



COAXIAL High Power Amplifier

ZHL-10W-2G+ ZHL-10W-2GX+

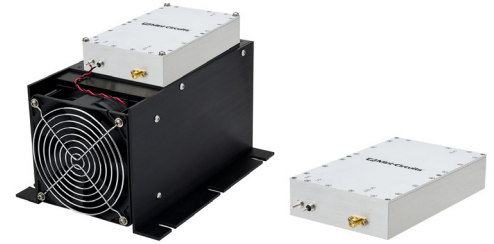
50Ω 10W 800 to 2000 MHz

FEATURES

- High power, 10 Watt
- Low Current consumption, 4A typ.
- High IP3, +50 dBm typ.
- Usable over 700 to 2200 MHz
- No damage with an open or short output load under full CW output power

APPLICATIONS

- Cellular
- PCN
- GSM
- ISM
- Lab Test



Generic photo used for illustration purposes only

| | | |
|------------|-------------|---------------------------|
| Model No. | ZHL-10W-2G+ | ZHL-10W-2GX+ [▲] |
| Case Style | BT1204 | |
| Connectors | SMA | |

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

ELECTRICAL SPECIFICATIONS

| Parameter | ZHL-10W-2G+ ZHL-10W-2GX+ [▲] | | | Units |
|---|--|------|------|-------|
| | Min. | Typ. | Max. | |
| Frequency Range | 800 | | 2000 | MHz |
| Gain | 40 | 43 | 49 | dB |
| Gain Flatness | | | ±2.0 | dB |
| Output Power at 1dB compression | +39 | +40 | | dBm |
| Saturated Output Power at 3dB compression | +40 | +41 | | dBm |
| Noise Figure | | 7.0 | | dB |
| Output third order intercept point | | +50 | | dBm |
| Input VSWR | | 1.3 | | :1 |
| Output VSWR | | 1.3 | | :1 |
| DC Supply Voltage | | 24 | 28 | V |
| Supply Current ¹ | | | 5.0 | A |

1. Power Supply should be capable of delivering 6A at start up.

[▲] Heat sink and fan not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 75°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 0.08°C/W max.

ABSOLUTE MAXIMUM RATINGS

| Parameter | Ratings |
|----------------------------|-------------------|
| Operating Temperature | -20 °C to +65 °C |
| Storage Temperature | -55 °C to +100 °C |
| Base Plate Temperature | 75 °C |
| Input RF Power (no damage) | +1 dBm |

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





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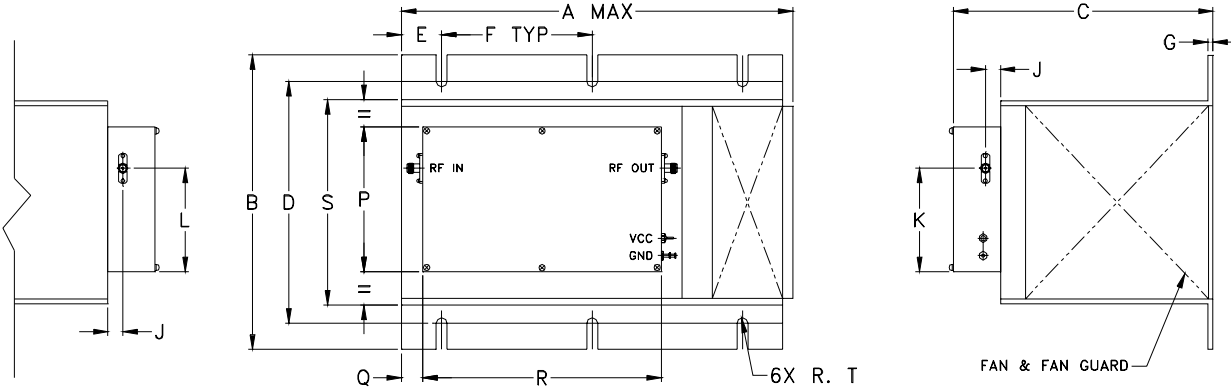
High Power Amplifier

ZHL-10W-2G+
ZHL-10W-2GX+

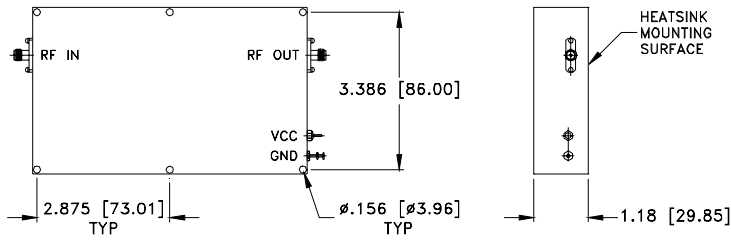
Mini-Circuits

50Ω 10W 800 to 2000 MHz

OUTLINE DRAWING



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK.



