

## Product Features

- GaAs MMIC
- Very Low Distortion
- Guaranteed Broadband Power Gain
- Heat Sink 99.9% Copper, Ag or Gold Plate
- Excellent Thermal Conductivity
- Single Supply Voltage @ 24V
- Low DC Power Consumption
- No External Circuit needed

## Applications

- Drive Amplifier



Package Type : DP-27

## Description

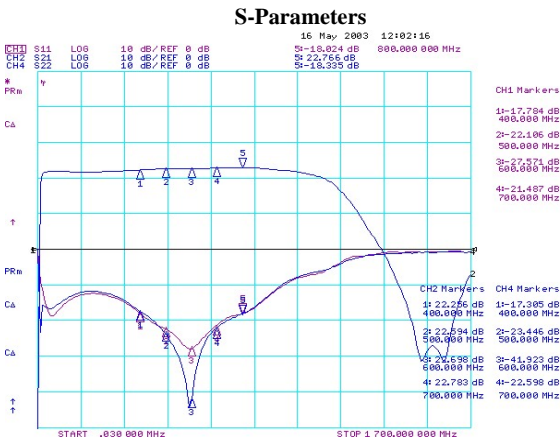
The RFC042 is specifically designed for up to 800MHz in frequency as amplifiers in BTS.  
 This hybrid dynamic range amplifier module operates with a single voltage supply of 24V(DC).  
 The RFC042 is equipped with over-voltage suppressor.

## Electrical Specifications @ $V_{DD} = 24V, T_A = 25^{\circ}C$

PARAMETER		UNIT	MIN	TYP	MAX	CONDITION
Operating Frequency		MHz	400	-	800	-
Gain		dB	21	23	-	-
Gain Flatness		dB	-	-	$\pm 0.5$	-
S11		dB	-	1.5 : 1	2.0 : 1	-
S22		dB	-	1.5 : 1	2.0 : 1	-
IMD3	$f_c$ : 400.5MHz	dBc	54	58	-	Total Pout = 23dBm. Tone spacing 1MHz
	$f_c$ : 600.5MHz		56	60	-	
	$f_c$ : 799.5MHz		56	60	-	
ACPR	1FA	$\Delta$ 750KHz	dBm	29	-	Po = 23dBm Avg. PAR 10.7dB.
		$\Delta$ 1.98MHz		44	-	
	3FA	$\Delta$ 750KHz		29	-	Po = 23dBm Avg. PAR 11.1dB.
		$\Delta$ 1.98MHz		44	-	
	8FA	$\Delta$ 750KHz		29	-	Po = 20dBm Avg. PAR 11.4dB.
		$\Delta$ 1.98MHz		44	-	
Noise Figure		dB	-	4.0	7.0	-
Supply Current		mA	-	400	430	-

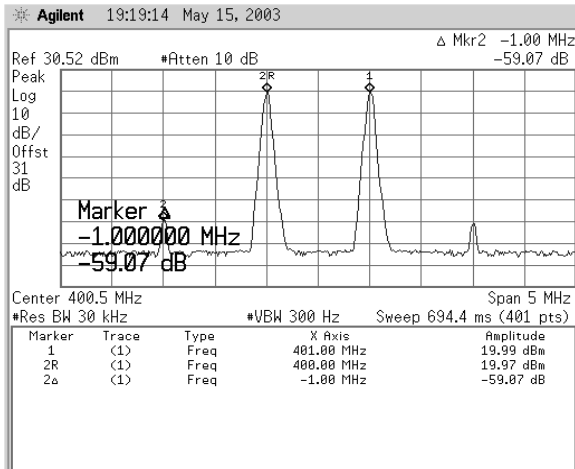
## Absolute Maximum Ratings

PARAMETER	UNIT	MIN	TYP	MAX	CONDITION
$V_{DD} / V_{RFOUT}$	VDC	-	-	28	-
$RF_{IN}$	dBm	-	-	22	Single Tone
Storage Temperature	$^{\circ}C$	-40	-	100	-
Operating Temperature	$^{\circ}C$	-20	-	100	-

