TENTATIVE TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE

HN9C08FT

VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

Unit in mm

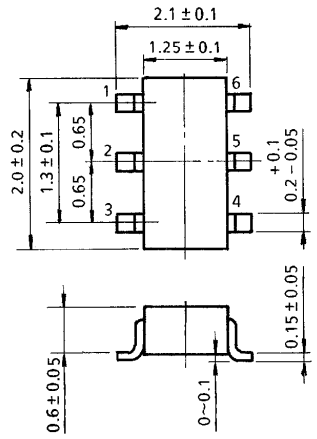
- TWO devices are built in to the super-thin and ultra super mini (6pins) package : TU6

MOUNTED DEVICES

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

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	Q1 / Q2	UNIT
Collector-Base Voltage	V_{CBO}	20	V
Collector-Emitter Voltage	V_{CEO}	8	V
Emitter-Base Voltage	V_{EBO}	1.5	V
Collector Current	I_C	40	mA
Base Current	I_B	20	mA
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_j	125	°C
Storage Temperature Range	T_{stg}	−55~125	°C

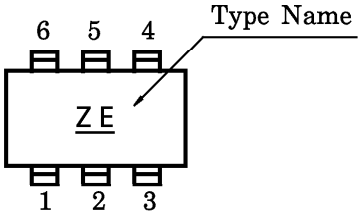


1. COLLECTOR 1
2. EMITTER 1
3. COLLECTOR 2
4. BASE 2
5. EMITTER 2
6. BASE 1

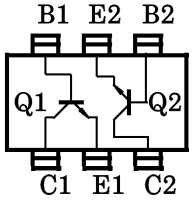
JEDEC	—
EIAJ	—
TOSHIBA	—

Weight : 0.008g

MARKING



PIN ASSIGNMENT (TOP VIEW)



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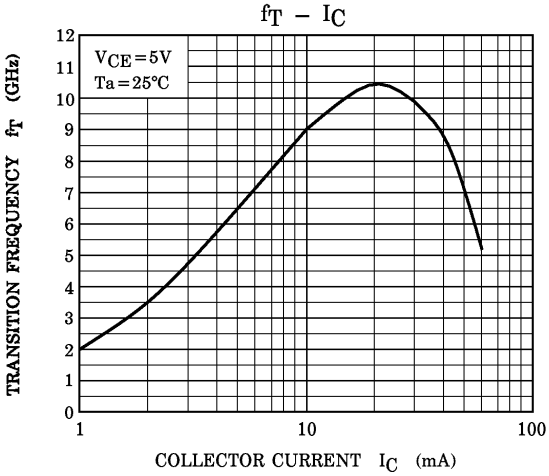
ELECTRICAL CHARACTERISTICS Q1 (Ta = 25°C)

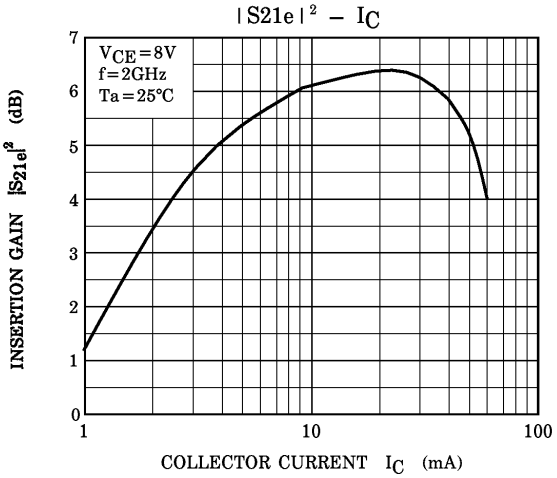
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB} = 10V, I_E = 0	—	—	1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 1V, I_C = 0	—	—	1	μA
DC Current Gain	h_{FE}	V_{CE} = 8V, I_C = 20mA	50	—	160	—
Transition Frequency	f_T	V_{CE} = 8V, I_C = 20mA	7	10	—	GHz
Insertion Gain	$\|S_{21e}\|^2$ (1)	V_{CE} = 8V, I_C = 20mA, f = 1000MHz	—	14	—	dB
	$\|S_{21e}\|^2$ (2)	V_{CE} = 8V, I_C = 20mA, f = 2000MHz	4	6.5	—	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)

