



Mini-Circuits

WIDEBAND

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

50Ω 0.4 to 8 GHz SMA Female

KEY FEATURES

- Wideband, 0.4 to 8 GHz
- P1dB, +27 dBm Typ.
- Excellent OIP3, +38 dBm Typ.
- 3.1 dB Typ. Noise Figure
- Voltage Regulated Internally and Reverse Voltage Protected
- Ideal evaluation module for PMA3-83MP+

APPLICATIONS

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

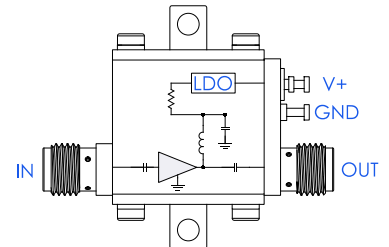
PRODUCT OVERVIEW

Mini-Circuits' ZX60-83MPR-S+ is a medium power amplifier utilizing MCL's own GaAs PHEMT amplifier, PMA3-83MP+, offering industry-leading performance over its full frequency range from 400 MHz to 8 GHz. This design operates on a single +9V 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 demanding operating conditions and crowded system layouts.



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



ELECTRICAL SPECIFICATIONS AT +25°C BASEPLATE, UNLESS OTHERWISE NOTED

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		19.2		
	8.0		17.3		
Gain Flatness	0.4-4.0		±1.4		dB
	0.4-8.0		±2.6		
Input Return Loss	0.4		13.5		dB
	1.0		14.5		
	2.0		13.5		
	4.0		10.5		
	6.0		9.7		
	8.0		5.0		
Output Return Loss	0.4		10.0		dB
	1.0		12.5		
	2.0		15.5		
	4.0		14.0		
	6.0		15.0		
	8.0		13.5		

REV. OR
ECO-026860
ZX60-83MPR-S+
MCL NY
250905





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ELECTRICAL SPECIFICATIONS AT +25°C BASEPLATE, UNLESS OTHERWISE NOTED

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Output Power @ 1 dB Compression	0.4		+28.5		dBm
	1.0		+28.0		
	2.0		+28.0		
	4.0		+27.0		
	6.0		+26.5		
	8.0		+26.0		
Output IP3 ¹	0.4		+40.0		dBm
	2.0		+37.7		
	4.0		+38.0		
	8.0		+36.0		
Noise Figure	0.4		3.3		dB
	2.0		3.2		
	4.0		2.8		
	8.0		3.2		
Device Operating Voltage (V_{DD})		+8.5	+9.0	+9.5	V
Device Operating Current (I_{DD}) ²		—	144	180	mA

1. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, +13 dBm/tone at output.

