



COAXIAL

High Power Amplifier

ZHL-10M2G0020+
ZHL-10M2G0020X+

50Ω 10 to 2000 MHz Broadband 20W SMA-Female

KEY FEATURES

- Broadband, 10 to 2000 MHz
- High Gain, 53 dB typ.
- High P1dB, +40 dBm, typ.
- High OIP3, +43 dBm typ.

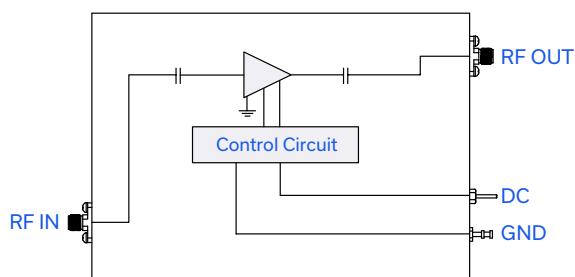


Generic photo used for illustration purposes only

APPLICATIONS

- Communication Systems
- R&D, Production, and Test Systems
- Test & Measurement Equipment
- General Laboratory Applications

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

The ZHL-10M2G0020(X)+ is a high-power broadband amplifier providing more than 20W of output power with a typical small signal gain of 52 dB over the 10 to 2000 MHz frequency band. The amplifier uses state-of-the-art semiconductor technology and can be used in a wide range of applications. A single supply voltage ensures ease of operation. The amplifier is made with a rugged aluminum housing and can be supplied with or without a heatsink.

ELECTRICAL SPECIFICATIONS AT $T_{\text{MOUNTING BASE}} = +25^{\circ}\text{C}$, $V_{\text{DC}} = +28\text{V}$

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
Frequency Range	f		10		2000	MHz
Small Signal Gain	G_{SS}	$P_{\text{IN}} = -50\text{dBm}$	45	53	55	dB
Small Signal Gain Flatness	$G_{\text{SS-FLAT}}$	$P_{\text{IN}} = -50\text{dBm}$		± 1.0	± 2.5	dB
Output Power at 1dB compression	P_{1dB}	$P_{\text{OUT-REF}} = +35\text{dBm}$		+40		dBm
Output Power at Saturation	P_{SAT}	$P_{\text{OUT-REF}} = +35\text{dBm}$	+42.8	+45		dBm
Noise Figure	NF			9.8		dB
Output Third Order Intercept Point	OIP3	$P_{\text{OUT}} = +30\text{dBm/ tone}$	+39.5	+43		dBm
Input Return Loss	I-RL	$P_{\text{IN}} = -50\text{dBm}$	7.3	21		dB
Output Return Loss	O-RL	$P_{\text{IN}} = -50\text{dBm}$	3.5	9		dB
DC Supply Voltage	V_{DC}			28	30	V
Supply Current	I_{DC}	Without fan @ P_{SAT}		3.5	5.0	A
		With fan @ P_{SAT}		3.9	5.4	

