*Coaxial*

# High Power Amplifier

## HPA-25W-63+

50Ω 25W 700 to 6000 MHz

## The Big Deal

- High output power at saturation, 25W typ.
- High gain, 53 dB typ.
- Rugged 3U rack mount case style with internal fans
- Operates from AC line power: 85-264V
- Built-in over-temperature protection



CASE STYLE: NG1942

## Product Overview

The HPA-25W-63+ is a high power, rack mount amplifier with a self-contained AC power supply which can be used for a wide variety of laboratory testing applications. This rugged amplifier is capable of amplifying signals up to 25W output power over its entire operating bandwidth of 700 – 6000 MHz. Built-in safety features include fans alarms and automatic shut down mechanism to prevent damage in the event of excessive internal temperatures. The amplifier's output stage is further protected in the event of a fault condition, allowing high power operation for up to 5 minutes into an open or short load (refer to the maximum input power specifications).

## Key Features

| Feature | Advantages |
|---|---|
| Wideband frequency range | 700 – 6000 MHz bandwidth covers popular wireless communications, SATCOM and radar bands in a single instrument, useful for many test applications. |
| 25W output power at saturation | Supports high power test applications such as EMI, max power handling, and reliability testing |
| High Gain | 53 dB typical gain allows the HPA-25W-63+ to be driven to full output power with nearly all commercially available signal generators |
| High Reverse Isolation | Insulates load reflections to protect sensitive signal sources from potential damage and performance variation due to load pulling |
| A/C Power | Operating from standard AC line power supply - the HPA-25W-63+ can be powered from 85-264V at 47~63 Hz making this HPA versatile in supporting global markets |
| Cooling system | Front to back forced air cooling fans makes this ideal for usage in test equipment racks. |
| Built-in protections | The unit shuts OFF when the internal amplifier reaches a set temperature of 85±5°C, preventing damage to the amplifier and providing added reliability. |
| CE marked | Meets conformity standards for sale within the European Economic Area (EEA). |

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### Features

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- Operates from AC line power: 85-264V
- Built-in over-temperature protection
- CE marked

### Applications

- Laboratory test instrument
- RF Power stress test
- EMI and antenna testing
- Reliability testing




CASE STYLE: NG1942

| Model No. | Description |
|---|---|
| **HPA-25W-63+** | High Power Amplifier w/ N-Type Connectors |
| **Included Accessories** | |
| CBL-3W-XX | AC Power Cord |

***+RoHS Compliant***
*The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications*

### Electrical Specifications at 25°C

| Parameter | Condition | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Frequency Range | | 700 | — | 6000 | MHz |
| Gain | 700 - 6000 MHz | 44 | 53 | 62 | dB |
| Gain Flatness | 700 - 6000 MHz | — | ±4.0 | ±5.0 | dB |
| Output Power at 1dB compression[1] | 700 - 6000 MHz | — | +37 | — | dBm |
| Saturated Output Power[1] | 700 - 6000 MHz | +43 | +44 | — | dBm |
| Noise Figure | 700 - 6000 MHz | — | 13 | 16 | dB |
| Output third order intercept point | 700 - 6000 MHz | +39 | +45 | — | dBm |
| Input VSWR | 700 - 6000 MHz | — | 1.8 | 2.9 | :1 |
| Output VSWR | 700 - 6000 MHz | — | 2.0 | 3.2 | :1 |
| Line Supply | 47~63 Hz | | 85/264 | | V |
| Power Consumption | 110/220V | — | 400 | 600 | W |

1. Power measured of fundamental tone only. Does not include power contribution of harmonics signals.

### Maximum Ratings[2]

| Parameter | Ratings |
|---|---|
| Operating Temperature | 0°C to 50°C |
| Storage Temperature | -20°C to 70°C |
| Input RF Power (no damage) | +5 dBm |

