

# NEC

## 1.0 GHz BANDWIDTH SILICON MMIC AMPLIFIER

### UPC1653A UPC1653P

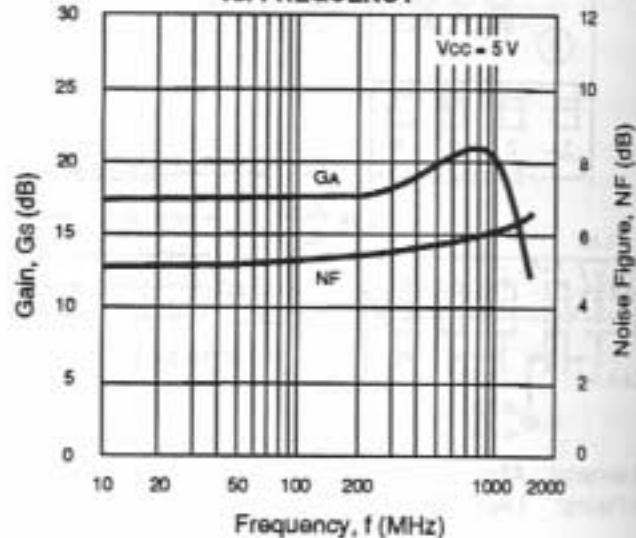
### FEATURES

- **BROAD FREQUENCY RESPONSE:** 1300 MHz TYP at 3 dB Down
- **INPUT AND OUTPUT MATCHED TO 50  $\Omega$**
- **AVAILABLE IN CHIP OR HERMETIC PACKAGE**
- **LOW VOLTAGE OPERATION:**  $V_{CC} = 5 V$

### DESCRIPTION

The UPC1653 Silicon Monolithic IC is designed as a wideband amplifier covering the VHF through UHF bands. This amplifier is matched to 50 ohms and is an excellent choice as a driver stage for the UPC1654. For narrow-band applications, appropriate band pass circuits may be used. Reliability and performance uniformity are assured by NEC's stringent quality control procedures. The UPC1653 is available in chip form and in a hermetically sealed package (TO-72).

NOISE FIGURE AND POWER GAIN  
vs. FREQUENCY



### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ C$ , $V_{CC} = 5.0 V$ , $f = 500 MHz$ )

PART NUMBER PACKAGE OUTLINE			UPC1653A 12 (TO-72)		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
$I_{CC}$	Operating Current	mA	15	20	25
$G_s$	Small Signal Gain	dB	16	18	20
BW	Bandwidth (3 dB BW)	MHz	1100	1300	
$P_{SAT}$	Saturated Output Power	dBm	3	5	
NF	Noise Figure	dB		5.5	6.5
$RL_{IN}$	Input Return Loss	dB	20	23	
$RL_{OUT}$	Output Return Loss	dB	13	16	
ISOL	Isolation	dB	25	28	

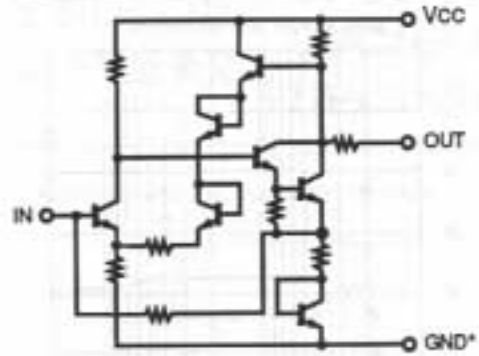
**ABSOLUTE MAXIMUM RATINGS<sup>1</sup>** (TA = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
VCC	Supply Voltage	V	7
PT	Total Power Dissipation	mW	250 <sup>2</sup>
TOP	Operating Temperature	°C	-55 to +125
TSTG	Storage Temperature	°C	-65 to +200

Note:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. At TA = +125°C.

