



# STB7101

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

### PRELIMINARY DATA

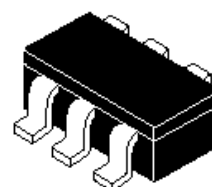
- OPERATING FREQUENCY 900-1900MHz
- OUTPUT POWER 9.8dBm typ. @ 900MHz  
7.5dBm typ. @ 1900MHz
- POWER GAIN  $G_P = 20.3\text{dB}$  typ. @ 900MHz  
 $G_P = 20.5\text{dB}$  typ. @ 1900MHz

### APPLICATIONS

PA driver for cellular applications

### DESCRIPTION

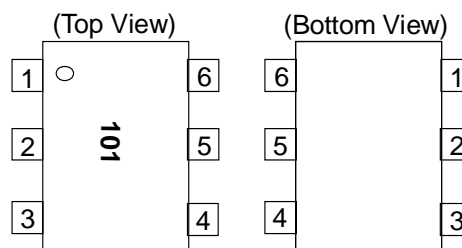
The STB7101, designed for cellular applications (0.9/1.9GHz), uses a 20 GHz  $F_T$  silicon bipolar process. This IC is a wide range amplifier operating from 900MHz to 1900MHz, in the overall frequencies range the gain flatness is less than 1 dB. The STB7101 is housed in a very small SMD package SOT323-6L.



SOT323-6L (SC70)

ORDER CODE  
STB7101

BRANDING  
101



### PIN CONNECTION

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

### ABSOLUTE MAXIMUM RATINGS

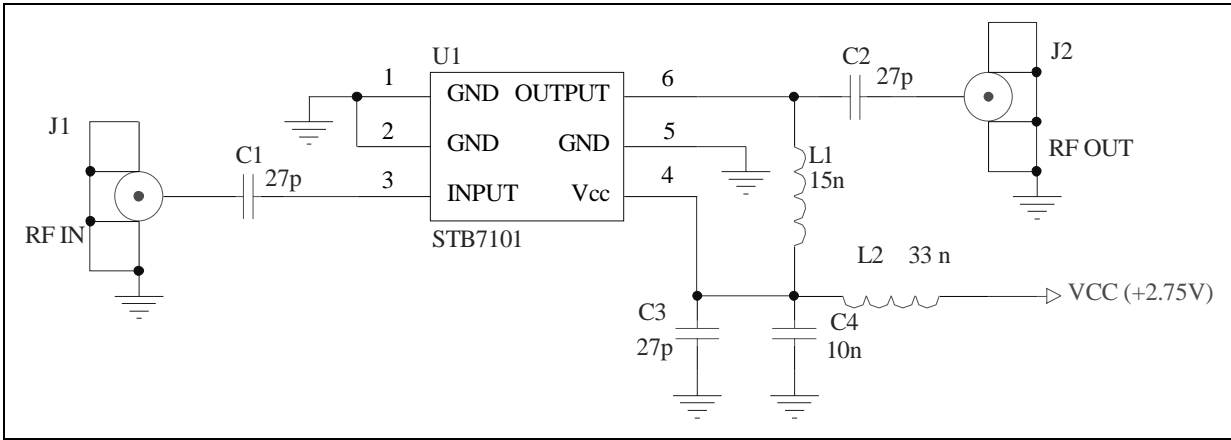
Symbol	Parameter	Conditions	Value	Unit
$V_{CC}$	Supply voltage	$T_a = +25^\circ\text{C}$ , pin 4 and 6	4.5	V
$T_{stg}$	Storage temperature		-55 to +150	$^\circ\text{C}$
$T_a$	Operating ambient temperature		-40 to +85	$^\circ\text{C}$
$P_{in}$	Input power	$T_a = +25^\circ\text{C}$	10	dBm

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## ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = +25°C, V<sub>CC</sub> = 2.75V, Z<sub>L</sub> = Z<sub>S</sub> = 50Ω, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>CC</sub>	Supply voltage		2.6	2.75	3.3	V
I <sub>CC</sub>	Circuit current	No signal		28		mA
G <sub>p</sub>	Power Gain	f = 0.9GHz f = 1.9GHz		20.3 20.5		dB
NF	Noise figure	f = 0.9GHz f = 1.9GHz		5 4.5		dB
P <sub>1dB</sub>	Output 1dB Compr. Power	f = 0.9GHz f = 1.9GHz		9.8 7.5		dBm
RL <sub>IN</sub>	Input return loss	f = 0.9GHz f = 1.9GHz		8 6.2		dB
RL <sub>OUT</sub>	Output Return loss	f = 0.9GHz f = 1.9GHz		9.7 9.7		dB
S <sub>12</sub>	Isolation	f = 0.9GHz f = 1.9GHz		-34 -33		dB
P <sub>o</sub> (Sat)	Saturated output power level	f = 0.9GHz f = 1.9GHz		11.3 9.7		dBm
OIP3	Output Third Order Intercept	f = 0.9GHz f = 1.9GHz		16.5 14.9		dBm

