



LOW NOISE, HIGH GAIN

High-Frequency Amplifier **ZVA-71863LNX+**

50Ω 71 to 86 GHz

THE BIG DEAL

- High gain, 37 dB typ.
- Excellent gain flatness, ± 1.75 dB typ.
- Low noise figure = 4.5 dB typ. from 71 to 81 GHz
- Adjustable single supply voltage, +10 to +15V

APPLICATIONS

- Automotive test
- Radar/Sensing
- 5G FR2+ bands (E-band)
- SATCOM E-band
- Wireless infrastructure



Generic photo used for illustration purposes only

| | |
|-------------------|---------------|
| Model No. | ZVA-71863LNX+ |
| Case Style | WC3071-5 |
| Connectors | 1.0mm Female |

+RoHS Compliant

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

PRODUCT OVERVIEW

Mini-Circuits' ZVA-71863LNX+ is a coaxial, low noise high frequency amplifier, operating from 71 to 86 GHz. This model operates over a single positive supply range of +10 to +15V, allowing users to choose their desired operating voltage. Internal DC-DC conversion circuitry maintains constant efficiency over the full input voltage range. The amplifier incorporates several DC-protection features, such as over-voltage, reverse voltage and in-rush current, that protect the amplifier from damage if mishandled during operation. The high frequency operation combined with high gain and low noise figure makes this amplifier an ideal choice for automotive, radar/sensing applications, and 5G testing in E-band frequency ranges.

KEY FEATURES

| Feature | Advantages |
|---|---|
| High Freq amplifier, 71 to 86 GHz | E-band LNA covering 5G, Automotive Radar (77 to 81 GHz) and SATCOM E-band (71 to 76 GHz, 81 to 86 GHz) |
| High gain Low VSWR Medium output power | The combination of low noise figure (4.5dB typ.) and high gain (37dB typ.) provides significant amplification with very little signal integrity degradation |
| Adjustable DC supply voltage | The device is capable of operating on a single supply voltage from +10 to +15 V with consistent DC power consumption, providing ease and flexibility for incorporation into test setups and systems |
| DC Protection – Over-voltage Reverse voltage In-rush current | The internal DC circuitry allows the amplifier to be protected from external mishandling that could lead to catastrophic failures in the field |

REV. OR
ECO-011973
ZVA-71863LNX+
MCL NY
220324





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Mini-Circuits

ELECTRICAL SPECIFICATIONS AT 25 °C BASEPLATE

| Parameter | Condition (MHz) | ZVA-71863LNx+ | | | Units |
|--|-----------------|---------------|--------|-------|-------|
| | | Min. | Typ. | Max. | |
| Frequency Range | | 71000 | | 86000 | MHz |
| Noise Figure | 71000 - 81000 | - | 4.5 | - | dB |
| | 81000 - 86000 | - | 5.5 | - | |
| Gain | 71000 - 86000 | 32.0 | 37.0 | - | dB |
| Gain Flatness | 71000 - 86000 | - | ± 1.75 | - | dB |
| Output Power at 1dB Compression | 71000 - 86000 | 9 | 13.5 | - | dBm |
| Input VSWR | 71000 - 86000 | - | 1.6 | 2.5 | :1 |
| Output VSWR ¹ | 71000 - 86000 | - | 1.6 | 2.5 | :1 |
| Operating DC Voltage | | +10 | - | +15 | V |
| Device Operating Current at +10 V ² | | - | 180 | 220 | mA |

1. Open and short-circuit loads are not recommended at the amplifier output. Ensure proper 50 Ohm load before turning the amplifier "ON".
2. Max Device Operating Current is specified when amplifier is in saturation.

MAXIMUM RATINGS⁴

| Parameter | Rating |
|----------------------------------|--|
| Operating temperature | -40 °C to +50 °C Ambient -40 °C to +60 °C Baseplate |
| Storage temperature | -40 °C to +85 °C |
| Total Power Dissipation | 2.5 W |
| RF Input Power ³ (CW) | 0 dBm |
| DC Operating Voltage | +16 V |

3. Specified under matched load to 50 ohms.
4. Continuous operation is not recommended at these extremes. Permanent damage may occur if any of these limits are exceeded.

