

NEC[®]

1.7 GHz MEDIUM POWER BROADBAND SILICON MMIC AMPLIFIER

UPC1677B
UPC1677C
UPC1677P

T-74-13-01

FEATURES

- **HIGH POWER OUTPUT:** +19.5 dBm
- **EXCELLENT FREQUENCY RESPONSE:**
1.7GHz TYP at 3 dB Down
- **HIGH POWER GAIN:** 24 dB TYP at 0.5 GHz
- **SINGLE SUPPLY VOLTAGE:** 5 V

DESCRIPTION AND APPLICATIONS

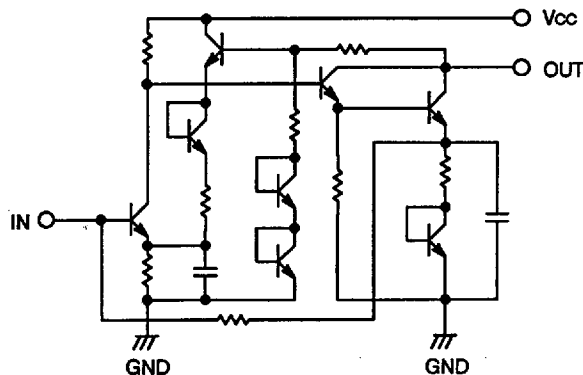
The UPC1677 is a silicon monolithic integrated circuit designed as a wide-band amplifier covering the HF to UHF bands. The device features high output power, 19.5 dBm TYP, high gain, 24 dB TYP and operates from a single 5 volt supply. The UPC1677 is available in two package styles: an 8 lead ceramic flat pack (UPC1677B), an 8 pin DIP (UPC1677C), and in chip form (UPC1677P).

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

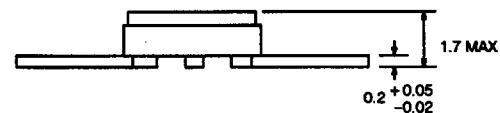
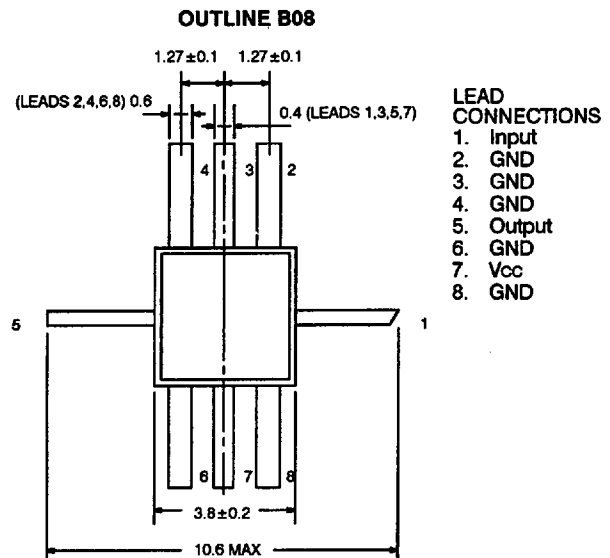
SYMBOLS	PARAMETERS	UNITS	RATINGS
V _{cc}	Supply Voltage	V	6
I _{cc}	Supply Current	mA	110
P _T	Total Power Dissipation UPC1677B UPC1677C	W mW	1.5 (T _C = +125°C) 750*
T _{OP}	Operating Temperature UPC1677B UPC1677C	°C °C	-55 to +125 -45 to +85
T _{STG}	Storage Temperature UPC1677B UPC1677C	°C °C	-65 to +200 -65 to +150
P _{IN}	Input Power	dBm	+10

*Mounted on 5 cm x 5 cm x 1.6 mm glass epoxy PWB.

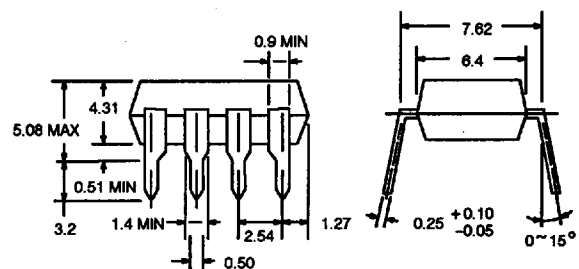
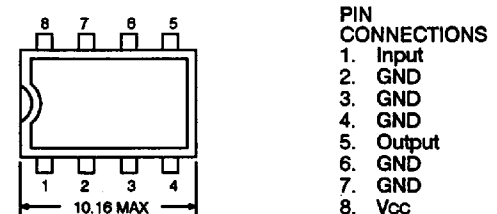
EQUIVALENT CIRCUIT



OUTLINE DIMENSIONS (Units in mm)