2. Specifications apply to CW signals only permanent damage may occur if any of these limits are exceeded.

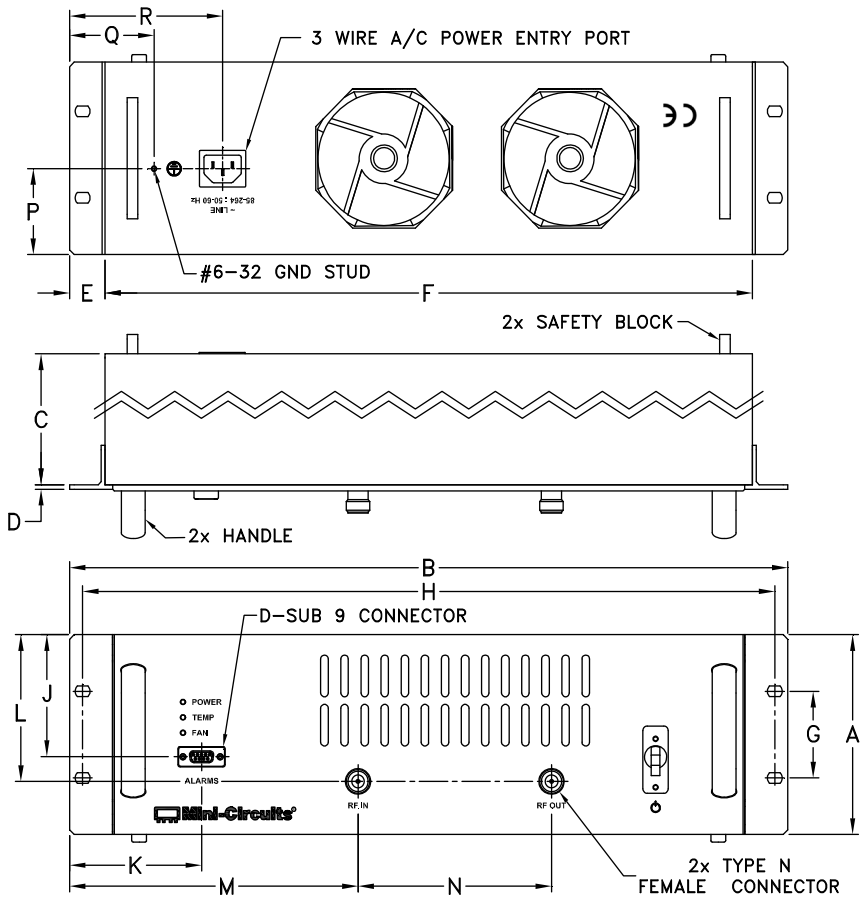
### D-Sub Male Connector Pin Functions (Front Panel)

| Pin # | Function | TTL Logic Level | |
|---|---|---|---|
| | | Low | High |
| 1 | Temperature Alarm | Normal | Alarm Shutdown |
| 2 | Fan Alarm | Normal | Fault |
| 3 | Ground | — | — |
| 4-9 | No connection | — | — |

### LED Indicators (Front Panel)

| Name | Color | LED State | |
|---|---|---|---|
| | | Off | On |
| Power | Green | Power off | Power on |
| Temp | Red | Normal | Alarm Shutdown |
| Fan | Red | Normal | Fault |

## Outline Drawing




## Outline Dimensions (inch / mm)

| A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | wt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.20 | 19.0 | 20.0 | .13 | .94 | 17.13 | 2.25 | 18.31 | 3.17 | 3.49 | 3.82 | 7.63 | 5.12 | 2.23 | 2.24 | 4.05 | grams |
| 132.08 | 482.60 | 508.00 | 3.30 | 23.88 | 435.10 | 57.15 | 465.07 | 80.52 | 88.65 | 97.03 | 193.80 | 130.05 | 56.64 | 56.90 | 102.87 | 13610.0 |

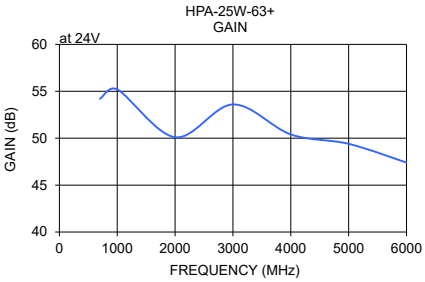
## Ordering, Pricing & Availability Information see our web site

