STB7102, STB7103, STB7104

0.1/2.5 GHz Si MMIC BUFFER AMPLIFIERS

PRELIMINARY DATA

FEATURES

STB710X FAMILY

- OPERATING FREQUENCY 100-2500MHz
- EXCELLENT ISOLATION
- LOW CURRENT CONSUMPTION
- ULTRA MINIATURE SOT323-6L PACKAGE (1.15 x 1.8 x 0.8 mm)

STB7102

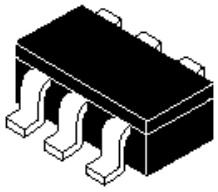
- HIGH ISOLATION (45 dB @ 950 MHz)

STB7103

- HIGH LINEARITY (P1 dB OUTPUT = +1.5 dBm)

STB7104

- LOW CURRENT CONSUMPTION (2.8 mA)



SOT323-6L (SC70)

ORDERING INFORMATION

P/N	ORDER CODE	MARKING
STB7102	STB7102TR	102
STB7103	TBD	103
STB7104	TBD	104

DESCRIPTION

The STB7102, STB7103 and STB7104 designed for Mobile Phone applications (0.1/2.5GHz), are an high isolation Si MMIC Buffer Amplifiers. Manufactured in the third generation of ST proprietary bipolar process, they offers an excellent isolation and a good linearity using a low current consumption. These low current amplifiers operate on 3.0 V. The STB710x family is housed in an ultra miniature package SOT323-6L surface mount package. SOT323-6L dimensions are 1.15mmx1.8mm with 0.8 mm thickness.

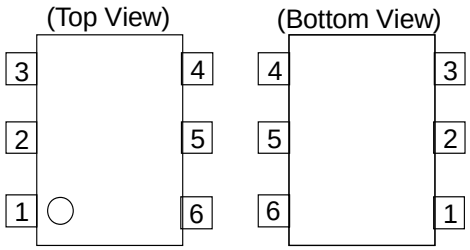
APPLICATION

UHF BUFFER AMPLIFIER for Mobile Phone Application (0.1/2.5GHz)

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Conditions	Value	Unit
V_{cc}	Supply voltage		3.3	V
T_{stg}	Storage temperature		-40 to +100	^oC
T_a	Operating ambient temperature		-30 to +85	^oC

