

**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 @ 24V
- Low DC Power Consumption
- Optimal Reliability

**Applications**

- CATV Trunk Amplifier
- Optical Drive Amplifier



Package Type: SOT-115J

**Description**

Hybrid Push Pull 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.

**Electrical Specifications** @  $V_{CC} = 24V$ ;  $T_{case} = 25^{\circ}C$ ;  $Z_S = Z_L = 75\Omega$ 

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL	CONDITION
<b>Operating Frequency</b>	MHz	45	-	1000	$f_o$	-
<b>Power Gain</b>	dB	18.0	-	19.0	$G_p$	$f = 45$ MHz
		19.5	-	20.5		$f = 1000$ MHz
<b>Gain Variation</b>	dB	-	-	$\pm 1$	$G_v$	$f = 45 \sim 1000$ MHz (Over Operating temperature range)
<b>Slope Cable Equivalent</b>	dB	1.0	-	2.0	SL	$f = 45 \sim 1000$ MHz
<b>Flatness of Frequency Response</b>	dB	-	-	0.6	FL	$f = 45 \sim 1000$ MHz
<b>Input Return Loss Linear de-rating from 45 ~ 1000MHz</b>	dB	17.0	-	20.0	$S_{11}$	$f = 45 \sim 1000$ MHz
<b>Output Return Loss Linear de-rating from 45 ~ 1000MHz</b>	dB	15.0	-	20.0	$S_{22}$	$f = 45 \sim 1000$ MHz
<b>Two tone Test</b>	dBc	76	77	-	2IM	38dBmV flat (Carrier at 77.25MHz, tones at 924 and 1000MHz)
<b>Noise Figure</b>	dB	-	5.0	6.0	F	$f = 45$ MHz
		-	5.8	8.0		$f = 1000$ MHz
<b>Total Current Consumption (DC)</b>	mA	200	220	250	$I_{tot}$	-

**Distortion** @  $V_{CC} = 24V$ ;  $T_{case} = 25^{\circ}C$ ;  $Z_S = Z_L = 75\Omega$

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL	CONDITION
Frequency	MHz	45	-	1000	f	-
Composite Triple Beat	dBc	-	-59	-57	CTB	135 channel flat; $V_o = 40\text{dBmV}$
Cross Modulation	dBc	-	-57	-53	XMOD	135 channel flat; $V_o = 40\text{dBmV}$
Composite Second Order Distortion	dBc	-	-60	-58	CSO	135 channel flat; $V_o = 40\text{dBmV}$

**Note**

135 Channels, NTSC frequency raster: 55.25MHz ~ 859.25MHz, 40dBmV flattened output level.

CTB, XMOD, CSO definitions follow NCTA definition.

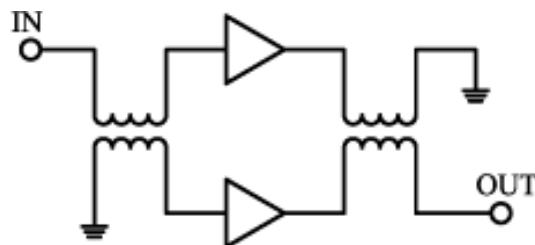
### Absolute Maximum Ratings

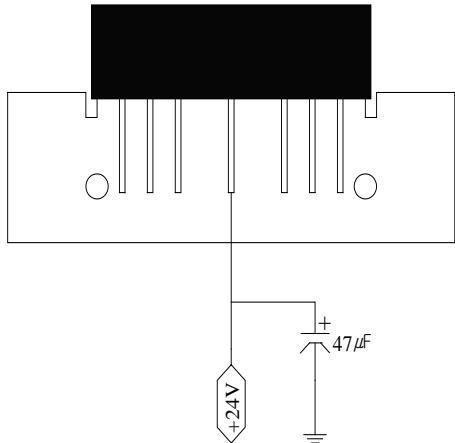
PARAMETER	UNIT	MIN	MAX	SYMBOL	CONDITION
RF Input Voltage	dBmV	-	70	$V_i$	Single Tone
DC Supply Over Voltage	V	-	28	V	5 minutes
Storage Temperature	°C	-40	100	$T_{stg}$	-
Operating Mounting Base Temperature	°C	-20	100	$T_{mb}$	-

