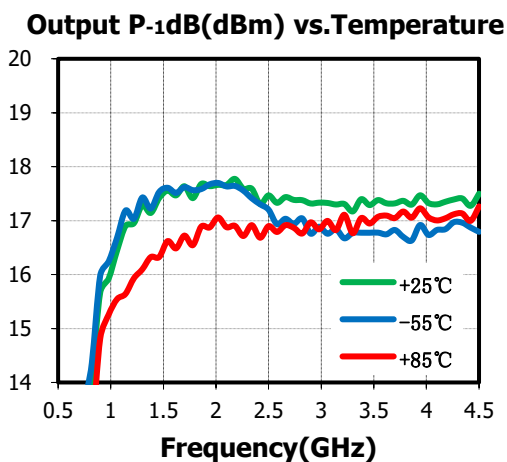
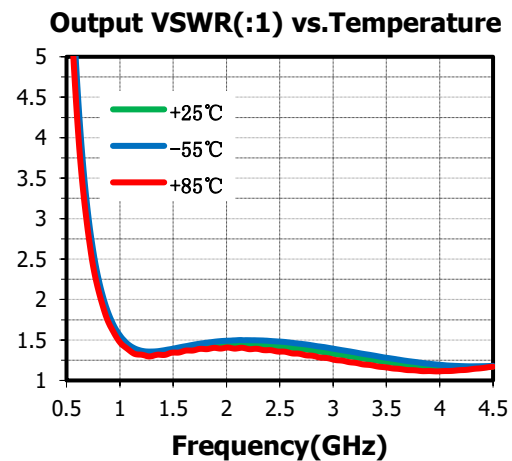
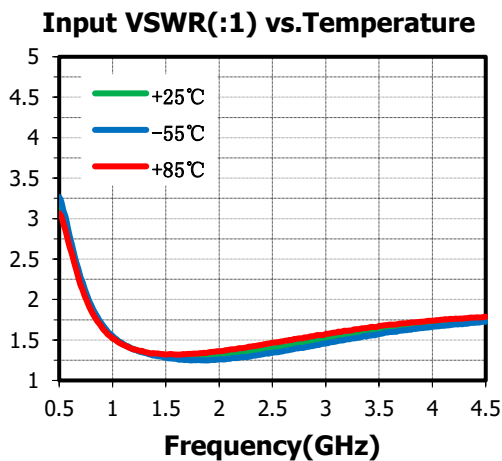
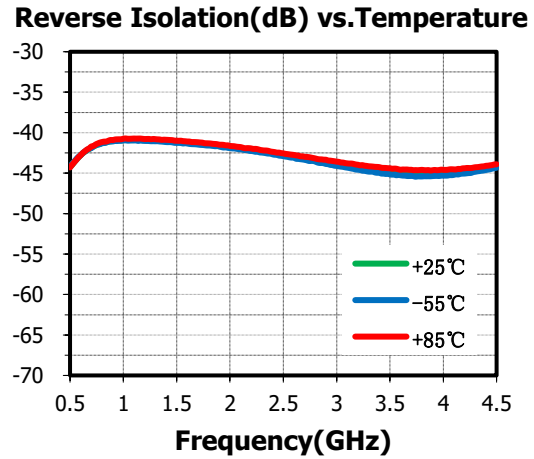
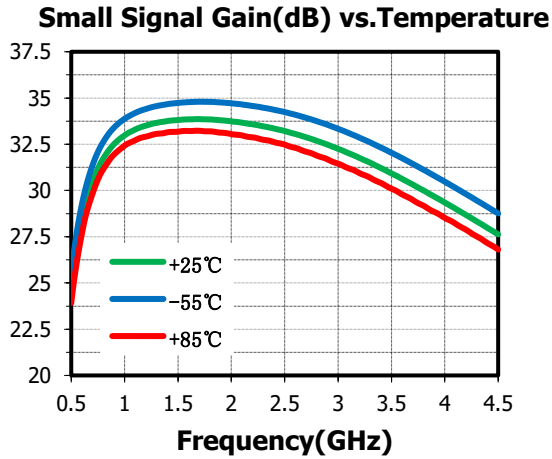