## TYPICAL EVALUATION CIRCUIT

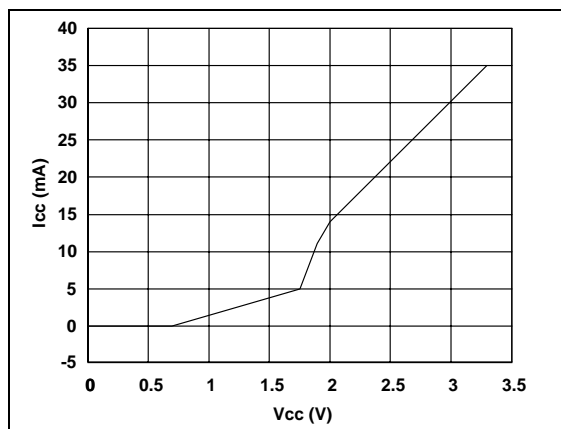


## Evaluation circuit components

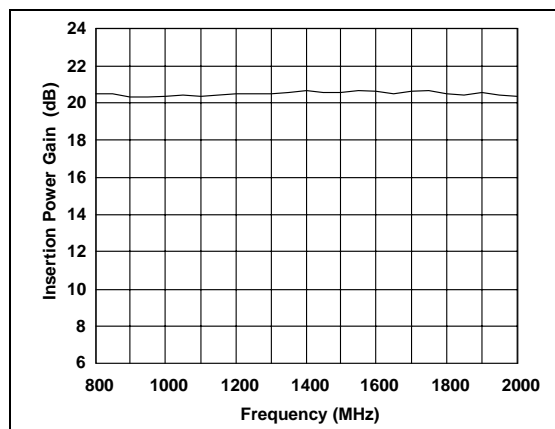
C1 = C2 = C3 = 27pF
C4 = 10nF
L1 = 15nH
L2 = 33nH

