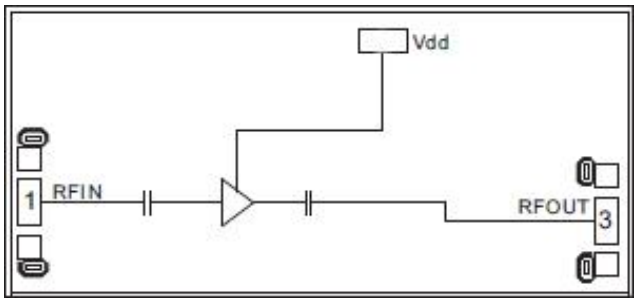
# GaAs MMIC LNA，18-40GHz

## Features:

- Frequency：18-40GHz
- Small Signal Gain：9.5dB
- Noise Figure：3.0dB typ. /3.2dB . max
- P-1dB：12dBm
- Supplying：+5V/40mA
- 50Ohm Input/output
- 100% tested
- Chip Size：1.85 x 1.6 x 0.09 mm

## Functional Diagram:




## General Description:

YTLA-1840D is a GaAs MMIC HEMT Self-biased，wideband Low Noise Amplifier Die Which perate between 18GHz~40GHz，with small signal gain value of 9.5dB，Noise Figure 3.0dB，Max. 3.2dB。It adopts use + 5V single supply。

| Parameter [1] | |
|---|---|
| Max Drain Voltage | +7V |
| Max. input Power | +20dBm |
| Working Temperature | -55 ~ +85°C |
| Storage Temperature | -65 ~ +150°C |

【1】 There is a risk of permanent damage over any of the above maximum limits。

| Electrical Specifications($T_A$ = +25°C，Vd=+5V) | | | | |
|---|---|---|---|---|
| Paramter | Min. | Typ. | Max. | Unite |
| Frequency | | 18-40 | | GHz |
| Small Signal Gain | 9 | 9.5 | 10 | dB |
| Flatness | | ±0.5 | | dB |
| Noise Figure | - | 3.0 | 3.2 | dB |
| P-1dB | - | 12 | - | dBm |
| Input return loss | 17 | 20 | - | dB |
| Output return loss | 20 | 25 | - | dB |
| Supply current | | 40 | | mA |

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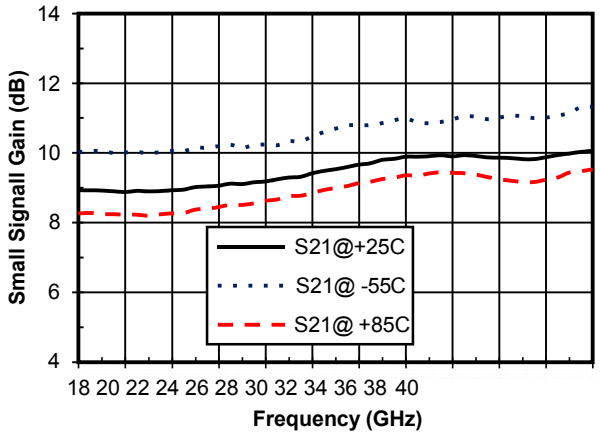
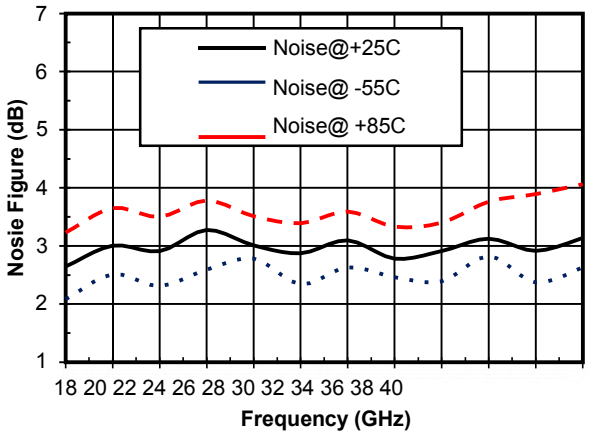
Curves:

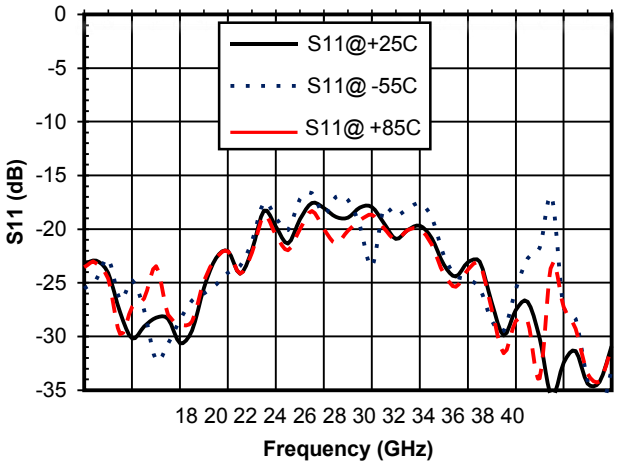
Gain vs.Frequency



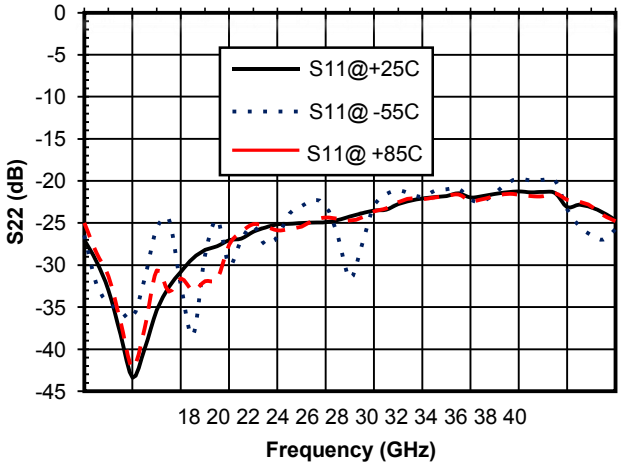

Noise Figure vs.Frequency



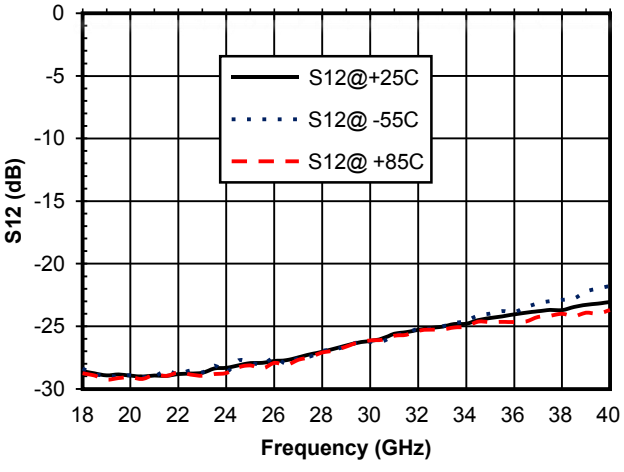

Input Return Loss vs. Fre.



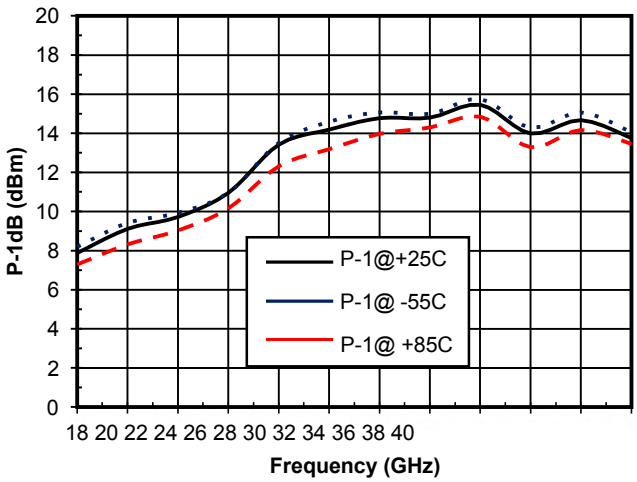

Output Return Loss vs. Fre.



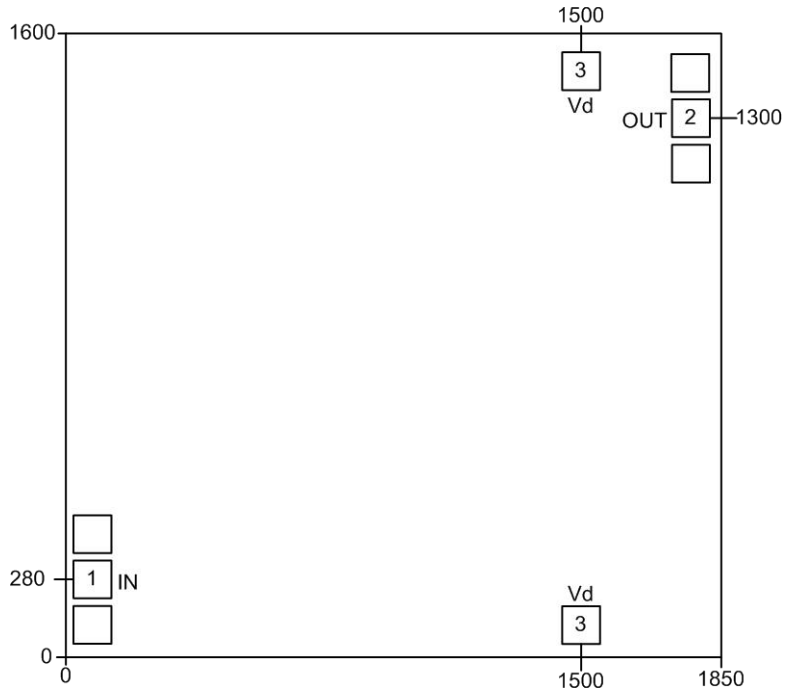

Isolation vs. Frequency



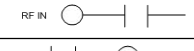
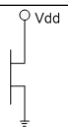