2. Current at $P_{IN} = -25$ dBm. Increases to 280 mA at P_{sat} .





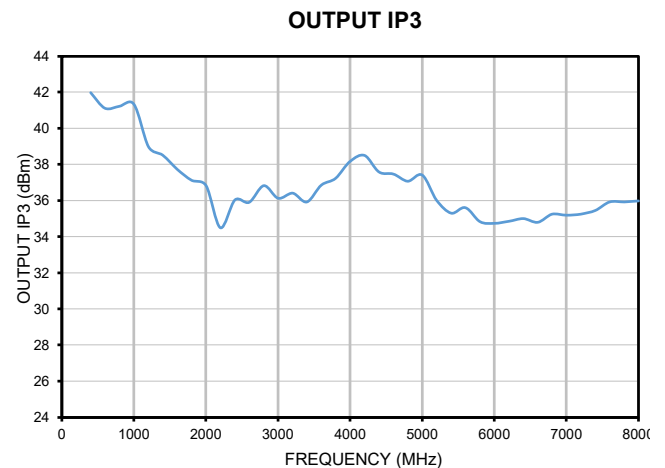
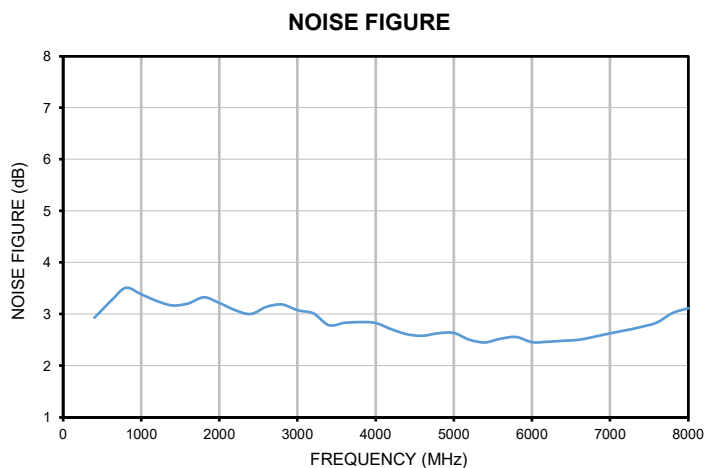
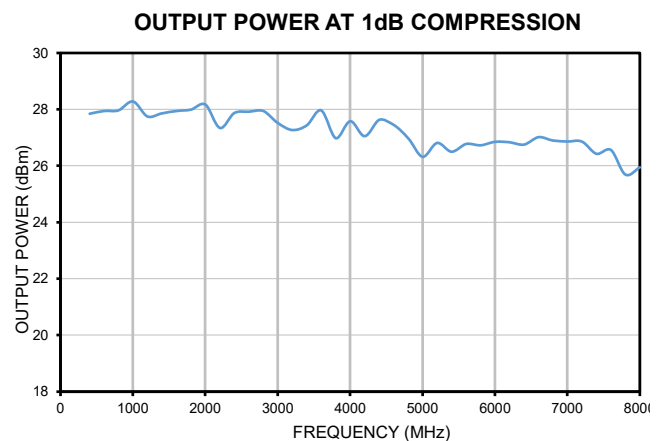
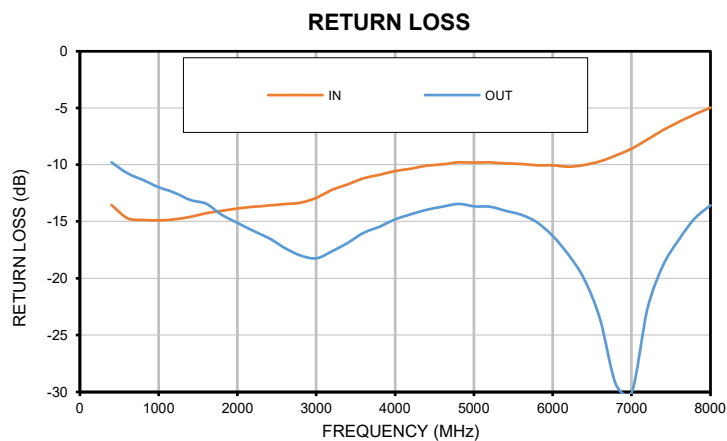
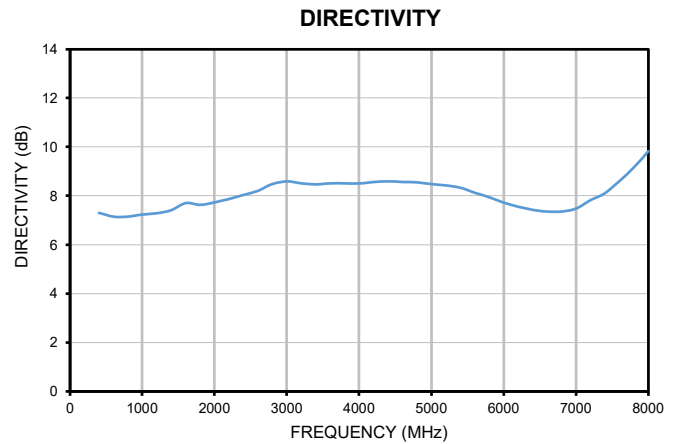
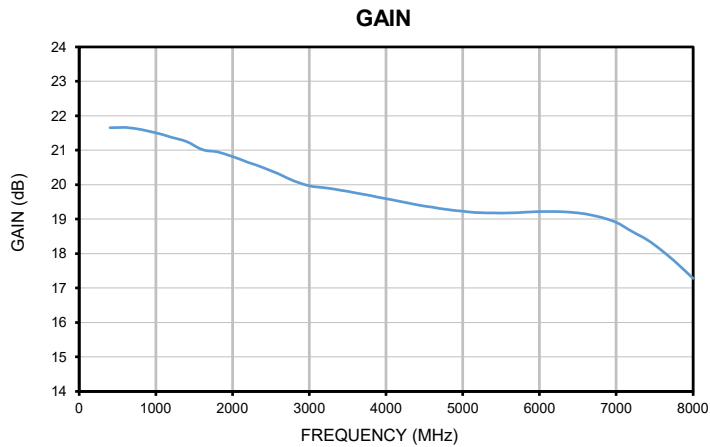
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TYPICAL PERFORMANCE GRAPHS



**ABSOLUTE MAXIMUM RATINGS³**

Parameter	Ratings
Operating Temperature (Baseplate)	-40°C to +65°C
Storage Temperature	-55°C to +100°C
Total Power Dissipation	2.2 W ⁵
RF Input Power (CW) ⁴	+14 dBm
DC Operating Voltage (Vs)	+10 V

3. Continuous operation is not recommended at these extremes. Permanent damage may occur if any of these limits are exceeded.

