

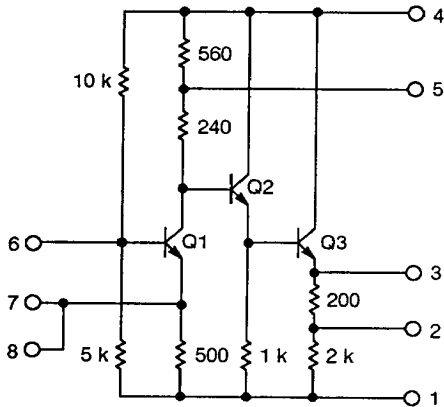
### FEATURES

- **LOW NOISE FIGURE:**  $\leq 3$  dB
- **HIGH GAIN:**  
Narrow Band:  $\geq 40$  dB  
Wide Band:  $\geq 18$  dB
- **FREQUENCY RESPONSE:** 1100 MHz TYP at 3 dB down
- **50  $\Omega$  INPUT AND OUTPUT IMPEDANCE**
- **SMALL SIZE**

### DESCRIPTION AND APPLICATIONS

The UPC1658 is a low noise, wide band, Silicon MMIC Amplifier that operates from 10–1000 MHz in a variety of configurations. It provides 40 dB of gain in narrow band configuration and 18 dB of gain in wide band operation. The UPG1658 is available in packages that easily adapt to a wide variety of designs.

### EQUIVALENT CIRCUIT



### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V <sub>cc</sub>	Supply Voltage	V	12
I <sub>Q3</sub>	Q <sub>3</sub> Collector Current	mA	40
P <sub>T</sub> *	Power Dissipation UPC1658A UPC1658C UPC1658G	mW mW mW	750 600 280
T <sub>STG</sub>	Storage Temperature UPC1658A UPC1658C UPC1658G	°C °C °C	-65 to +200 -55 to +150 -55 to +150
Top	Operating Temperature UPC1658A UPC1658C UPC1658G	°C °C °C	-55 to +125 -45 to +75 -45 to +75

\*Free Air

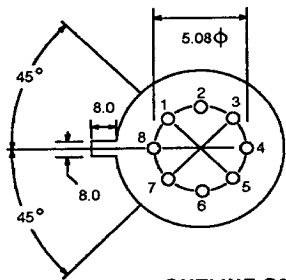
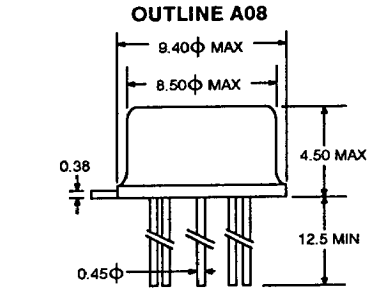
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### ELECTRICAL SPECIFICATIONS (T<sub>A</sub> = 25°C)

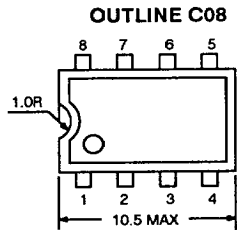
PART NUMBER PACKAGE OUTLINE			UPC1658A,C,G A08, C08, G08		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
I <sub>cc</sub>	Supply Current at V <sub>cc</sub> = 10 V	mA	9		18
G <sub>1</sub>	Gain at f = 10 MHz*, V <sub>cc</sub> = 10 V	dB	37	41	45
G <sub>2</sub>	Gain at f = 100 MHz*, V <sub>cc</sub> = 10 V	dB	28	31	34
G <sub>3</sub>	Gain at f = 500 MHz*, V <sub>cc</sub> = 10 V	dB	14	17	20
NF <sub>1</sub>	Noise Figure at f = 100 MHz*, V <sub>cc</sub> = 10 V	dB		1.5	2.5
NF <sub>2</sub>	Noise Figure at f = 500 MHz*, V <sub>cc</sub> = 10 V	dB		2	3

\*See Test Circuit 1, page 2.

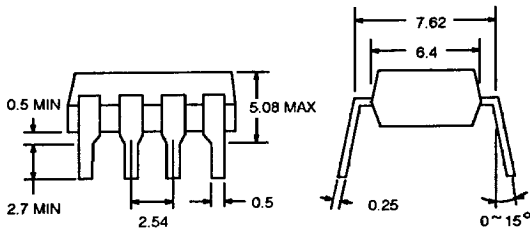
**OUTLINE DIMENSIONS** (Units in mm)



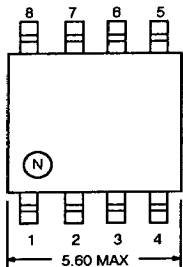
- 1. GND
- 2. Test Point
- 3. Output
- 4. Vcc
- 5. Test Circuit
- 6. Input
- 7. Bypass
- 8. Bypass