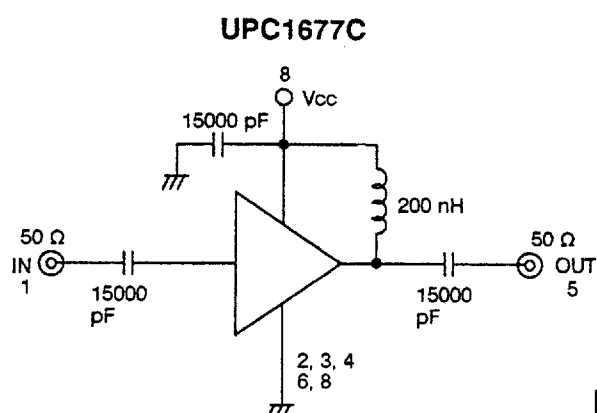
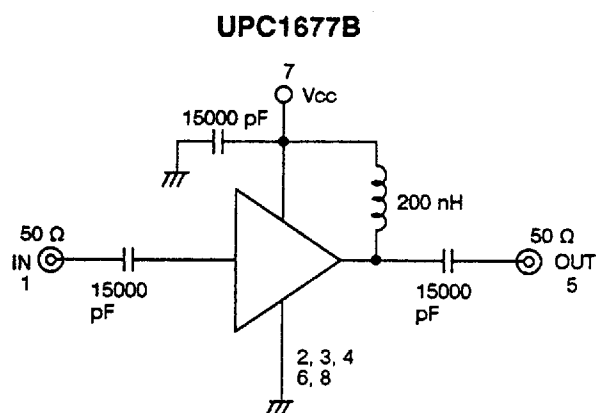
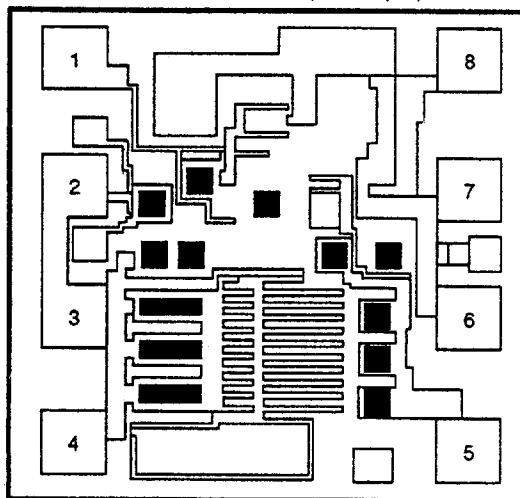
OUTLINE C08



ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{ V}$)

PART NUMBER PACKAGE OUTLINE			UPC1677B, UPC1677C B08, C08		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
I_{CC}	Circuit Current at No Input Signal	mA		75	
GP	Power Gain at $f = 500\text{ MHz}$	dB		24	
NF	Noise Figure at $f = 500\text{ MHz}$	dB		6	
BW	Bandwidth at 3 dB Down	GHz		1.7	
ISL	Isolation at $f = 500\text{ MHz}$	dB		34	
RL_{IN}	Input Return Loss at $f = 500\text{ MHz}$	dB		18	
RL_{OUT}	Output Return Loss at $f = 500\text{ MHz}$	dB		3	
RL_{IN}^*	Input Return Loss at $f = 500\text{ MHz}$	dB		13	
RL_{OUT}^*	Output Return Loss at $f = 500\text{ MHz}$	dB		4	
P_{OUT}	Power Output at $f = 500\text{ MHz}$	dBm		+19.5	

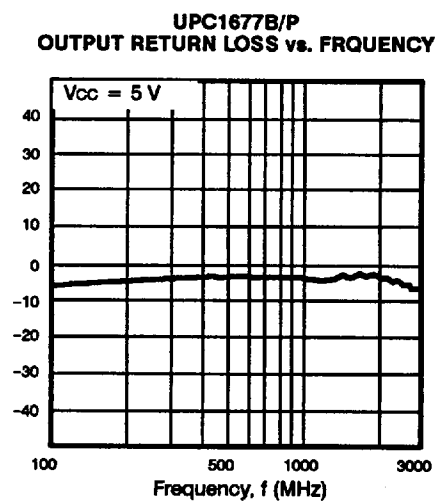
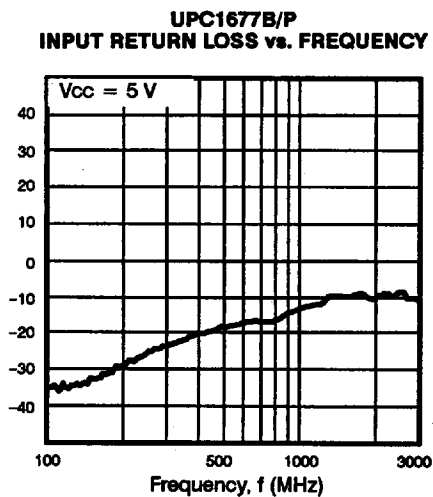
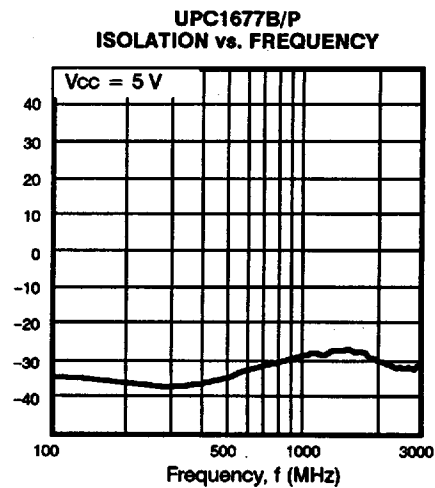
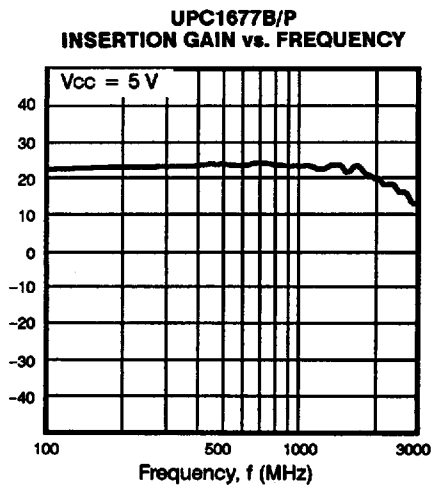
*For UPC1677C

