

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

# MT3S07T

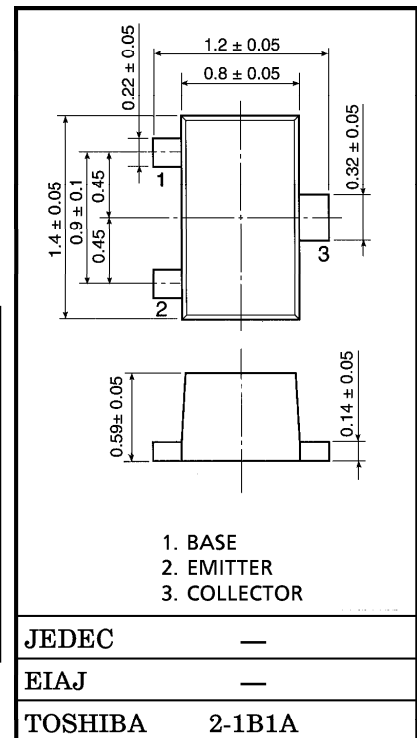
VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

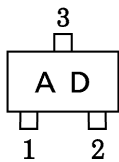
- Low Noise Figure :  $NF = 1.5 \text{ dB}$   
( $V_{CE} = 3 \text{ V}, I_C = 5 \text{ mA}, f = 2 \text{ GHz}$ )
- High Gain :  $|S_{21e}|^2 = 9.5 \text{ dB}$   
( $V_{CE} = 3 \text{ V}, I_C = 15 \text{ mA}, f = 2 \text{ GHz}$ )

MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	10	V
Collector-Emitter Voltage	$V_{CEO}$	5	V
Emitter-Base Voltage	$V_{EBO}$	1.5	V
Collector Current	$I_C$	25	mA
Base Current	$I_B$	10	mA
Collector Power Dissipation	$P_C$	100	mW
Junction Temperature	$T_j$	125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55~125	$^\circ\text{C}$



MARKING



MICROWAVE CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Transition Frequency	$f_T$	$V_{CE} = 3 \text{ V}, I_C = 10 \text{ mA}$	10	12	—	GHz
Insertion Gain	$ S_{21e} ^2 (1)$	$V_{CE} = 1 \text{ V}, I_C = 5 \text{ mA}, f = 2 \text{ GHz}$	—	7.5	—	dB
	$ S_{21e} ^2 (2)$	$V_{CE} = 3 \text{ V}, I_C = 15 \text{ mA}, f = 2 \text{ GHz}$	6.5	9.5	—	
Noise Figure	NF (1)	$V_{CE} = 1 \text{ V}, I_C = 5 \text{ mA}, f = 2 \text{ GHz}$	—	1.6	3	dB
	NF (2)	$V_{CE} = 3 \text{ V}, I_C = 5 \text{ mA}, f = 2 \text{ GHz}$	—	1.5	3	

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	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	$h_{FE}$	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}$	70	—	140	—
Reverse Transfer Capacitance	$C_{re}$	$V_{CB} = 1\text{ V}, I_E = 0, f = 1\text{ MHz}$ (Note)	—	0.4	0.85	pF

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

**CAUTION**

This device electrostatic sensitivity. Please handle with caution.