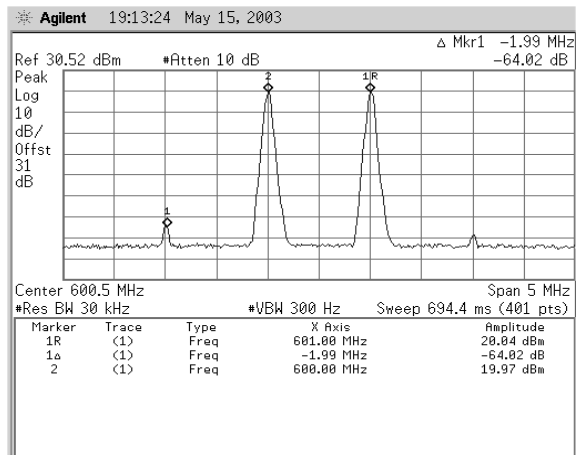


## IMD3

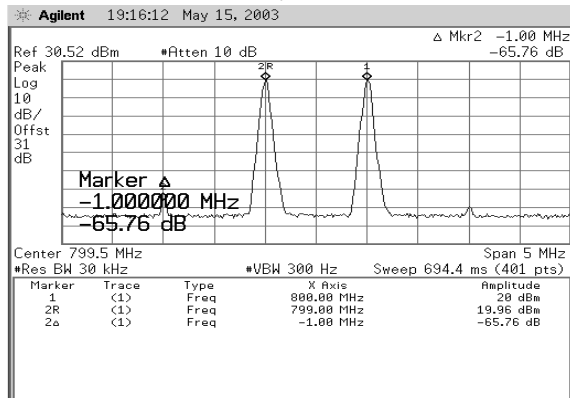
1)  $f_c = 400.5\text{MHz}$



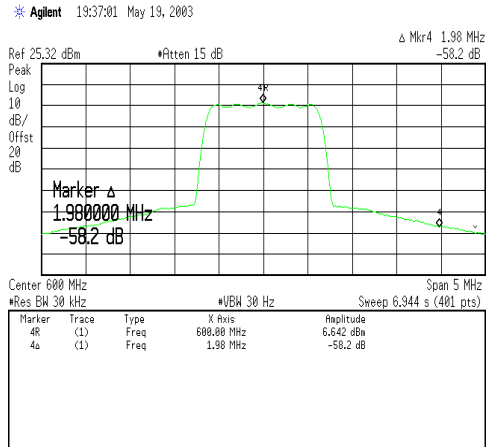
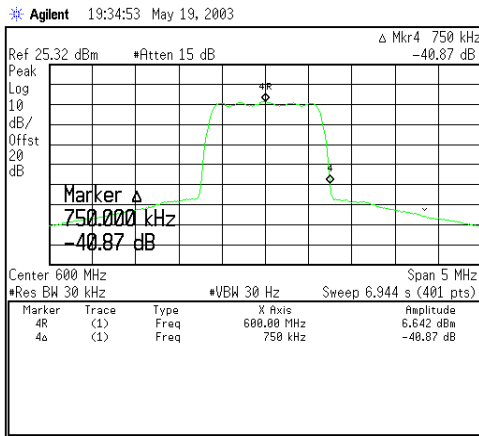
2)  $f_c = 600.5\text{MHz}$



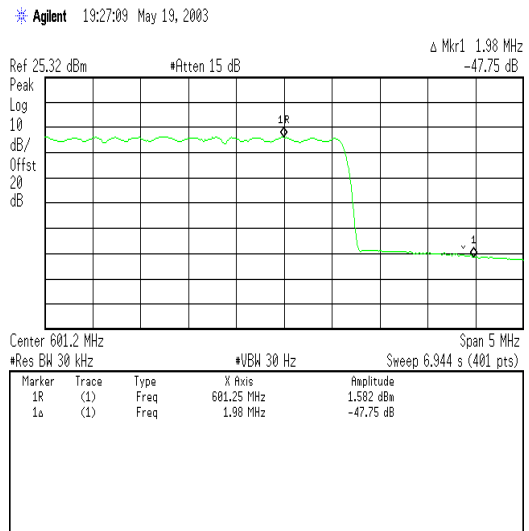
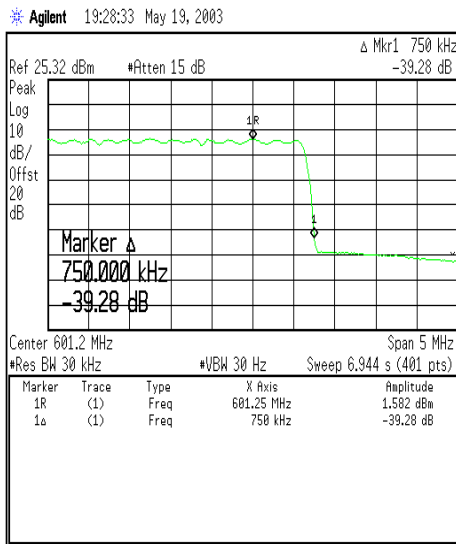
3)  $f_c = 799.5\text{MHz}$



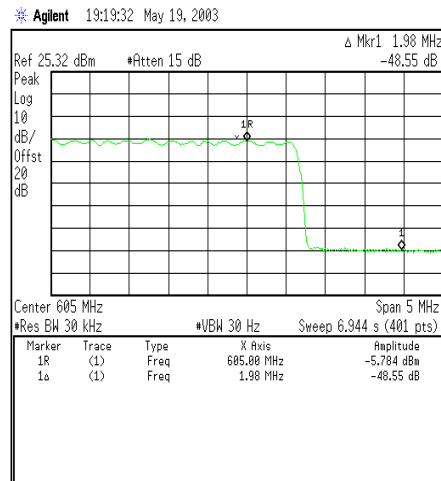
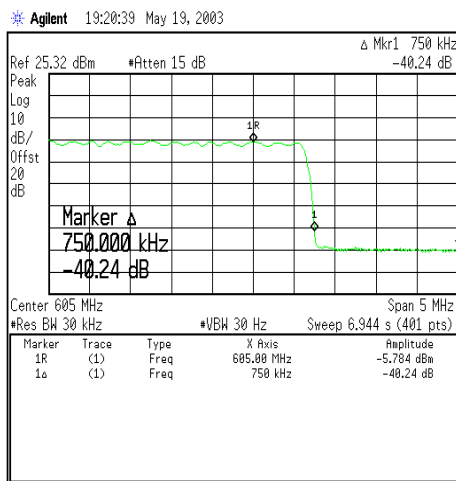
### CDMA 1FA Test (Po = 23dBm Avg.)



