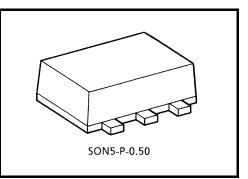
TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

TA4011AFE

UHF Wide Band Amplifier Applications

Features

- Low current: ICC = 3.5 mA
- Wide band: f = 2.4 GHz (3dB down)
- Operating supply voltage: V_{CC} = 1.5~3 V



Weight: 0.003 g (typ.)

Characteristics		Symbol	Rating	Unit
Supply voltage 1		V _{CC} 1	3.2	V
Supply voltage 2	(Note 1)	V _{CC} 2	4	V
Total power dissipation	(Note 2)	PD	300	mW
Operating temperature		T _{opr}	-40~85	°C
Storage temperature		T _{stg}	-55~150	°C

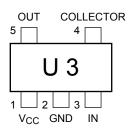
Absolute Maximum Ratings (Ta = 25°C)

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 $V_{\mbox{CC}}$ is operated at less than 1/4 duty cycle
- Note 2: When mounted on the glass epoxy of 2.5 $\text{cm}^2 \times 1.6 \text{ t}$

Marking



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

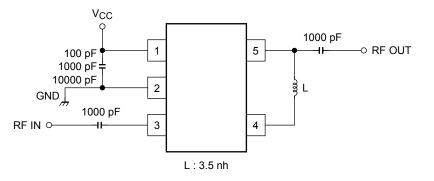
Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Circuit current	Icc	V _{CC} = 2 V, non carrier	2.5	3.5	4.5	mA
Band width	BW	$V_{CC} = 2 V$ (Note3)	2.2	2.4	_	GHz
Insertion gain	S21 ²	V _{CC} = 2 V, f = 1.5 GHz	8	10	_	dB
Noise figure	NF	V _{CC} = 2 V, f = 1.5 GHz	_	6.5	8	dB
Isolation	S12 ²	V _{CC} = 2 V, f = 1.5 GHz	_	-22	_	dB
Input return loss	S11 ²	V _{CC} = 2 V, f = 1.5 GHz	_	-6.5	_	dB
Output return loss	S22 ²	V _{CC} = 2 V, f = 1.5 GHz		-5.5		dB
Output power at 1 dB gain compression	Po1dB	V _{CC} = 2 V, f = 1.5 GHz		-6		dBmW

Note3: BW is the frequency of 3dB down from $|S21|^2$ 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

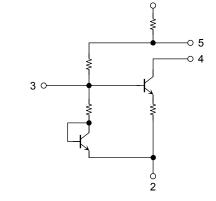
The circuits and measurements contained in this document are given only in the context of as examples of applications for these products.

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

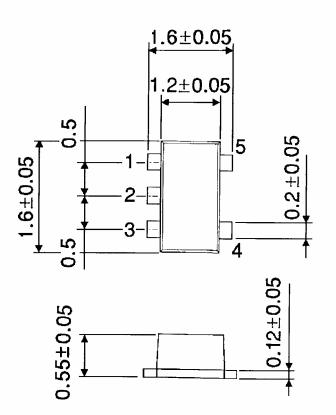


TOSHIBA

Package Dimensions

SON5-P-0.50

Unit : mm



Weight: 0.003 g (typ.)

RESTRICTIONS ON PRODUCT USE

20070701-EN GENERAL

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- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
 In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc.
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