

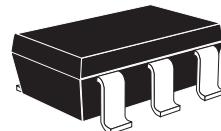
ZAMP003

800-2500MHz MMIC WIDEBAND AMPLIFIER

LNA, 15dB Gain, Very Low Current

DESCRIPTION

The ZAMP003 is an ultra low current low noise amplifier designed for L band and IF applications. Although the ZAMP003 has been designed primarily for DBS applications the ZAMP003 is capable of extending to frequencies of 2.5GHz so it has a good fit with various applications. An additional benefit of the ZAMP003 is it's rising gain characteristic, this has been designed to counteract the gain losses found at the higher frequencies. The ZAMP003 has been optimized for input and output impedance's of 50 ohms. The ZAMP003 complements the buffer amplifiers in the ZAMP range to give a low current high performance solution. Packaged in a small SC70-6 with the minimum number of external bias components required it is the ideal solution for space and current limited applications.

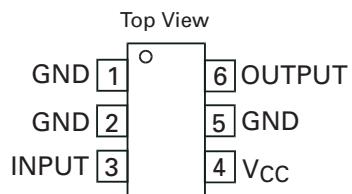


SC70-6

FEATURES

- L and IF frequency band
- Low current consumption 6.8mA typical
- Gain 14.8dB typical
- Rising gain
- IP3 5.8dBm @ 1GHz
- 4.5 to 5.5V Supply Voltage
- Unconditionally stable
- SC70-6 SMD package

CONNECTION DIAGRAM



APPLICATIONS

- Satellite LNB receivers
- Set-top boxes
- TV tuners
- SMR (Special Mobile Radio)
- RLAN/WLAN
- General purpose

ORDERING INFORMATION

DEVICE	REEL SIZE (inches)	QUANTITY PER REEL	DEVICE MARKING
ZAMP003H6TA	7	3000 units	ZP03
ZAMP003H6TC	13"	10000 units	ZP03

ZAMP003

ABSOLUTE MAXIMUM RATINGS

Supply Voltage	7V
Supply Current	30mA
Operating Temperature	-40 to 85°C
Storage Temperature	-50 to 125°C

ELECTRICAL CHARACTERISTICS

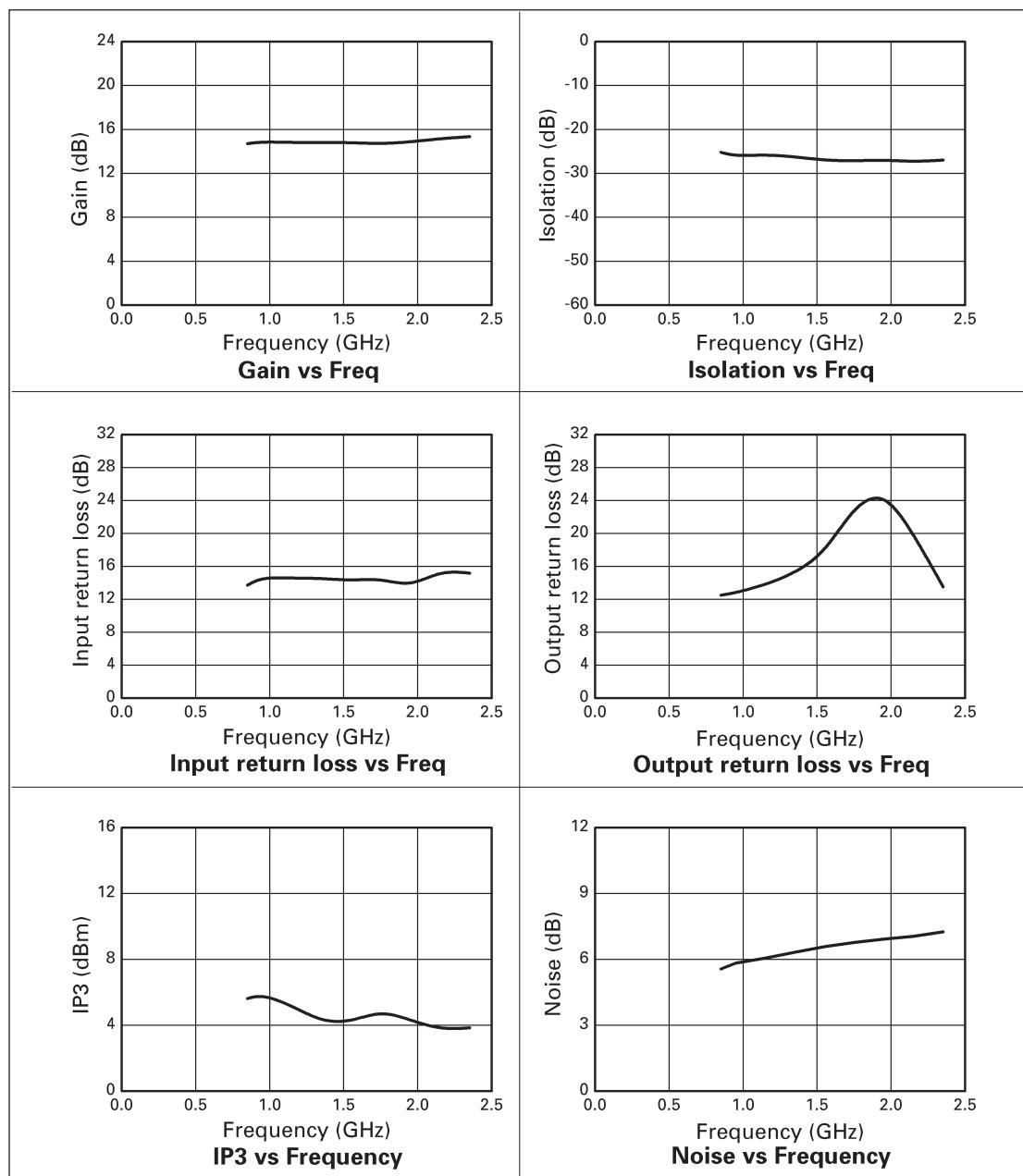
Test Conditions (unless otherwise stated): $V_{CC} = 5V$, $T_{amb} = 25^\circ C$, $Z_o = 50\Omega$.

