# HD33988

## 20-4000MHz 2W RF Power Amplifier

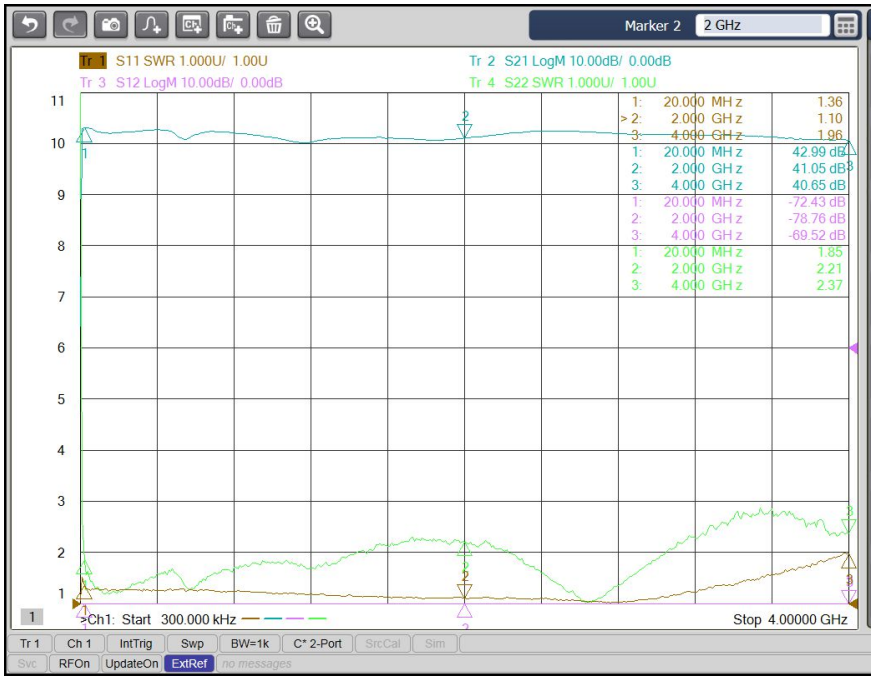
### Features

- Frequency Range: 20-4000MHz
- Small Signal Gain: 40dB
- $P_{SAT}$: +33dBm (2W)
- DC Power: +28V @ 900mA
- DC Power Reverse Protected
- RF Connector: SMA Female
- GaN RF Power Amplifier
- Class AB Power Amplifier

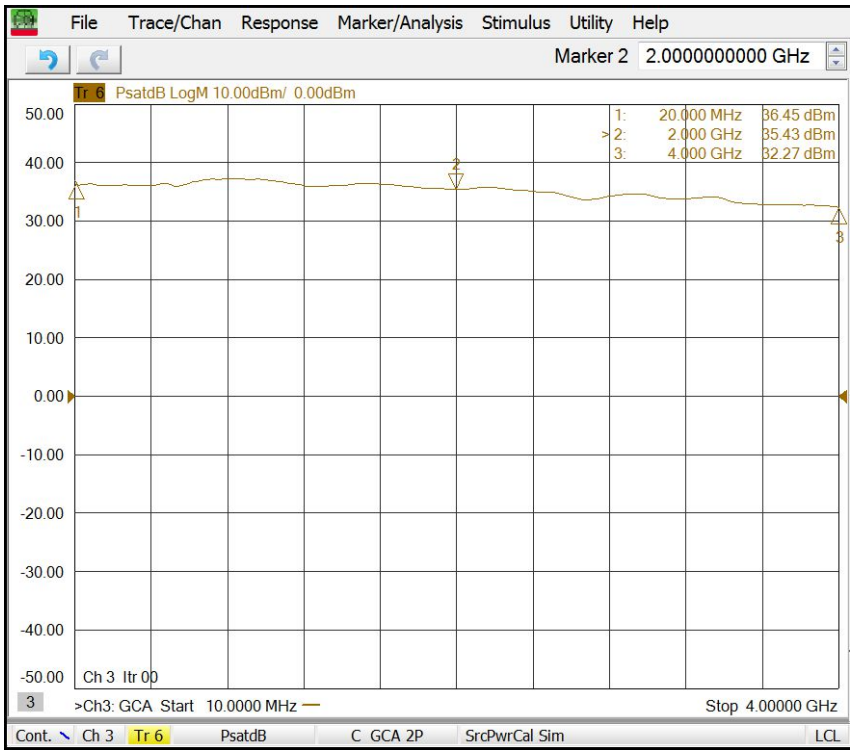
**Electrical Specifications @+25°C, $Z_{in}$=$Z_{out}$=50 Ω, DC Power Supply = +28VDC**