PIN CONNECTION

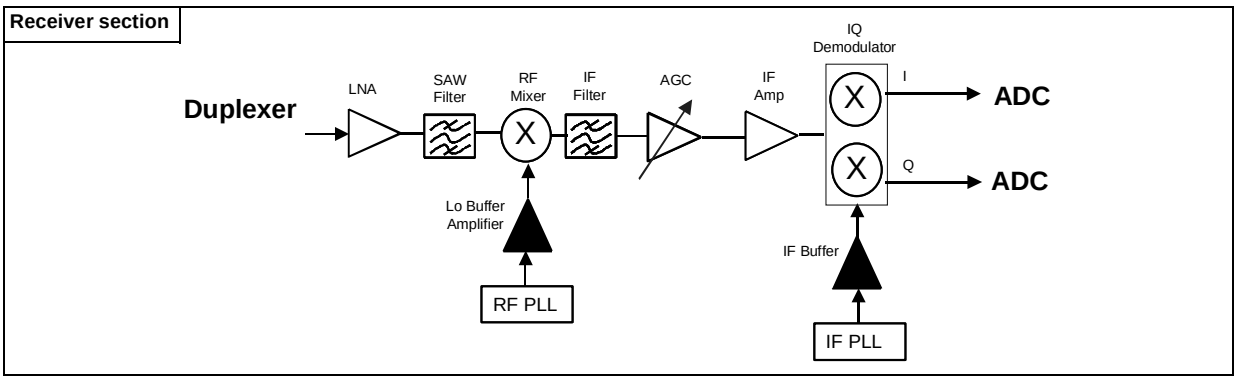


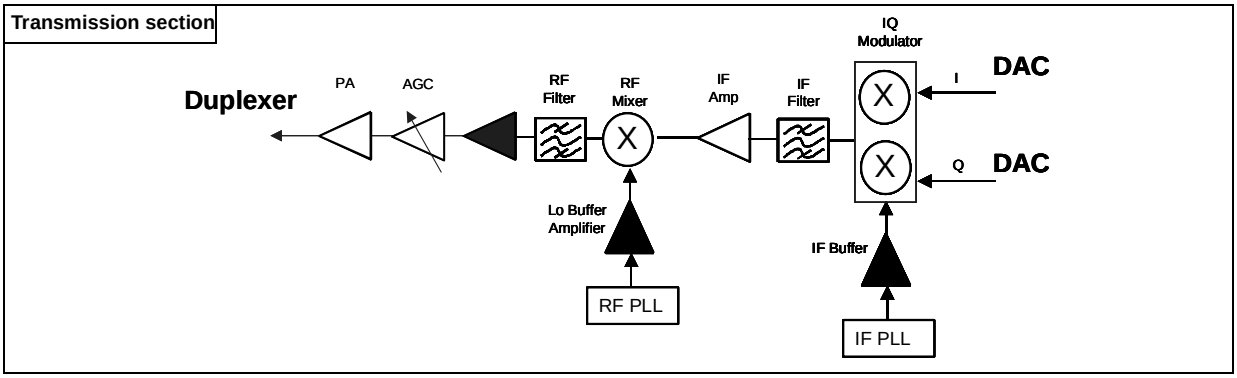
Pin No.	Pin Name
1	INPUT
2	GND
3	GND
4	OUTPUT
5	GND
6	VCC

PRODUCT LINE-UP

Part Number	Icc (mA)	950 MHz output port matching frequency		
		Gp at 1dB (dB)	**ISL** (dB)	**P1dBout** (dBm)
STB7102	4.3	15.5	45	0
STB7103	4.1	17.5	45	1.5
STB7104	2.8	17	45	-0.25

Example of a digital cellular phone (Receiver and Transmission section)





These ICs can be added to your system around ▲ parts, when you need more isolation or gain.
The application showed above is only an example therefore it can depend on your kit evaluation.

ELECTRICAL CHARACTERISTICS

(T_a = +25 °C, V_{cc} = 3V, Z_S = Z_L = 50Ω, unless otherwise specified)

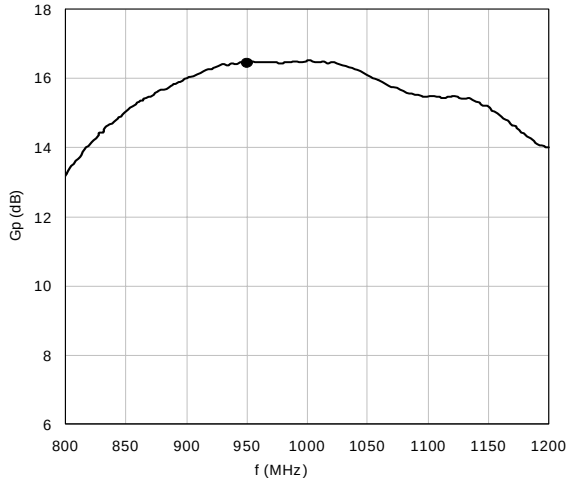
Symbol	Parameters	Test Conditions	STB7102 (1)			STB7103 (2)			STB7104 (2)			Unit
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
I_{cc}	Circuit Current	f = 950 MHz	3.3	4.3	5.3	3.3	4.1	4.9	2.2	2.8	3.4	mA
P1dB	Output Power at 1dB Compression Point	f = 950 MHz		0			1.5			-0.25		dBm
G_P	Gain at 1dB Compression Point	f = 950 MHz		15.5			17.5			17		dB
NF	Noise Figure	f = 950 MHz		3			2.85			3.3		dB
ISL	Isolation	f = 950 MHz		45			45			45		dB
RL_{in}	Input Return Loss	f = 950 MHz		8			10			7		dB
RL_{out}	Output Return Loss	f = 950 MHz		20			7			7		dB

(1) STB7102 data are measured in TEST CIRCUIT showed in page 5

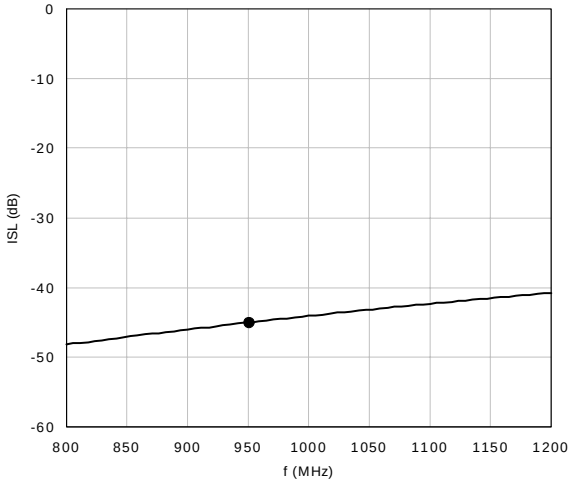
(2) STB7103 and STB7104 data are measured in TEST CIRCUIT showed in page 8