OUTLINE DIMENSIONS (Inch mm)

| A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | S | T | wt |
|--------|--------|--------|--------|-------|-------|------|---|------|-------|-------|---|---|-------|-------|--------|--------|------|-----------------------------|
| 9.85 | 7.3 | 6.5 | 6.00 | 1.00 | 3.75 | .13 | — | .37 | 2.56 | 2.56 | — | — | 3.58 | .5 | 5.95 | 5.1 | .135 | grams |
| 250.19 | 185.42 | 165.10 | 152.40 | 25.40 | 95.25 | 3.30 | — | 9.40 | 65.02 | 65.02 | — | — | 90.93 | 12.70 | 151.13 | 129.54 | 3.43 | 4265 |
| | | | | | | | | | | | | | | | | | | *580 grams without heatsink |



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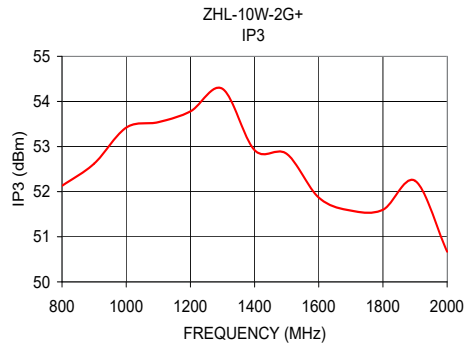
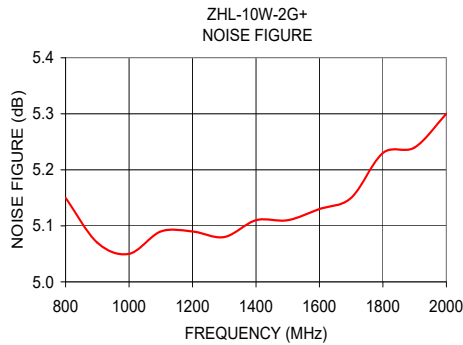
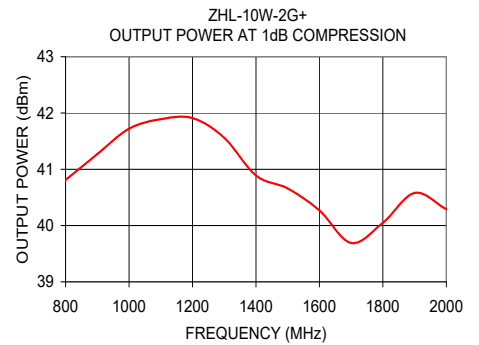
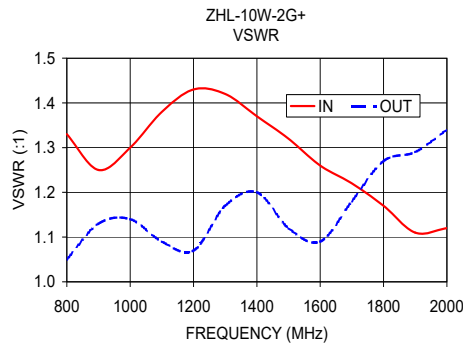
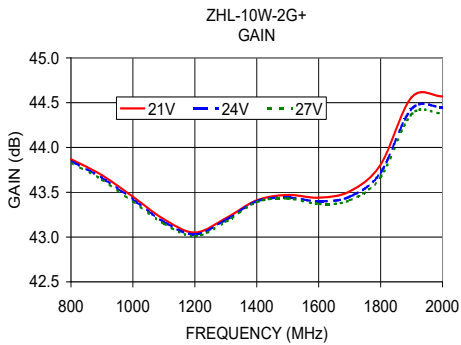
High Power Amplifier