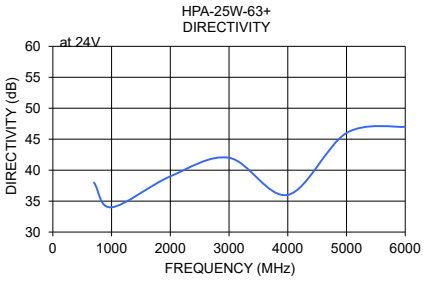
| Model | Description |
|---|---|
| HPA-25W-63+ | Rack Mount High Power Amplifier |

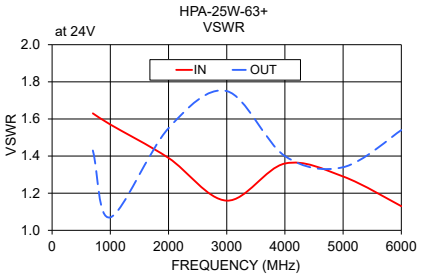
| Included Accessories | Description |
|---|---|
| CBL-3W-XX | AC Power Cord (*Select one power cord from below with each Rack Mount HPA)* |

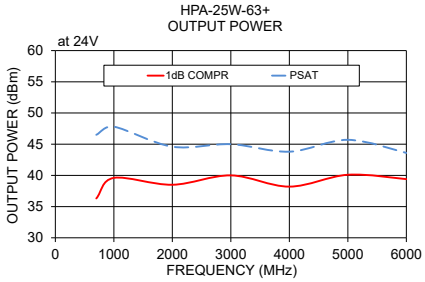
| AC Power Cords | Description |
|---|---|
| CBL-3W-US | US Power Cord |
| CBL-3W-EU | EU Power Cord |
| CBL-3W-UK | UK Power Cord |

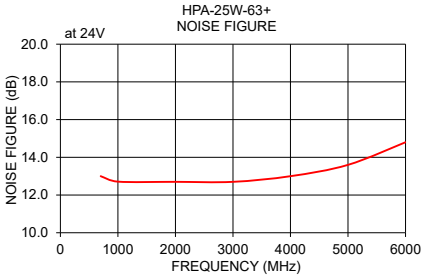
| FREQUENCY (MHz) | GAIN (dB) | DIRECTIVITY (dB) | VSWR (:1) | | POUT at 1 dB COMPR. (dBm) | POUT at Saturation (dBm) | NOISE FIGURE (dB) | IP3 (dBm) |
|---|---|---|---|---|---|---|---|---|
| | 24V | 24V | IN | OUT | 24V | 24V | 24V | 24V |
| 700 | 54.2 | 38.0 | 1.6 | 1.4 | 36.3 | 46.5 | 13.0 | 53.5 |
| 1000 | 55.2 | 34.0 | 1.6 | 1.1 | 39.6 | 47.8 | 12.7 | 53.9 |
| 2000 | 50.1 | 39.0 | 1.4 | 1.6 | 38.5 | 44.6 | 12.7 | 49.3 |
| 3000 | 53.6 | 42.0 | 1.2 | 1.8 | 40.0 | 45.0 | 12.7 | 49.2 |
| 4000 | 50.4 | 36.0 | 1.4 | 1.4 | 38.2 | 43.8 | 13.0 | 47.9 |
| 5000 | 46.7 | 46.0 | 1.3 | 1.3 | 40.1 | 45.7 | 13.6 | 48.8 |
| 6000 | 47.4 | 47.0 | 1.1 | 1.5 | 39.4 | 43.6 | 14.8 | 45.0 |

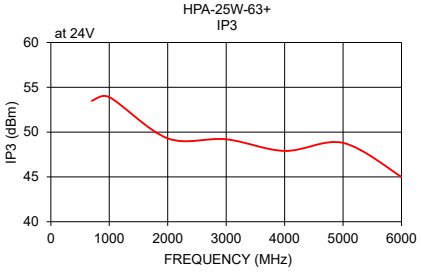



## Additional Notes

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.