| Parameter | | Unit | Minimum | Typical | Maximum |
|---|---|---|---|---|---|
| Frequency Range | | MHz | 20 | | 4000 |
| Small Signal Gain ($S_{21}$) | f = 20MHz | dB | 40 | 42 | |
| ($P_{IN}$ = -40dBm) | f = 2000MHz | dB | 39 | 41 | |
| | f = 4000MHz | dB | 38 | 40 | |
| Gain Flatness | | dB | | ±1.5 | ±2.5 |
| Output Power $P_{sat}$ | f = 20MHz | dBm | +35.0 | +36.0 | |
| | f = 2000MHz | dBm | +34.0 | +35.0 | |
| | f = 4000MHz | dBm | +31.0 | +32.5 | |
| Output IP3 | f = 2000MHz | dBm | | +44 | |
| Efficiency | $P_{IN}$ = 0dBm, f = 2000MHz | % | | 12 | |
| Noise Figure | @ f = 2000MHz | dB | | 6.0 | 7.0 |
| Reverse Isolation ($S_{12}$) | | dB | -60 | -70 | |
| VSWR-Input ($S_{11}$) | f = 2000MHz | | | 1.5:1 | 2.0:1 |
| VSWR-Output ($S_{22}$) | f = 2000MHz | | | 2.2:1 | 3.0:1 |
| DC Supply Voltage | | V | 24 | 28 | 32 |
| DC Supply Current | No RF Input | mA | | 600 | 800 |
| | $P_{OUT}$ = +33dBm | mA | | 900 | 1200 |

## Gain S21, Isolation S12, Return Loss S11, S22 vs Frequency




## Psat vs Frequency



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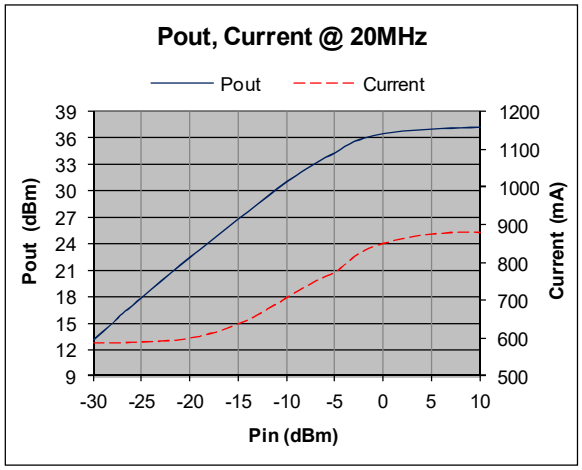
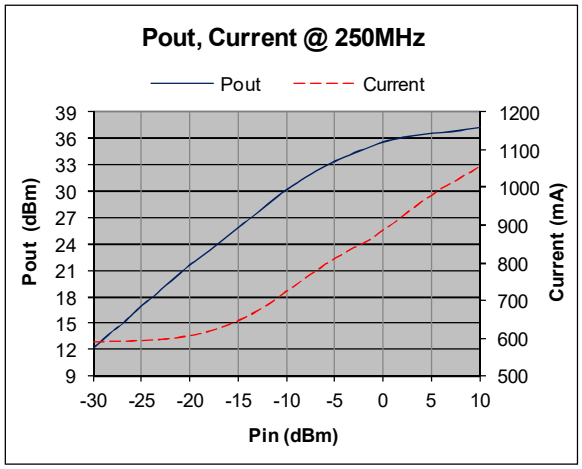
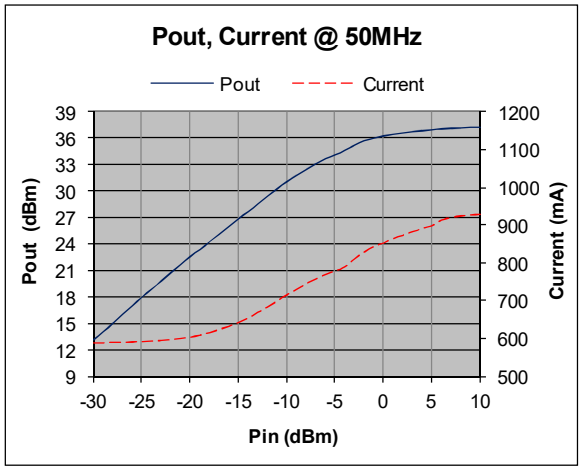
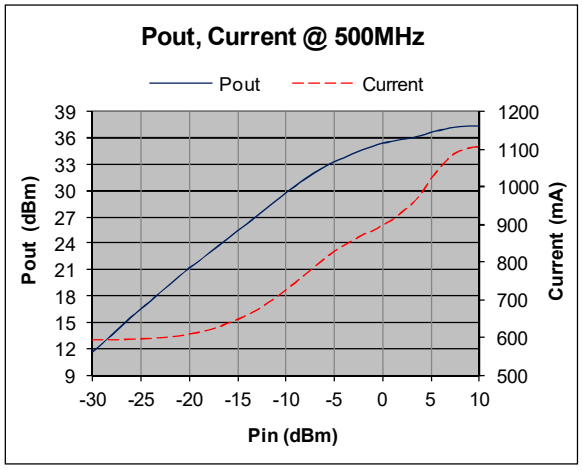
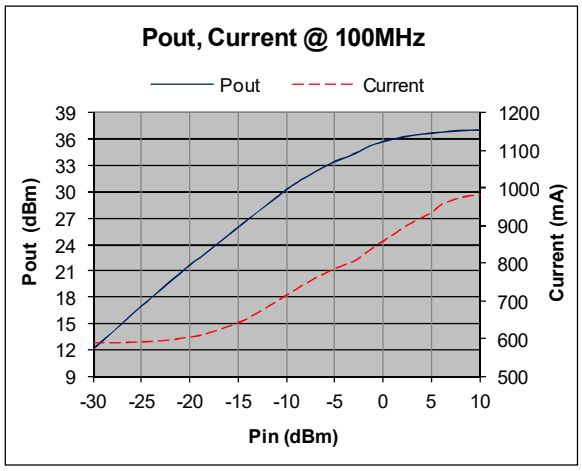
## Typical Performance @ +25°C