TYPICAL PERFORMANCE *(**STB7102**)*

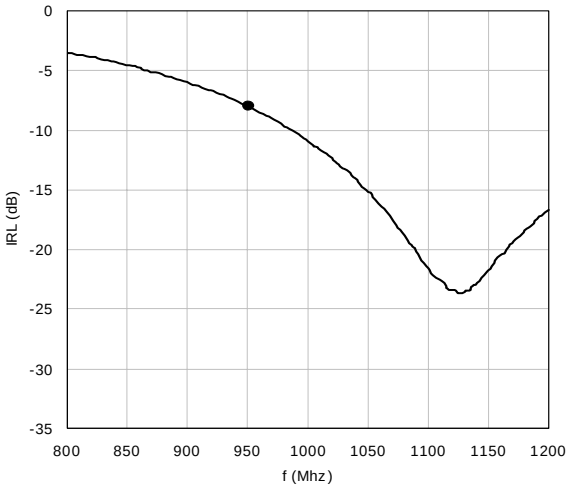
Power Gain vs. Frequency



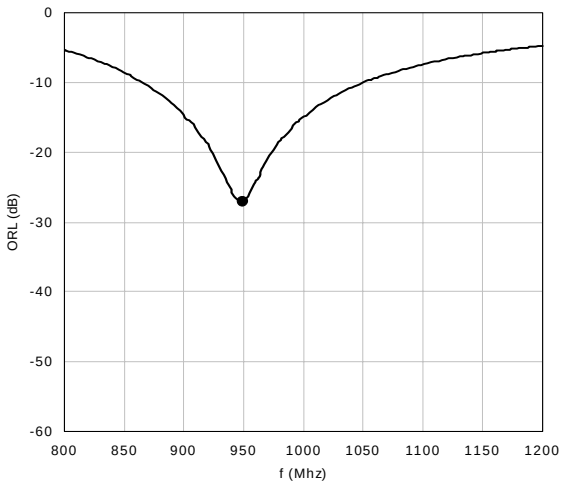
Reverse Isolation vs. Frequency



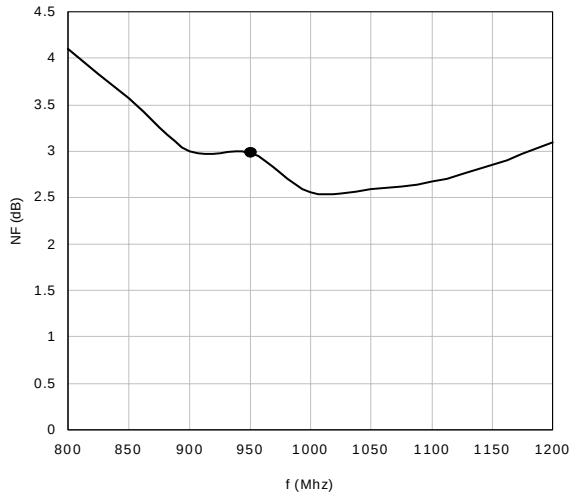
Input Return Loss vs. Frequency



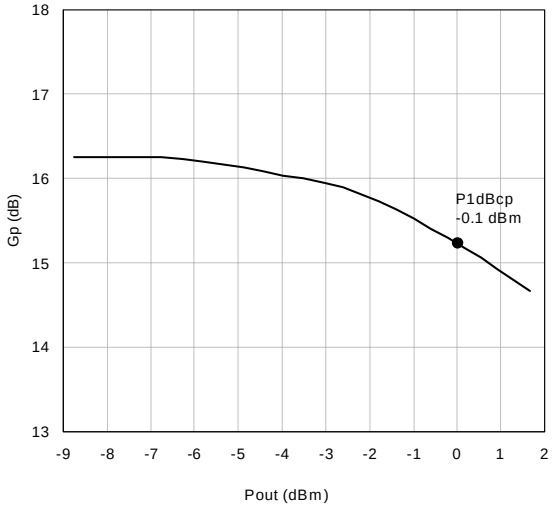
Output Return Loss vs. Frequency