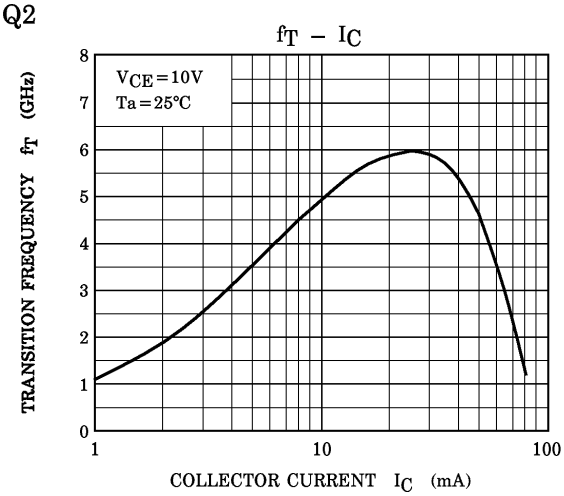
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB} = 10V, I_E = 0	—	—	1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 1V, I_C = 0	—	—	1	μA
DC Current Gain	h_{FE}	V_{CE} = 6V, I_C = 7mA	50	—	160	—
Transition Frequency	f_T	V_{CE} = 6V, I_C = 7mA	7	10	—	GHz
Insertion Gain	$\|S_{21e}\|^2$ (1)	V_{CE} = 6V, I_C = 7mA, f = 1000MHz	—	14	—	dB
	$\|S_{21e}\|^2$ (2)	V_{CE} = 6V, I_C = 7mA, f = 2000MHz	4.5	7	—	dB
Noise Figure	NF (1)	V_{CE} = 6V, I_C = 3mA, f = 1000MHz	—	1.1	—	dB
	NF (2)	V_{CE} = 6V, I_C = 3mA, f = 2000MHz	—	1.7	3	dB

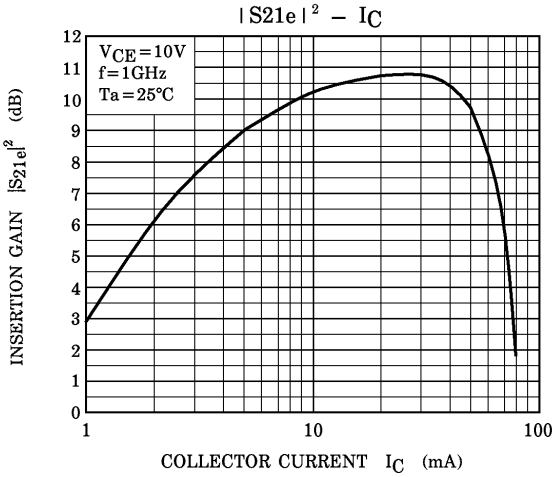
Q1


f_T – I_C
V_{CE} = 5V
Ta = 25°C
TRANSITION FREQUENCY f_T (GHz)
COLLECTOR CURRENT I_C (mA)


$|S21e|^2$ – I_C
V_{CE} = 8V
f = 2GHz
Ta = 25°C
INSERTION GAIN $|S_{21e}|^2$ (dB)
COLLECTOR CURRENT I_C (mA)

Q2


f_T – I_C
V_{CE} = 10V
Ta = 25°C
TRANSITION FREQUENCY f_T (GHz)
COLLECTOR CURRENT I_C (mA)


$|S21e|^2$ – I_C
V_{CE} = 10V
f = 1GHz
Ta = 25°C
INSERTION GAIN $|S_{21e}|^2$ (dB)
COLLECTOR CURRENT I_C (mA)