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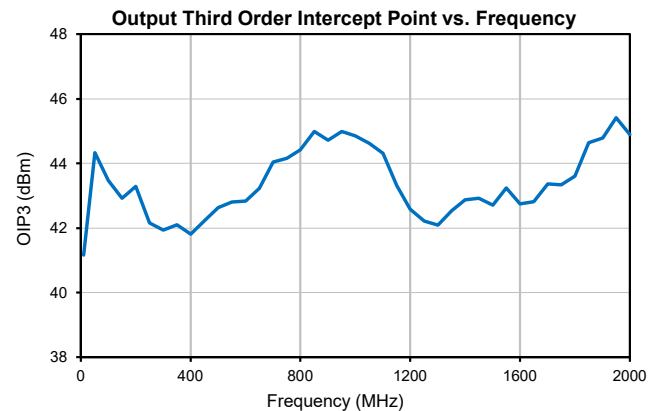
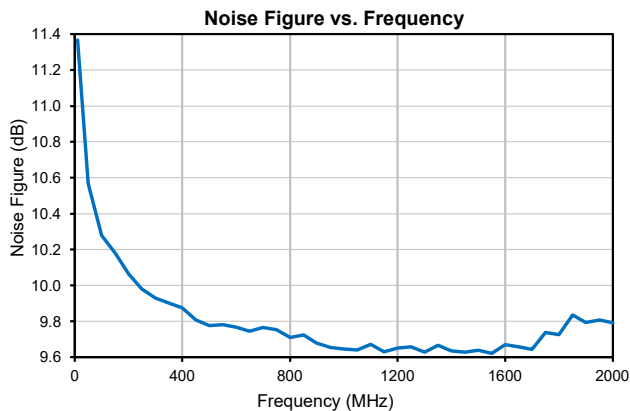
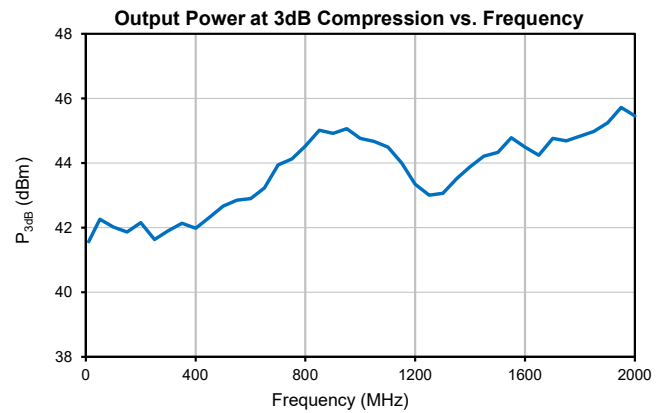
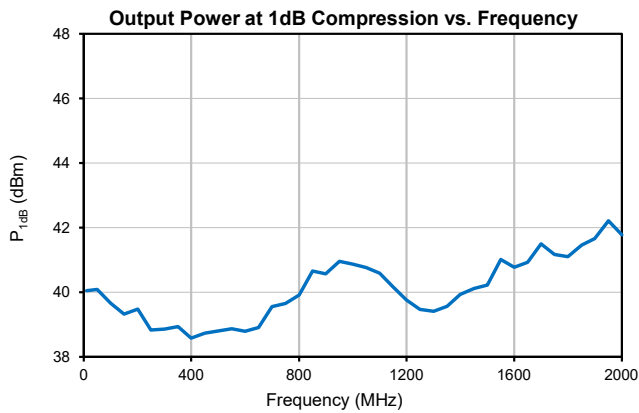
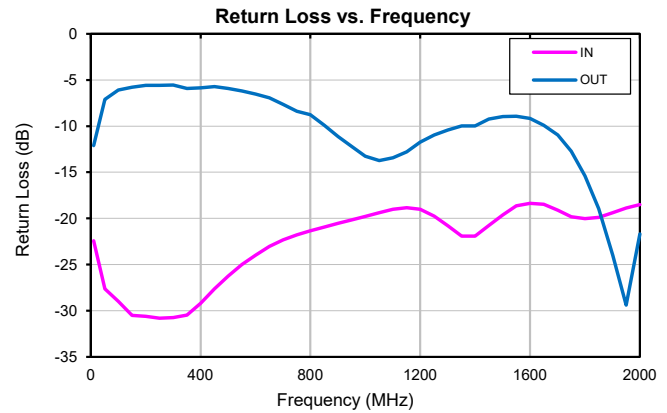
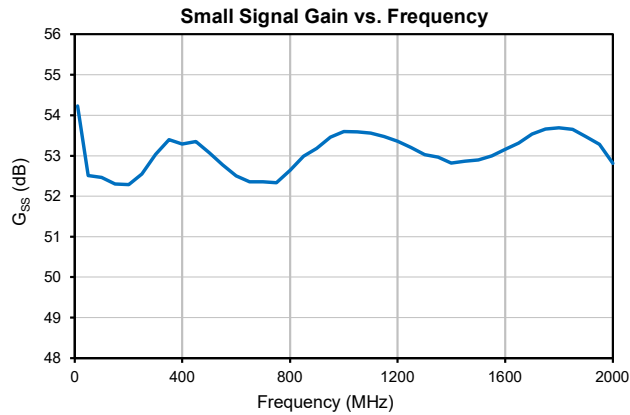
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ZHL-10M2G0020X+

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TYPICAL PERFORMANCE DATA AT $T_{\text{MOUNTINGBASE}} = +25^{\circ}\text{C}$, $V_{\text{DC}} = +28\text{V}$, 50 OHM



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ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	ZHL-10M2G0020+ T_{AMBIENT} : -20 °C to +60 °C
	ZHL-10M2G0020X+ $T_{\text{MOUNTING BASE}}$: -20 °C to +85 °C
Storage Temperature	-55°C to +100°C
No damage with an open or short at $P_{\text{OUT}} = +43 \text{ dBm CW}$	
RF Input Power (no damage)	+5 dBm
DC Operating Voltage	$\pm 30 \text{ V}$

