

TENTATIVE

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

HN9C20FT

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

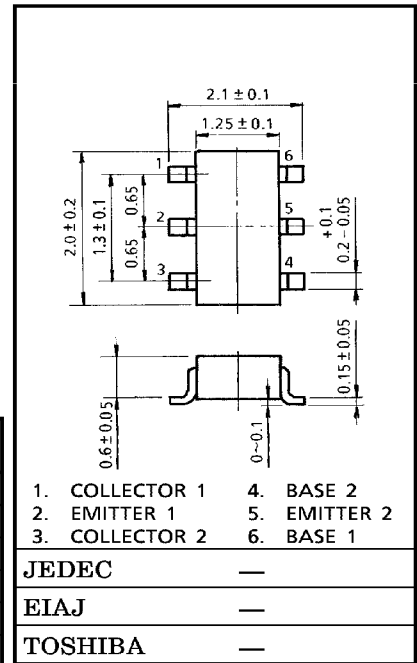
- TWO devices are built in to the super-thin and ultra super mini (6pins) package : TU6

MOUNTED DEVICES

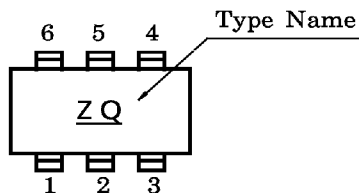
	Q1	Q2
Three-pins (SSM) mold products are corresponded.	2SC5464	2SC5464

MAXIMUM RATINGS (Ta = 25°C)

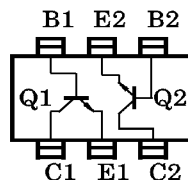
CHARACTERISTIC	SYMBOL	Q1 / Q2	UNIT
Collector-Base Voltage	V _{CBO}	20	V
Collector-Emitter Voltage	V _{CEO}	12	V
Emitter-Base Voltage	V _{EBO}	3	V
Collector Current	I _C	60	mA
Base Current	I _B	30	mA
Collector Power Dissipation	P _C	200	mW
Junction Temperature	T _j	125	°C
Storage Temperature Range	T _{stg}	-55~125	°C



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.
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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	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1V, I_C = 0$	—	—	1	μA
DC Current Gain	h_{FE}	$V_{CE} = 8V, I_C = 15mA$	80	—	240	—
Transition Frequency	f_T	$V_{CE} = 8V, I_C = 15mA$	5	7	—	GHz
Insertion Gain	$ S_{21e} ^2 (1)$	$V_{CE} = 8V, I_C = 15mA, f = 500MHz$	—	17	—	dB
	$ S_{21e} ^2 (2)$	$V_{CE} = 8V, I_C = 15mA,$ $f = 1000MHz$	8	12	—	dB
Noise Figure	NF (1)	$V_{CE} = 8V, I_C = 5mA, f = 500MHz$	—	1	—	dB
	NF (2)	$V_{CE} = 8V, I_C = 5mA, f = 1000MHz$	—	1.1	2	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	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1V, I_C = 0$	—	—	1	μA
DC Current Gain	h_{FE}	$V_{CE} = 8V, I_C = 15mA$	80	—	240	—
Transition Frequency	f_T	$V_{CE} = 8V, I_C = 15mA$	5	7	—	GHz
Insertion Gain	$ S_{21e} ^2 (1)$	$V_{CE} = 8V, I_C = 15mA, f = 500MHz$	—	17	—	dB
	$ S_{21e} ^2 (2)$	$V_{CE} = 8V, I_C = 15mA,$ $f = 1000MHz$	8	12	—	dB
Noise Figure	NF (1)	$V_{CE} = 8V, I_C = 5mA, f = 500MHz$	—	1	—	dB
	NF (2)	$V_{CE} = 8V, I_C = 5mA, f = 1000MHz$	—	1.1	2	dB