

## Product Features

- GaAs Push Pull
- Extremely Low Distortion
- Guaranteed Broadband Power Gain
- Heat Sink 99.9% Copper, & Gold Plated
- Excellent Thermal Conductivity
- Single Supply Voltage @ 12V
- Low DC Power Consumption
- Optimal Reliability

## Application

- CATV Trunk Amplifier
- Optical Drive Amplifier



Package Type: SOT-115J

## Description

Hybrid Push Pull amplifier for CATV Systems up to 750MHz in frequency.

This hybrid amplifier module operates with a single voltage supply of 12V (DC), and use GaAs MMIC technology.

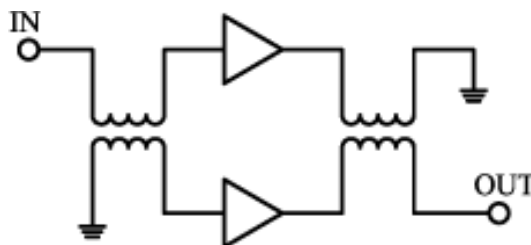
## Quick Reference Data

| SYMBOL    | PARAMETER                      | CONDITIONS     | MIN. | MAX. | UNIT |
|-----------|--------------------------------|----------------|------|------|------|
| $G_p$     | Power Gain                     | F = 50 MHz     | 33.5 | 34.5 | dB   |
|           |                                | F = 750 MHz    | 34.5 | -    | dB   |
| $I_{tot}$ | Total Current Consumption (DC) | $V_{cc} = 12V$ | -    | 650  | mA   |

## Limiting Values

| SYMBOL    | PARAMETER                           | MIN. | MAX. | UNIT |
|-----------|-------------------------------------|------|------|------|
| $V_i$     | RF Input Voltage (Single Tone)      | -    | +55  | dBmV |
| V         | DC Supply Over Voltage (5 minutes)  |      |      | V    |
| $T_{stg}$ | Storage Temperature                 | -40  | +100 | °C   |
| $T_{mb}$  | Operating Mounting Base Temperature | -20  | +100 | °C   |

## Functional Diagram



## CHARACTERISTICS

Bandwidth 50 to 750MHz;  $V_{CC} = 12V$ ;  $T_{case} = 25^{\circ}C$ ;  $Z_S = Z_L = 75\Omega$

| SYMBOL    | PARAMETER                      | CONDITIONS                            | MIN  | TYP  | MAX  | UNIT |
|-----------|--------------------------------|---------------------------------------|------|------|------|------|
| $G_p$     | Power Gain                     | $f = 50 \text{ MHz}$                  | 33.5 | -    | 34.5 | dB   |
|           |                                | $f = 750 \text{ MHz}$                 | 34.5 | 34.8 | -    | dB   |
| SL        | Slope Cable Equivalent         | $f = 50 \text{ to } 750 \text{ MHz}$  | -    | -    | 1.0  | dB   |
| FL        | Flatness of Frequency Response | $f = 50 \text{ to } 750 \text{ MHz}$  | -    | 0.5  | -    | dB   |
| $S_{11}$  | Input Return Loss              | $f = 50 \text{ to } 80 \text{ MHz}$   | 16.0 | 17.0 | -    | dB   |
|           |                                | $f = 80 \text{ to } 160 \text{ MHz}$  | 16.0 | 17.0 | -    | dB   |
|           |                                | $f = 160 \text{ to } 320 \text{ MHz}$ | 16.0 | 18.0 | -    | dB   |
|           |                                | $f = 320 \text{ to } 640 \text{ MHz}$ | 16.0 | 17.5 | -    | dB   |
|           |                                | $f = 640 \text{ to } 750 \text{ MHz}$ | 16.0 | 17.5 | -    | dB   |
| $S_{22}$  | Output Return Loss             | $f = 50 \text{ to } 80 \text{ MHz}$   | 16.0 | 17.0 | -    | dB   |
|           |                                | $f = 80 \text{ to } 160 \text{ MHz}$  | 16.0 | 17.0 | -    | dB   |
|           |                                | $f = 160 \text{ to } 320 \text{ MHz}$ | 16.0 | 18.0 | -    | dB   |
|           |                                | $f = 320 \text{ to } 640 \text{ MHz}$ | 16.0 | 17.5 | -    | dB   |
|           |                                | $f = 640 \text{ to } 750 \text{ MHz}$ | 16.0 | 17.5 | -    | dB   |
| F         | Noise Figure                   | $f = 50 \text{ MHz}$                  | -    | 4.5  | -    | dB   |
|           |                                | $f = 550 \text{ MHz}$                 | -    | 4.5  | -    | dB   |
|           |                                | $f = 600 \text{ MHz}$                 | -    | 4.5  | -    | dB   |
|           |                                | $f = 650 \text{ MHz}$                 | -    | 4.5  | -    | dB   |
|           |                                | $f = 750 \text{ MHz}$                 | -    | 4.5  | -    | dB   |
| $I_{tot}$ | Total Current Consumption (DC) |                                       | 560  | 580  | 650  | mA   |

