

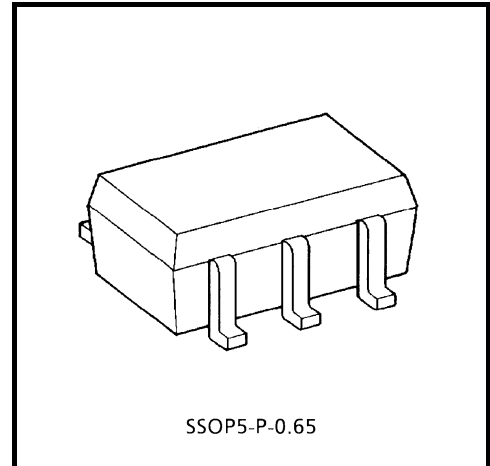
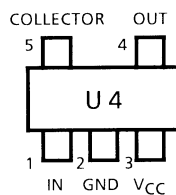
# TA4012FU

## UHF Wide Band Amplifier Applications

### Features

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

### Pin Assignment



SSOP5-P-0.65

Weight: 0.006 g (typ.)

### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristic	Symbol	Rating	Unit
Supply voltage 1	$V_{CC1}$	2.2	V
Supply voltage 2	$V_{CC2}$ (Note 1)	3	V
Total power dissipation	$P_D$ (Note 2)	300	mW
Operating temperature	$T_{opr}$	-40~85	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55~150	$^\circ\text{C}$

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings and the operating ranges.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

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

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

### Caution

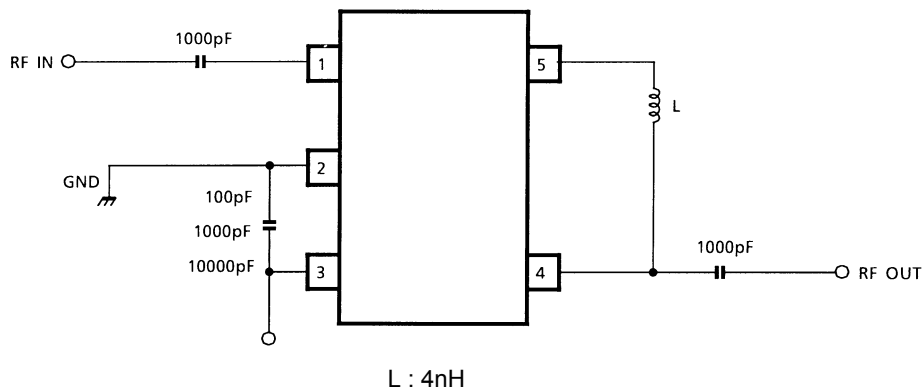
This device electrostatic sensitivity. Please handle with caution.

Electrical Characteristics ( $T_a = 25^\circ\text{C}$ ,  $Z_g = Z_l = 50 \Omega$ )

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Circuit current	$I_{CC}$	$V_{CC} = 2 \text{ V}$ , non carrier	4.5	6.5	8.5	mA
Band width	BW	$V_{CC} = 2 \text{ V}$ (Note 3)	1.8	2.0	—	GHz
Insertion gain	$ S_{21} ^2$	$V_{CC} = 2 \text{ V}$ , $f = 1.5 \text{ GHz}$	10	12	—	dB
Noise figure	NF	$V_{CC} = 2 \text{ V}$ , $f = 1.5 \text{ GHz}$	—	6	7.5	dB
Isolation	$ S_{12} ^2$	$V_{CC} = 2 \text{ V}$ , $f = 1.5 \text{ GHz}$	—	-22	—	dB
Input return loss	$ S_{11} ^2$	$V_{CC} = 2 \text{ V}$ , $f = 1.5 \text{ GHz}$	—	-6.5	—	dB
Output return loss	$ S_{22} ^2$	$V_{CC} = 2 \text{ V}$ , $f = 1.5 \text{ GHz}$	—	-7.5	—	dB
Output power at 1dB gain compression	$P_{o1dB}$	$V_{CC} = 2 \text{ V}$ , $f = 1.5 \text{ GHz}$	—	0	—	dBmW

Note 3: BW is the frequency of 3dB down from  $|S_{21}|^2$  at 1.5 GHz.

**RF Test Circuit (top view)**



**Notice**

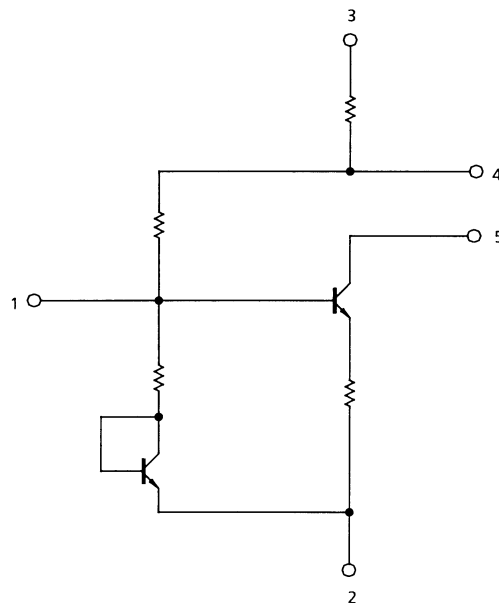
The circuits and measurements contained in this document are given only in the context of as examples of applications for these products.

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.

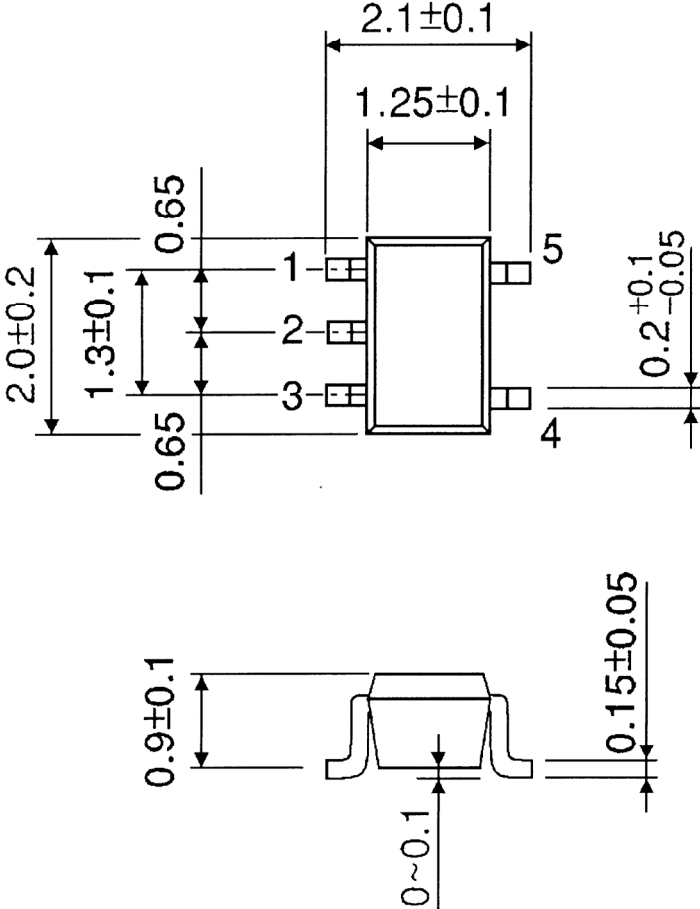
**Equivalent Circuit**



**Package Dimensions**

SSOP5-P-0.65

Unit : mm



Weight : 0.006 g (Typ.)

**RESTRICTIONS ON PRODUCT USE**

20070701-EN GENERAL

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