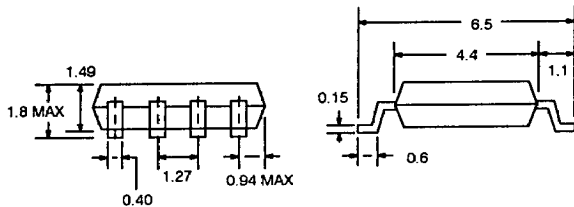
- 1. GND
- 2. Test Point
- 3. Output
- 4. Vcc
- 5. Test Point
- 6. Input
- 7. Bypass
- 8. Bypass



**OUTLINE G08**

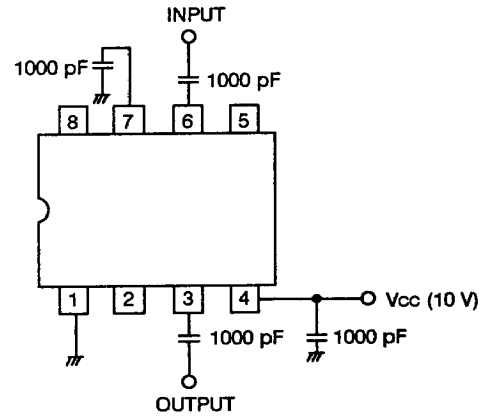


- PIN CONNECTIONS**
- 1. GND
  - 2. Test Point
  - 3. Output
  - 4. Vcc
  - 5. Test Point
  - 6. Input
  - 7. Bypass
  - 8. Bypass

