

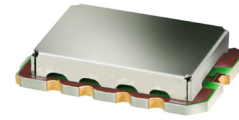
# Low Noise Amplifier

## TAMP-362LN+

50Ω 3300 to 3600 MHz

### The Big Deal

- Ultra Low Noise Figure, 0.9 dB typ.
- Low Current, 20mA at +5V
- Good VSWR, 1.3:1 typ.
- Integrated Bias Matching and Stabilization Circuits



CASE STYLE: JQ1382

### Product Overview

The TAMP-362LN+ (RoHS compliant) utilizes advanced HJ-FET technology in a single stage low noise amplifier design built into a shielded case (size: .591"x.394"x.118"). The drop-in module offers ultra low noise figure with good input and output return loss over the entire frequency range and without the need of external matching components.

### Key Features

| Feature                          | Advantages  |
|----------------------------------|---|
| Ultra Low NF                     | With typ. 0.9 dB NF, the TAMP-362LN+ enables greater sensitivity for receiver applications. It includes all matching and stability circuits making this Drop-in LNA module a turn-key solution for ensuring low system sensitivity in demanding applications.                                       |
| Low Current, 20mA typ.           | At only 20mA, the TAMP-362LN+ is ideal for applications with limited available power or densely packed applications where thermal and power management is critical.   |
| Well Matched input/ output ports | With typical input & output VSWR of 1.3:1, the TAMP-362LN+ can be used in cascade with many 50 Ohm components and maintain minimal interaction or reflections.  |
| Drop-in Module                   | Eliminates the need for designers to optimize low noise transistor bias and matching circuitry. The TAMP-362LN+ provides the outstanding combined performance and does not require any external elements.<br>The case PCB area is smaller than most LNA transistor designs with external circuitry. |
| Metal Case                       | Provides a protective enclosure improving handling robustness in addition to shielding the sensitive high gain devices from close by circuitry.   |
| Unconditionally stable           | No adverse effects due to reactive loads at the input and output ports avoiding potential instability which can be a critical requirement when integrating high gain, high frequency devices on an open PCB assembly.   |

#### Notes

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Surface Mount

# Low Noise Amplifier

## TAMP-362LN+

50Ω

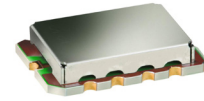
3300 to 3600 MHz

### Features

- Ultra Low noise figure, 0.9 dB typ.
- Output power, up to +11 dBm typ.
- Good output IP3, 25 dBm typ.
- Low current consumption
- Good VSWR, 1.3:1 typ.
- Unconditionally stable

### Applications

- WiMAX
- Defence system radar
- Base station transceiver, tower mounted amplifier, repeater
- General purpose low noise amplifier



CASE STYLE: JQ1382

### +RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

### Electrical Specifications at 25°C

| Parameter                                 | Condition (MHz) | Min. | Typ.  | Max.  | Units |
|---|-----------------|------|-------|-------|-------|
| Frequency Range                           |                 | 3300 |       | 3600  | MHz   |
| Noise Figure                              | 3300 - 3600     |      | 0.9   | 1.2   | dB    |
| Gain                                      | 3300 - 3600     | 10   | 12    |       | dB    |
| Gain Flatness                             | 3300 - 3600     |      | ± 0.4 | ± 0.8 | dB    |
| Output Power at 1dB compression           | 3300 - 3600     | 9    | 11    |       | dBm   |
| Output third order intercept point (OIP3) | 3300 - 3600     |      | 25    |       | dBm   |
| Input VSWR                                | 3300 - 3600     |      | 1.3   |       | :1    |
| Output VSWR                               | 3300 - 3600     |      | 1.3   |       | :1    |
| DC Supply Voltage                         |                 |      | 5.0   |       | V     |
| DC Supply Current                         |                 |      | 20    | 30    | mA    |

### Pin Connections

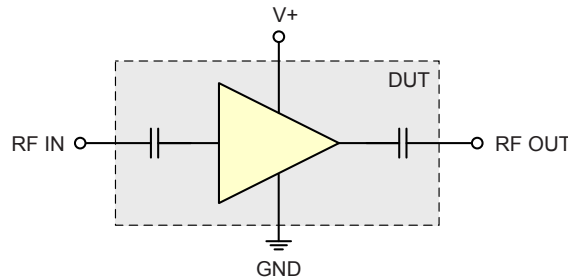
|        |                  |
|--------|------------------|
| RF IN  | 10               |
| RF OUT | 5                |
| V+     | 7                |
| GROUND | 1,2,3,4,6,8,9,11 |

### Maximum Ratings

| Parameter                  | Ratings        |
|----------------------------|----------------|
| Operating Temperature      | -40°C to 85°C  |
| Storage Temperature        | -55°C to 100°C |
| Operating Voltage          | 5.5 V          |
| Input RF Power (no damage) | 0 dBm          |
| Power Consumption          | 165 mW         |

Permanent damage may occur if any of these limits are exceeded.