P-1dB vs. Frequency



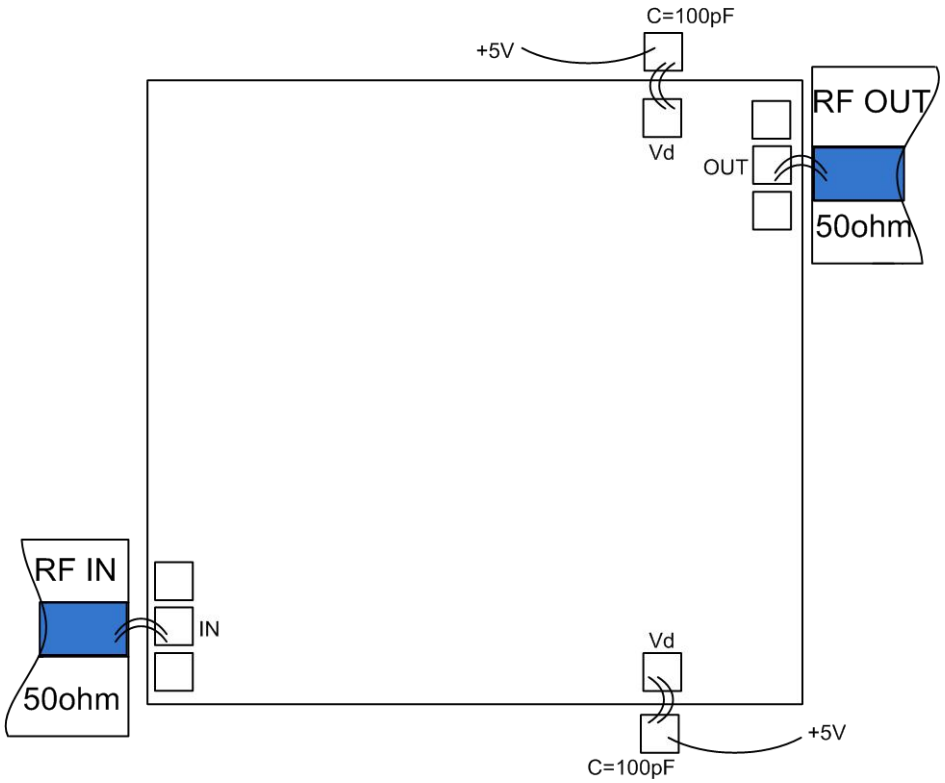
Outline Drawing [2]




【2】um

| Pad Descriptions | | | |
|---|---|---|---|
| Part No. | Function | Description | Circuit |
| 1 | RFIN | RF signal input, no straightening capacitor |   |
| 2 | RFOUT | RF signal input, no straightening capacitor |   |
| 3 | VD | Amplifier drain bias, external 100pf bypass capacitance, single side power supply, only one side of the bonding vd 。 |   |
| Die Bottom | GND | Die bottom must be connected to RF/DC ground. |   |

## Assembly




【3】single side power supply, only one side of the bonding vd。

## Handling Precautions

- All bare die are placed in either Waffle or Gel based ESD protective containers, stored in a dry nitrogen environment。
- Handle the chips in a clean environment. DO NOT attempt to clean the chip using liquid cleaning systems。
- Follow ESD precautions to protect against ESD strikes。
- Handle the chip along the edges with a vacuum collet or with a sharp pair of bent tweezers. The surface of the chip has fragile air bridges and should not be touched with vacuum collet, tweezers, or fingers。
- The chip is back-metallized and can be die mounted with AuSn eutectic preforms or with electrically conductive epoxy. The mounting surface should be clean and flat。
- temperature of 265 ° C. When hot 90/10 nitrogen/hydrogen gas is applied, tool tip temperature should be 290 ° C. DO NOT expose the chip to a temperature greater than 320 ° C for more than 20 seconds. No more than 3 seconds of scrubbing should be required for attachment
- Apply a minimum amount of epoxy to the mounting surface so that a thin epoxy fi llet is observed around the perimeter of the chip once it is placed into position. Cure epoxy per the manufacturer’s schedule.。

  Ball bonds should be made with a force of 40-50 grams and wedge bonds at 18-22 grams. All bonds should be made with a nominal stage temperature of 150 ° C. A minimum amount of ultrasonic energy should be applied to achieve reliable bonds。