



WIDEBAND

Medium Power Amplifier **ZX60-83MP-S+**

50Ω 0.4 to 8 GHz SMA Female

THE BIG DEAL

- Wideband, 400 MHz to 8 GHz
- P1dB, +27dBm Typ.
- Excellent OIP3, +40 dBm Typ.
- 3.2dB Typ Noise Figure
- Reverse Polarity Protection



Generic photo used for illustration purposes only

| | |
|------------|--------------|
| Model No. | ZX60-83MP-S+ |
| Case Style | GC957 |
| Connectors | SMA Female |

+RoHS Compliant

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

APPLICATIONS

- Sub- 6GHz 5G Infrastructure
- WiFi6E, IoT & ISM Applications
- Test & Measurement Equipment
- R&D Lab, Production, and OTA Test Systems

PRODUCT OVERVIEW

Mini-Circuits' ZX60-83MP-S+ is a medium power amplifier offering industry-leading performance over its full frequency range from 400 MHz to 8 GHz. This design operates on a single +8V supply @ 144 mA and comes in a rugged, compact unibody case (0.74" x 0.75" x 0.46") with integrated SMA female connectors, making it an excellent candidate for tough operating conditions and crowded system layouts.

KEY FEATURES

| Feature | Advantages |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wideband: 0.4 to 8 GHz | Ideal for a wide range of transmitter applications including military, commercial wireless, and instrumentation. |
| Flat gain | Ideal for broadband or multi-band applications. Just one, cost-efficient model required for multiple frequency usage. |
| High OIP3, +38 dBm typ. | Provides enhanced linearity over a broad frequency range. |
| High gain, 20 dB typ. | Reduces the number of gain stages, lowering component count and overall system cost. |
| Rugged unibody construction | Mini-Circuits' unibody construction integrates the RF connectors into the case body, providing high reliability and excellent survivability in critical applications. |

REV. OR
ECO-016347
ZX60-83MP-S+
MM/CP/AM
230201





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ELECTRICAL SPECIFICATIONS AT 25°C, Z₀ =50Ω AND +8V, UNLESS NOTED OTHERWISE

| Parameter | Condition (GHz) | Min. | Typ. | Max. | Units |
|---------------------------------------------|-----------------|------|------|------|-------|
| Frequency Range | | 0.4 | | 8 | GHz |
| Gain | 0.4 | | 21.5 | | dB |
| | 1.0 | | 21.4 | | |
| | 2.0 | | 20.7 | | |
| | 4.0 | | 19.5 | | |
| | 6.0 | | 18.5 | | |
| | 8.0 | | 16.5 | | |
| Gain Flatness | 0.4-4.0 | | ±1.0 | | dB |
| | 0.4-8.0 | | ±2.5 | | |
| Input Return Loss | 0.4 | | 13.5 | | dB |
| | 1.0 | | 14.5 | | |
| | 2.0 | | 13.5 | | |
| | 4.0 | | 12.5 | | |
| | 6.0 | | 9.7 | | |
| | 8.0 | | 5.4 | | |
| Output Return Loss | 0.4 | | 10.0 | | dB |
| | 1.0 | | 12.5 | | |
| | 2.0 | | 13.2 | | |
| | 4.0 | | 16.2 | | |
| | 6.0 | | 13.2 | | |
| | 8.0 | | 11.3 | | |
| Output Power at 1dB Compression | 0.4 | | 27.0 | | dBm |
| | 1.0 | | 27.5 | | |
| | 2.0 | | 27.5 | | |
| | 4.0 | | 27.2 | | |
| | 6.0 | | 25.5 | | |
| | 8.0 | | 24.2 | | |
| Output IP3 | 0.4 | | 40.0 | | dBm |
| | 2.0 | | 37.7 | | |
| | 4.0 | | 40.0 | | |
| | 8.0 | | 34.3 | | |
| Noise Figure | 0.4 | | 3.3 | | dB |
| | 2.0 | | 3.2 | | |
| | 4.0 | | 2.8 | | |
| | 8.0 | | 3.2 | | |
| Device Operating Voltage (V _{DD}) | — | 7.7 | 8.0 | 8.3 | V |
| Device Operating Current (I _{DD}) | — | — | 144 | 175 | mA |

ABSOLUTE MAXIMUM RATINGS¹

| Parameter | Ratings |
|-----------------------------------------|--------------------------------------------------|
| Operating Temperature (Baseplate) | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| Total Power Dissipation | 1.4 W |
| Input Power | +22 dBm (5 minutes max.) +17 dBm (continuous) |
| DC Voltage V _{DD} ² | +8.8V |

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

Electrical maximum ratings are not intended for continuous normal operation.

