



# STB7101

## 0.9/1.9GHz BROAD BAND PRE-POWER AMPLIFIER

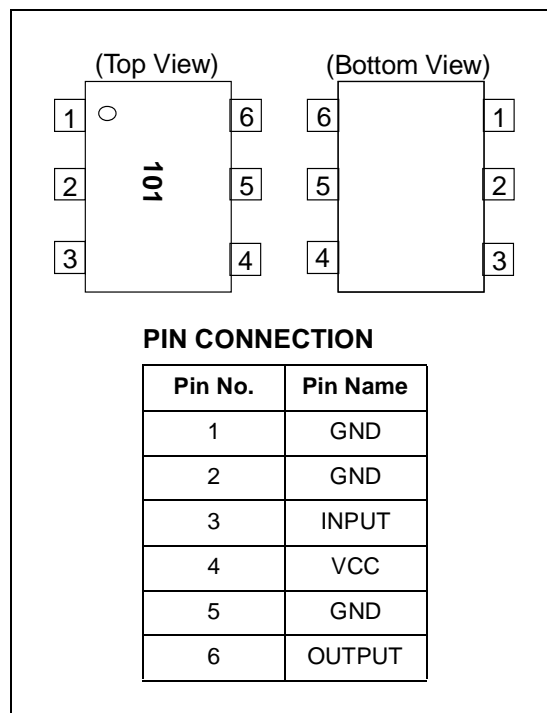
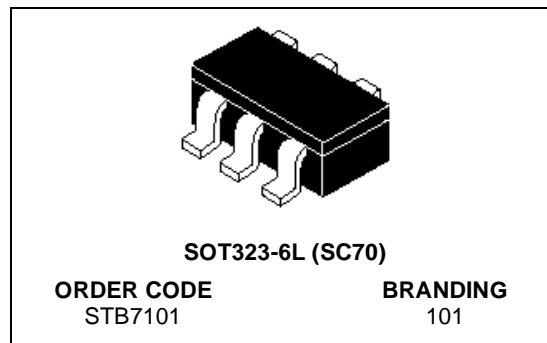
- OPERATING FREQUENCY 900-1900MHz
- OUTPUT POWER 9.8dBm typ. @ 900MHz  
7.5dBm typ. @ 1900MHz
- POWER GAIN  $G_P = 20.3\text{dB}$  typ. @ 900MHz  
 $G_P = 20.5\text{dB}$  typ. @ 1900MHz

### APPLICATIONS

PA driver for cellular applications

### DESCRIPTION

The STB7101, designed for cellular applications (0.9/1.9GHz), uses a 20 GHz  $F_T$  silicon bipolar process. This IC is a wide range amplifier operating from 900MHz to 1900MHz, in the overall frequencies range the gain flatness is less than 1 dB. The STB7101 is housed in a very small SMD package SOT323-6L.