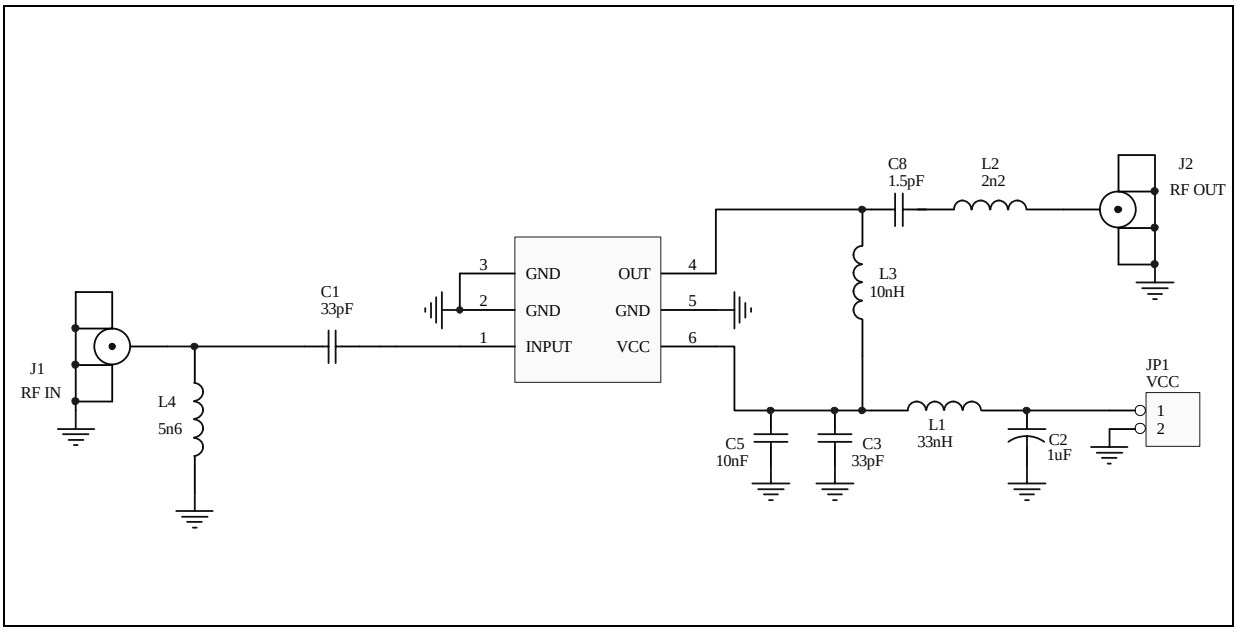
Noise Figure vs. Frequency



Output Power @ 1dB compression point

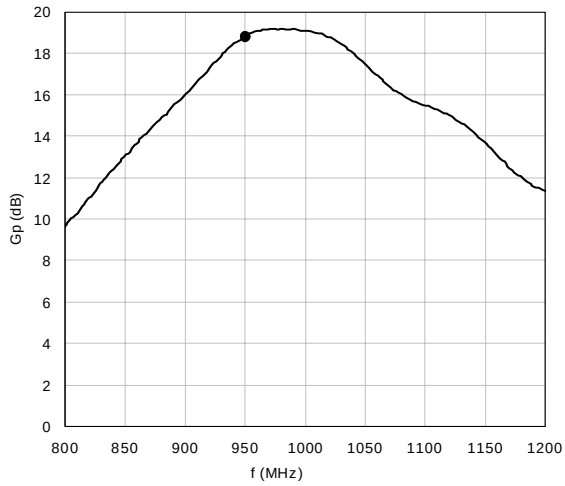


STB7102 TEST CIRCUIT

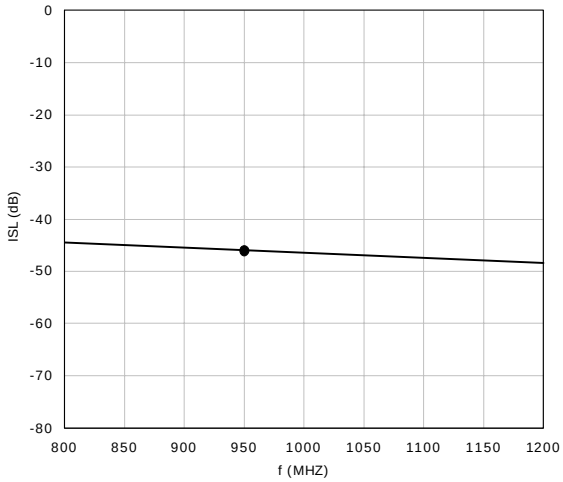


TYPICAL PERFORMANCE *(**STB7103**)*

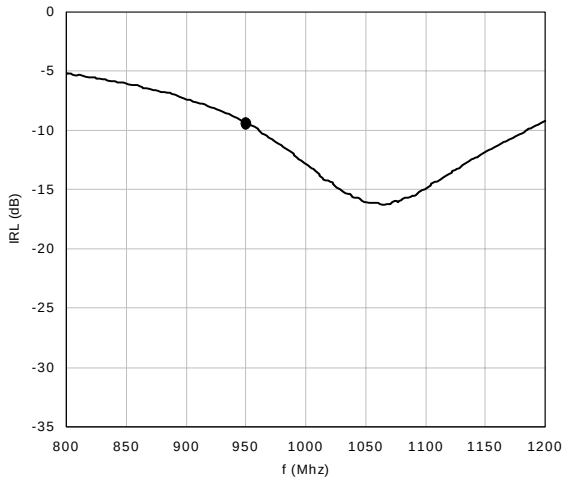