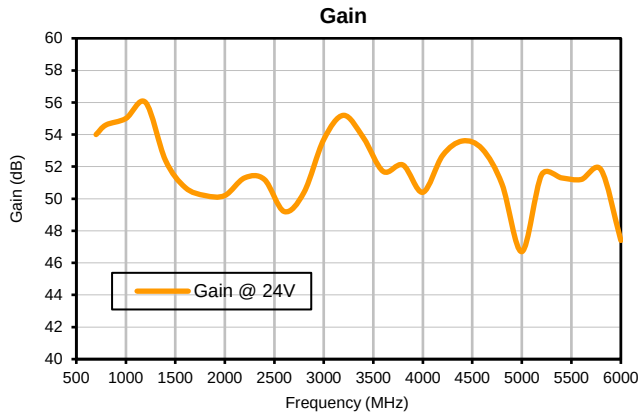
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

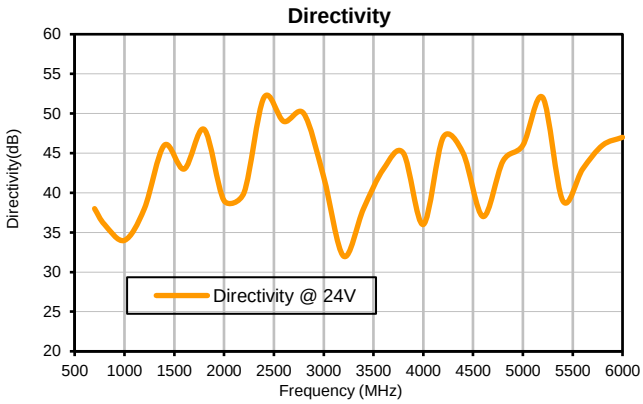
# High Power Amplifier HPA-25W-63+

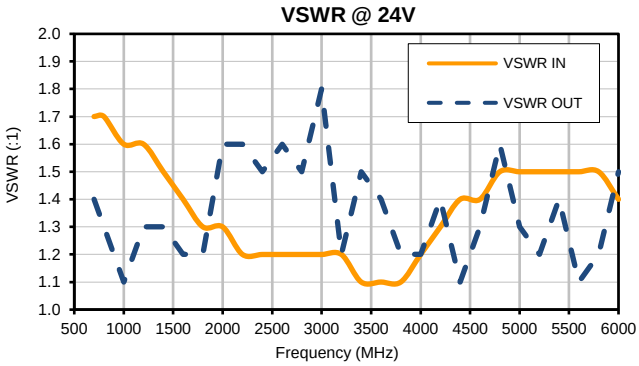
*Typical Performance Data*

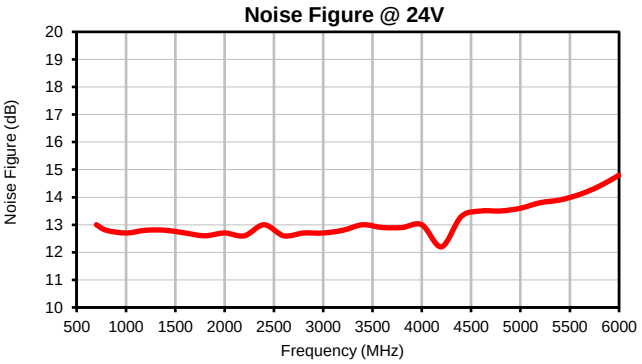
| Frequency (MHz) | Gain (dB) 24V | Directivity (dB) 24V | VSWR In (:1) 24V | VSWR Out (:1) 24V | Noise Figure (dB) 24V | Pout at 1dB Compression (dBm) 24V | Pout at Saturation (dBm) 24V | Output IP3 (dBm) 24V |
|---|---|---|---|---|---|---|---|---|
| 700 | 54.0 | 38.0 | 1.7 | 1.4 | 13.0 | 36.3 | 46.5 | 53.5 |
| 800 | 54.6 | 36.0 | 1.7 | 1.3 | 12.8 | 38.0 | 47.3 | 57.0 |
| 1000 | 55.0 | 34.0 | 1.6 | 1.1 | 12.7 | 39.6 | 47.8 | 53.9 |
| 1200 | 56.0 | 38.0 | 1.6 | 1.3 | 12.8 | 39.6 | 47.6 | 51.9 |
| 1400 | 52.4 | 46.0 | 1.5 | 1.3 | 12.8 | 37.6 | 46.7 | 50.2 |
| 1600 | 50.7 | 43.0 | 1.4 | 1.2 | 12.7 | 37.2 | 45.9 | 49.3 |
| 1800 | 50.2 | 48.0 | 1.3 | 1.2 | 12.6 | 37.6 | 45.2 | 49.2 |
| 2000 | 50.2 | 39.0 | 1.3 | 1.6 | 12.7 | 38.5 | 44.6 | 49.3 |
| 2200 | 51.3 | 40.0 | 1.2 | 1.6 | 12.6 | 39.6 | 44.9 | 50.1 |
| 2400 | 51.2 | 52.0 | 1.2 | 1.5 | 13.0 | 40.4 | 45.5 | 50.6 |