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 MOUNTING BASE TEMP = +85 °C (CHECK MAXIMUM RATINGS TABLE FOR THIS VALUE) MAXIMUM USER AMBIENT TEMP = +60 °C (USER DEFINED) POWER DISSIPATION = 130 WATTS (CHECK MAXIMUM RATINGS TABLE FOR THIS VALUE) THEN MAXIMUM ALLOWABLE THERMAL RESISTANCE = 0.19 °C/W



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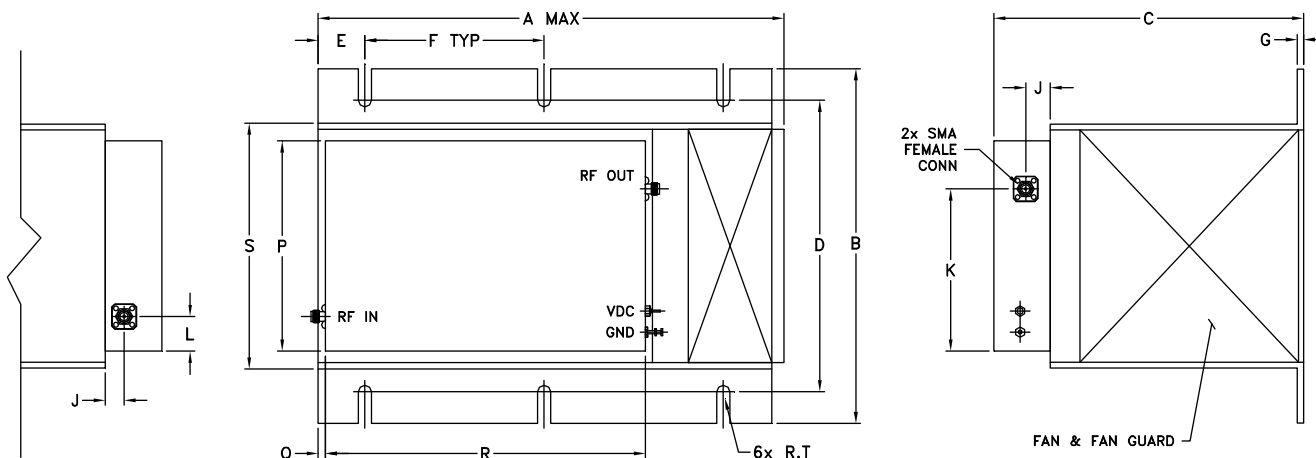
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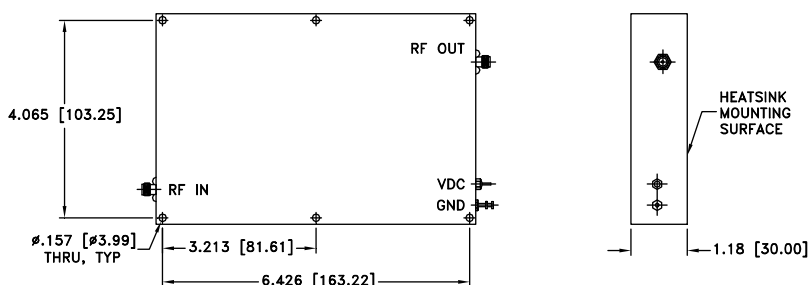
COAXIAL CONNECTIONS

IN (RF IN)	SMA-Female
OUT (RF OUT)	SMA-Female

CASE STYLE DRAWING WITH HEATSINK (ZHL-10M2G0020+)



CASE STYLE DRAWING WITHOUT HEATSINK (ZHL-10M2G0020X+)



OUTLINE DIMENSIONS (Inch mm)

A	B	C	D	E	F	G	J	K	L	M	P	Q	R	S	T	wt
9.85	7.30	6.50	6.00	0.98	3.75	0.13	0.47	3.34	0.71	--	4.33	0.20	6.69	5.10	0.14	grams*
250.19	185.42	167.64	152.4	24.89	95.25	3.30	12.00	84.80	18.00	--	110.00	5.08	170.00	129.54	3.45	4565

*880 grams without heatsink





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ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD.

Performance Data	Table
	Graphs
	S-Parameter (S2P Files) Data Set (.zip file)
RoHs Status	Compliant
Environmental Ratings	ENV23T19

ORDERING INFORMATION

Model No. Links	ZHL-10M2G0020+	ZHL-10M2G0020X+
Option	With heatsink	Without heatsink
Case Style	BT1689-1	
Connector	IN (SMA-Female) / OUT (SMA-Female)	

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

