

TENTATIVE

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

**MT4S04A**

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

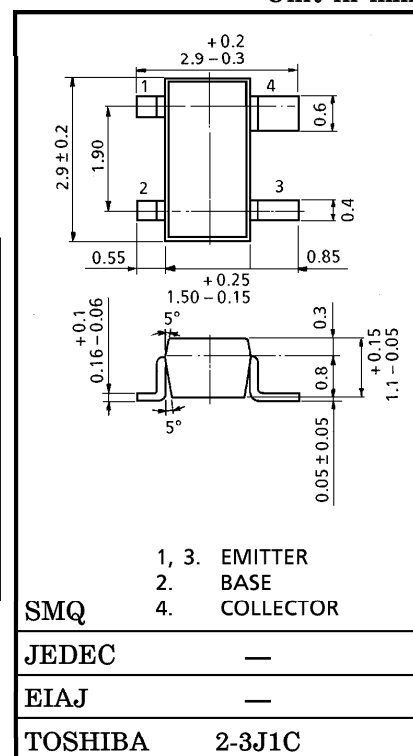
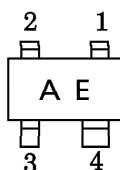
Unit in mm

- Low Noise : Figure : NF = 1.2 dB
- High Gain : Gain = 13.5 dB (f = 1 GHz)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V <sub>CBO</sub>	10	V
Collector-Emitter Voltage	V <sub>CEO</sub>	5	V
Emitter-Base Voltage	V <sub>EBO</sub>	2	V
Base Current	I <sub>C</sub>	40	mA
Collector Current	I <sub>B</sub>	10	mA
Collector Power Dissipation	P <sub>C</sub>	150	mW
Junction Temperature	T <sub>j</sub>	125	°C
Storage Temperature Range	T <sub>stg</sub>	-55~125	°C

MARKING



Weight : 0.012 g

MICROWAVE CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Transition Frequency	f <sub>T</sub> (1)	V <sub>CE</sub> = 1 V, I <sub>C</sub> = 5 mA	2	4.5	—	GHz
	f <sub>T</sub> (2)	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 7 mA	5	7	—	
Insertion Gain	S <sub>21e</sub>   <sup>2</sup> (1)	V <sub>CE</sub> = 1 V, I <sub>C</sub> = 5 mA, f = 1 GHz	8	10	—	dB
	S <sub>21e</sub>   <sup>2</sup> (2)	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 20 mA, f = 1 GHz	11.5	13.5	—	
Noise Figure	NF (1)	V <sub>CE</sub> = 1 V, I <sub>C</sub> = 5 mA, f = 1 GHz	—	1.3	2.2	dB
	NF (2)	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 7 mA, f = 1 GHz	—	1.2	2	

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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	$h_{FE}$	$V_{CE} = 1\text{ V}, I_C = 5\text{ mA}$	80	—	160	—
Reverse Transfer Capacitance	$C_{re}$	$V_{CB} = 1\text{ V}, I_E = 0, f = 1\text{ MHz}$ (Note)	—	0.75	1.1	pF

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

## CAUTION

This device electrostatic sensitivity. Please handle with caution.