

TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

# MT3S08T

## VHF~UHF Band Low Noise Amplifier Applications

Unit: mm

- Suitable for use in an OSC
- Low noise figure

NF = 1.4dB

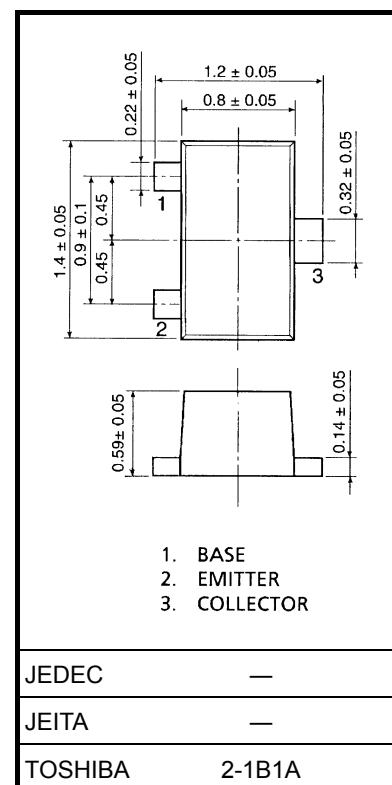
 $|S_{21e}|^2 = 10.5\text{dB} (@1\text{ V/5 mA/1 GHz})$ 

## Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	20	V
Collector-emitter voltage	$V_{CEO}$	8	V
Emitter-base voltage	$V_{EBO}$	1.5	V
Collector current	$I_C$	40	mA
Base current	$I_B$	10	mA
Collector power dissipation	$P_C$	100	mW
Junction temperature	$T_j$	125	°C
Storage temperature range	$T_{stg}$	-55~125	°C

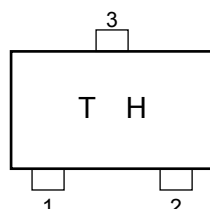
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

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).



Weight: 2.2 mg (typ.)

## Marking



**Microwave Characteristics (Ta = 25°C)**

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition frequency	$f_T$	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}$	2	4.5	—	GHz
Insertion gain	$ S_{21e} ^2(1)$	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}, f = 1\text{ GHz}$	—	10.5	—	dB
	$ S_{21e} ^2(2)$	$V_{CE} = 3\text{ V}, I_C = 20\text{ mA}, f = 1\text{ GHz}$	10.5	13.5	—	
Noise figure	NF	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}, f = 1\text{ GHz}$	—	1.4	2.5	dB

**Electrical Characteristics (Ta = 25°C)**

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = 10\text{ V}, I_E = 0$	—	—	0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 1\text{ V}, I_C = 0$	—	—	1	$\mu\text{A}$
DC current gain	$h_{FE}$	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}$	80	—	140	—
Reverse transfer capacitance	$C_{re}$	$V_{CB} = 1\text{ V}, I_E = 0, f = 1\text{ MHz}$ (Note)	—	0.55	0.95	pF

Note:  $C_{re}$  is measured by 3 terminal method with capacitance bridge.

**Caution**

This device is sensitive to electrostatic discharge. Please handle with caution.

**RESTRICTIONS ON PRODUCT USE**

20070701-EN GENERAL

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