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNITS
F_O	Operating Frequency		800		2500	MHz
V_{CC}	Supply Voltage		4.5	5	5.5	V
I_{CC}	Supply Current			6.8	8	mA
G_p	Power Gain	$F = 950$	14	14.8		dB
		$F = 1550$ MHz		14.8		dB
		$F = 2150$ MHz		15.1	15.8	dB
NF	Noise Figure	$F = 950$		5.5		dB
		$F = 1550$ MHz		6.5		dB
		$F = 2150$ MHz		7.5		dB
$IP3$	3rd Order Intercept Point	$F = 950$ MHz	4.5	5.8		dBm
		$F = 1550$ MHz		4.5		dBm
		$F = 2150$ MHz		4		dBm
P_{1dB}	1dB Gain Compression	$F = 950$ to 2150 MHz	-7.5	-6.5		dBm
RL_{IN}	Input Return Loss	$F = 950$		14		dB
		$F = 2150$ MHz		14		dB
RL_{OUT}	Output Return Loss	$F = 950$		13		dB
		$F = 2150$ MHz		21		dB
R_{ISOL}	Reverse Isolation	$F = 950$ MHz		26		dB
		$F = 2150$ MHz		27		dB
K	Stability factor	$F = 950$ MHz		1.8		
		$F = 2150$ MHz		2.1		

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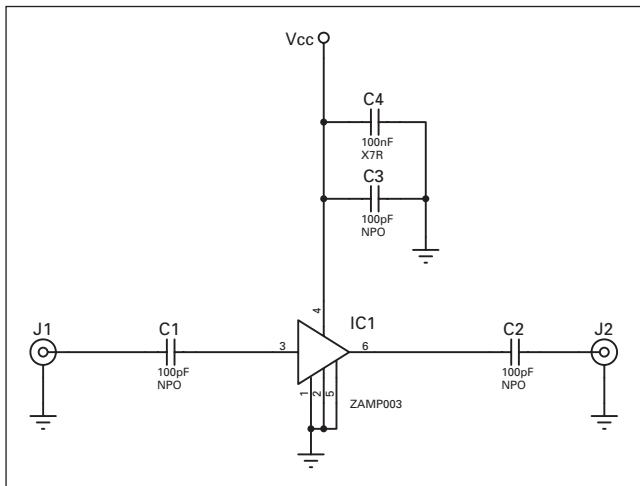
TYPICAL CHARACTERISTICS

Test Conditions (unless otherwise stated): V_{CC} = 5V, T_{amb} = 25°C, Z_o = 50Ω.