### ABSOLUTE MAXIMUM RATINGS

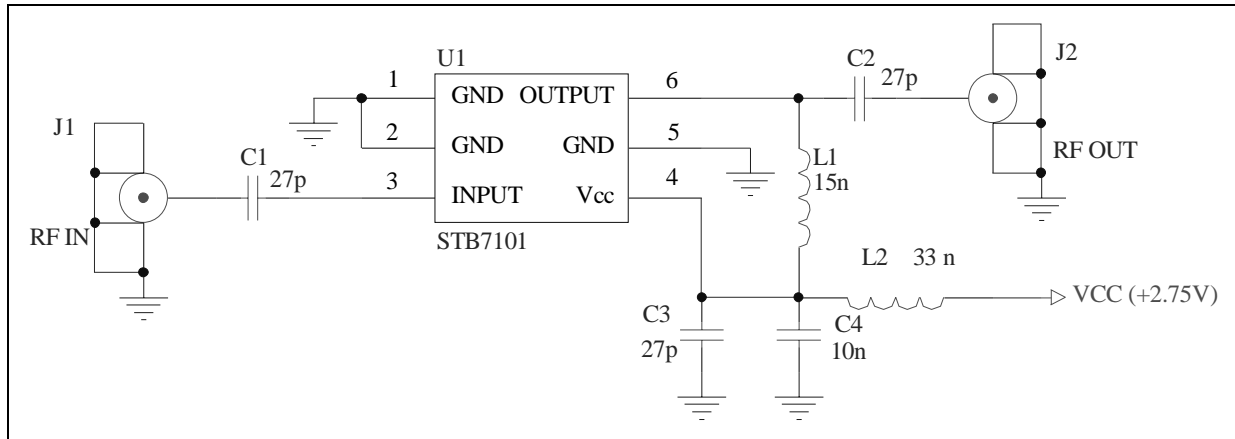
Symbol	Parameter	Conditions	Value	Unit
$V_{CC}$	Supply voltage	$T_a = +25^\circ\text{C}$ , pin 4 and 6	4.5	V
$T_{stg}$	Storage temperature		-55 to +150	$^\circ\text{C}$
$T_a$	Operating ambient temperature		-40 to +85	$^\circ\text{C}$
$P_{in}$	Input power	$T_a = +25^\circ\text{C}$	10	dBm

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## ELECTRICAL CHARACTERISTICS ( $T_a = +25^\circ\text{C}$ , $V_{cc} = 2.75\text{V}$ , $Z_L = Z_S = 50\Omega$ , unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{cc}$	Supply voltage		2.6	2.75	3.3	V
$I_{cc}$	Circuit current	No signal		28		mA
$G_p$	Power Gain	$f = 0.9\text{GHz}$ $f = 1.9\text{GHz}$		20.3 20.5		dB
NF	Noise figure	$f = 0.9\text{GHz}$ $f = 1.9\text{GHz}$		5 4.5		dB
$P_{1\text{dB}}$	Output 1dB Compr. Power	$f = 0.9\text{GHz}$ $f = 1.9\text{GHz}$		9.8 7.5		dBm
$RL_{\text{IN}}$	Input return loss	$f = 0.9\text{GHz}$ $f = 1.9\text{GHz}$		8 6.2		dB
$RL_{\text{OUT}}$	Output Return loss	$f = 0.9\text{GHz}$ $f = 1.9\text{GHz}$		9.7 9.7		dB
$S_{12}$	Isolation	$f = 0.9\text{GHz}$ $f = 1.9\text{GHz}$		-34 -33		dB
$P_o(\text{Sat})$	Saturated output power level	$f = 0.9\text{GHz}$ $f = 1.9\text{GHz}$		11.3 9.7		dBm
OIP3	Output Third Order Intercept	$f = 0.9\text{GHz}$ $f = 1.9\text{GHz}$		16.5 14.9		dBm