Power Gain vs. Frequency



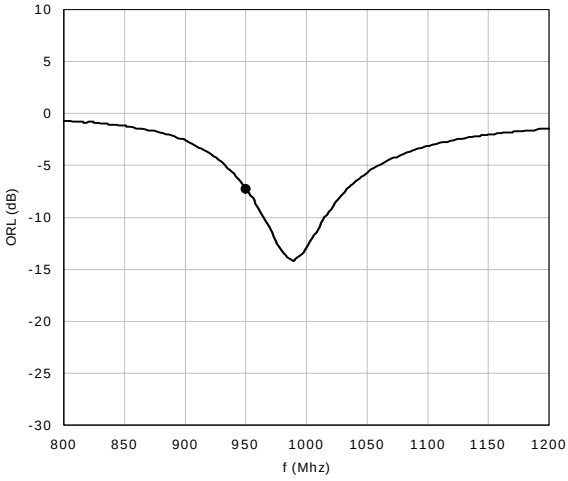
Reverse Isolation vs. Frequency



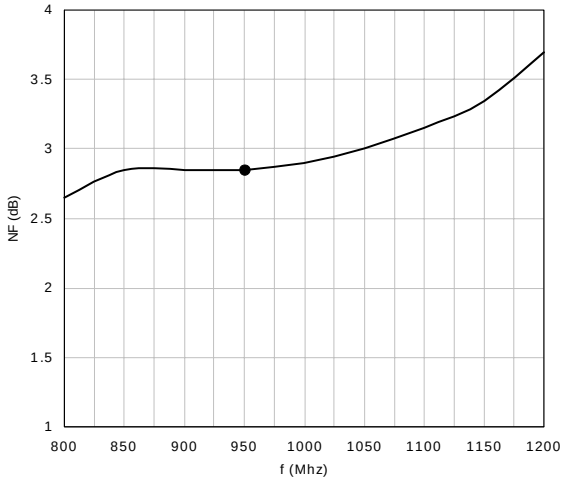
Input Return Loss vs. Frequency



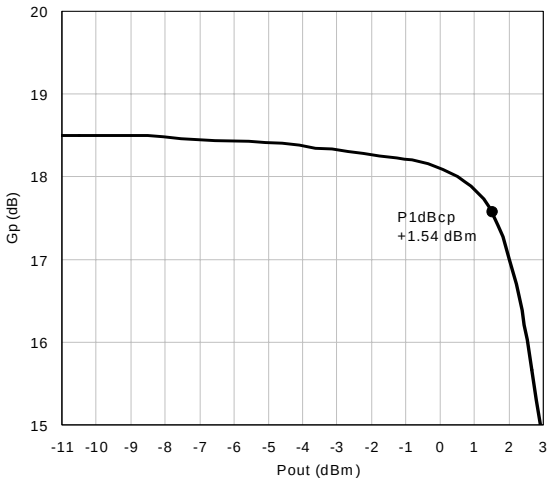
Output Return Loss vs. Frequency



Noise Figure vs. Frequency

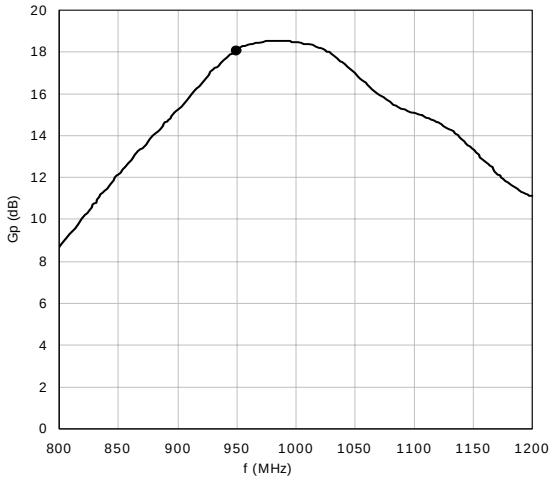


