

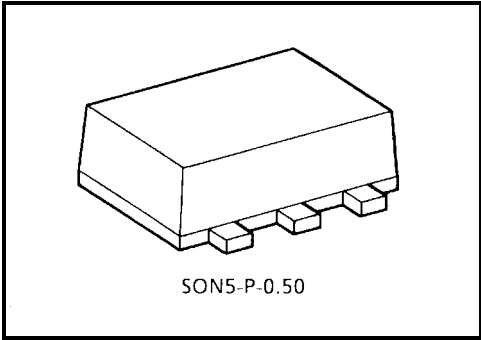
TOSHIBA Bipolar Linear Integrated Circuit    Silicon Monolithic

# TA4012AFE

UHF Wide Band Amplifier Applications

## Features

- Low current:  $I_{CC} = 6.5 \text{ mA}$
- Wide band:  $f = 2.0 \text{ GHz}$  (3dB down)
- Operating supply voltage:  $V_{CC} = 1.5\sim 2.2 \text{ V}$



Weight: 0.003 g (typ.)

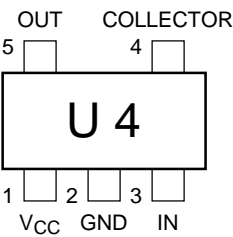
## Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Supply voltage 1	$V_{CC1}$	2.2	V
Supply voltage 2 (Note1)	$V_{CC2}$	3	V
Total power dissipation (Note2)	$P_D$	300	mW
Operating temperature	$T_{opr}$	-40~85	°C
Storage temperature	$T_{stg}$	-55~150	°C

Note1: When  $V_{CC}$  is operated at less than 1/4 duty cycle

Note2: When mounted on the glass epoxy of  $2.5 \text{ cm}^2 \times 1.6 \text{ t}$

## Marking



## Electrical Characteristics (Ta = 25°C, Zg = Zl = 50 Ω)

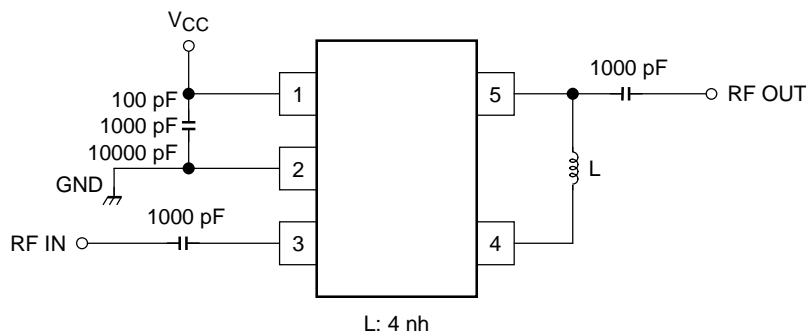
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Circuit current	I <sub>CC</sub>	V <sub>CC</sub> = 2 V, non carrier	4.5	6.5	8.5	mA
Band width	BW	V <sub>CC</sub> = 2 V (Note3)	1.8	2.0	—	GHz
Insertion gain	S <sub>21</sub>   <sup>2</sup>	V <sub>CC</sub> = 2 V, f = 1.5 GHz	10	12	—	dB
Noise figure	NF	V <sub>CC</sub> = 2 V, f = 1.5 GHz	—	6	7.5	dB
Isolation	S <sub>12</sub>   <sup>2</sup>	V <sub>CC</sub> = 2 V, f = 1.5 GHz	—	-22	—	dB
Input return loss	S <sub>11</sub>   <sup>2</sup>	V <sub>CC</sub> = 2 V, f = 1.5 GHz	—	-6.5	—	dB
Output return loss	S <sub>22</sub>   <sup>2</sup>	V <sub>CC</sub> = 2 V, f = 1.5 GHz	—	-7.5	—	dB
Output power at 1 dB gain compression	Po1dB	V <sub>CC</sub> = 2 V, f = 1.5 GHz	—	0	—	dBmW

Note3: BW is the frequency of 3dB down from |S<sub>21</sub>|<sup>2</sup> at 1.5 GHz.

## Caution

This device is sensitive to electrostatic discharge. When using this device, please ensure that all tools and equipment are earthed.

## RF Test Circuit (top view)



## Notice

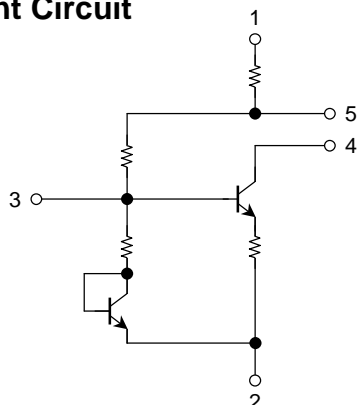
The circuits and measurements contained in this document are given only in the context of as examples of applications for these products.

Moreover, these example application circuits are not intended for mass production, since the high-frequency characteristics (the AC characteristics) of these devices will be affected by the external components which the customer uses, by the design of the circuit and by various other conditions.

It is the responsibility of the customer to design external circuits which correctly implement the intended application, and to check the characteristics of the design.

TOSHIBA assume no responsibility for the integrity of customer circuit designs or applications.

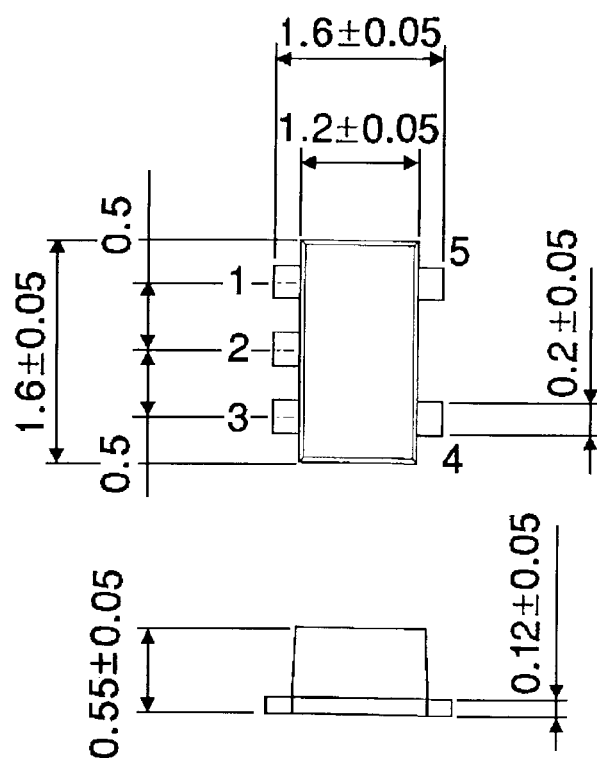
## Equivalent Circuit



## Package Dimensions

SON5-P-0.50

Unit : mm



Weight: 0.003 g (typ.)

**RESTRICTIONS ON PRODUCT USE**

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