MMIC Limiter Noise Amplifier MMIC  
0.9~4GHz

Rev 1.0

## Typical Performance Curve

$V_D=+5V$   $I_{DQ}=55mA$



### SuperApex, LLC

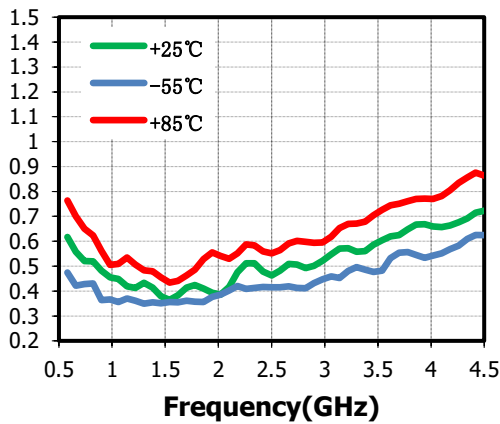
1580 S. Milwaukee Ave. Suite 405, Libertyville, IL 60048, USA  
Tel: 1-847-505-8319, 1-847-573-9866  
E-mail: sales@superapexco.com  
Website: www.superapexco.com

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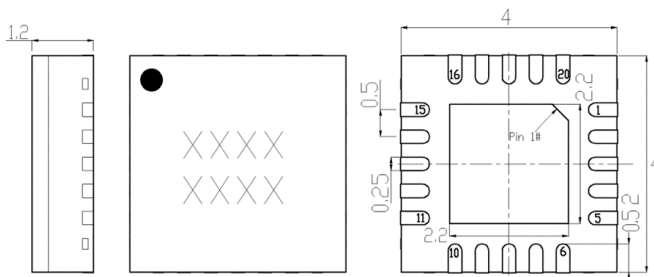
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**Noise Figure(dB) vs.Temperature**

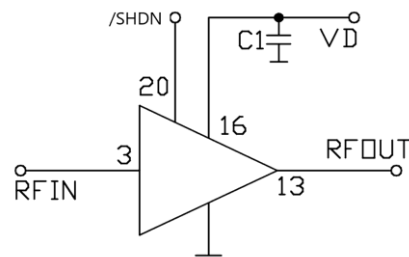


## Outline Drawing

(All dimensions in mm)



## Assembly Diagram



## Pin Function

| Pin No. | Description      | Pin No. | Description                                  |
|---------|------------------|---------|--|
| 1       | Connect to GND   | 11      | Connect to GND                               |
| 2       | Connect to GND   | 12      | Connect to GND                               |
| 3       | RFIN, DC Coupled | 13      | RFOUT, AC Coupled                            |
| 4       | Connect to GND   | 14      | Connect to GND                               |
| 5       | Connect to GND   | 15      | Connect to GND                               |
| 6       | Connect to GND   | 16      | VD   |
| 7       | Connect to GND   | 17      | Connect to GND                               |
| 8       | Connect to GND   | 18      | Connect to GND                               |
| 9       | Connect to GND   | 19      | Connect to GND                               |
| 10      | Connect to GND   | 20      | Floating: Normal<br>Connect to GND: Shutdown |

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## Components List

| Reference Des. | Value  | Part Number | Size |
|----------------|--------|-------------|------|
| C1             | 1000pF | -           | 0402 |

### Attention:

- 1.The moisture resistant grade of products is 2a, the storage environment  $\leq 30^{\circ}\text{C}/60\% \text{RH}$ , the surrounding workshop Life is 4 weeks.
2. Try to use thin RF boards and increase the number of groundings vias at the bottom of the device to reduce grounding inductance.
3. Remove the vacuum packaging and bake in a  $125+/-5^{\circ}$  environment for 6 hours before reflow soldering.
4. It is extremely not recommended to heat the package directly from the top.

## Revision History

| Revision | Date            | Comment       |
|----------|-----------------|---------------|
| 1.0      | Nov. 25th, 2024 | First Release |

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