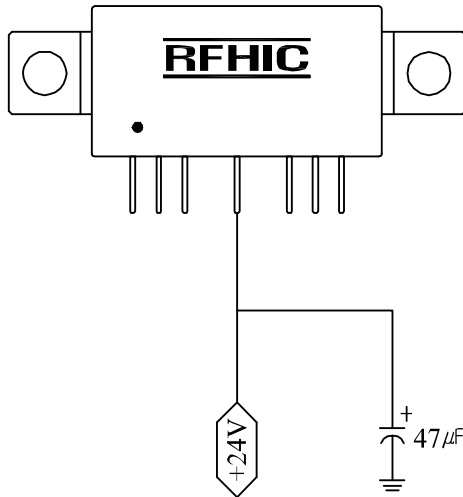
### CDMA 3FA Test (Po = 23dBm Avg.)



### CDMA 8FA Test (Po = 20dBm Avg.)



**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.

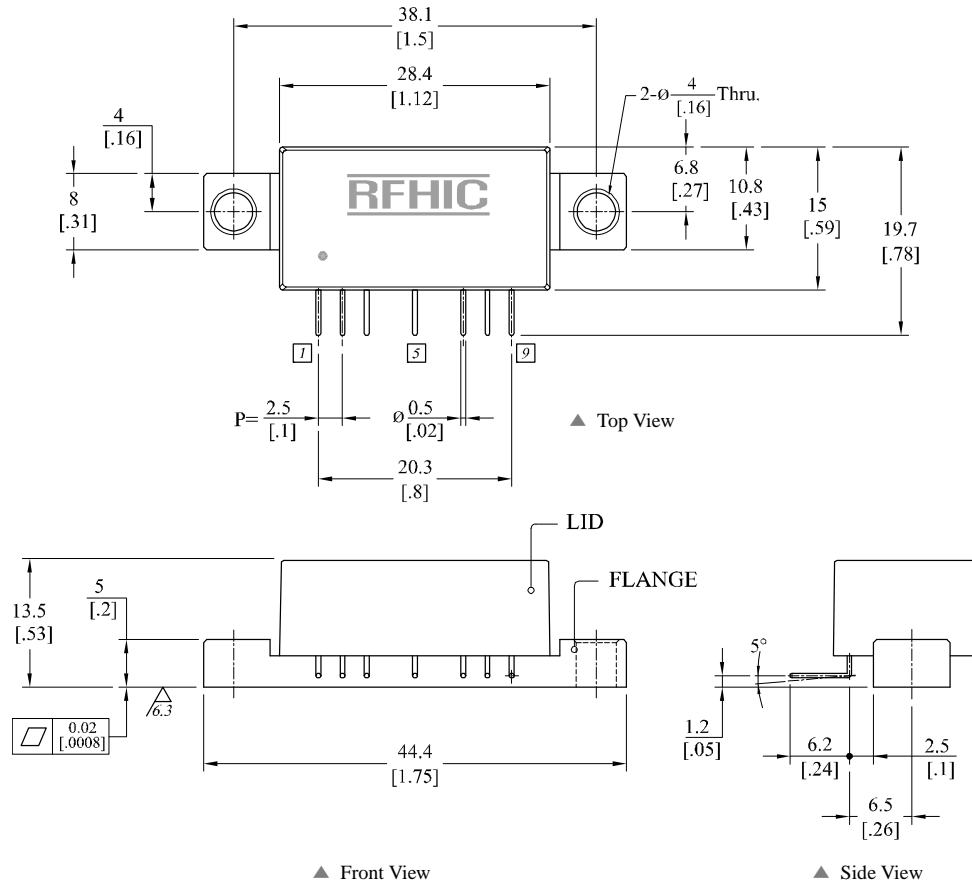
**ESD Protection**

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: DP-27)

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



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

### \* Mounting Configuration Notes

1. Ground / thermal via holes are critical for the proper performance of this device.
2. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
3. Mounting screws can be added near the part to fasten the board to a heatsink. Ensure that the ground / thermal via hole region contacts the heatsink.
4. Do not put solder mask on the backside of the PCB in the region where the board contacts the heatsink.
5. RF trace width depends upon the PCB material and construction.
6. Use 1 oz. Copper minimum.

**Revision History**

Part Number	Release Date	Version	Modification	Data Sheet Status
RFC042	2012.11.6	6.0	Electrical Specifications, Graph name modification	-
RFC042	2012.9.5	5.9	-	-

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