### Quick Reference Data

PARAMETER	UNIT	MIN	MAX	SYMBOL	CONDITION
Power Gain	dB	18.0	19.0	$G_p$	$f = 45\text{ MHz}$
		19.5	20.5		$f = 1000\text{ MHz}$
Total Current Consumption (DC)	mA	200	250	$I_{tot}$	$V_{cc} = 24V$

### Functional Diagram



**Note for Correct Use**

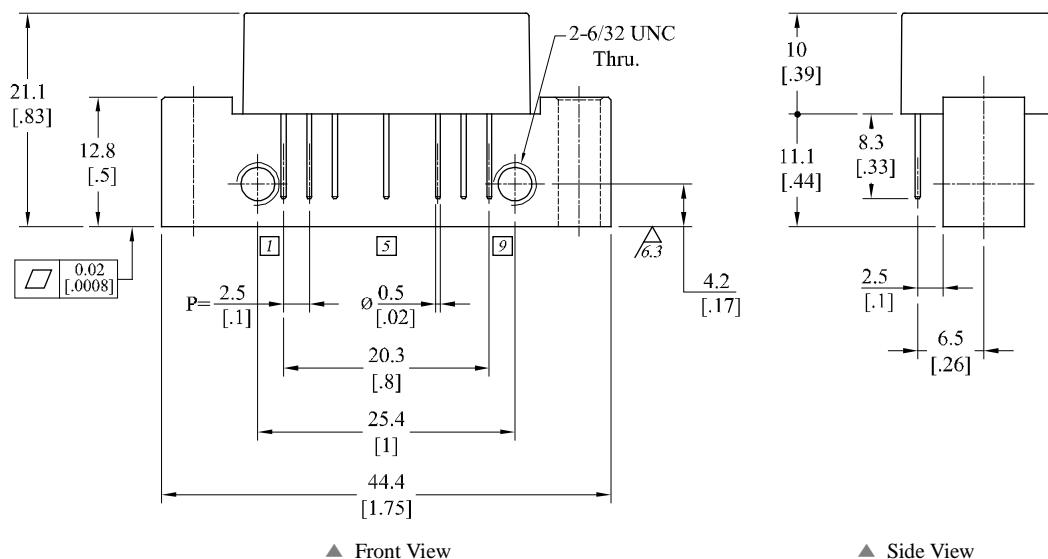
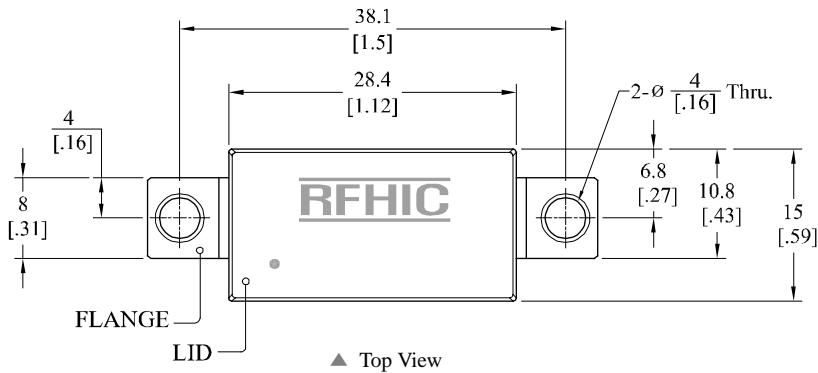
1. On the power input port (Pin#5), 47uF/35V capacitor GND is recommended.
2. The heat sink of CATV Hybrids is to be mounted in direct contact with the metal case of the equipment. Heat conducting grease should be applied to the module/equipment interface and the unit tightly secured.
3. Put the power 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.

**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.

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

\* Unit: mm[inch] | Tolerance:  $\pm 0.2[.008]$ 

▲ Front View

▲ Side View

Pin Description					
Pin No	Function	Pin No	Function	Pin No	Function
1	RF Input	4	-	7	GND
2	GND	5	Vcc	8	GND
3	GND	6	-	9	RF Output

## Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
2F1G18P	2012.9.5	1.2	-	-

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