### TYPICAL EVALUATION CIRCUIT

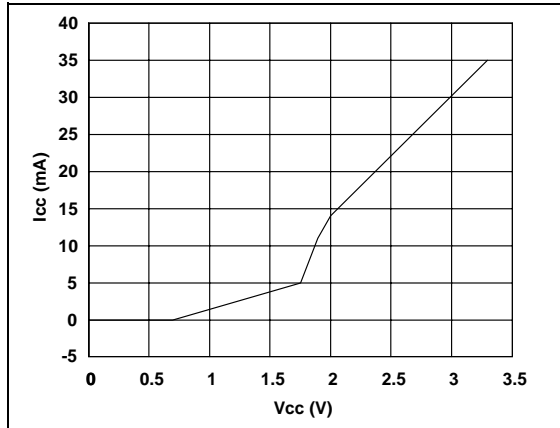


### Evaluation circuit components

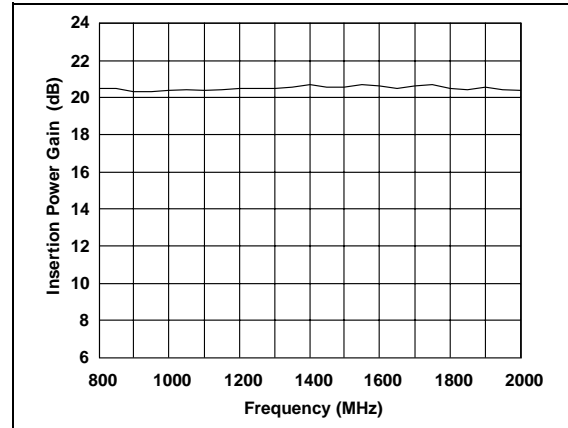
$C1 = C2 = C3 = 27\text{pF}$
$C4 = 10\text{nF}$
$L1 = 15\text{nH}$
$L2 = 33\text{nH}$

TYPICAL PERFORMANCE ( $T_a = +25\text{ }^\circ\text{C}$ ,  $V_{cc} = 2.75\text{V}$ , unless otherwise specified)