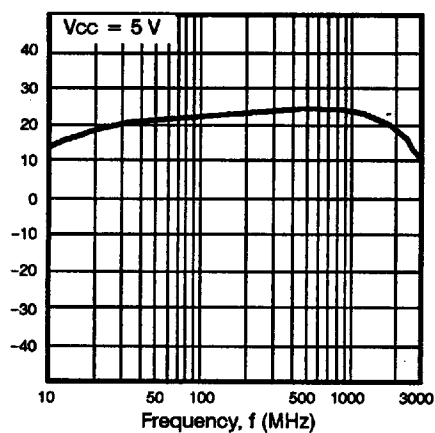
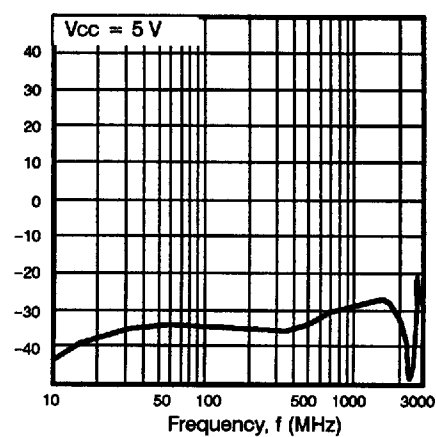
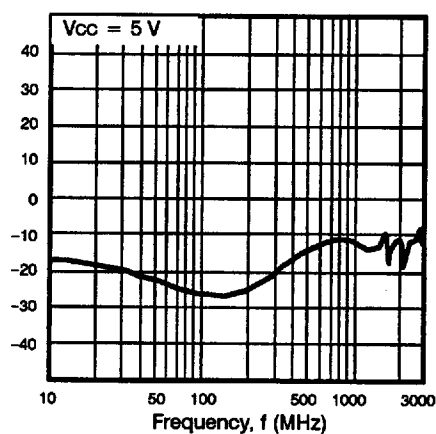
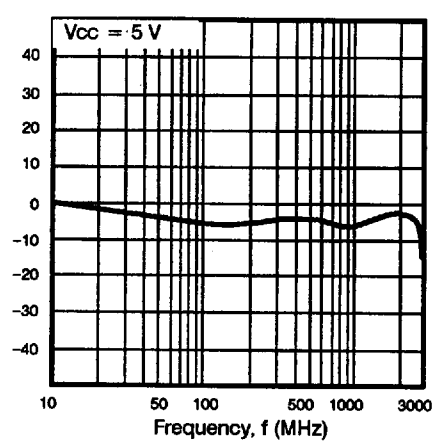
TEST CIRCUIT**CHIP DIMENSIONS** (Units in μm)

Die Size: 0.83 mm x 0.83 mm
Thickness: 160 μm
Ti/Pt/Au Metalization

BONDING INFORMATION

BONDING PAD NO.	BONDING PAD POSITION (μm)		PAD CONNECTION
	X AXIS	Y AXIS	
1	-300	300	INPUT
2	-300	100	GND
3	-300	-100	GND
4	-300	-300	GND
5	300	-300	OUTPUT
6	300	-100	GND
7	300	100	GND
8	300	300	Vcc

TYPICAL PERFORMANCE CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

TYPICAL PERFORMANCE CHARACTERISTICS ($T_A = 25^\circ\text{C}$)**UPC1677C**
INSERTION GAIN vs. FREQUENCY**UPC1677C**
ISOLATION vs. FREQUENCY**UPC1677C**
INPUT RETURN LOSS vs. FREQUENCY**UPC1677C**
OUTPUT RETURN LOSS vs. FREQUENCY

TYPICAL PERFORMANCE CHARACTERISTICS ($T_A = 25^\circ\text{C}$)