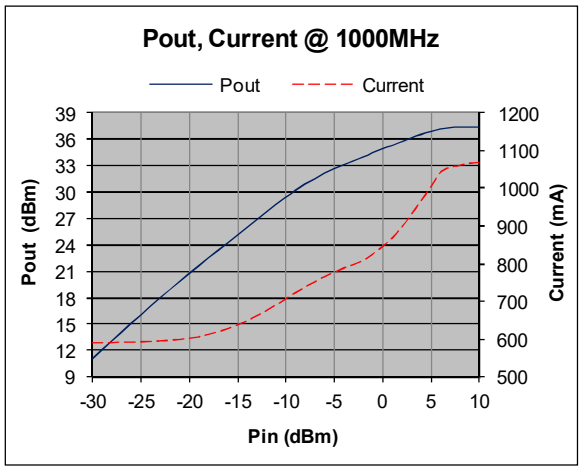


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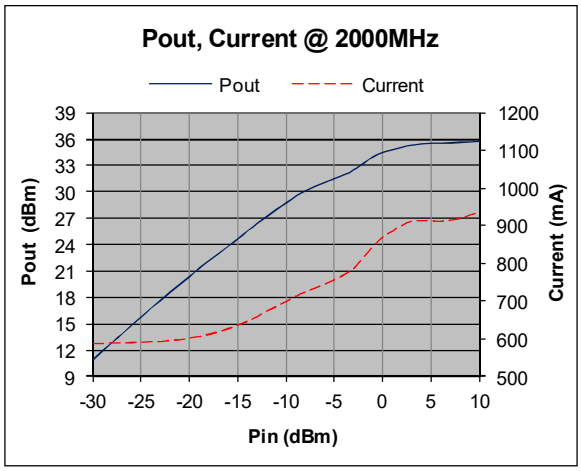
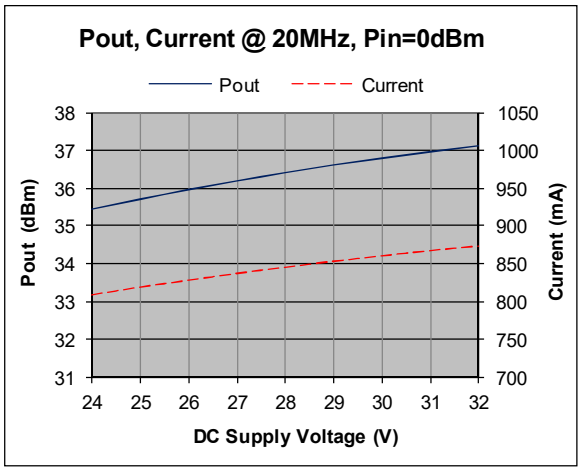