2. This module includes reverse voltage protection, however it does not include over voltage protection or internal voltage regulation. Caution must be used to not exceed the maximum rated voltage at all times.





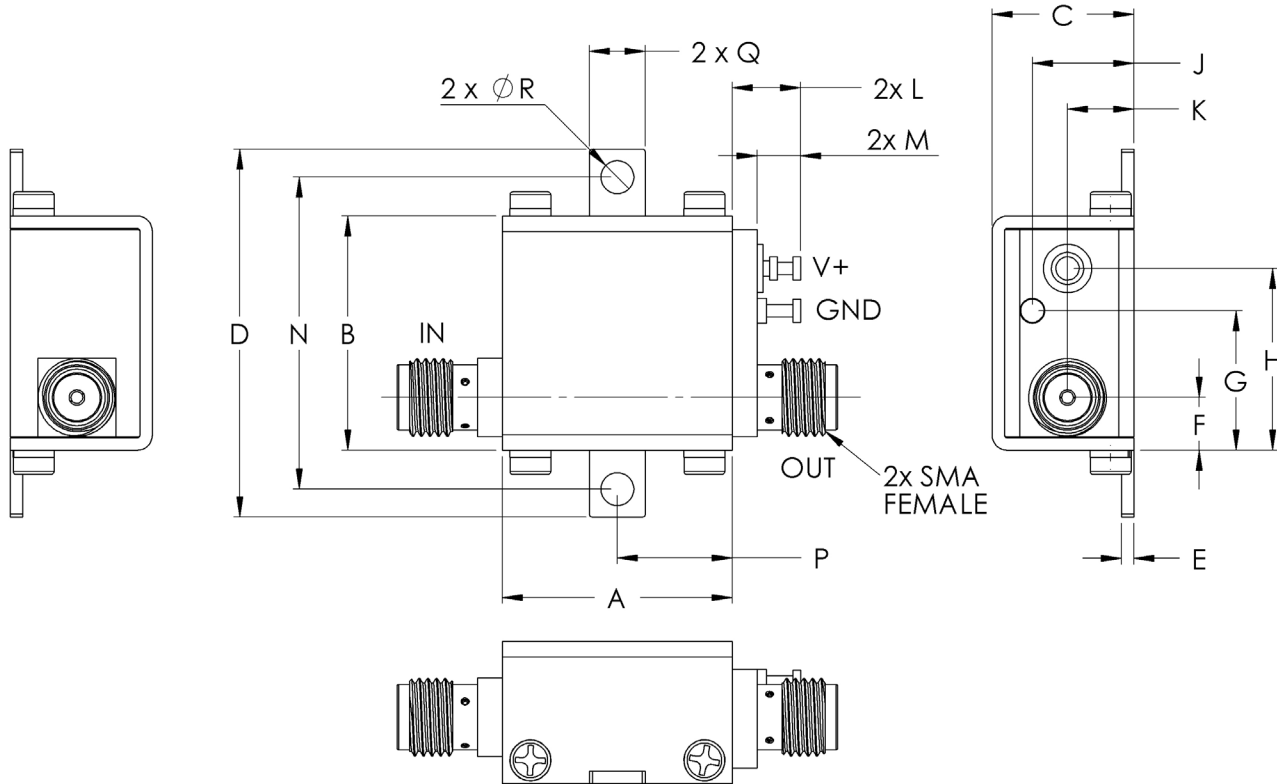
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OUTLINE DRAWING



! NOTE: When soldering the DC connections, caution must be used to avoid overheating the DC terminal. See Application Note. [AN-40-010](#).