Output Power @ 1dB compression point

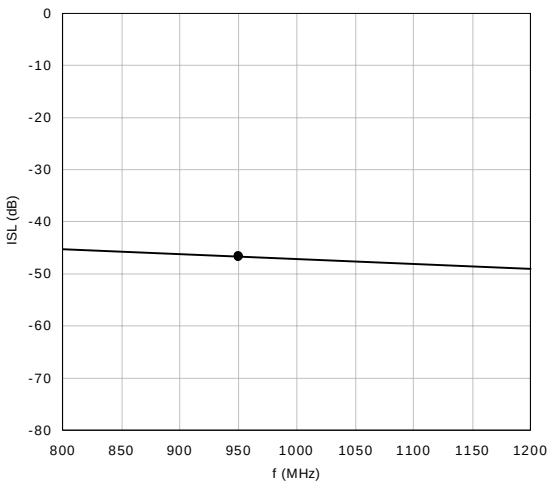


TYPICAL PERFORMANCE *(**STB7104**)*

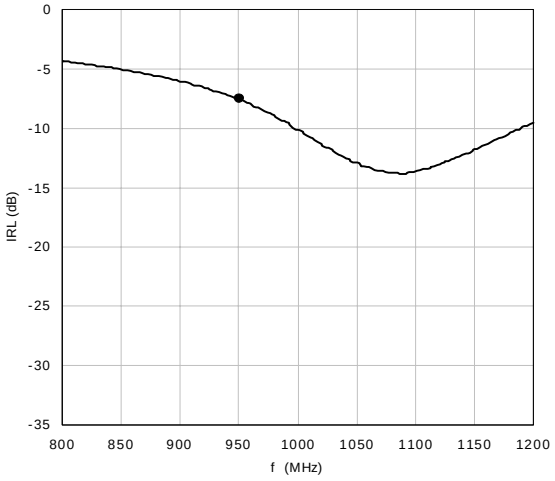
Power Gain vs. Frequency



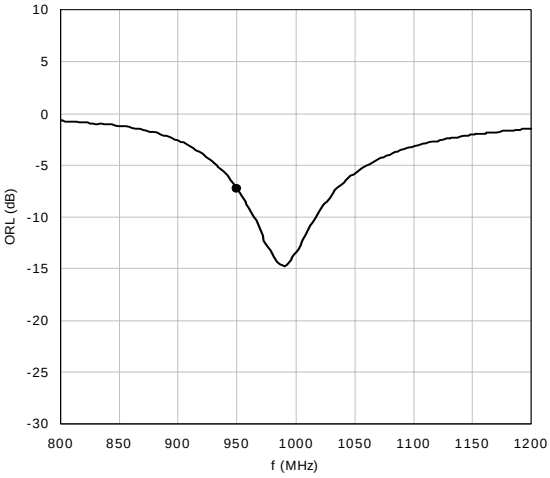
Reverse Isolation vs. Frequency



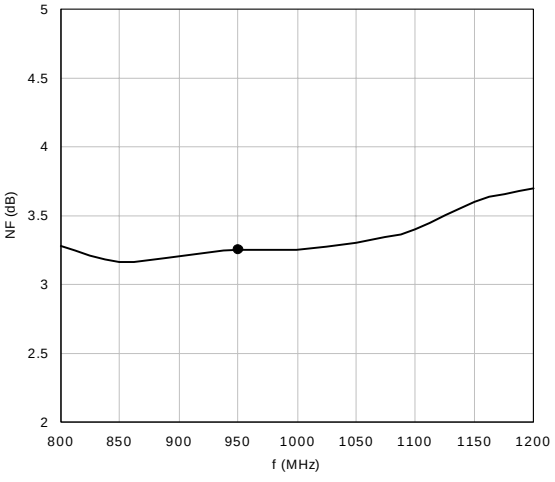
