



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.

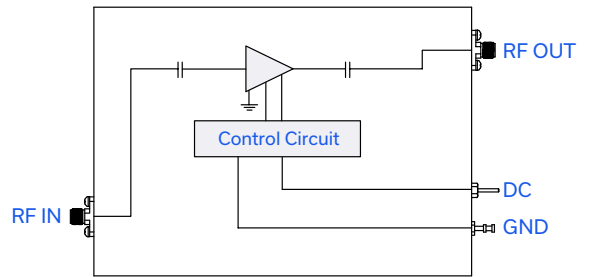


Generic photo used for illustration purposes only

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 | $P_{1\text{dB}}$ | $P_{\text{OUT-REF}} = +35\text{dBm}$ | | +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 | $P_{\text{OUT}} = +30\text{dBm}/\text{tone}$ | +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} With fan @ P_{SAT} | | 3.5 3.9 | 5.0 5.4 | A |





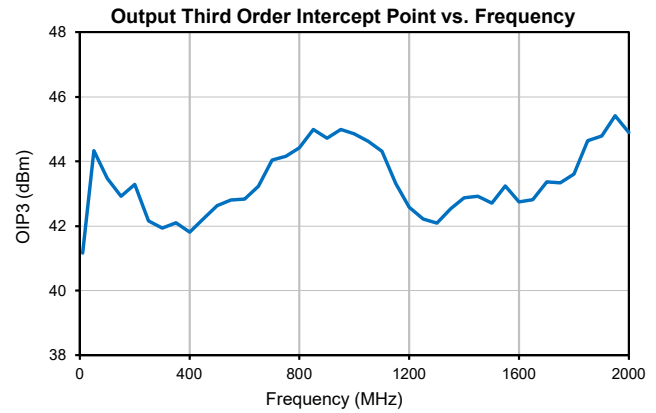
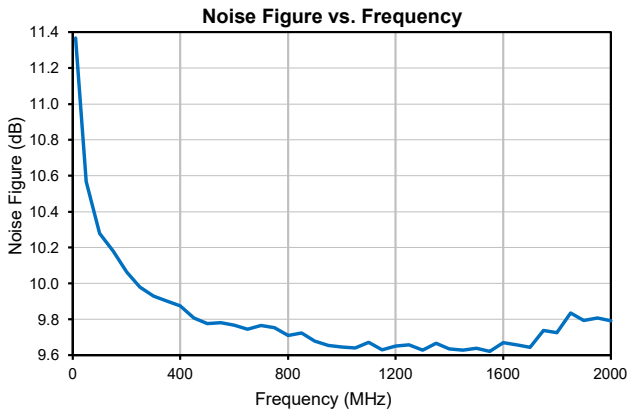
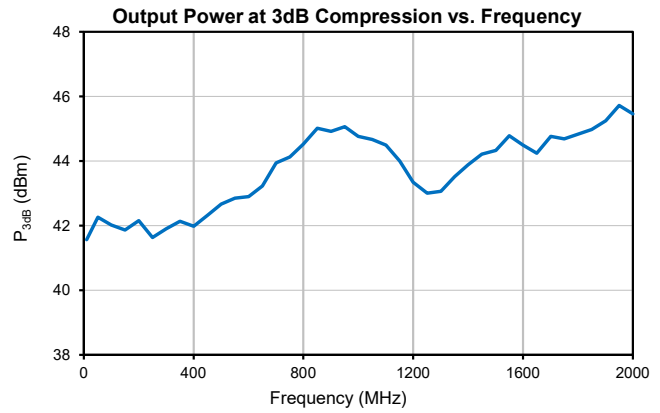
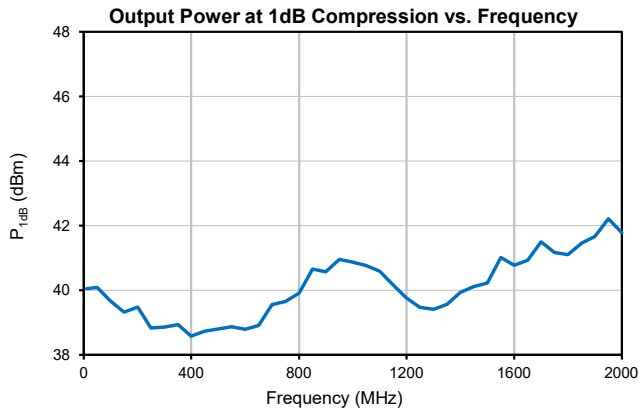
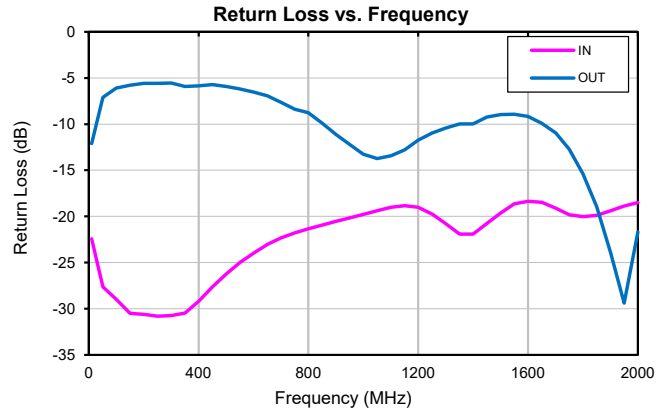
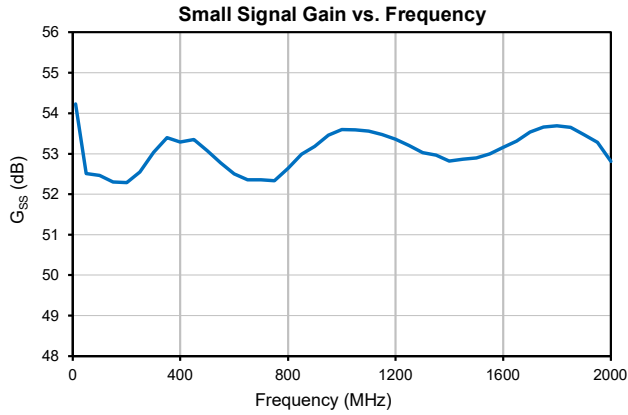
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TYPICAL PERFORMANCE DATA AT $T_{MOUNTINGBASE} = +25^{\circ}C$, $V_{DC} = +28V$, 50 OHM