ZAMP003

TEST CIRCUIT

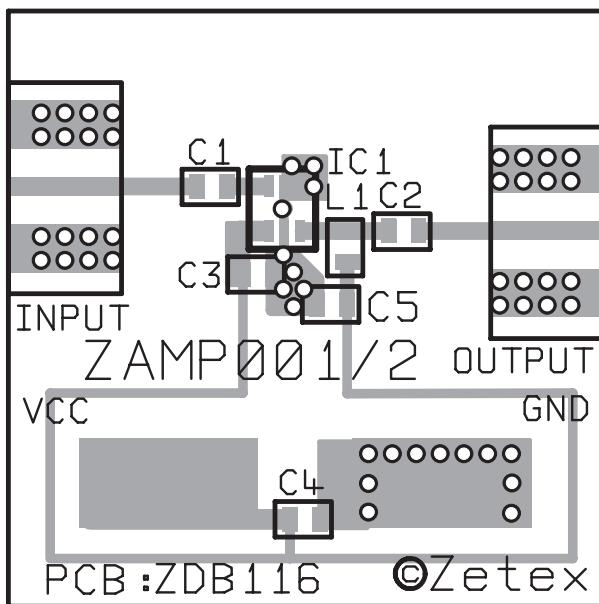


TEST CIRCUIT COMPONENTS LIST

Circuit Ref.	Description	Value	Type
C1,C2,C3	Chip ceramic capacitor	100 pF	Murata GRH708 series, size 0805
C4	Chip ceramic capacitor	100 nF	X7R, size 0805
IC1	ZAMP003		Wideband Amplifier, SC70-6

ZAMP003

TEST CIRCUIT LAYOUT



Note: For ZAMP003, L1 and C5 are not fitted.

APPLICATION NOTES

The ZAMP003 is a medium power wideband amplifier which is designed for low power applications. The ZAMP003 provides both a 50 Ohm input and output impedance and thus requires no additional matching components. The input and output signal connections each require a DC blocking capacitor (C1 and C2). A suitable value for these capacitors is around 100pF for the 950MHz to 2150MHz frequency range. For other frequency ranges the value of the capacitor should be such that its reactance at the lowest operating frequency is small when compared to 50 ohms. Supply de-coupling is also recommended and should take the form of a suitable 100pF capacitor, C3, for the 950MHz to 2150MHz frequency range. The 100pF capacitor should be mounted as close to the Vcc pin of the amplifier as is physically possible. An additional low frequency de-coupling capacitor, C4, with a value around 100nF (for the 950MHz to 2150MHz range) is also advised.

An example layout for a test board for the series can be seen above. This was designed for an FR4 board 1x1 inch, 0.016 inch thick with a copper thickness of 35 microns. Edge mounted SMA connectors were used for the RF signals. The inductor is not required for the ZAMP003.

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Notes

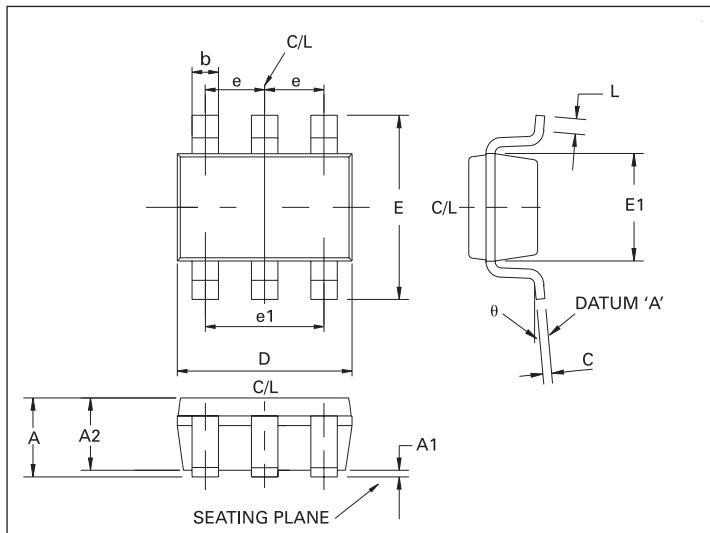
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Notes

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PACKAGE DIMENSIONS SC706



PACKAGE DIMENSIONS

DIM	MILLIMETRES		DIM	MILLIMETRES	
	MIN	MAX		MIN	MAX
A	—	1.00	E	2.10	BSC
A1	—	0.10	E1	1.25	1.35
A2	0.70	0.90	e	0.65	BSC
b	0.15	0.30	e1	1.30	BSC
C	0.08	0.25	L	0.26	0.46
D	2.00	BSC	θ	0°	8°

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