

FEATURES

- **WIDE-BAND PERFORMANCE**
(UPC1659A/B: 0.6 to 2.3 GHz)
(UPC1659G: 0.6 to 1.75 GHz)
- **HIGH ISOLATION:** Greater than 40 dB
- **HIGH GAIN:** 23 dB TYP at $f = 1.5$ GHz
- **50 Ω INPUT AND OUTPUT IMPEDANCE**
- **CASCADABLE FOR MULTI-STAGE AMPLIFIER APPLICATIONS**
- **SMALL SIZE**

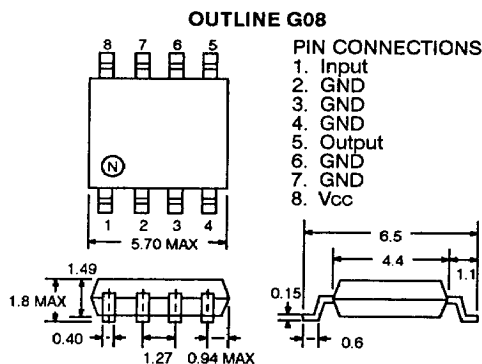
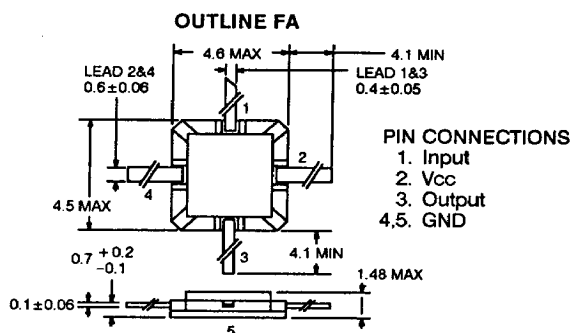
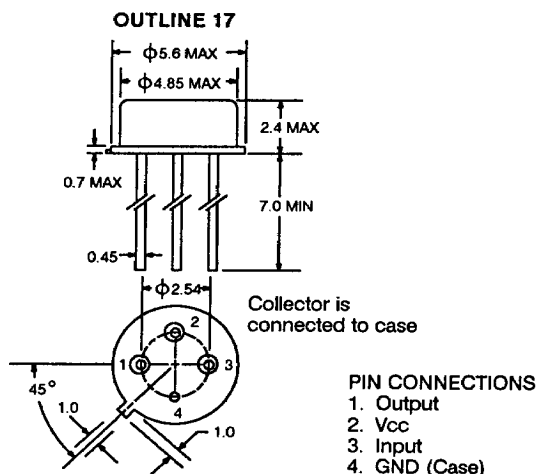
DESCRIPTION AND APPLICATIONS

The UPC1659A/B/G are 3-stage silicon monolithic microwave integrated amplifiers that operate between 600 MHz and 2.3 GHz. They provide typically 23 dB of gain. The chip design employs the direct nitride-passivation process to achieve high reliability and low cost. The UPC1659A/B/G are small hermetically sealed devices that are available in can (UPC1659A), flat package (UPC1659B) and 8-pin DIP (UPC1659G) packages to adapt to a wide variety of component designs. This amplifier is well suited as a narrow-band IF amplifier for TVRO, DBS and satellite transmitter and receiver applications. As a wide-band IF amplifier, it could be designed into military or commercial mobile, airborne or ship-based communications systems.

ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

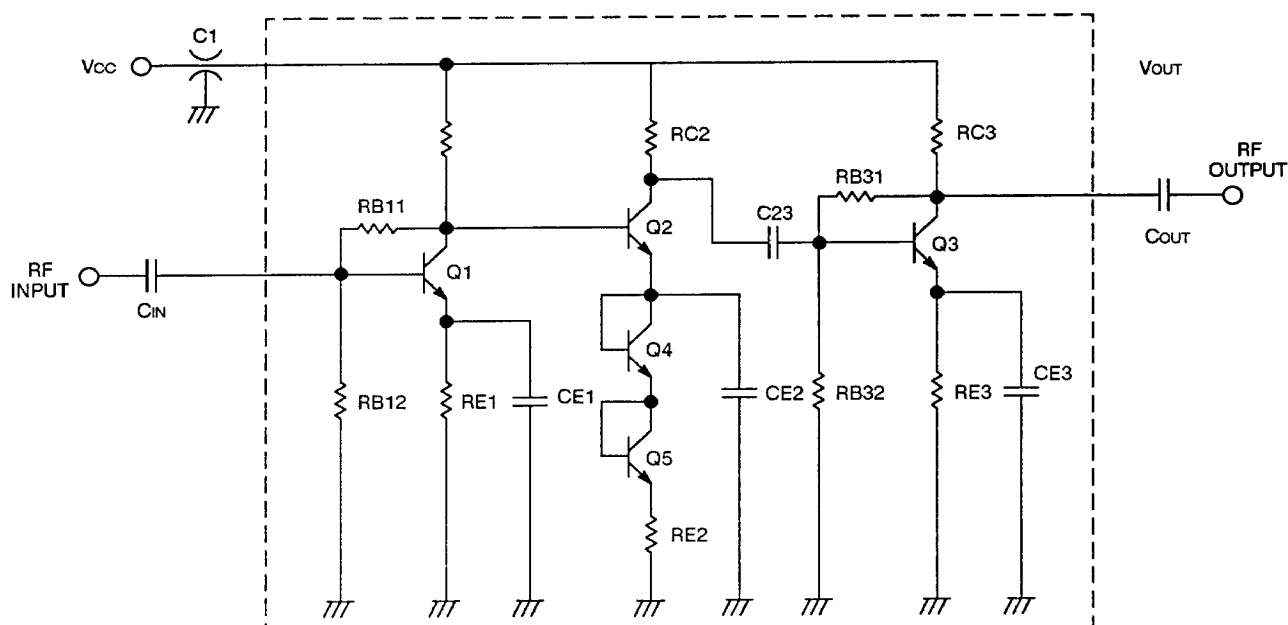
SYMBOLS	PARAMETERS	UNITS	RATINGS
Vcc	Supply Voltage	V	12
PT	Total Power Dissipation UPC1659A UPC1659B UPC1659G	mW mW mW	350 500 330
RTH	Thermal Resistance (J-C) UPC1659B	°C/W	61
TOP	Operating Temperature UPC1659A/B UPC1659G	°C °C	-55 to +125 -45 to +75
TSTG	Storage Temperature UPC1659A/B UPC1659G	°C °C	-65 to +200 -55 to +150

OUTLINE DIMENSIONS (Units in mm)

