



LOW NOISE WIDE-BAND SILICON MMIC AMPLIFIER

T-74-13-01

UPC1658A
UPC1658C
UPC1658G

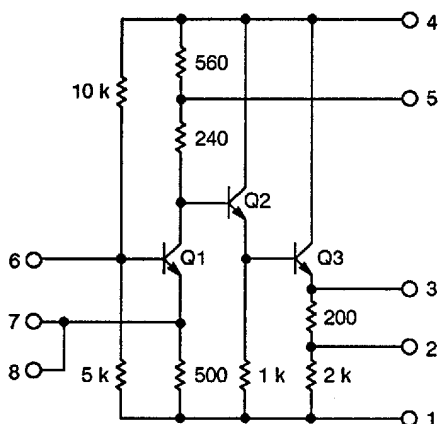
FEATURES

- **LOW NOISE FIGURE:** ≤ 3 dB
- **HIGH GAIN:**
Narrow Band: ≥ 40 dB
Wide Band: ≥ 18 dB
- **FREQUENCY RESPONSE:** 1100 MHz TYP at 3 dB down
- **50 Ω 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 UPC1658 is available in packages that easily adapt to a wide variety of designs.

EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
Vcc	Supply Voltage	V	12
Iq3	Q3 Collector Current	mA	40
Pr*	Power Dissipation UPC1658A UPC1658C UPC1658G	mW mW mW	750 600 280
TSTG	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

ELECTRICAL SPECIFICATIONS (TA = 25°C)

PART NUMBER PACKAGE OUTLINE			UPC1658A,C,G A08, C08, G08		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
Icc	Supply Current at Vcc = 10 V	mA	9		18
G1	Gain at f = 10 MHz*, Vcc = 10 V	dB	37	41	45
G2	Gain at f = 100 MHz*, Vcc = 10 V	dB	28	31	34
G3	Gain at f = 500 MHz*, Vcc = 10 V	dB	14	17	20
NF1	Noise Figure at f = 100 MHz*, Vcc = 10 V	dB		1.5	2.5
NF2	Noise Figure at f = 500 MHz*, Vcc = 10 V	dB		2	3

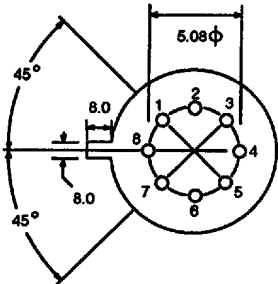
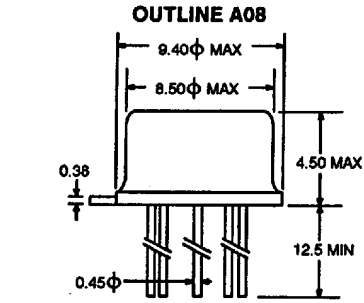
*See Test Circuit 1, page 2.

5

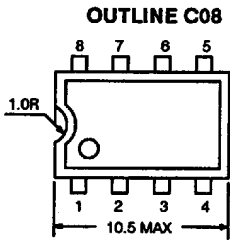
UPC1658A, UPC1658C, UPC1658G

OUTLINE DIMENSIONS (Units in mm)

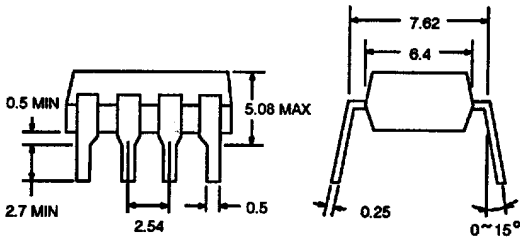
TEST CIRCUITS (See performance characteristics)



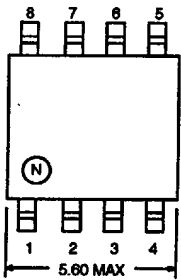
- 1. GND
- 2. Test Point
- 3. Output
- 4. Vcc
- 5. Test Circuit
- 6. Input
- 7. Bypass
- 8. Bypass