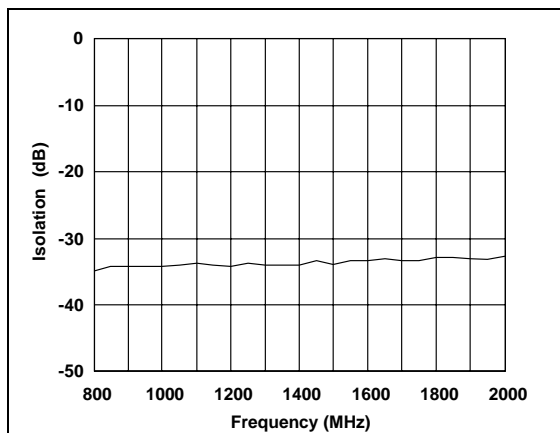
Circuit Current versus Supply Voltage



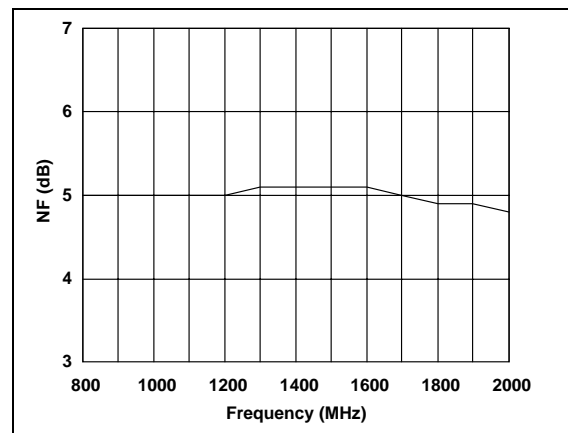
Insertion Power Gain versus Frequency



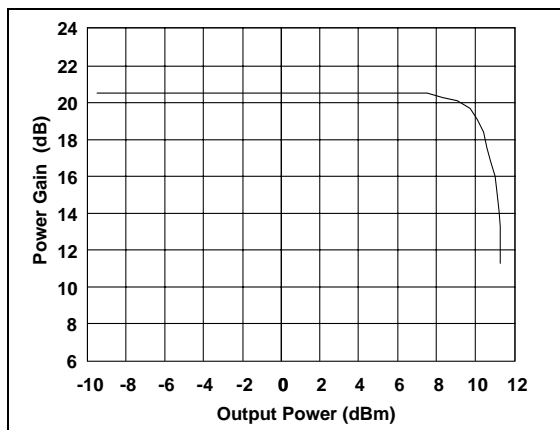
Isolation versus Frequency



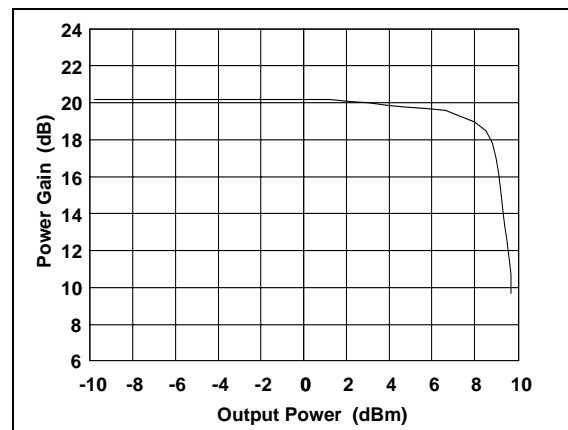
Noise Figure versus Frequency



Power Gain versus Output Power @ 900 MHz

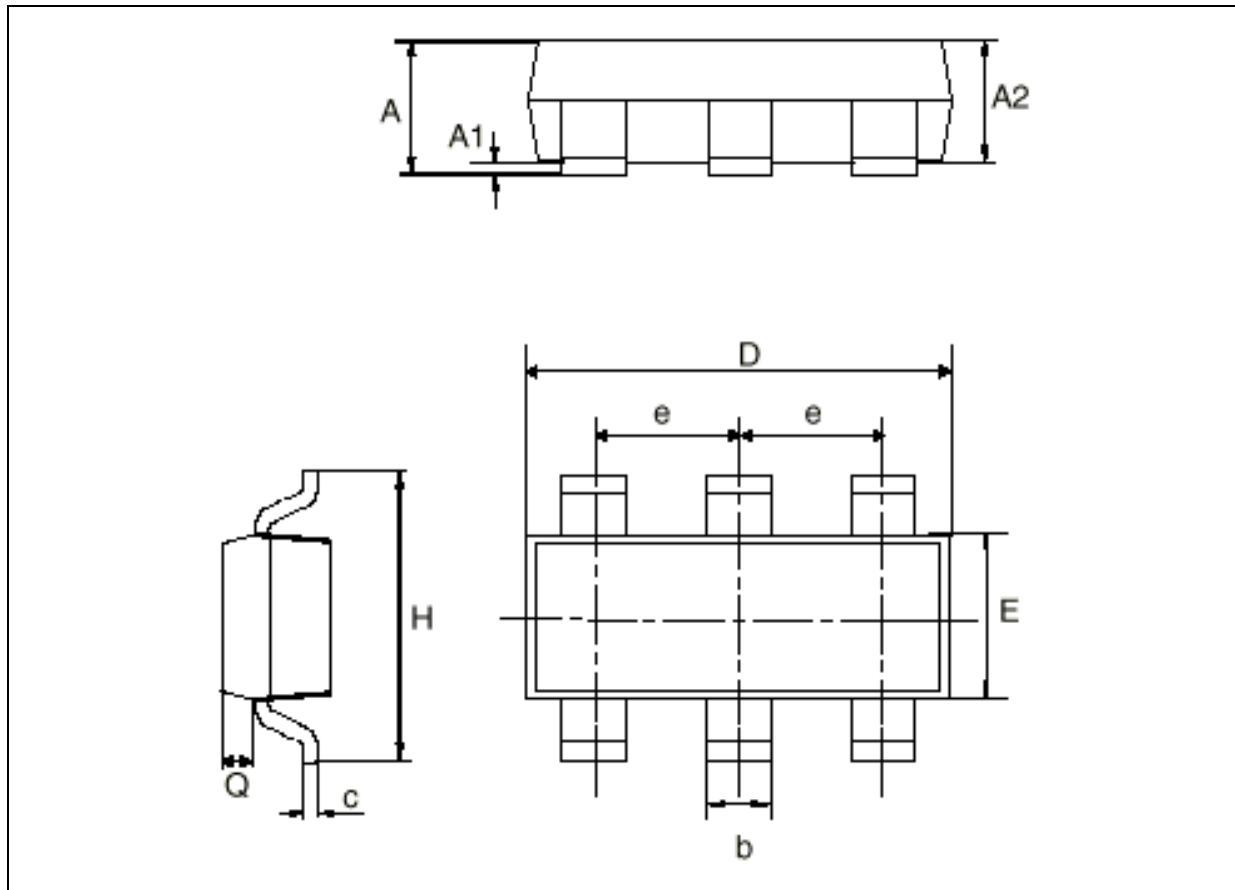


Power Gain versus Output Power @ 1900 MHz



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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