## DISTORTION

Bandwidth 50 to 870MHz;  $V_{CC} = 12V$ ;  $T_{case} = 25^{\circ}C$ ;  $Z_S = Z_L = 75\Omega$

| SYMBOL | PARAMETER                         | CONDITIONS                              | MIN | TYP | MAX | UNIT |
|--------|-----------------------------------|---|-----|-----|-----|------|
| CTB    | Composite Triple Beat             | 110 channel flat; $V_o = 44\text{dBmV}$ | -   | -60 | -58 | dBc  |
|        |                                   | 79 channel flat; $V_o = 46\text{dBmV}$  | -   | -61 | -59 | dBc  |
| XMOD   | Cross Modulation                  | 110 channel flat; $V_o = 44\text{dBmV}$ | -   | -62 | -59 | dBc  |
|        |                                   | 79 channel flat; $V_o = 46\text{dBmV}$  | -   | -61 | -59 | dBc  |
| CSO    | Composite Second Order distortion | 110 channel flat; $V_o = 44\text{dBmV}$ | -   | -62 | -59 | dBc  |
|        |                                   | 79 channel flat; $V_o = 46\text{dBmV}$  | -   | -62 | -59 | dBc  |

Notes;

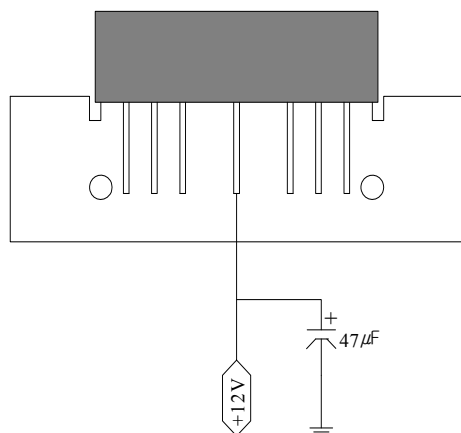
- $f_p=55.25\text{MHz}$ ;  $V_p=44\text{dBmV}$ ;  $f_q=691.25\text{MHz}$ ;  $V_q=44\text{dBmV}$ ; measured at  $f_p+f_q=746.5\text{MHz}$
- $f_p=740.25\text{MHz}$ ;  $V_p=V_o$ ;  $f_q=747.25\text{MHz}$ ;  $V_q=V_o-6\text{dB}$ ;  $f_r=749.25\text{MHz}$ ;  $V_r=V_o-6\text{dB}$ ; measured at  $f_p+f_q-f_r=738.25\text{MHz}$

## ESD PROTECTION

Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices. Some of the precautions recommended are;

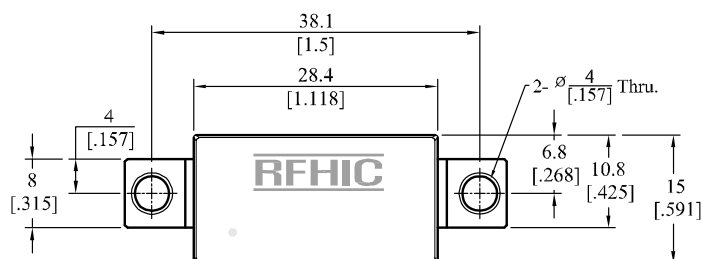
- Person at a workbench should be earthed via a wrist strap and a resistor.
- All mains-powered equipment should be connected to the mains via an earth-leakage switch.
- Equipment cases should be grounded.
- Relative humidity should be maintained between 40% and 50%.
- An ionizer is recommended.
- Keep static materials, such as plastic envelopes and plastic trays etc. away from the workbench.

## NOTES FOR CORRECT USE

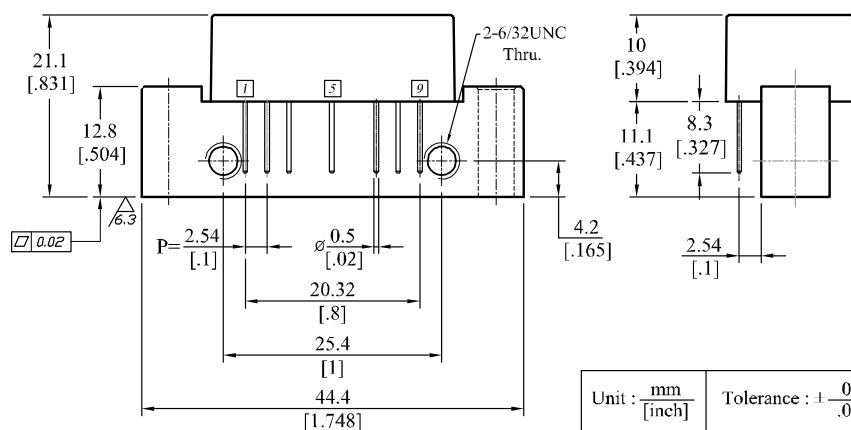


1. On the power input port (Pin#5), 47µF/35V capacitor GND is recommended.
2. The heat sink of CATV Hybrids is to be mounted in direct contact with the metal case of the equipment. Heat conducting grease should be applied to the module/equipment interface and the unit tightly secured.
3. Put the power off before adjusting in/output matching of the system.
4. The unit must have a common ground with the equipment and the analyzer.
5. Pay close attention to the input voltage not to over power the hybrid.
6. The space between bottom of socket and the tip of the lead is recommended to have space of 2mm+ to protect the pin
7. Do not open the plastic cover to change the matching inside the hybrid. Once opened, RFHIC will not be responsible for the hybrid.

## Package Dimensions (Type: SOT-115J)



| Pin No.    | Function  |
|------------|-----------|
| 1          | RF Input  |
| 2, 3, 7, 8 | Ground    |
| 5          | Vcc       |
| 9          | RF Output |



|                     |                             |
|---------------------|-----------------------------|
| Unit : mm<br>[inch] | Tolerance : ± 0.2<br>[.008] |
|---------------------|-----------------------------|

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