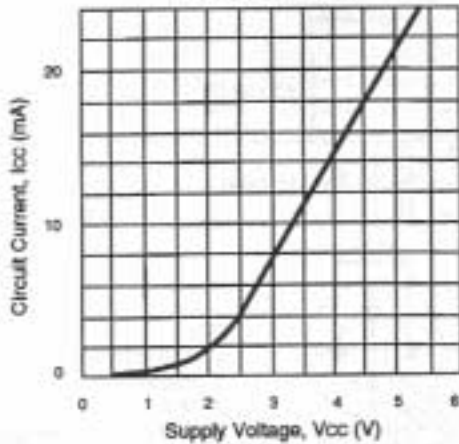
**EQUIVALENT CIRCUIT**



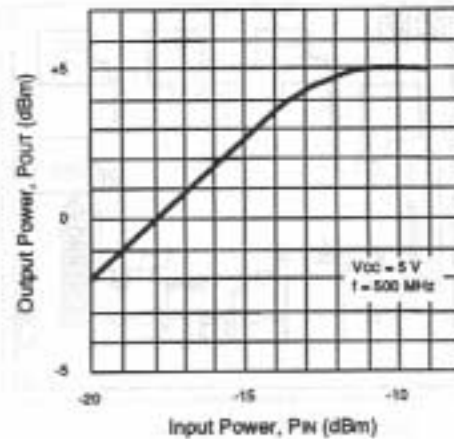
\* Case must be connected to GND for stable RF operation and optimum thermal dissipation.

**TYPICAL PERFORMANCE CURVES** (TA = 25°C)

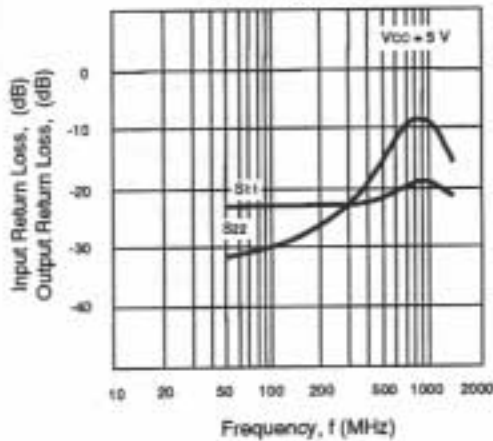
**CIRCUIT CURRENT vs. SUPPLY VOLTAGE**



**INPUT POWER vs. OUTPUT POWER**



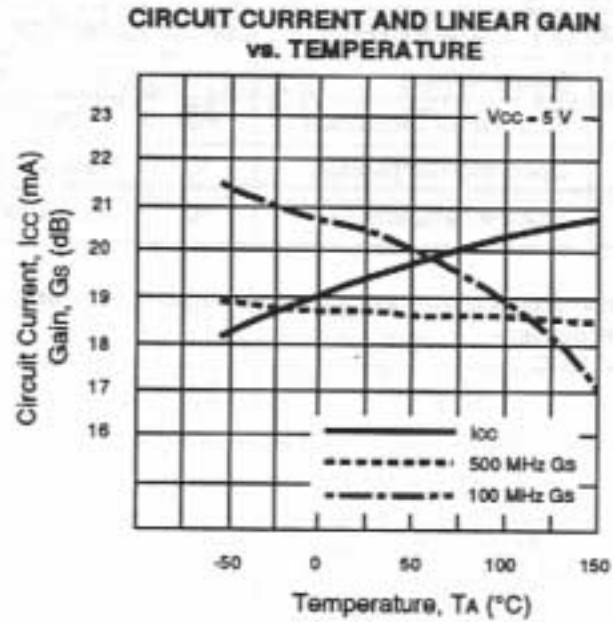
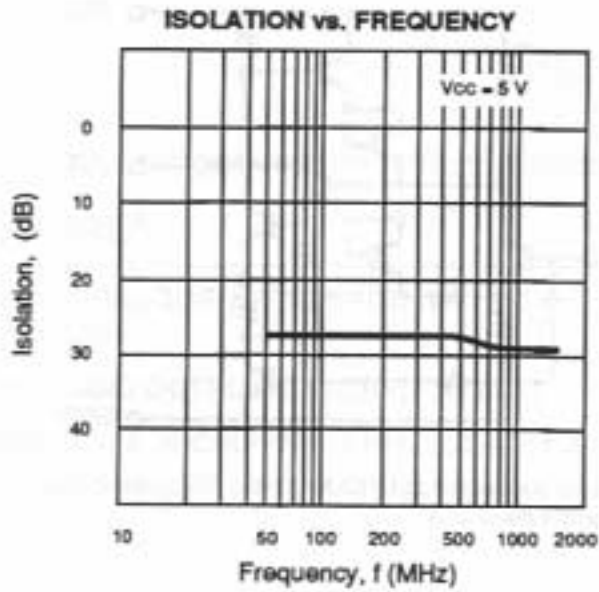
**INPUT AND OUTPUT RETURN LOSS vs. FREQUENCY**