DETERMINING MAXIMUM THERMAL RESISTANCE OF USERS' EXTERNAL HEAT SINK

| | |
|--|---|
| $\text{MAXIMUM THERMAL RESISTANCE} = \frac{\text{MAXIMUM OPERATING CASE TEMP} - \text{MAXIMUM USER AMBIENT TEMP}}{\text{POWER DISSIPATION}}$ | |
| Example: | MAXIMUM OPERATING CASE TEMP = 50 °C (CHECK MAXIMUM RATINGS TABLE FOR THIS VALUE) MAXIMUM USER AMBIENT TEMP = 30 °C (USER DEFINED) POWER DISSIPATION = 10 WATTS (CHECK MAXIMUM RATINGS TABLE FOR THIS VALUE) THEN MAXIMUM ALLOWABLE THERMAL RESISTANCE = 2 °C/W |



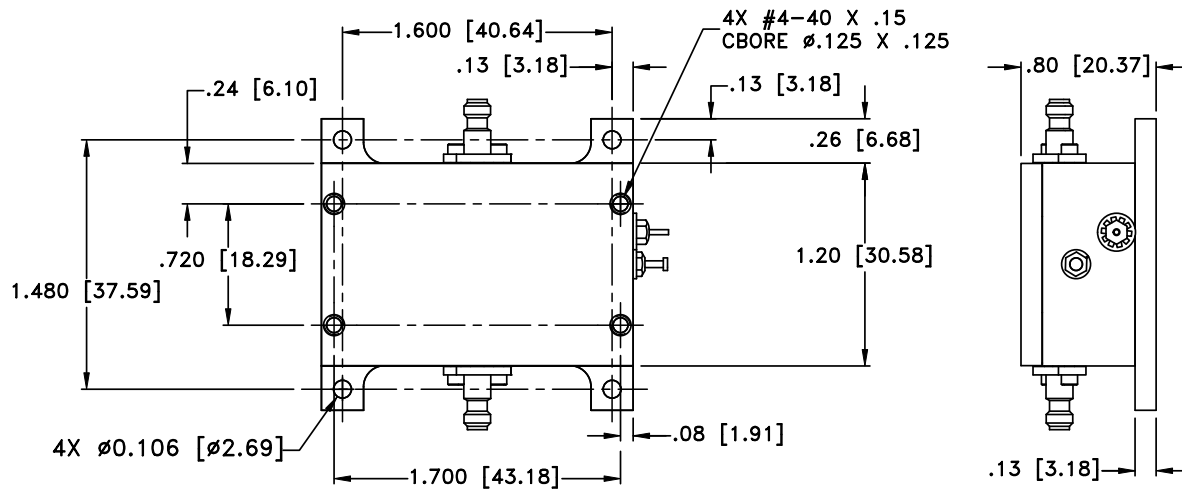


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OUTLINE DRAWING



Weight: 60 grams

Dimensions are in inches [mm]. Tolerances: 2 Pl. \pm .03; 3 Pl. \pm .015

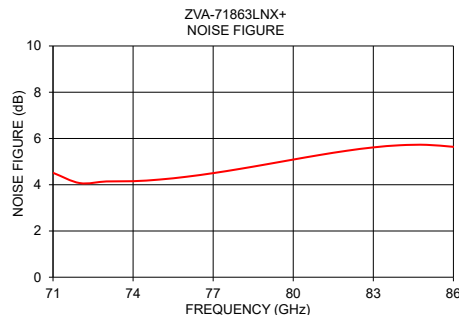
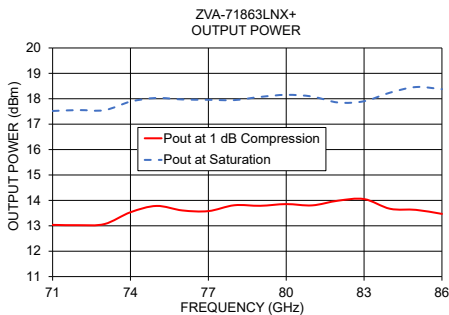
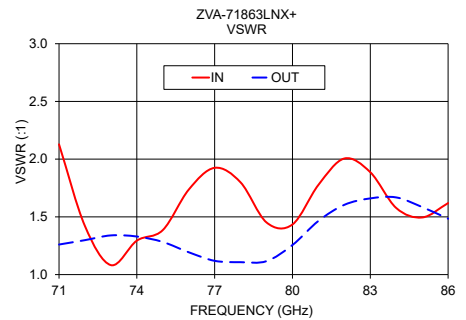
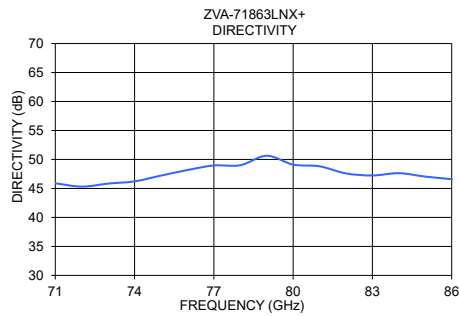
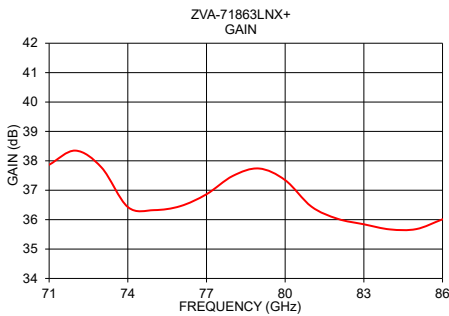


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TYPICAL PERFORMANCE DATA

| Frequency (GHz) | Gain (dB) | Directivity (dB) | VSWR (:1) | | Pout at 1 dB Compression (dBm) | Pout at Saturation (dBm) | Noise Figure (dB) |
|-----------------|-----------|------------------|-----------|------|--------------------------------|--------------------------|-------------------|