OUTLINE DIMENSIONS (Inches) mm

| A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | wt |
|-------|------|-------|------|------|------|------|-------|------|------|------|------|-------|------|------|------|-------|
| .74 | .75 | .46 | 1.18 | .04 | .17 | .45 | .59 | .33 | .21 | .22 | .14 | 1.00 | .37 | .18 | .106 | grams |
| 18.80 | 19.1 | 11.68 | 30.0 | 1.02 | 4.32 | 11.4 | 14.99 | 8.38 | 5.33 | 5.59 | 3.56 | 25.40 | 9.40 | 4.57 | 2.69 | 23.0 |





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TYPICAL PERFORMANCE DATA

| Frequency (MHz) | Gain (dB) | VSWR (:1) | | Power Out @1 dB COMPR. (dBm) | Noise Figure (dB) | Frequency (MHz) | Output IP3 (dBm) |
|-----------------|-----------|-----------|------|------------------------------|-------------------|-----------------|------------------|
| | | IN | OUT | | | | |
| 400 | 21.60 | 1.51 | 1.87 | 27.04 | 3.24 | 400 | 39.73 |
| 500 | 21.63 | 1.46 | 1.79 | 27.44 | 3.28 | 2000 | 37.55 |
| 600 | 21.63 | 1.44 | 1.73 | 27.22 | 3.22 | 4000 | 41.65 |
| 1000 | 21.44 | 1.43 | 1.64 | 27.70 | 3.29 | 8000 | 35.63 |
| 2000 | 20.71 | 1.51 | 1.51 | 27.69 | 3.14 | | |
| 3000 | 19.89 | 1.51 | 1.32 | 27.44 | 3.12 | | |
| 4000 | 19.57 | 1.61 | 1.32 | 27.05 | 2.86 | | |
| 5000 | 19.11 | 1.69 | 1.35 | 26.65 | 2.81 | | |
| 6000 | 18.58 | 1.93 | 1.43 | 25.75 | 2.97 | | |
| 6600 | 18.17 | 2.17 | 1.48 | 25.54 | 3.16 | | |
| 7000 | 17.87 | 2.44 | 1.53 | 25.29 | 3.29 | | |
| 7600 | 17.19 | 2.90 | 1.66 | 24.41 | 3.27 | | |
| 8000 | 16.70 | 3.37 | 1.68 | 24.24 | 3.23 | | |