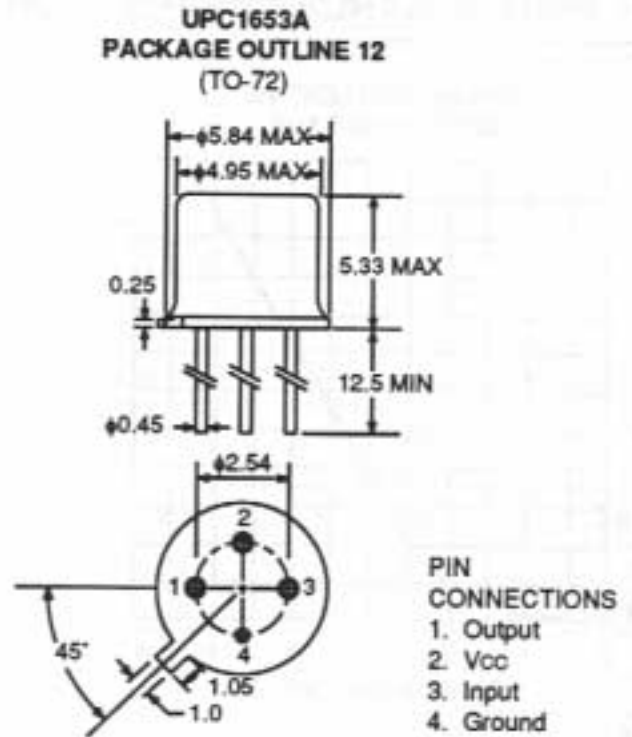
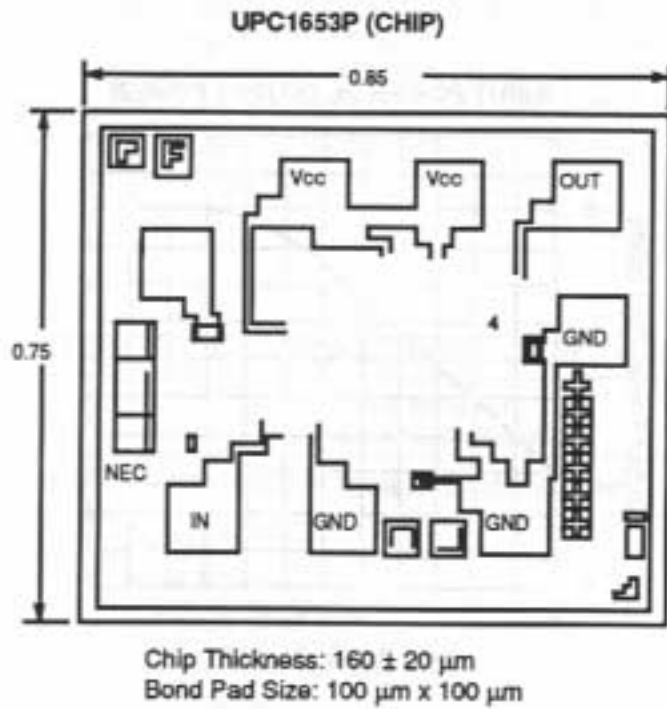
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# UPC1653A, UPC1653P

## TYPICAL PERFORMANCE CURVES (TA = 25°C)



## OUTLINE DIMENSIONS (Units in mm)



Note: All Dimensions are typical unless otherwise specified.