

TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

# MT3S05T

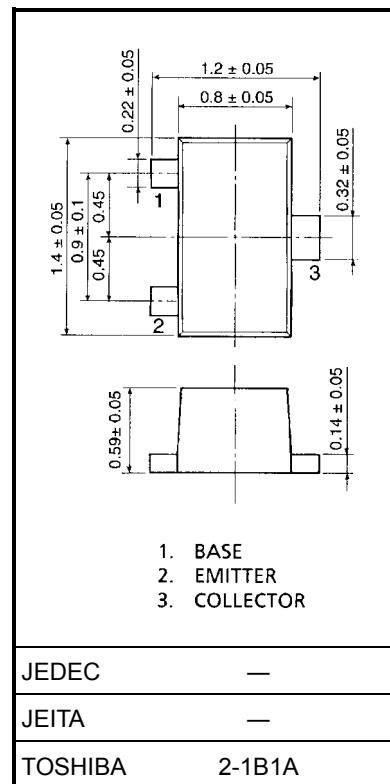
## VHF~UHF Band Low Noise Amplifier Applications

Unit: mm

- Suitable for use in an OSC
- Low noise figure  
NF = 1.4dB
- Excellent collector current linearity  
 $|S_{21e}|^2 = 8.5\text{dB}$  (@1 V/5 mA/1 GHz)

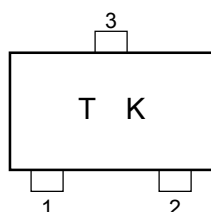
### Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	10	V
Collector-emitter voltage	$V_{CEO}$	5	V
Emitter-base voltage	$V_{EBO}$	2	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



Weight: g (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)$	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}, f = 1\text{ GHz}$	—	8.5	—	dB
	$ S_{21e} ^2(2)$	$V_{CE} = 3\text{ V}, I_C = 20\text{ mA}, f = 1\text{ GHz}$	8.5	11.5	—	
Noise figure	NF	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}, f = 1\text{ GHz}$	—	1.4	2.2	dB

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = 5\text{ V}, I_E = 0$	—	—	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)	—	0.9	1.25	pF

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

**Caution**

This device electrostatic sensitivity. Please handle with caution.

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