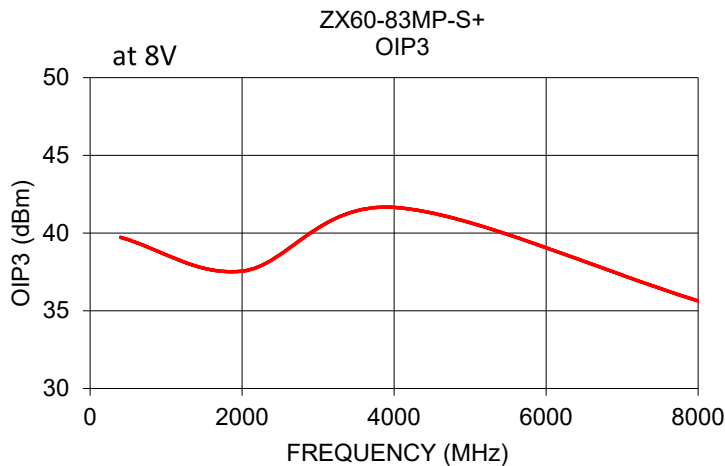
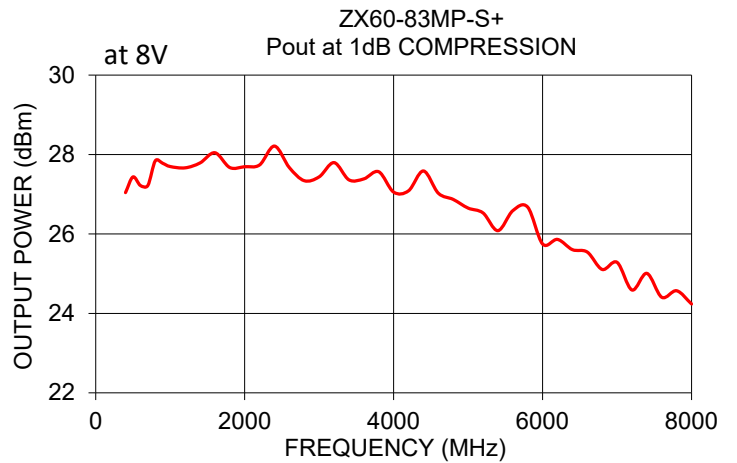
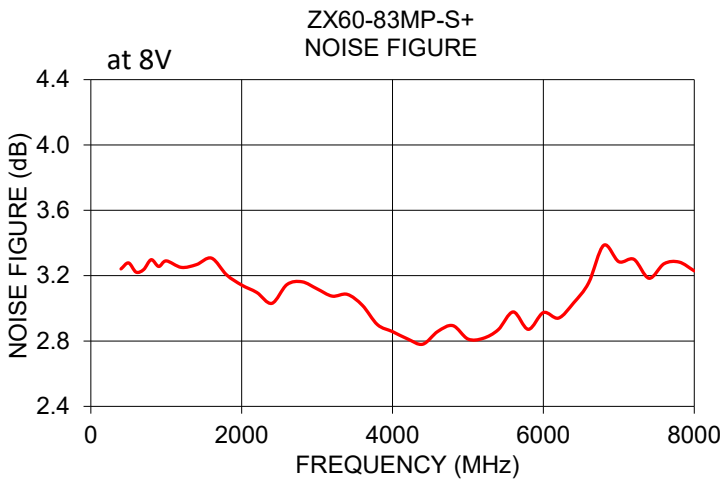
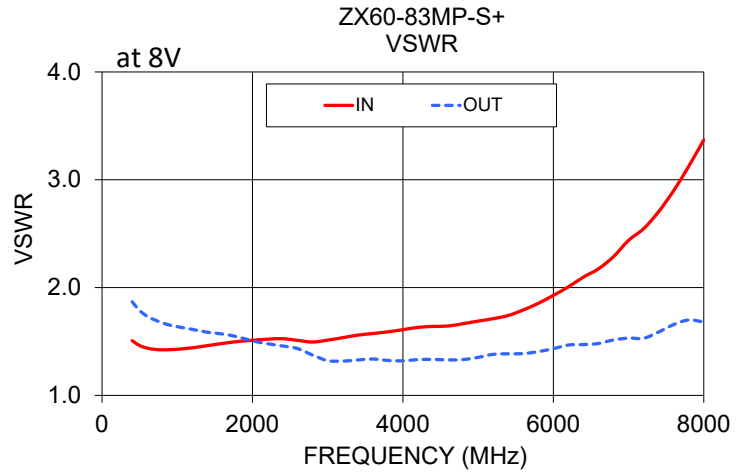
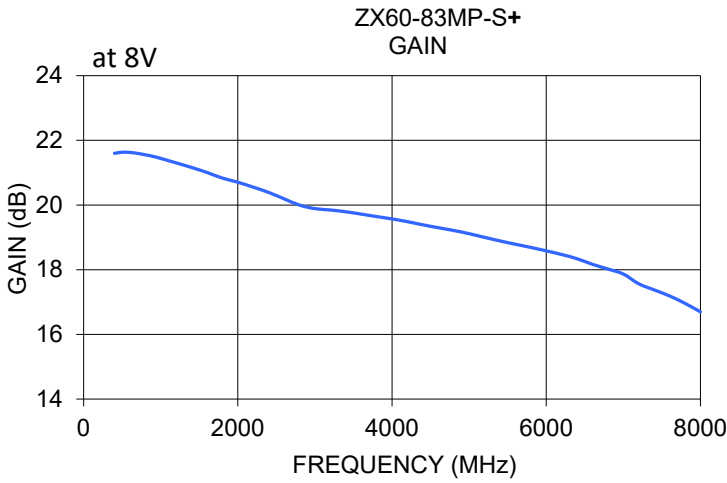


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TYPICAL PERFORMANCE GRAPHS



- 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.
 - C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard. Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html



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