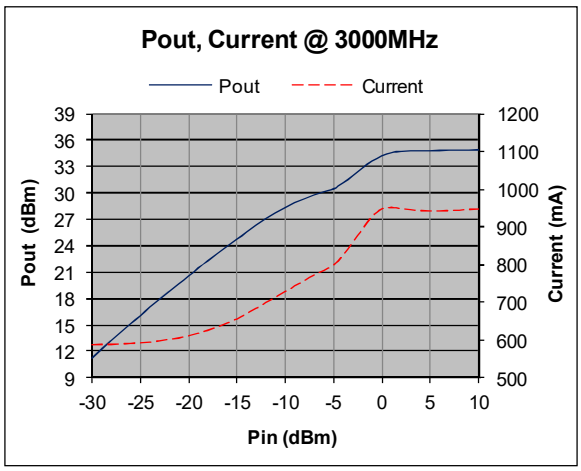
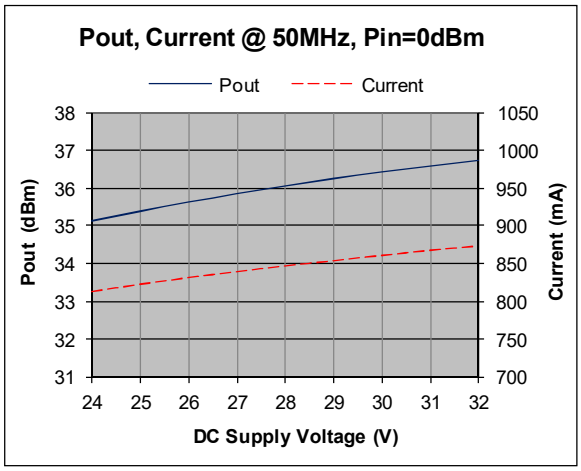
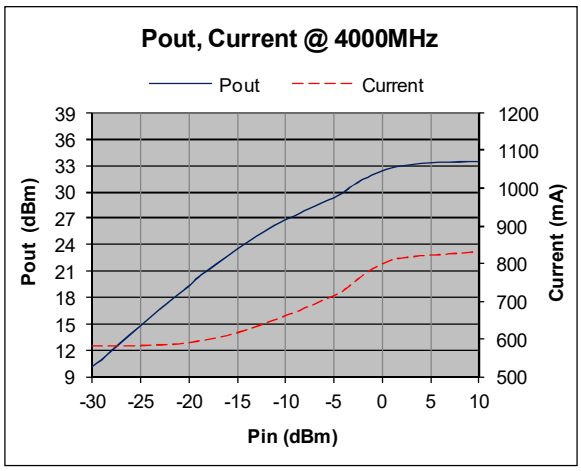
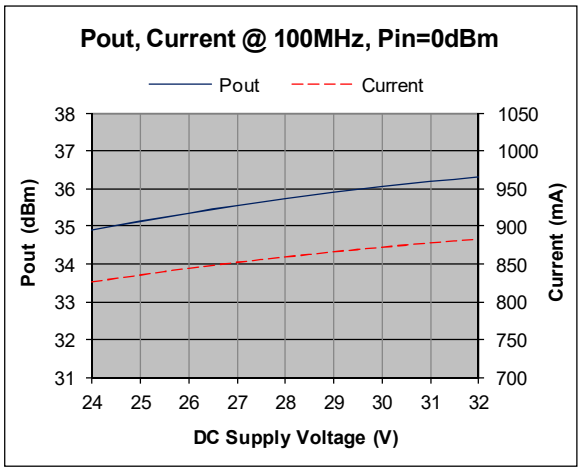