ZHL-10W-2G+ ZHL-10W-2GX+

50Ω 10W 800 to 2000 MHz

TYPICAL PERFORMANCE DATA AND CHARTS

| Frequency (MHz) | Gain (dB) | | | VSWR (:1) | | Noise Figure (dB) | Pout at 1 dB Compr. (dBm) | IP3 (dBm) |
|-----------------|-----------|-------|-------|-----------|------|-------------------|---------------------------|-----------|
| | 21V | 24V | 27V | IN | OUT | 24V | 24V | 24V |
| 800.00 | 43.87 | 43.85 | 43.83 | 1.33 | 1.05 | 5.15 | 40.81 | 52.13 |
| 900.00 | 43.69 | 43.66 | 43.64 | 1.25 | 1.13 | 5.07 | 41.27 | 52.62 |
| 1000.00 | 43.45 | 43.42 | 43.40 | 1.30 | 1.14 | 5.05 | 41.72 | 53.42 |
| 1100.00 | 43.20 | 43.17 | 43.15 | 1.38 | 1.09 | 5.09 | 41.89 | 53.54 |
| 1200.00 | 43.05 | 43.03 | 43.01 | 1.43 | 1.07 | 5.09 | 41.91 | 53.78 |
| 1300.00 | 43.21 | 43.19 | 43.17 | 1.42 | 1.17 | 5.08 | 41.56 | 54.28 |
| 1400.00 | 43.41 | 43.40 | 43.39 | 1.37 | 1.20 | 5.11 | 40.89 | 52.92 |
| 1500.00 | 43.47 | 43.44 | 43.43 | 1.32 | 1.12 | 5.11 | 40.66 | 52.84 |
| 1600.00 | 43.44 | 43.40 | 43.37 | 1.26 | 1.09 | 5.13 | 40.27 | 51.87 |
| 1700.00 | 43.51 | 43.45 | 43.41 | 1.22 | 1.18 | 5.15 | 39.69 | 51.58 |
| 1800.00 | 43.81 | 43.72 | 43.67 | 1.17 | 1.27 | 5.23 | 40.05 | 51.60 |
| 1900.00 | 44.56 | 44.43 | 44.37 | 1.11 | 1.29 | 5.24 | 40.58 | 52.24 |
| 2000.00 | 44.57 | 44.45 | 44.38 | 1.12 | 1.34 | 5.30 | 40.29 | 50.67 |



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



Amplifier

ZHL-10W-2G+

Typical Performance Data

| FREQUENCY (MHz) | GAIN (dB) 24V | DIRECTIVITY (dB) 24V | VSWR IN (:1) 24V | VSWR OUT (:1) 24V | NOISE FIGURE (dB) 24V | Pout at 1dB Comp. (dBm) 24V | Output IP3 (dBm) 24V |
|--------------------|---------------------|----------------------------|---------------------------|----------------------------|--------------------------------|--------------------------------------|-------------------------------|
| 800.0 | 43.85 | 44.70 | 1.33 | 1.05 | 5.15 | 40.81 | 52.13 |
| 900.0 | 43.66 | 47.50 | 1.25 | 1.13 | 5.07 | 41.27 | 52.62 |
| 1000.0 | 43.42 | 47.10 | 1.30 | 1.14 | 5.05 | 41.72 | 53.42 |
| 1100.0 | 43.17 | 53.40 | 1.38 | 1.09 | 5.09 | 41.89 | 53.54 |
| 1200.0 | 43.03 | 47.00 | 1.43 | 1.07 | 5.09 | 41.91 | 53.78 |
| 1300.0 | 43.19 | 46.10 | 1.42 | 1.17 | 5.08 | 41.56 | 54.28 |
| 1400.0 | 43.40 | 52.70 | 1.37 | 1.20 | 5.11 | 40.89 | 52.92 |
| 1500.0 | 43.44 | 49.40 | 1.32 | 1.12 | 5.11 | 40.66 | 52.84 |
| 1600.0 | 43.40 | 43.90 | 1.26 | 1.09 | 5.13 | 40.27 | 51.87 |
| 1700.0 | 43.45 | 50.50 | 1.22 | 1.18 | 5.15 | 39.69 | 51.58 |
| 1800.0 | 43.72 | 44.80 | 1.17 | 1.27 | 5.23 | 40.05 | 51.60 |
| 1900.0 | 44.43 | 39.40 | 1.11 | 1.29 | 5.24 | 40.58 | 52.24 |
| 2000.0 | 44.45 | 46.10 | 1.12 | 1.34 | 5.30 | 40.29 | 50.67 |

