

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

MT3S07U

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

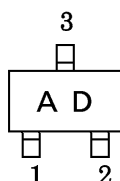
- Low Noise Figure : $NF = 1.5 \text{ dB}$
($V_{CE} = 3 \text{ V}$, $I_C = 5 \text{ mA}$, $f = 2 \text{ GHz}$)
- High Gain : $|S_{21e}|^2 = 9.5 \text{ dB}$
($V_{CE} = 3 \text{ V}$, $I_C = 15 \text{ mA}$, $f = 2 \text{ GHz}$)

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}	$-55 \sim 125$	$^\circ\text{C}$

1. BASE	
2. EMITTER	
3. COLLECTOR	
JEDEC	—
EIAJ	SC-70
TOSHIBA	2-2E1A

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	$V_{CB} = 5\text{ V}, I_E = 0$	—	—	0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1\text{ V}, I_C = 0$	—	—	1	μA
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.