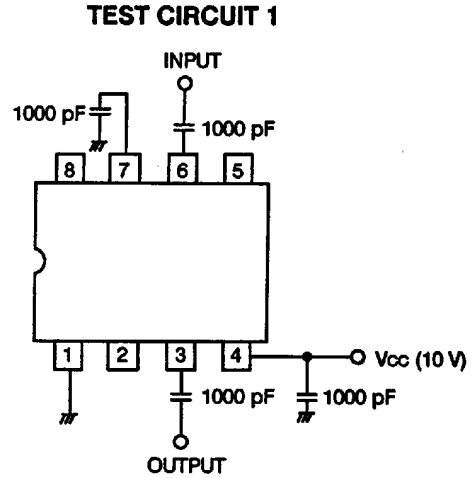
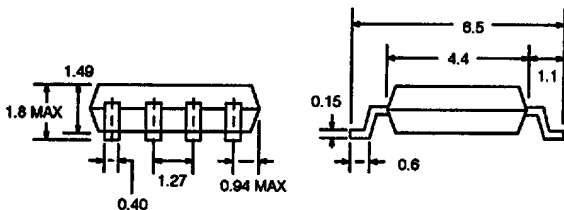
- 1. GND
- 2. Test Point
- 3. Output
- 4. Vcc
- 5. Test Point
- 6. Input
- 7. Bypass
- 8. Bypass



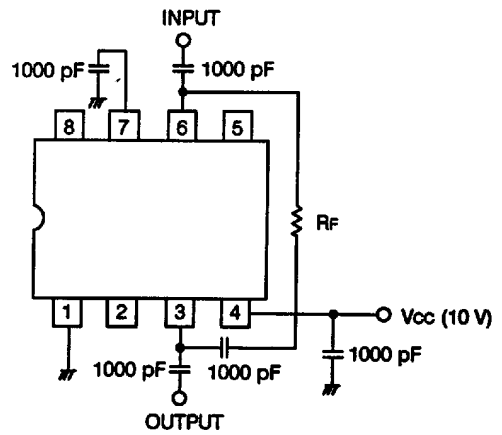
OUTLINE G08



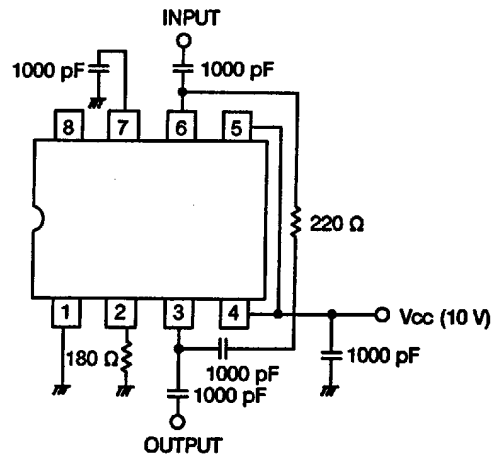
- PIN CONNECTIONS**
- 1. GND
 - 2. Test Point
 - 3. Output
 - 4. Vcc
 - 5. Test Point
 - 6. Input
 - 7. Bypass
 - 8. Bypass