| | 10V | | IN | OUT | 10V | 10V | |
| 71.0 | 37.87 | 45.89 | 2.13 | 1.26 | 13.04 | 17.52 | 4.52 |
| 72.0 | 38.35 | 45.32 | 1.42 | 1.30 | 13.02 | 17.56 | 4.07 |
| 73.0 | 37.77 | 45.84 | 1.08 | 1.34 | 13.07 | 17.55 | 4.14 |
| 74.0 | 36.43 | 46.22 | 1.29 | 1.33 | 13.53 | 17.89 | 4.15 |
| 75.0 | 36.32 | 47.22 | 1.39 | 1.28 | 13.78 | 18.03 | 4.22 |
| 76.0 | 36.46 | 48.18 | 1.74 | 1.19 | 13.60 | 17.97 | 4.34 |
| 77.0 | 36.86 | 48.97 | 1.92 | 1.12 | 13.58 | 17.96 | 4.50 |
| 78.0 | 37.49 | 49.01 | 1.80 | 1.11 | 13.81 | 17.95 | 4.68 |
| 79.0 | 37.74 | 50.64 | 1.45 | 1.12 | 13.79 | 18.07 | 4.88 |
| 80.0 | 37.34 | 49.12 | 1.43 | 1.26 | 13.85 | 18.15 | 5.09 |
| 81.0 | 36.44 | 48.82 | 1.78 | 1.46 | 13.80 | 18.09 | 5.29 |
| 82.0 | 36.03 | 47.59 | 2.01 | 1.60 | 13.99 | 17.85 | 5.47 |
| 83.0 | 35.84 | 47.24 | 1.89 | 1.66 | 14.05 | 17.90 | 5.61 |
| 84.0 | 35.67 | 47.63 | 1.58 | 1.67 | 13.67 | 18.24 | 5.71 |
| 85.0 | 35.68 | 47.05 | 1.49 | 1.58 | 13.63 | 18.46 | 5.72 |
| 86.0 | 36.01 | 46.60 | 1.62 | 1.48 | 13.47 | 18.38 | 5.64 |



- NOTES**
- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
 - B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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