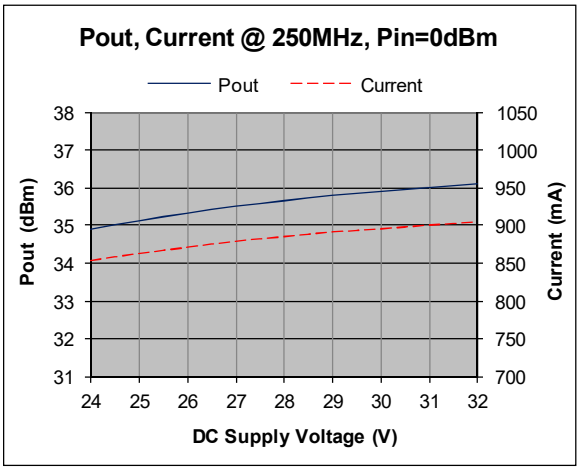



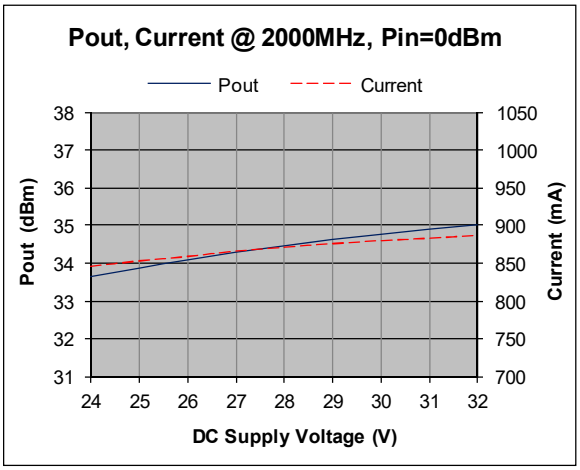



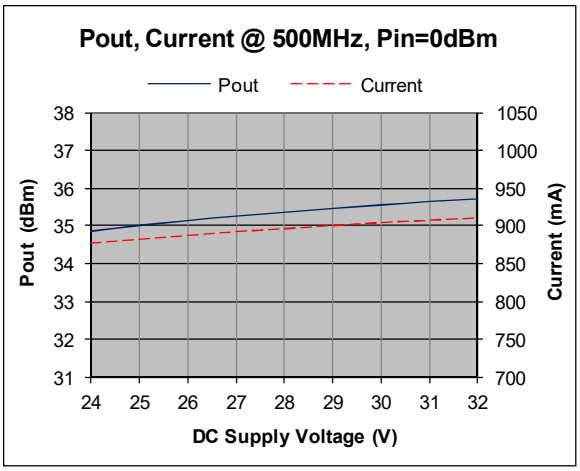



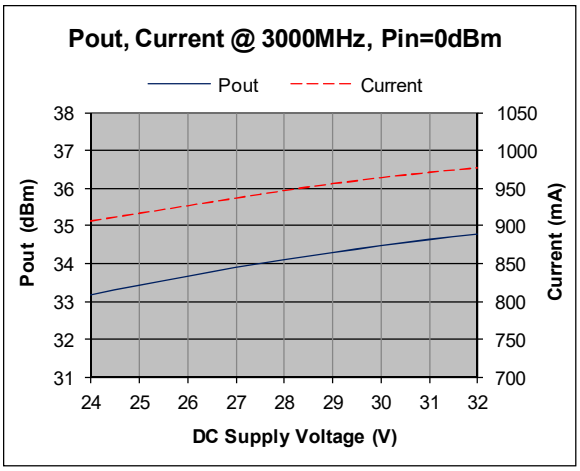



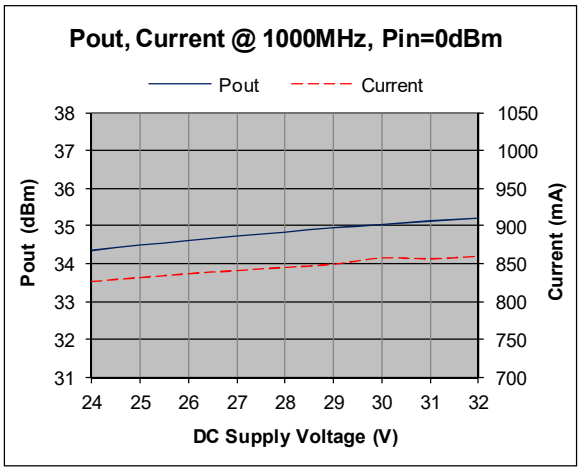
## Typical Performance @ +25°C

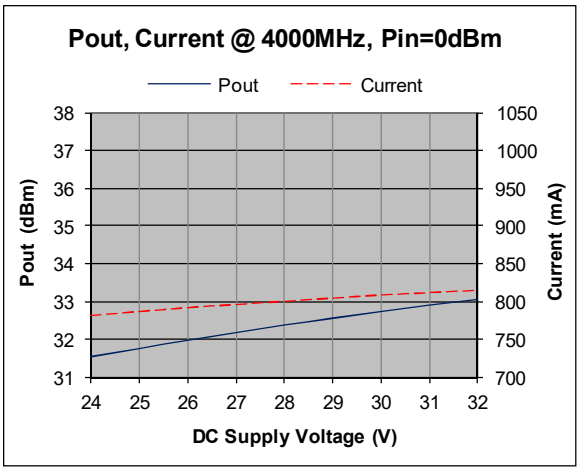


## 20-4000MHz 2W RF Power Amplifier

### Absolute Maximum Ratings

| Parameter | Absolute Maximum |
|---|---|
| Supply Voltage (Survival) | +33V |
| RF Input Power | +15dBm |
| Operating Temperature | -20 °C to +65 °C |
| Storage Temperature | -55 °C to +125 °C |

### ESD Sensitive Material

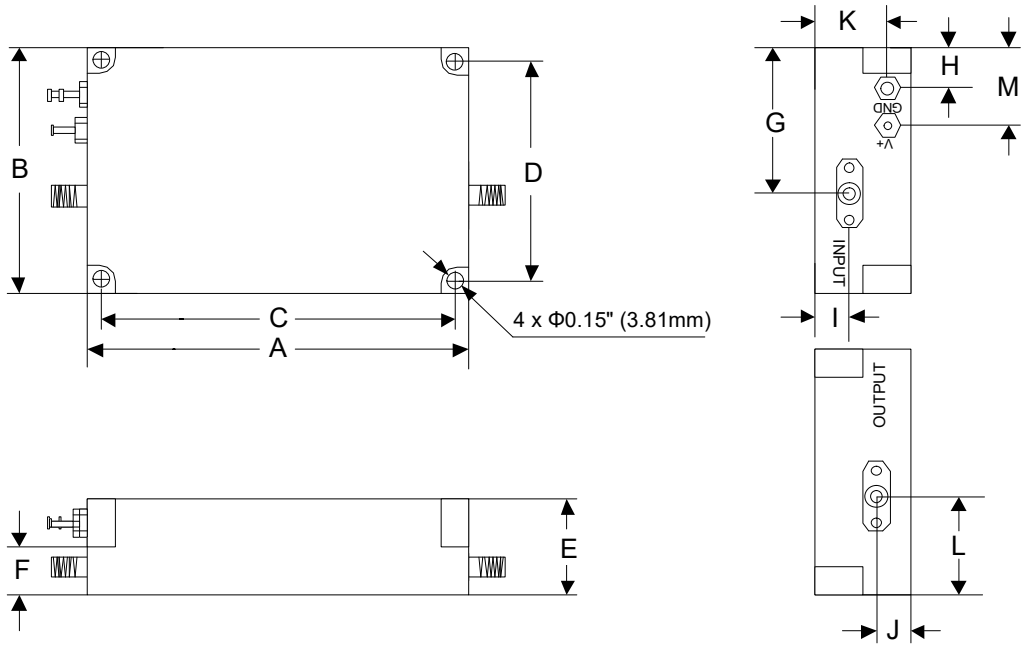

**Warning and Caution:**

1) **Adequate heatsink must be used. Cooling Fan highly recommended. Amplifier operational baseplate temperature must be within datasheet operating temperature range.**

2) **Load must be connected to amplifier output at all time if DC power is ON.**

3) **If power amplifier will be connected to an antenna for signal transmission, it is strongly recommended to use a high power isolator or fixed attenuator between the amplifier output and antenna input.**

## Outline




Mounting screws recommended to use hex socket head cap #6x3/4”

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| **Inch** | 4.00 | 2.50 | 3.70 | 2.20 | 1.05 | 0.54 | 1.40 | 0.30 | 0.30 |
| **mm** | 101.60 | 63.50 | 93.98 | 55.88 | 26.67 | 13.72 | 35.56 | 7.62 | 7.62 |
| | **J** | **K** | **L** | **M** | | | | | |
| **Inch** | 0.30 | 0.75 | 1.10 | 0.70 | | | | | |
| **mm** | 7.62 | 19.05 | 27.94 | 17.78 | | | | | |