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ABSOLUTE MAXIMUM RATINGS

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

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

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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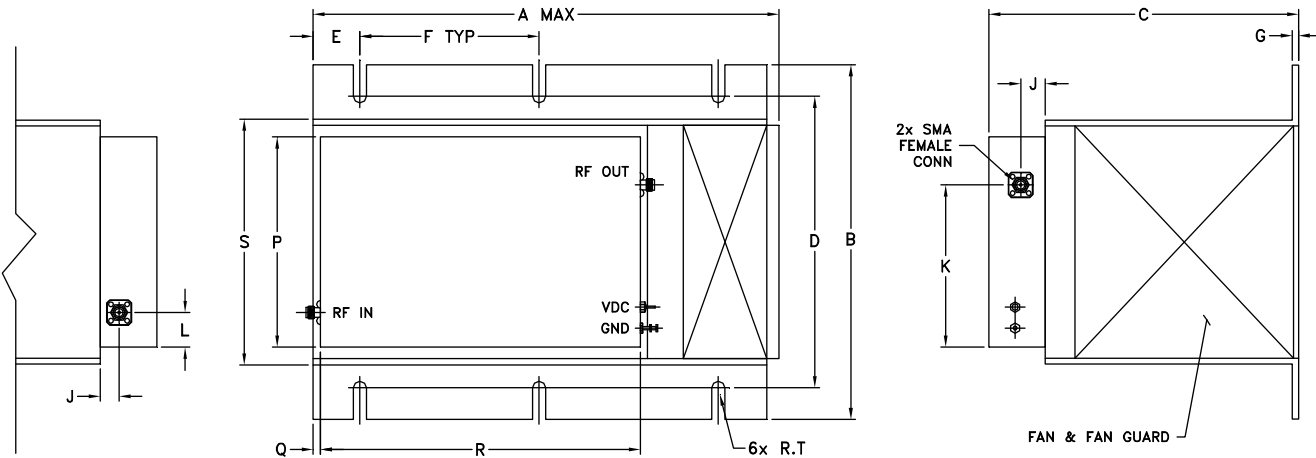
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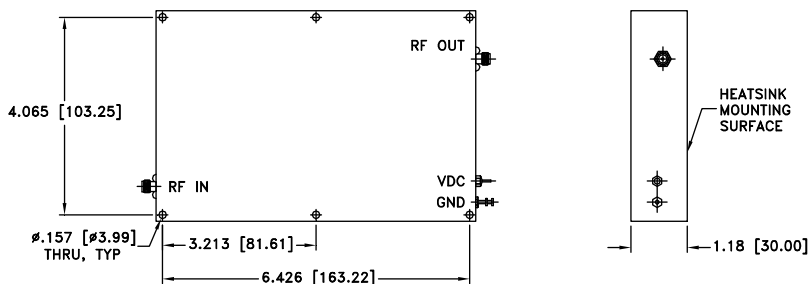
COAXIAL CONNECTIONS

| | |
|--------------|------------|
| 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



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