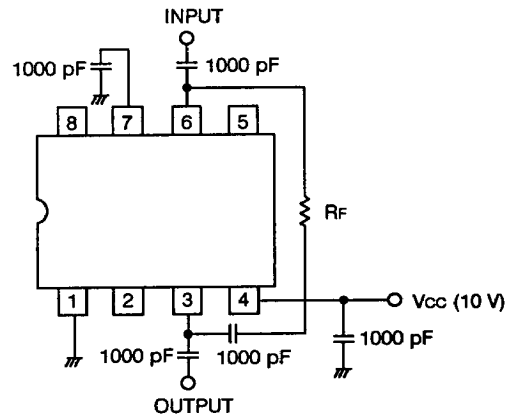


**TEST CIRCUITS** (See performance characteristics)

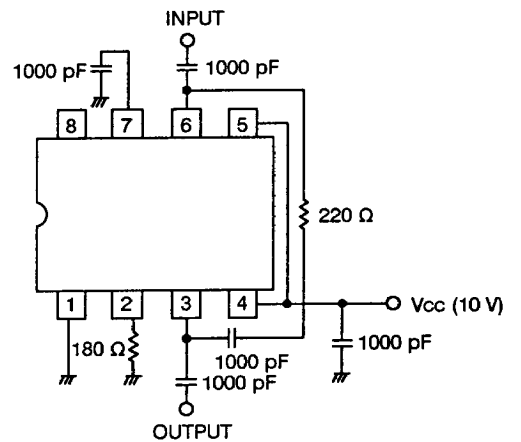
**TEST CIRCUIT 1**



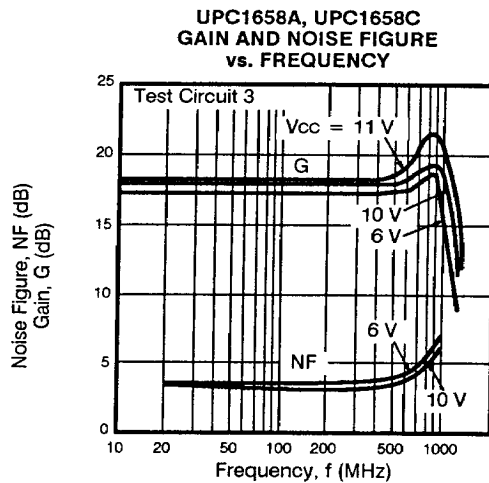
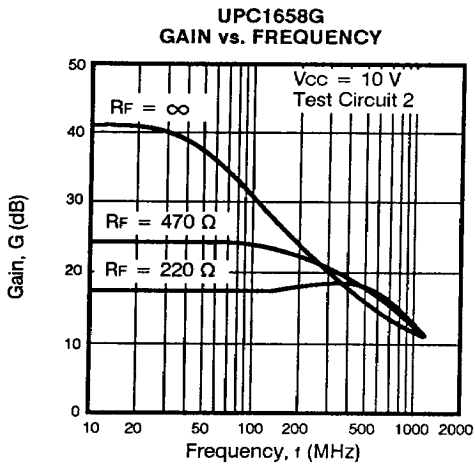
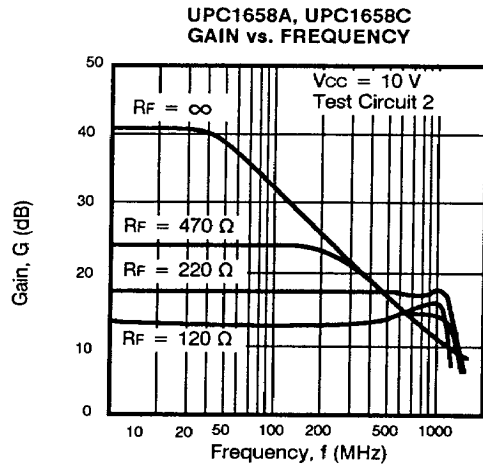
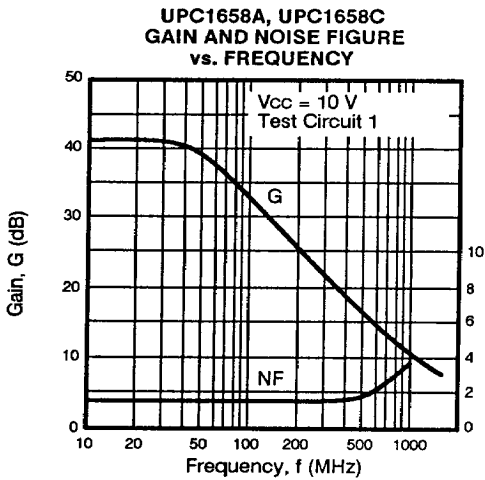
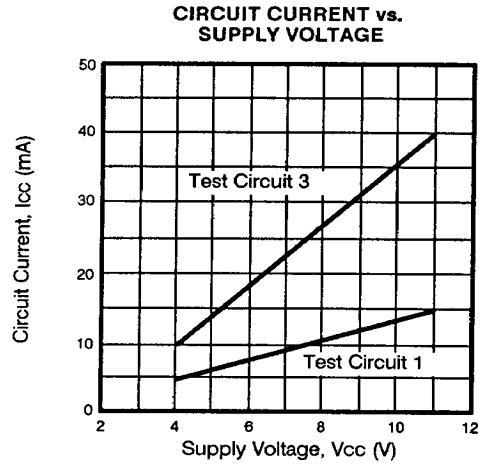
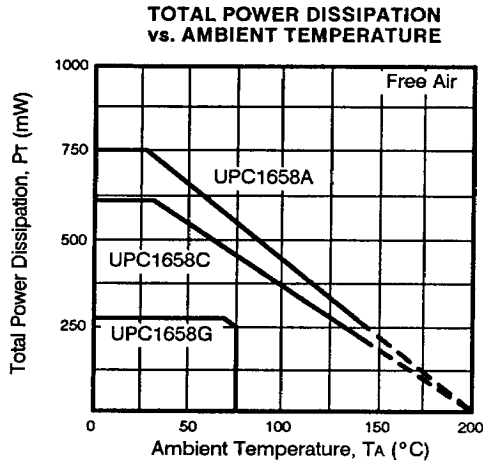
**TEST CIRCUIT 2**



**TEST CIRCUIT 3**



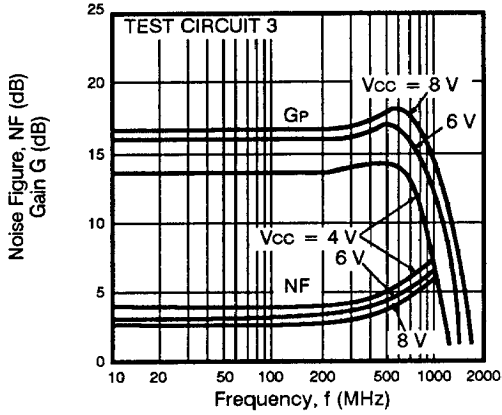
TYPICAL PERFORMANCE CHARACTERISTICS (TA = 25°C)



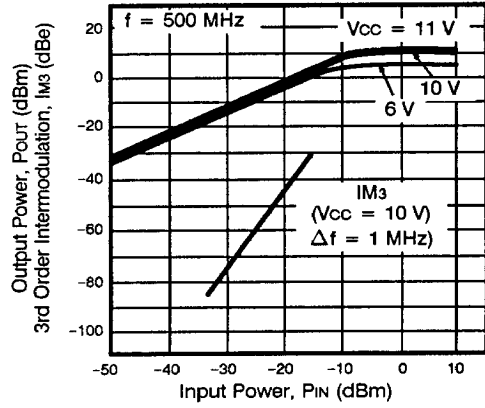
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TYPICAL PERFORMANCE CHARACTERISTICS (T<sub>A</sub> = 25°C)

UPC1658G  
GAIN NOISE FIGURE  
vs. FREQUENCY



UPC1658A, UPC1658C  
OUTPUT POWER, 3<sup>RD</sup> ORDER  
INTERMODULATION vs. INPUT POWER



UPC1658G  
OUTPUT POWER, 3<sup>RD</sup> ORDER  
INTERMODULATION vs. INPUT POWER