REV. X1
ZHL-10W-2G+
070515
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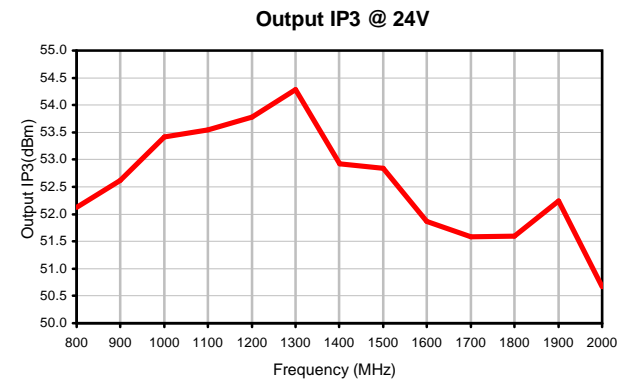
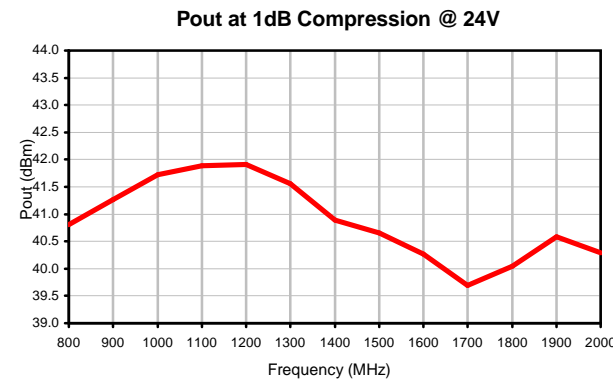
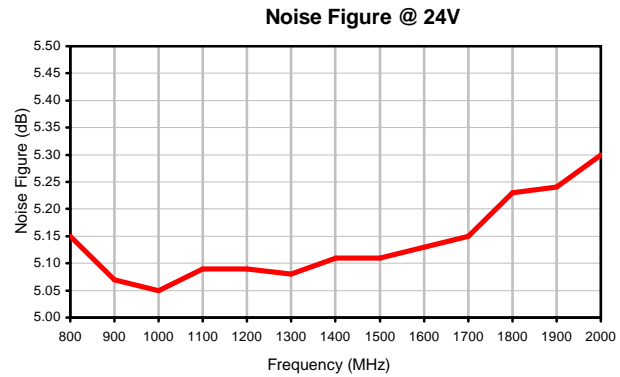
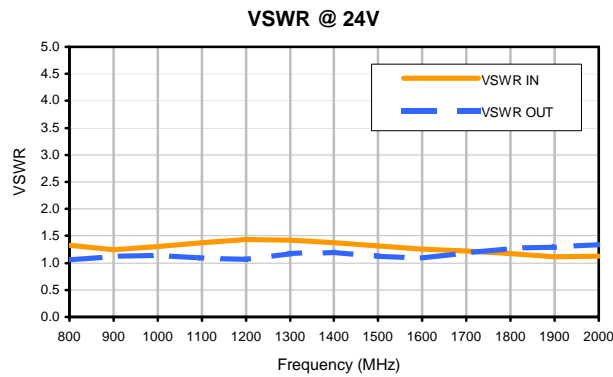
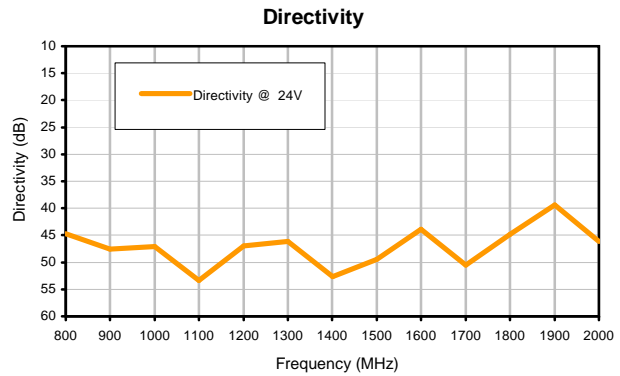
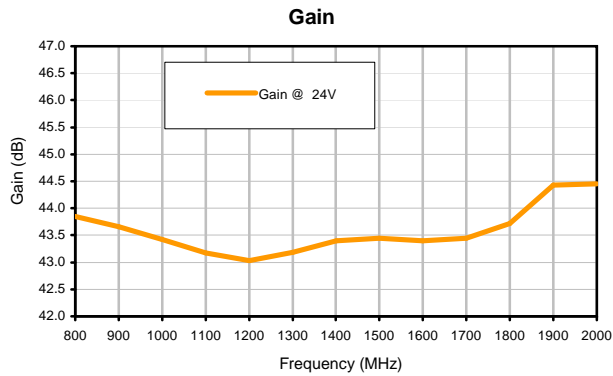
IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS 9100 CERTIFIED RoHS compliant
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661



