



Mini-Circuits

COAXIAL

High-Power Amplifier

ZHL-20M2G7025+
ZHL-20M2G7025X+

50Ω 20 to 2700 MHz Broadband 25W SMA-Female

KEY FEATURES

- Broadband, 20 to 2700 MHz
- High Gain, 50 dB typ.
- High P1dB, +40 dBm, typ.
- High OIP3, +49 dBm typ.

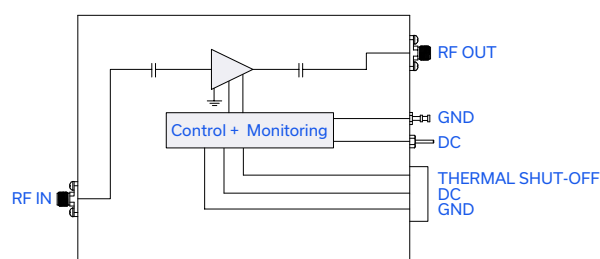


Generic photo used for illustration purposes only

APPLICATIONS

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

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

The ZHL-20M2G7025(X)+ is a high-power broadband amplifier providing more than 25 W of output power with a typical small signal gain of 50 dB over the 20 to 2700 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 $T_{\text{MOUNTING BASE}} = +25^{\circ}\text{C}$, $V_{\text{DS}} = +28\text{ V}$

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
Frequency Range	f		20		2700	MHz
Small Signal Gain	G_{SS}	$P_{\text{OUT}} = -25\text{ dBm}$	45	50	55	dB
Small Signal Gain Flatness	$G_{\text{SS-FLAT}}$	$P_{\text{OUT}} = -25\text{ dBm}$		± 0.8	± 2.0	dB
Output Power at 1dB compression	P_{1dB}	$P_{\text{OUT-REF}} = +35\text{ dBm}$	+36	+40		dBm
Output Power at 3dB compression	P_{3dB}	$P_{\text{OUT-REF}} = +35\text{ dBm}$	+40	+44		dBm
Output Power at Saturation	P_{SAT}	$P_{\text{OUT-REF}} = +35\text{ dBm}$	+42	+45		dBm
Noise Figure	NF			10		dB
Output Third Order Intercept Point	OIP3	$P_{\text{OUT}} = +30\text{ dBm/ tone}$	+40	+49		dBm
Input Return Loss	I-RL	$P_{\text{OUT}} = -25\text{ dBm}$	7.7	23		dB
Output Return Loss	O-RL	$P_{\text{OUT}} = -25\text{ dBm}$	7.7	10		dB
DC Supply Voltage	V_{DC}			+28	+30	V
Supply Current	I_{DC}	Without fan @ $P_{\text{OUT}} = +44\text{ dBm}$		3.5	5.0	A
		With fan @ $P_{\text{OUT}} = +44\text{ dBm}$		3.9	5.4	