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

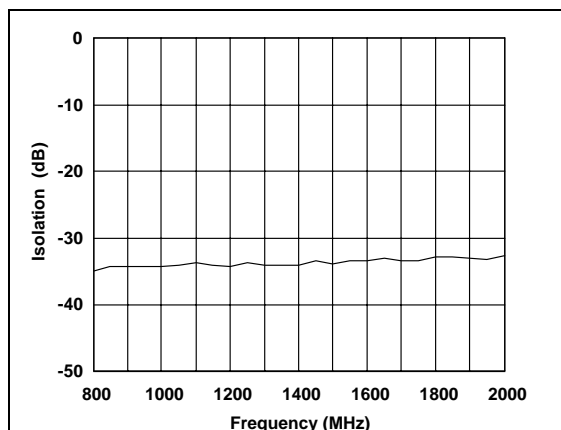
Circuit Current versus Supply Voltage



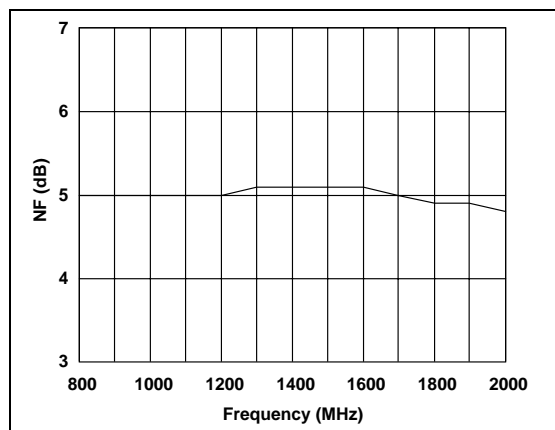
Insertion Power Gain versus Frequency



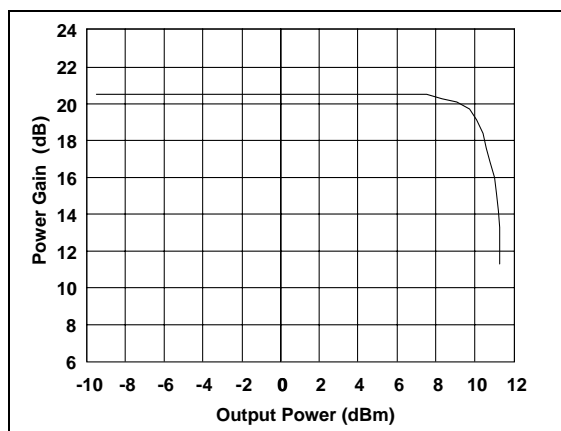
Isolation versus Frequency



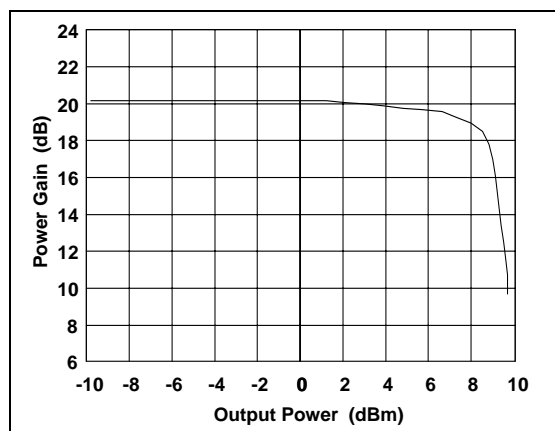
Noise Figure versus Frequency



Power Gain versus Output Power @ 900 MHz

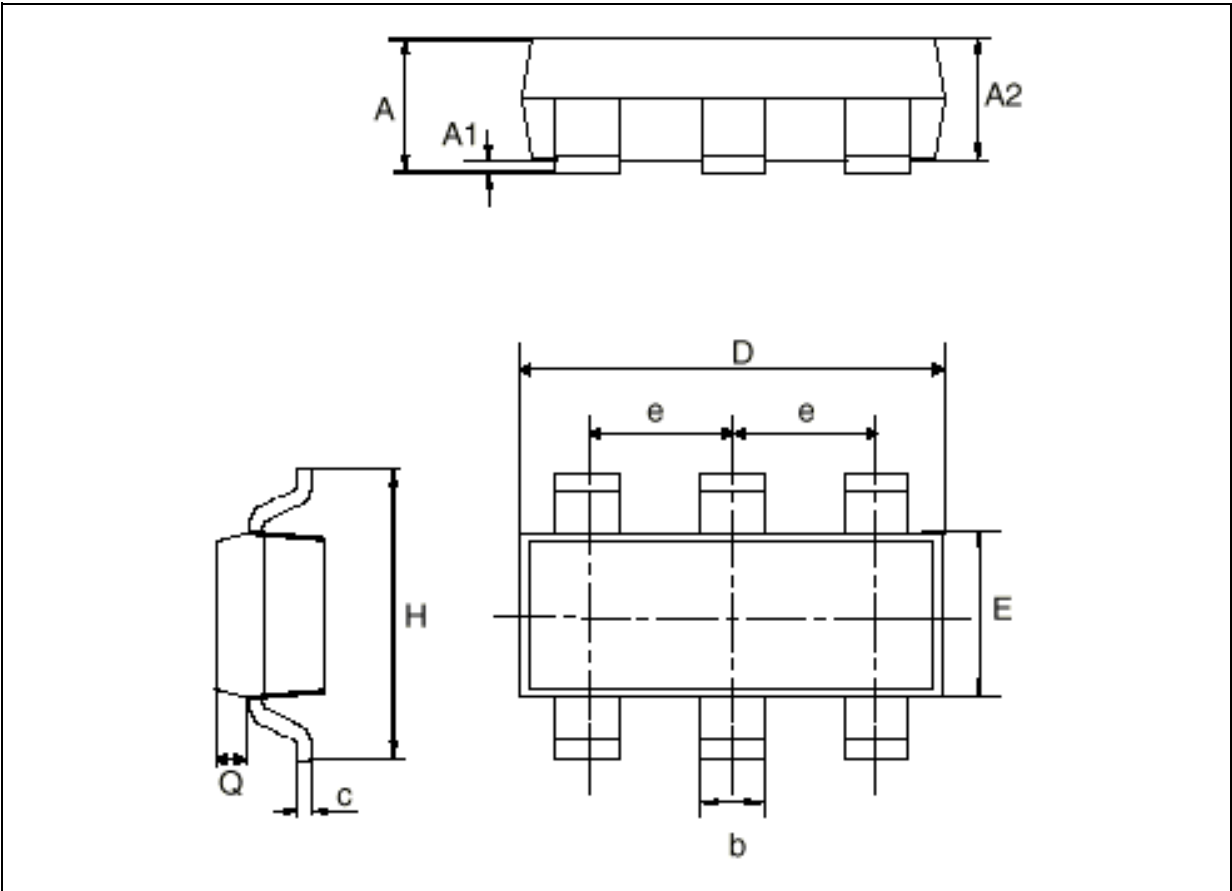


Power Gain versus Output Power @ 1900 MHz



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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