Input Return Loss vs. Frequency



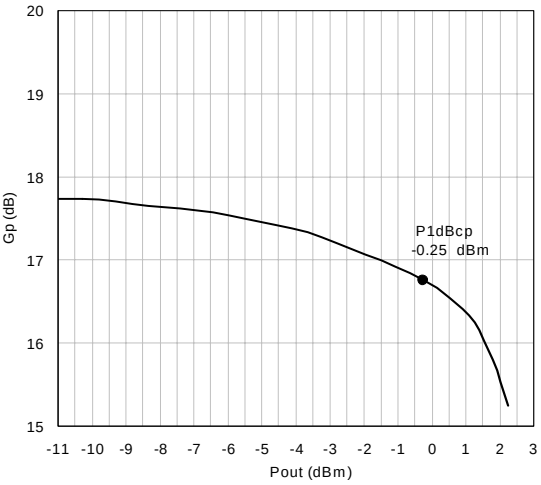
Output Return Loss vs. Frequency



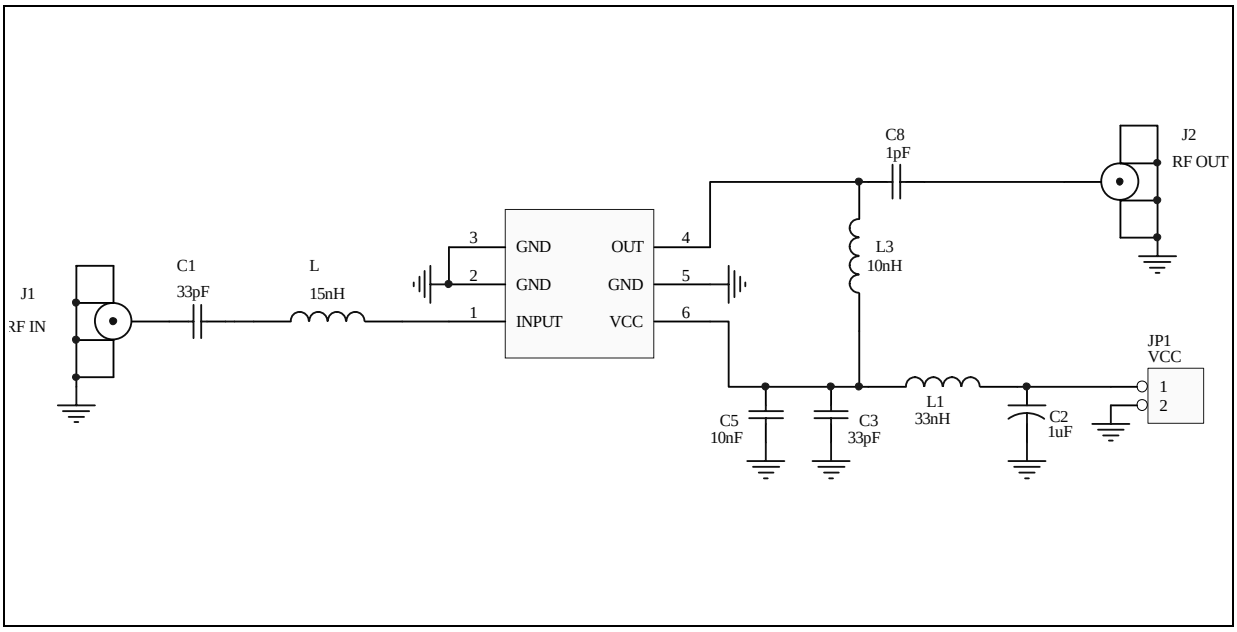
Noise Figure vs. Frequency



Output Power @ 1dB compression point

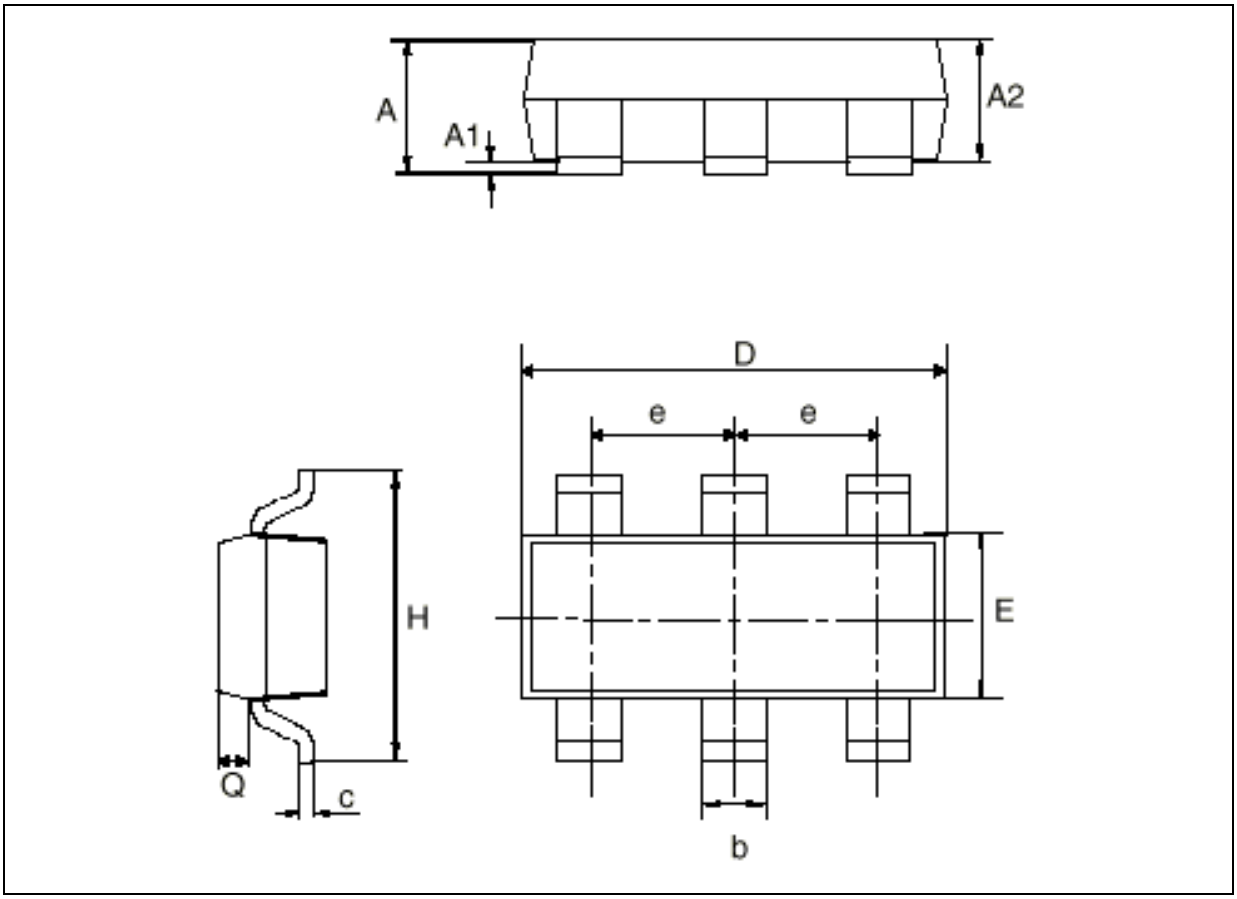


STB7103 / STB7104 TEST CIRCUIT



SOT323-6L MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A	0.8		1.1	0.031		0.043
A1	0		0.1	0		0.004
A2	0.8		1	0.0031		0.039
b	0.15		0.3	0.006		0.012
c	0.1		0.18	0.004		0.007
D	1.8		2.2	0.071		0.088
E	1.15		1.35	0.045		0.59
e		0.65			0.025	
H	1.8		2.4	0.071		0.094
Q	0.1		0.4	0.004		0.016



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