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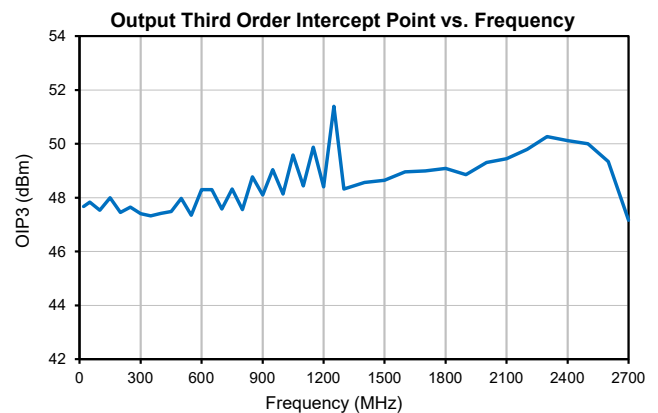
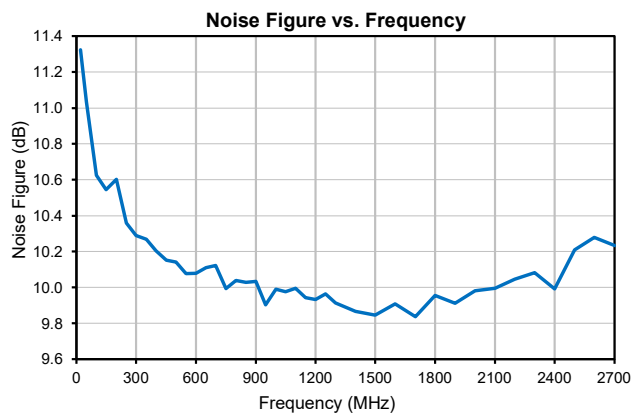
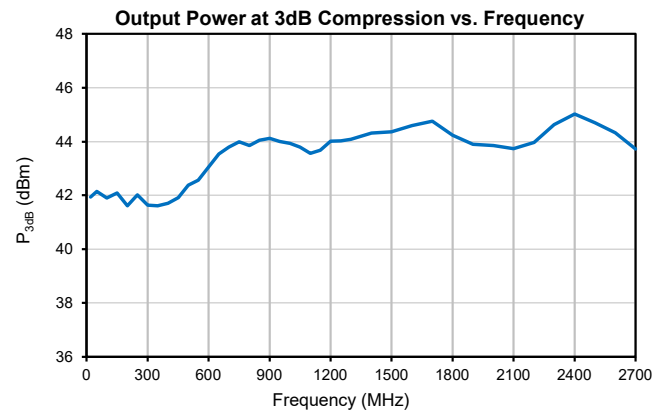
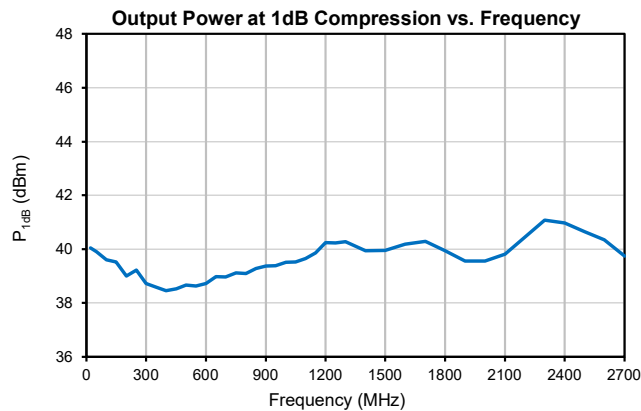
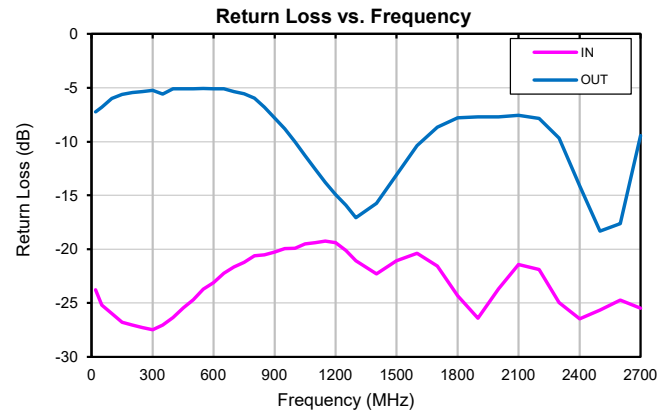
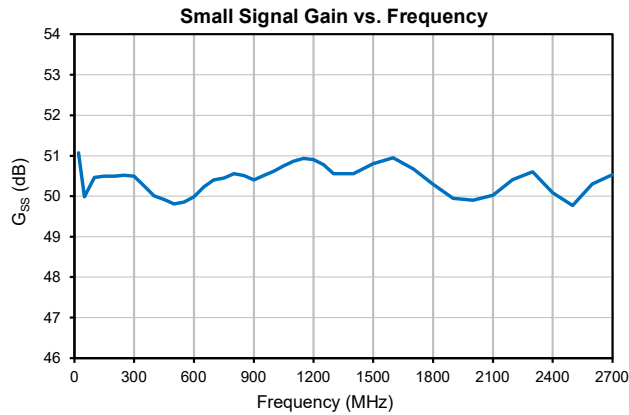
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TYPICAL PERFORMANCE DATA AT $T_{\text{MOUNTINGBASE}} = +25^{\circ}\text{C}$, $V_{\text{DC}} = +28\text{V}$, 50 OHM



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ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings	
Operating Temperature	ZHL-20M2G7025+	T _{AMBIENT} : -20 °C to +60 °C
	ZHL-20M2G7025X+	T _{MOUNTING BASE} : -20 °C to +85 °C
Storage Temperature	-55°C to +100°C	
No damage with an open or short at P _{OUT} = +42 dBm CW		
RF Input Power (no damage)	+5 dBm	
DC Operating Voltage	± 30 V	