### Simplified Schematic



### ESD Rating

Human Body Model (HBM): Class 0 (< 250 V) in accordance with EIAJ-ED-4701

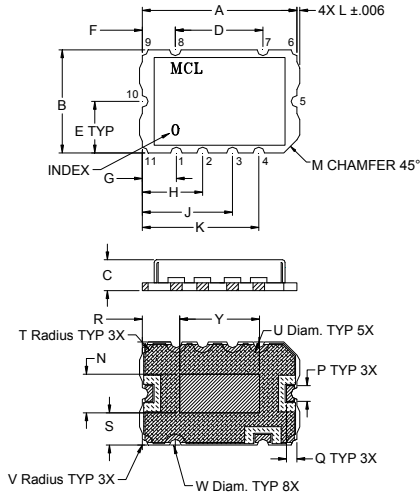
Machine Model (MM): Class M1 (<100 V) in accordance with EIAJ-ED-4701

#### Notes

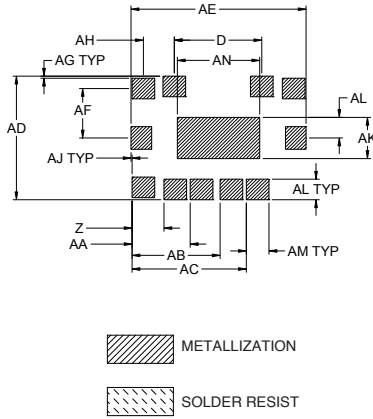
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## Outline Drawing



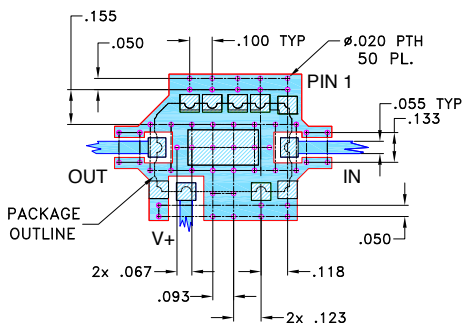
## PCB Land Pattern



## Outline Dimensions (inch/mm)

| A    | B    | C    | D    | E    | F    | G    | H    | J    | K    | L    | M    | N    | P    | Q    | R    | S    | T    | U    | V    | W    | Y    | Z    | AA   | AB   | AC   | AD   | AE   | AF   | AG   | AH   | AJ   | AK   | AL   | AM   | AN   | wt.   |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| .591 | .394 | .118 | .335 | .197 | .126 | .130 | .230 | .344 | .445 | .011 | .050 | .148 | .060 | .040 | .143 | .123 | .042 | .084 | .022 | .044 | .305 | .122 | .222 | .337 | .437 | .472 | .669 | .189 | .008 | .118 | .004 | .158 | .079 | .087 | .315 | grams |
| 15.0 | 10.0 | 3.0  | 8.5  | 5.0  | 3.2  | 3.3  | 5.85 | 8.75 | 11.3 | .28  | 1.27 | 3.75 | 1.52 | 1.02 | 3.63 | 3.13 | 1.07 | 2.13 | .56  | 1.12 | 7.75 | 3.1  | 5.65 | 8.55 | 11.1 | 12.0 | 17.0 | 4.8  | .20  | 3.0  | .10  | 4.0  | 2.0  | 2.2  | 8.0  | 0.8   |

## Demo Board MCL P/N: TB-468+ Suggested PCB Layout (PL-293)



### NOTES:

- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002; COPPER 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