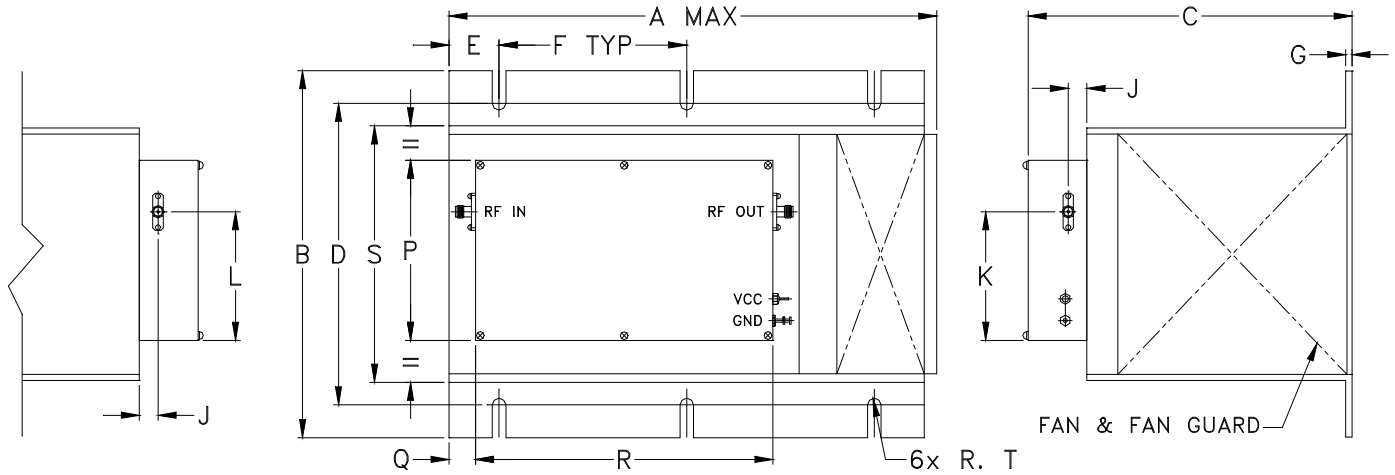
The Design Engineers Search Engine finds the model you need, Instantly • For detailed performance specs & shopping online see



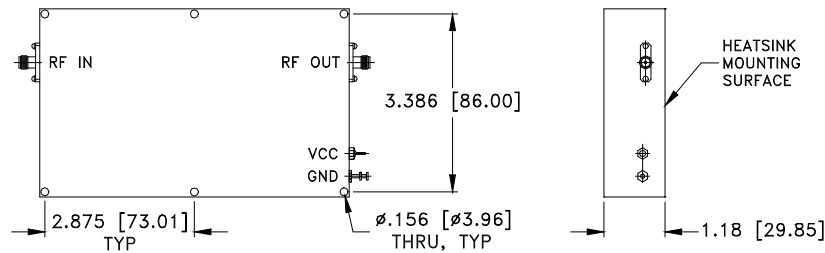
Typical Performance Curves



Outline Dimensions



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK.



| CASE# | A | B | C | D | E | F | G | H | J | K | L | M | N |
|--------|------------------|-----------------|-----------------|------------------|-----------------|-----------------|---------------|--------|---------------|-----------------|-----------------|--------|--------|
| BT1204 | 9.85 (250.19) | 7.3 (185.42) | 6.5 (165.10) | 6.00 (152.40) | 1.00 (25.40) | 3.75 (95.25) | .13 (3.30) | - - | .37 (9.40) | 2.56 (65.02) | 2.56 (65.02) | - - | - - |

| CASE# | P | Q | R | S | T | WT, GRAM | WT WITHOUT HEATSINK, GRAM |
|--------|-----------------|---------------|------------------|-----------------|----------------|----------|---------------------------|
| BT1204 | 3.58 (90.93) | .5 (12.70) | 5.95 (151.13) | 5.1 (129.54) | .135 (3.43) | 4265 | 580 |

Dimensions are in inches (mm). Tolerances: 1 Pl. $\pm .1$; 2 Pl. $\pm .03$; 3 Pl. $\pm .015$

Notes:

- Case material: Aluminum alloy.
- Finish:
For RoHS Case Styles: Clear Chemical conversion coating, non-chrome or trivalent chrome based.
- Heatsink finish: Black anodize.
- Refer to the individual model data sheet for the type of connectors available.
- Recommended screws for mounting model without heat sink on 3/32" thick sheet: #6-32, 1.50" Length.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



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RF/IF MICROWAVE COMPONENTS



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification | Test/Inspection Condition | Reference/Spec |
|---------------------------|---------------------------------------|--|
| Operating Temperature | -20° to 65° C Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C Ambient Environment | Individual Model Data Sheet |
| Stabilization Bake | (non-operating) 125°C, 24 hours | - - - |
| Burn-in at Elevated Temp. | (DC on) 160 hours at 85° C | MIL-STD-202, Method 108 |
| Thermal Shock | -55° to 100°C, 5 cycles | MIL-STD-202, Method 107, Condition A, except 100°C |