| 2600 | 49.2 | 49.0 | 1.2 | 1.6 | 12.6 | 40.1 | 45.4 | 50.2 |
| 2800 | 50.4 | 50.0 | 1.2 | 1.5 | 12.7 | 39.8 | 42.2 | 50.0 |
| 3000 | 53.7 | 42.0 | 1.2 | 1.8 | 12.7 | 40.0 | 45.0 | 49.2 |
| 3200 | 55.2 | 32.0 | 1.2 | 1.2 | 12.8 | 40.3 | 44.9 | 47.9 |
| 3400 | 53.8 | 38.0 | 1.1 | 1.5 | 13.0 | 38.8 | 44.3 | 46.4 |
| 3600 | 51.7 | 43.0 | 1.1 | 1.4 | 12.9 | 39.0 | 44.9 | 47.6 |
| 3800 | 52.1 | 45.0 | 1.1 | 1.2 | 12.9 | 38.6 | 44.4 | 47.7 |
| 4000 | 50.4 | 36.0 | 1.2 | 1.2 | 13.0 | 38.2 | 43.8 | 47.9 |
| 4200 | 52.7 | 47.0 | 1.3 | 1.4 | 12.2 | 38.5 | 43.9 | 48.6 |
| 4400 | 53.6 | 45.0 | 1.4 | 1.1 | 13.3 | 38.8 | 44.6 | 49.0 |
| 4600 | 53.1 | 37.0 | 1.4 | 1.3 | 13.5 | 38.7 | 44.9 | 49.0 |
| 4800 | 50.9 | 44.0 | 1.5 | 1.6 | 13.5 | 39.2 | 45.0 | 49.4 |
| 5000 | 46.7 | 46.0 | 1.5 | 1.3 | 13.6 | 40.1 | 45.7 | 48.8 |
| 5200 | 51.5 | 52.0 | 1.5 | 1.2 | 13.8 | 40.0 | 45.4 | 48.1 |
| 5400 | 51.3 | 39.0 | 1.5 | 1.4 | 13.9 | 39.5 | 45.0 | 47.4 |
| 5600 | 51.2 | 43.0 | 1.5 | 1.1 | 14.1 | 39.6 | 45.1 | 48.2 |
| 5800 | 51.8 | 46.0 | 1.5 | 1.2 | 14.4 | 40.0 | 45.0 | 47.9 |
| 6000 | 47.4 | 47.0 | 1.4 | 1.5 | 14.8 | 39.4 | 43.6 | 45.0 |