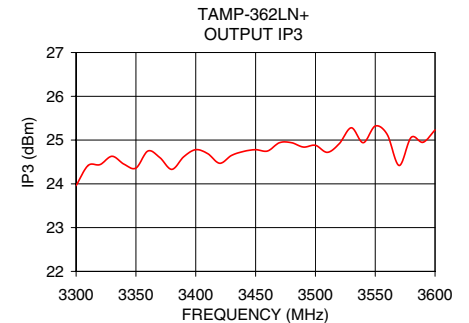
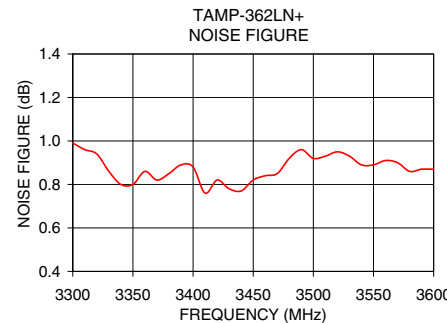
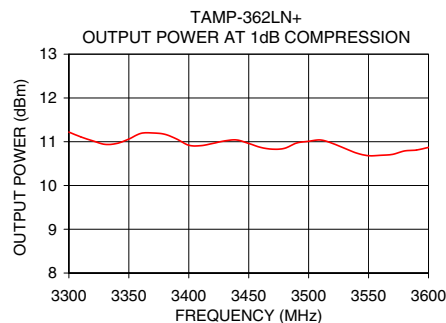
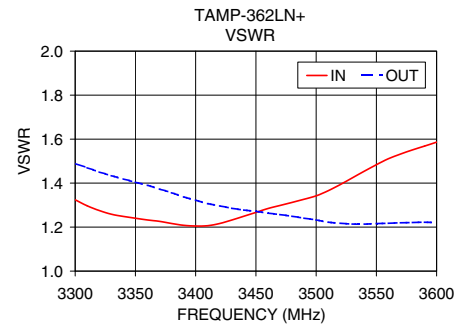
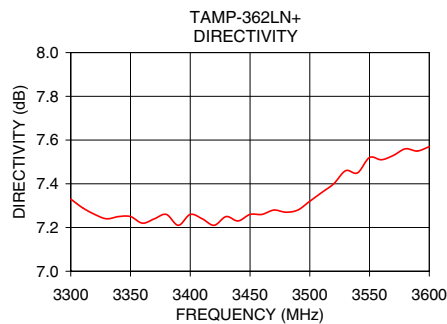
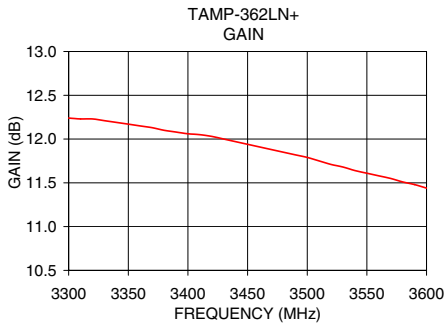
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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| FREQUENCY (MHz) | GAIN (dB) | DIRECTIVITY (dB) | VSWR IN (:1) | VSWR OUT (:1) | NOISE FIGURE (dB) | P. OUT @ 1dB COMPR. (dBm) | OUTPUT IP3 (dBm) |
|-----------------|-----------|------------------|--------------|---------------|-------------------|---------------------------|------------------|
| 3300.00         | 12.24     | 7.33             | 1.32         | 1.49          | 0.99              | 11.22                     | 23.96            |
| 3320.00         | 12.23     | 7.26             | 1.28         | 1.45          | 0.94              | 11.02                     | 24.44            |
| 3340.00         | 12.19     | 7.25             | 1.25         | 1.42          | 0.80              | 10.96                     | 24.45            |
| 3360.00         | 12.15     | 7.22             | 1.23         | 1.39          | 0.86              | 11.19                     | 24.75            |
| 3380.00         | 12.10     | 7.26             | 1.22         | 1.36          | 0.85              | 11.17                     | 24.33            |
| 3400.00         | 12.06     | 7.26             | 1.21         | 1.32          | 0.88              | 10.92                     | 24.78            |
| 3420.00         | 12.03     | 7.21             | 1.22         | 1.30          | 0.82              | 10.96                     | 24.47            |
| 3440.00         | 11.97     | 7.23             | 1.25         | 1.28          | 0.77              | 11.04                     | 24.74            |
| 3460.00         | 11.91     | 7.26             | 1.28         | 1.26          | 0.84              | 10.87                     | 24.75            |
| 3480.00         | 11.85     | 7.27             | 1.31         | 1.25          | 0.92              | 10.85                     | 24.94            |
| 3470.00         | 11.88     | 7.28             | 1.30         | 1.26          | 0.85              | 10.83                     | 24.94            |
| 3480.00         | 11.85     | 7.27             | 1.31         | 1.25          | 0.92              | 10.85                     | 24.94            |
| 3490.00         | 11.82     | 7.28             | 1.33         | 1.24          | 0.96              | 10.97                     | 24.84            |
| 3500.00         | 11.79     | 7.32             | 1.34         | 1.23          | 0.92              | 11.01                     | 24.88            |
| 3510.00         | 11.75     | 7.36             | 1.37         | 1.22          | 0.93              | 11.04                     | 24.72            |
| 3520.00         | 11.71     | 7.40             | 1.39         | 1.22          | 0.95              | 10.96                     | 24.92            |
| 3540.00         | 11.64     | 7.45             | 1.45         | 1.21          | 0.89              | 10.74                     | 24.94            |
| 3560.00         | 11.58     | 7.51             | 1.51         | 1.22          | 0.91              | 10.69                     | 25.13            |
| 3580.00         | 11.51     | 7.56             | 1.55         | 1.22          | 0.86              | 10.79                     | 25.06            |
| 3600.00         | 11.44     | 7.57             | 1.59         | 1.22          | 0.87              | 10.87                     | 25.23            |



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