

TENTATIVE

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

# HN3C17FU

VHF~UHF LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

(CHIP :  $f_T=16\text{GHz}$  series)

- Low Noise Figure :  $NF=1.3\text{dB}$  ( $f=2\text{GHz}$ )
- High Gain :  $|S_{21e}|^2=9.0\text{dB}$  ( $f=2\text{GHz}$ )

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	8	V
Collector-Emitter Voltage	$V_{CEO}$	5	V
Emitter-Base Voltage	$V_{EBO}$	1.5	V
Collector Current	$I_C$	20	mA
Base Current	$I_B$	10	mA
Collector Power Dissipation	$P_{C^*}$	200	mW
Junction Temperature	$T_j$	125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55~125	$^\circ\text{C}$

\* : Total

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB}=10\text{V}, I_E=0$	—	—	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	$h_{FE}$	$V_{CE}=3\text{V}, I_C=15\text{mA}$	50	—	250	—
Transition Frequency	$f_T$	$V_{CE}=3\text{V}, I_C=15\text{mA}$ ,	9	—	—	GHz
Insertion Gain	$ S_{21e} ^2 (1)$	$V_{CE}=3\text{V}, I_C=15\text{mA}$ , $f=1\text{GHz}$	12	15	—	dB
Insertion Gain	$ S_{21e} ^2 (2)$	$V_{CE}=3\text{V}, I_C=15\text{mA}$ , $f=2\text{GHz}$	6	9.0	—	dB
Noise Figure	NF	$V_{CE}=3\text{V}, I_C=5\text{mA}$ , $f=2\text{GHz}$	—	1.3	2.2	dB
Reverse Transfer Capacitance $Q_1$	$C_{re} (1)$	$V_{CB}=2.5\text{V}, I_E=0$	—	0.45	0.9	pF
Reverse Transfer Capacitance $Q_2$	$C_{re} (2)$	$f=1\text{MHz}$ (Note)	—	0.4	0.85	pF

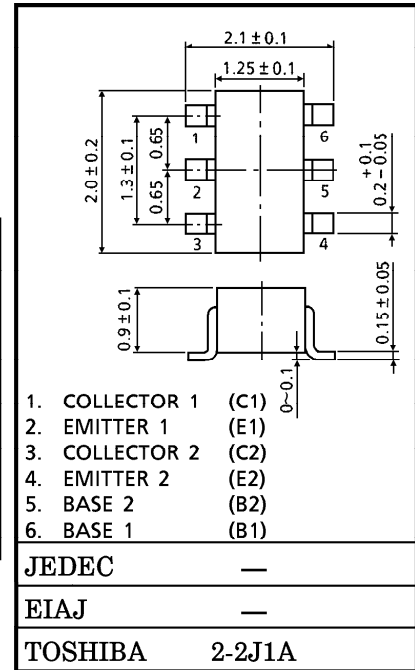
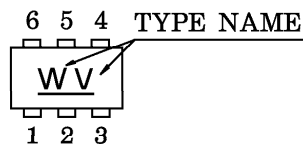
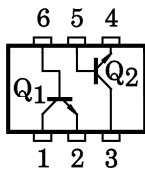
(Note)  $C_{re}$  is measured by 3 terminal method with Capacitance Bridge.

**CAUTION**

This device electrostatic sensitivity. Please handle with caution.

PIN ASSIGNMENT (TOP VIEW)

MARKING



1. COLLECTOR 1 (C1)
2. EMITTER 1 (E1)
3. COLLECTOR 2 (C2)
4. EMITTER 2 (E2)
5. BASE 2 (B2)
6. BASE 1 (B1)

JEDEC	—
EIAJ	—
TOSHIBA	2-2J1A

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