

TENTATIVE

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

# HN9C15FT

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

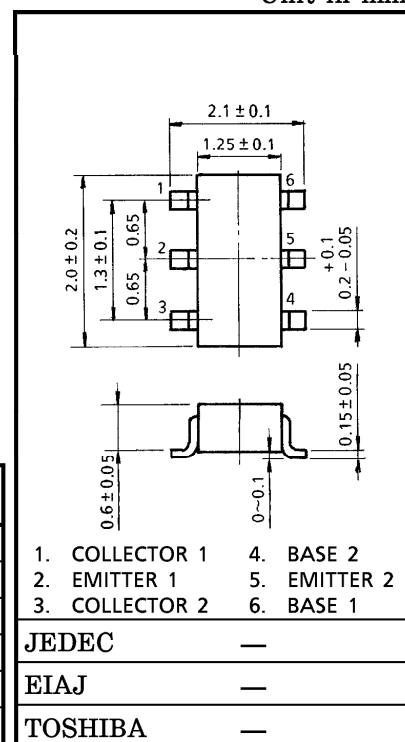
- TWO devices are built in to the super-thin and ultra super mini (6pins) package : TU6

## MOUNTED DEVICES

	Q1	Q2
Three-pins (SSM) mold products are corresponded.	2SC5091	2SC5256

## MAXIMUM RATINGS (Ta = 25°C)

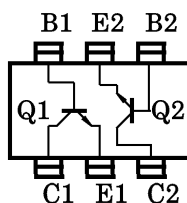
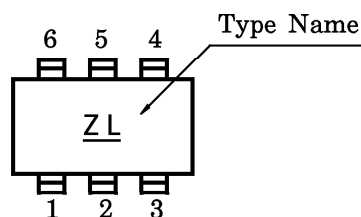
CHARACTERISTIC	SYMBOL	Q1	Q2	UNIT
Collector-Base Voltage	V <sub>CB0</sub>	20	15	V
Collector-Emitter Voltage	V <sub>CEO</sub>	8	7	V
Emitter-Base Voltage	V <sub>EBO</sub>	1.5	1.5	V
Collector Current	I <sub>C</sub>	40	40	mA
Base Current	I <sub>B</sub>	20	20	mA
Collector Power Dissipation	P <sub>C</sub>	200		mW
Junction Temperature	T <sub>j</sub>	125		°C
Storage Temperature Range	T <sub>stg</sub>	-55~125		°C



Weight 0.008g

## MARKING

## PIN ASSIGNMENT (TOP VIEW)



961001EAA1

- TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.

## ELECTRICAL CHARACTERISTICS Q1 (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 10V, I_E = 0$	—	—	1	$\mu A$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 1V, I_C = 0$	—	—	1	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE} = 8V, I_C = 20mA$	50	—	160	—
Transition Frequency	$f_T$	$V_{CE} = 8V, I_C = 20mA$	7	10	—	GHz
Insertion Gain	$ S_{21e} ^2 (1)$	$V_{CE} = 8V, I_C = 20mA, f = 1000MHz$	—	13.5	—	dB
	$ S_{21e} ^2 (2)$	$V_{CE} = 8V, I_C = 20mA, f = 2000MHz$	4.5	7	—	dB
Noise Figure	NF (1)	$V_{CE} = 8V, I_C = 5mA, f = 1000MHz$	—	1.1	—	dB
	NF (2)	$V_{CE} = 8V, I_C = 5mA, f = 2000MHz$	—	1.7	3	dB

## ELECTRICAL CHARACTERISTICS Q2 (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 10V, I_E = 0$	—	—	1	$\mu A$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 1V, I_C = 0$	—	—	1	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE} = 5V, I_C = 20mA$	50	—	160	—
Transition Frequency	$f_T$	$V_{CE} = 5V, I_C = 20mA$	9	12	—	GHz
Insertion Gain	$ S_{21e} ^2 (1)$	$V_{CE} = 5V, I_C = 20mA, f = 1000MHz$	—	14	—	dB
	$ S_{21e} ^2 (2)$	$V_{CE} = 5V, I_C = 20mA, f = 2000MHz$	5	8	—	dB
Noise Figure	NF (1)	$V_{CE} = 5V, I_C = 5mA, f = 1000MHz$	—	1.1	—	dB
	NF (2)	$V_{CE} = 5V, I_C = 5mA, f = 2000MHz$	—	1.5	3	dB