4. Specified under matched load to 50 ohms.

5. Operation is recommended using the supplied heatsink or an alternative heatsink with a thermal resistance ≤ 11.5 °C/W.

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



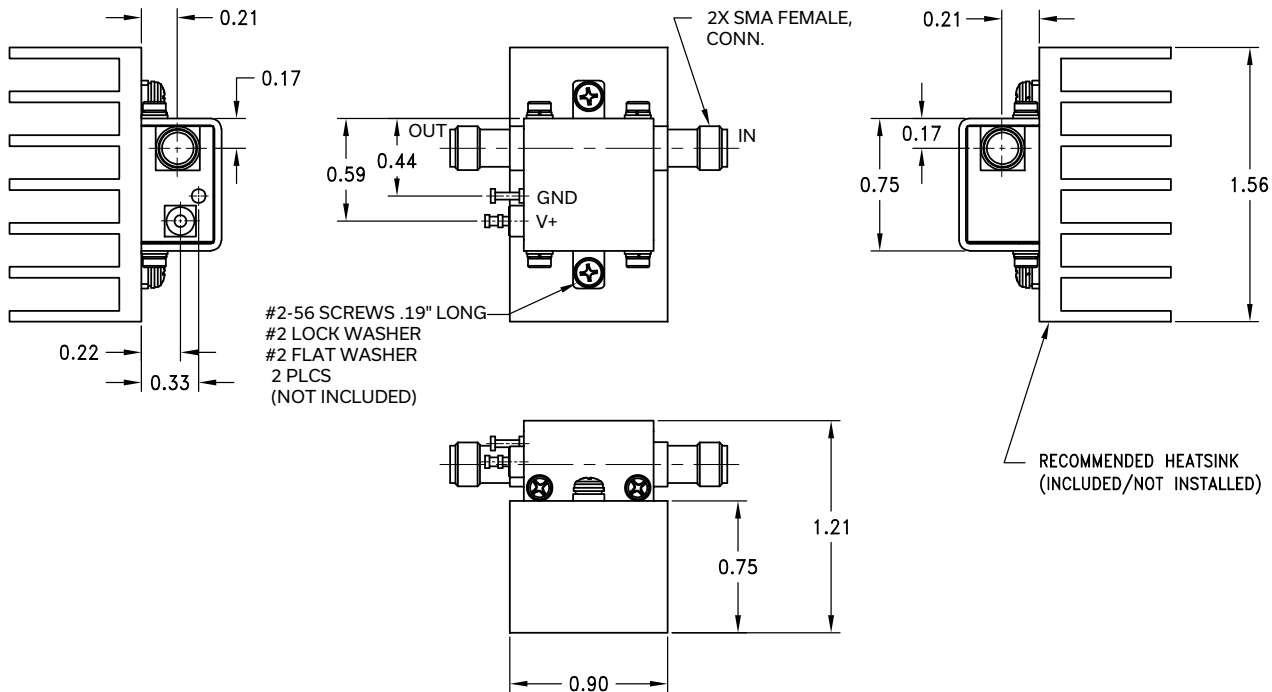
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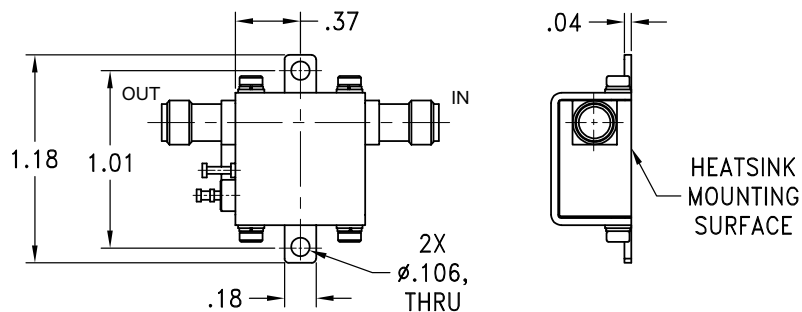
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CASE STYLE DRAWING



MOUNTING INFORMATION OF MODEL WITHOUT HEATSINK



Weight: 43 grams; without heatsink 23 grams.

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





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ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD

Performance Data & Graphs	Data
	Graphs
	S-Parameter (S2P Files) Data Set (.zip file)
RoHS Status	Compliant
Environmental Ratings	ENV23T16
Export Information	ECCN# EAR99

ORDERING INFORMATION

Model No. Link	ZX60-83MPR-S+
Case Style	GC957-3
Connector	IN: SMA Female OUT: SMA Female

NOTES

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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