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

D-SUB MALE CONNECTOR PIN CONNECTIONS¹

Pin Function	Label on unit	Pin #
None	N/C1, N/C2, N/C3 N/C4, N/C5	1,2,4,5
<u>Thermal Shut-Off Indication</u> Shut-Off: +2 to +5V Not Shut-Off: 0 to +0.8V	TTL Out	3
DC Input (+)	Vdc	6,7
Ground	GND	8,9

1. Each amplifier will come packaged with an additional D-Sub connector for mating with the amplifier

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 = 98 WATTS (CHECK MAXIMUM RATINGS TABLE FOR THIS VALUE) THEN MAXIMUM ALLOWABLE THERMAL RESISTANCE = 0.15 °C/W



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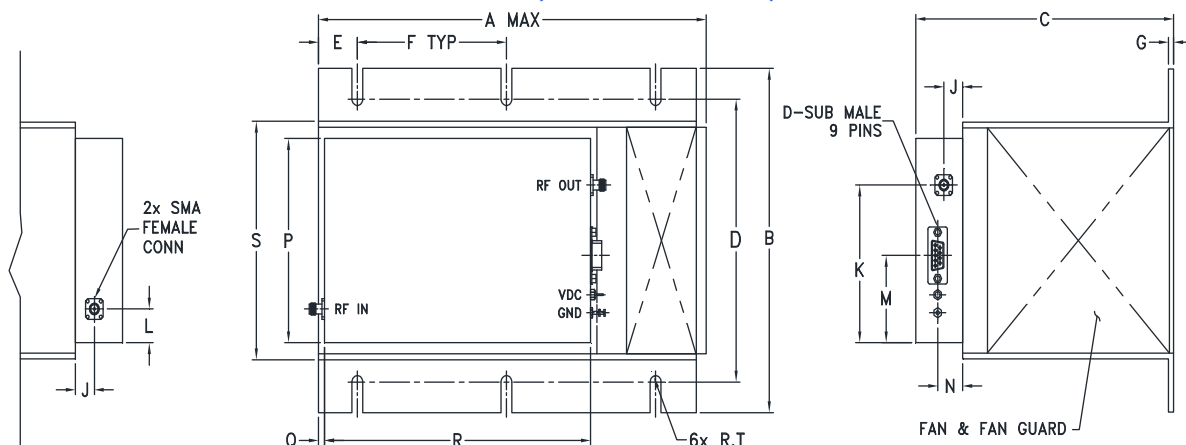
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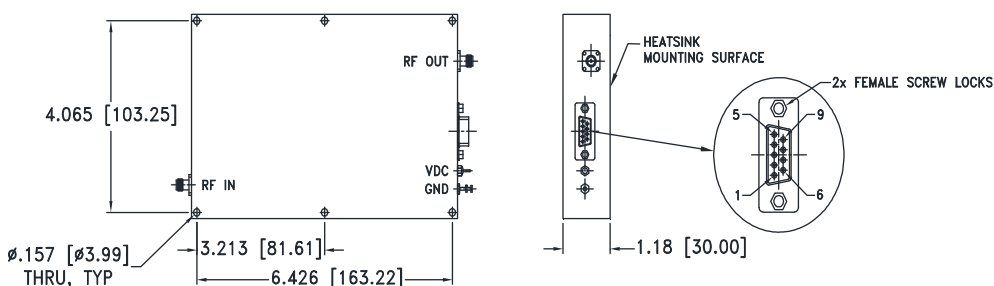
COAXIAL CONNECTIONS

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

CASE STYLE DRAWING WITH HEATSINK (ZHL-20M2G7025+)



CASE STYLE DRAWING WITHOUT HEATSINK (ZHL-20M2G7025X+)

OUTLINE DIMENSIONS (Inch
mm)

A	B	C	D	E	F	G	J	K	L	M	N	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	1.85	0.63	4.33	0.20	6.69	5.10	0.14	grams*
250.19	185.42	165.10	152.40	24.89	95.25	3.30	12.00	84.80	18.00	47.00	16.00	110.00	5.08	170.00	129.54	3.45	4565

*880 grams without heatsink

Tolerances: 1 Pl. +.1; 2 Pl. +.03; 3 Pl. +.015

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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-20M2G7025+	ZHL-20M2G7025X+
Option	With heatsink	Without heatsink
Case Style	BT2119	
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