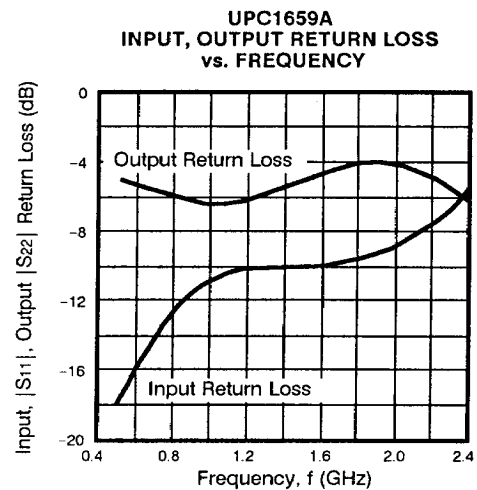
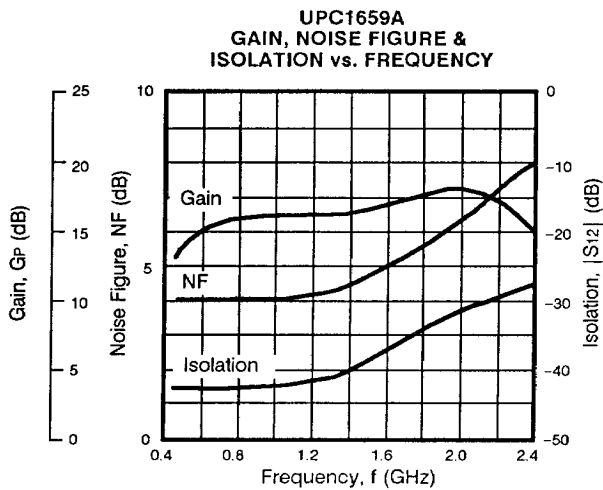
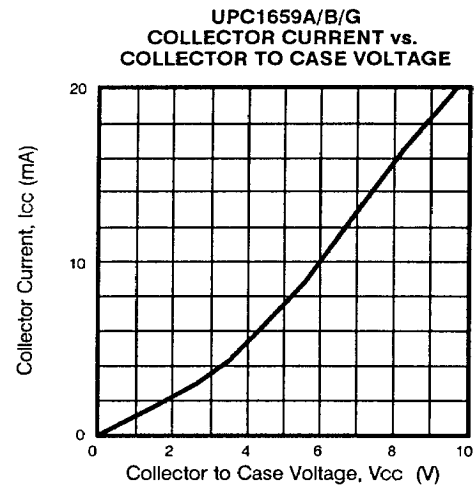
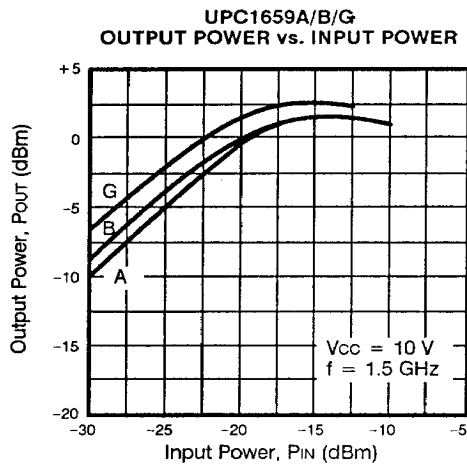


ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

PART NUMBER PACKAGE OUTLINE			UPC1659A 17			UPC1659B FA			UPC1659G* G08		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
I_{CC}	Supply Current at $V_{CC} = 10\text{ V}$	mA	15	21	27	15	21	27	15	21	27
GP	Gain at $V_{CC} = 10\text{ V}$, $f = 1.5\text{ GHz}$	dB	17	19.5	22	20.5	23	25.5	20	23	26
NF	Noise Figure at $V_{CC} = 10\text{ V}$, $f = 1.5\text{ GHz}$	dB		5	6.5		5	6.5		5	6.5
BW	Frequency Range at $V_{CC} = 10\text{ V}$, at -3 dB Points	GHz	0.6		2.3	0.6		2.3	0.7		1.8
$ S_{12} $	Isolation at $V_{CC} = 10\text{ V}$, $f = 1.5\text{ GHz}$	dB	34	39		43	48		38	43	
$ S_{11} $	Input Return Loss at $V_{CC} = 10\text{ V}$, $f = 1.5\text{ GHz}$	dB	7	10		8	11		9	12	
$ S_{22} $	Output Return Loss at $V_{CC} = 10\text{ V}$, $f = 1.5\text{ GHz}$	dB	3	5		5	7		5	7	
P_{1dB}	Output Power (P_1 dB) at $V_{CC} = 10\text{ V}$, $f = 1.5\text{ GHz}$	dBm	0	+3		0	+3		0	+3	

*UPC1659G was tested at $f = 1\text{ GHz}$ **EQUIVALENT CIRCUIT AND EXTERNAL COMPONENTS REQUIRED**

C_1 : 1000 pF feedthrough capacitor
 C_{IN} : Input DC blocking capacitor (100 to 500 pF chip)
 C_{OUT} : Output DC blocking capacitor (100 to 500 pF chip)
 V_{CC} : 10 V

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

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