TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

MT3S05T

VHF~UHF Band Low Noise Amplifier Applications

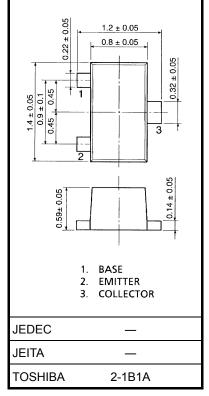
Unit: mm

- Suitable for use in an OSC
- Low noise figure NF = 1.4dB
- Excellent collector current linearity | S21e | ² = 8.5dB (@1 V/5 mA/1 GHz)

Absolute 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	IC	40	mA
Base current	ΙΒ	10	mA
Collector power dissipation	PC	100	mW
Junction temperature	Tj	125	°C
Storage temperature range	Tstg	-55~125	°C

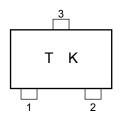
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e.



Weight: 2.2 mg (typ.)

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).

Marking



Microwave Characteristics (Ta = 25°C)

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Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Transition frequency	f _T	$V_{CE} = 1 \text{ V}, I_{C} = 5 \text{ mA}$	2	4.5	_	GHz
Insertion gain –	S21e ² (1)	$V_{CE} = 1 \text{ V}, I_{C} = 5 \text{ mA}, f = 1 \text{ GHz}$	_	8.5	_	- dB
	S21e 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	Тур.	Max	Unit
Collector cut-off current	I _{CBO}	$V_{CB} = 5 \text{ V}, I_{E} = 0$	_	_	0.1	μА
Emitter cut-off current	I _{EBO}	$V_{EB} = 1 \text{ V}, I_{C} = 0$	_	_	1	μΑ
DC current gain	h _{FE}	$V_{CE} = 1 \text{ V}, I_{C} = 5 \text{ mA}$	80	_	140	_
Reverse transfer capacitance	C _{re}	$V_{CB} = 1 \text{ V}, \text{ I}_{E} = 0, \text{ f} = 1 \text{ MHz}$ (Note)		0.9	1.25	pF

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

Caution

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

RESTRICTIONS ON PRODUCT USE

20070701-EN GENERAL

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