

## Product Features

- GaAs Power Doubler
- Extremely Low Distortion
- Guaranteed Broadband Power Gain
- Heat Sink 99.9% Copper, & Gold Plated
- Excellent Thermal Conductivity
- Single Supply Voltage @ 24V
- Low DC Power Consumption
- Optimal Reliability

## Application

- CATV Trunk Amplifier
- Optical Drive Amplifier



Package Type: SOT-115J

## Description

Hybrid Power Doubler amplifier for CATV Systems up to 1000MHz in frequency. This hybrid amplifier module operates with a single voltage supply of 24V(DC), and use GaAs MMIC technology.

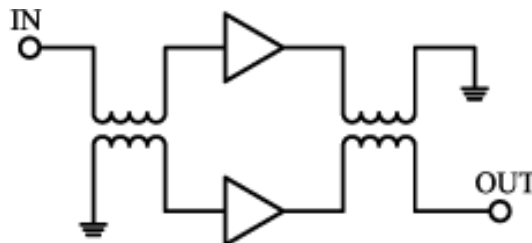
## Quick Reference Data

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$G_p$	Power Gain	F = 45 MHz	21.0	24.5	dB
		F = 1000 MHz	24.5	25.5	dB
$I_{tot}$	Total Current Consumption (DC)	$V_{cc} = 24V$	-	430	mA

## Limiting Values

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
$V_i$	RF Input Voltage (Single Tone)	-	+70	dBmV
V	DC Supply Over Voltage (5 minutes)		28	V
$T_{stg}$	Storage Temperature	-40	+100	°C
$T_{mb}$	Operating Mounting Base Temperature	-20	+100	°C

## Functional Diagram



## Characteristics

Bandwidth 45 to 1000MHz;  $V_{CC} = 24V$ ;  $T_{case} = 25^{\circ}C$ ;  $Z_S = Z_L = 75\Omega$

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$G_p$	Power Gain	f = 45 MHz	24.0	-	24.5	dB
		f = 1000 MHz	24.5	-	25.5	dB
SL	Slope Cable Equivalent	f = 45 to 1000 MHz	-	0.5	-	dB
FL	Flatness of Frequency Response	f = 45 to 1000 MHz	-	-	0.6	dB
$S_{11}$	Input Return Loss	f = 45 to 80 MHz	19.0	-	-	dB
		f = 80 to 160 MHz	18.0	-	-	dB
		f = 160 to 320 MHz	17.0	-	-	dB
		f = 320 to 640 MHz	16.0	-	-	dB
		f = 640 to 1000 MHz	16.0	-	-	dB
$S_{22}$	Output Return Loss	f = 45 to 80 MHz	19.0	-	-	dB
		f = 80 to 160 MHz	18.0	-	-	dB
		f = 160 to 320 MHz	17.0	-	-	dB
		f = 320 to 640 MHz	16.0	-	-	dB
		f = 640 to 1000 MHz	16.0	-	-	dB
F	Noise Figure	f = 45 MHz	-	5.0	-	dB
		f = 1000 MHz	-	4.0	4.5	dB
$I_{tot}$	Total Current Consumption (DC)		380	400	430	mA

## Distortion

Bandwidth 45 to 550MHz;  $V_{CC} = 24V$ ;  $T_{case} = 25^{\circ}C$ ;  $Z_S = Z_L = 75\Omega$

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
CTB	Composite Triple Beat	79ch. 7dB tilted; $V_o = +49dBmV$	-	-70	-67	dBc
XMOD	Cross Modulation	79ch. 7dB tilted; $V_o = +49dBmV$	-	-68	-64	dBc
CSO	Composite Second Order Distortion	79ch. 7dB tilted; $V_o = +49dBmV$	-	-66	-65	dBc

Notes;

79 Channels, NTSC frequency raster: 55.25MHz to 547.25MHz, +42dBmV to +49dBmV tilted output level.

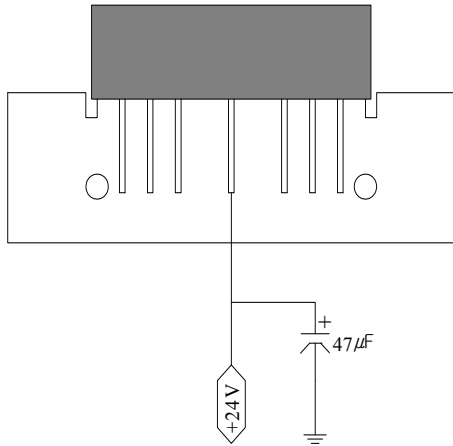
CTB, XMOD, CSO definitions follow NCTA definition.

## 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

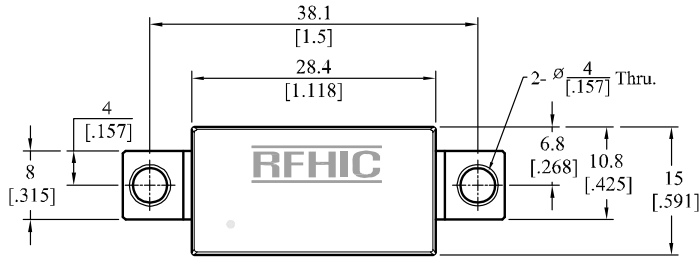


1. On the power input port (Pin#5), 47uF/35V capacitor GND is recommended.
2. The heat sink of CATV Hybrids is to be mounted in direct contact with the metal case of the equipment. Heat conducting grease should be applied to the module/equipment interface and the unit tightly secured.
3. Put the power 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.
8. This CATV Hybrid amplifier is designed with GaAs technology and can be damaged by electrical shock. To protect the device from excessive AC input, user should use a high pass filter(Note 1) at the in/output port of the hybrid amp or use a diplexer filter at the in/output port of the system/equipment to be on the safe side.

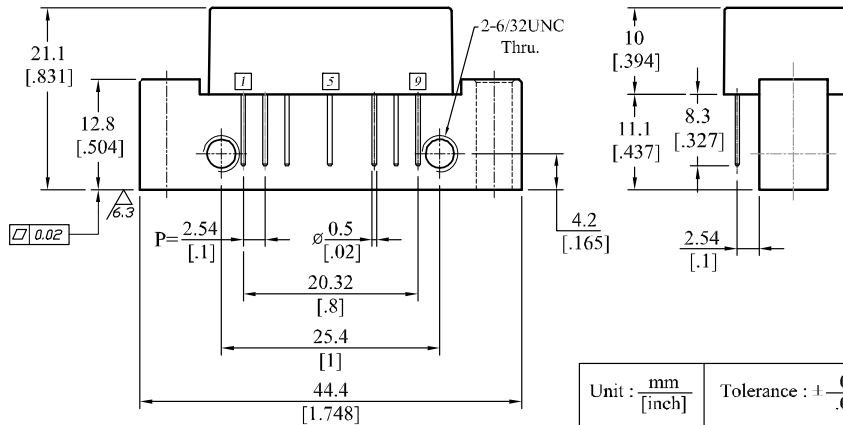
### Note 1. Recommend High Pass Filter

Recommended Filter		Specification @ 25°C
Cutoff Frequency		45 MHz
Bandwidth		45 ~ 1000 MHz
Return Loss		15 dB Min.
Attenuation	@ DC ~ 20 MHz	25 dBc Min
In/Out Impedance		75 ohm

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



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



Unit : $\frac{\text{mm}}{\text{[inch]}}$	Tolerance : $\pm \frac{0.2}{.008}$
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