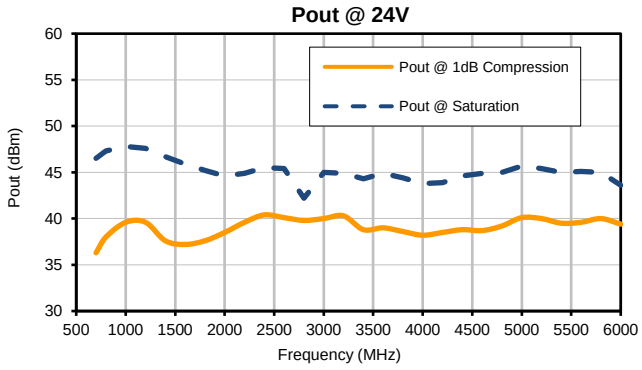
## *Typical Performance Curves*

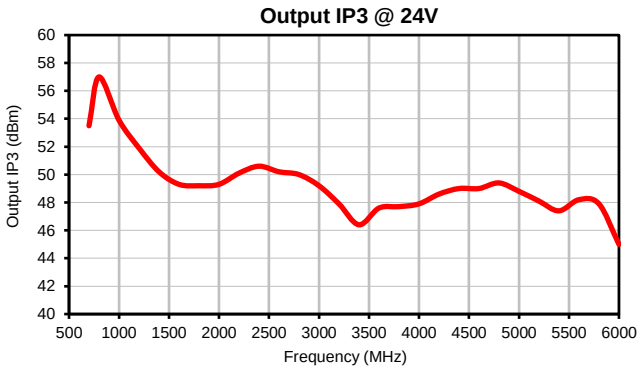


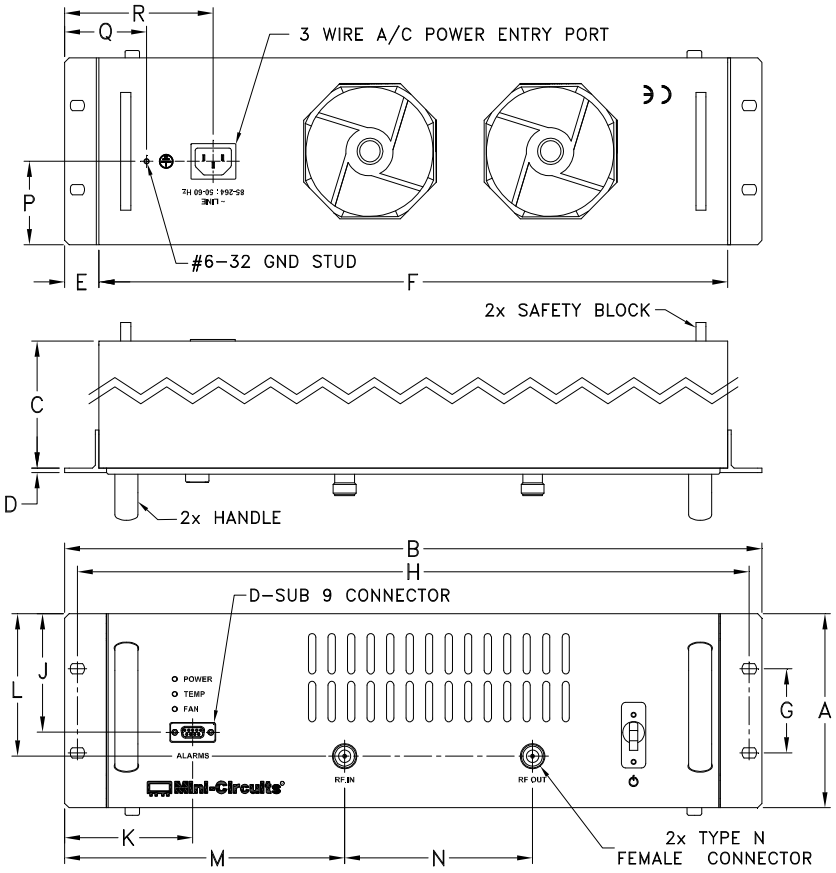



# Case Style NG

## Outline Dimensions

**NG1942**




| CASE # | A | B | C | D | E | F | G | H | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NG1942 | 5.20 (132.08) | 19.00 (482.60) | 20.00 (508.00) | .13 (3.30) | .94 (23.88) | 17.13 (435.10) | 2.25 (57.15) | 18.31 (465.07) | 3.17 (80.52) | 3.49 (88.65) | 3.82 (97.03) |

| CASE # | M | N | P | Q | R | S | T | WT, GRAMS |
|---|---|---|---|---|---|---|---|---|
| NG1942 | 7.63 (193.80) | 5.12 (130.05) | 2.23 (56.64) | 2.24 (56.90) | 4.05 (102.87) | -- -- | -- -- | 13610 |

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015

**Note:**

1. Case material: Aluminum alloy.
2. Finish: Powder coating, Color: White.


Mini-Circuits®
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Mini-Circuits

**Environmental Specifications** **ENV76**

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 | -0° to 50° C<br>Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -20° to 70° C (non condensing) | Individual Model Data Sheet |


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