TEST CIRCUIT 2

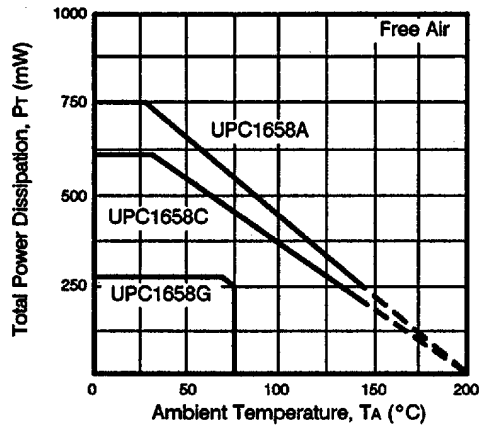


TEST CIRCUIT 3

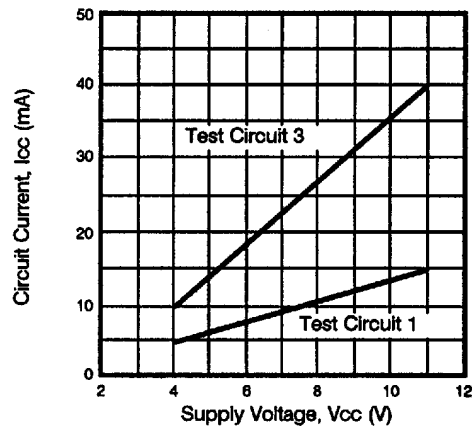


TYPICAL PERFORMANCE CHARACTERISTICS (TA = 25°C)

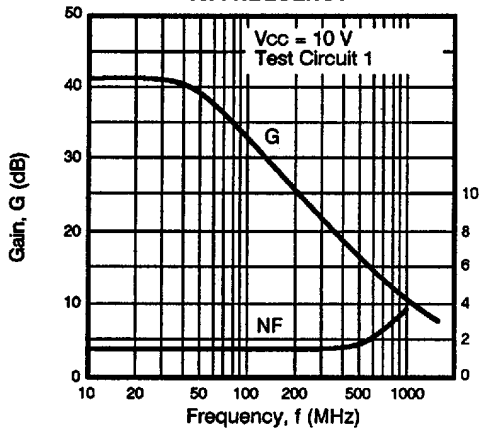
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



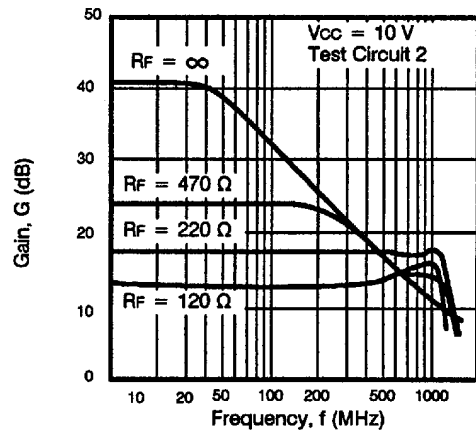
CIRCUIT CURRENT vs. SUPPLY VOLTAGE



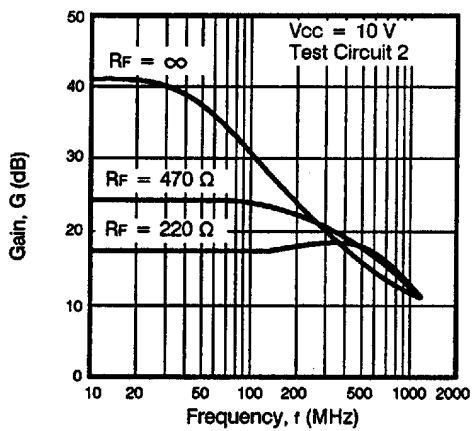
UPC1658A, UPC1658C GAIN AND NOISE FIGURE vs. FREQUENCY



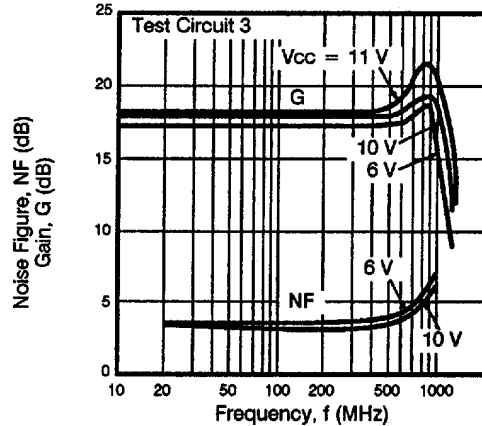
UPC1658A, UPC1658C GAIN vs. FREQUENCY



UPC1658G GAIN vs. FREQUENCY



UPC1658A, UPC1658C GAIN AND NOISE FIGURE vs. FREQUENCY



5

UPC1658A, UPC1658C, UPC1658G

TYPICAL PERFORMANCE CHARACTERISTICS (TA = 25°C)

