

TENTATIVE TOSHIBA Transistor Silicon PNP-NPN Epitaxial Type (PCT Process)

HN3B02FU

Audio Frequency General Purpose Amplifier Applications

Unit: mm

Q1

- High voltage : $V_{CEO} = -50V$
- High current : $I_C = -150mA$ (max)
- High h_{FE} : $h_{FE} = 120\sim 400$
- Excellent h_{FE} linearity : $h_{FE}(I_C = -0.1mA) / (I_C = -2mA) = 0.95$ (typ.)

Q2

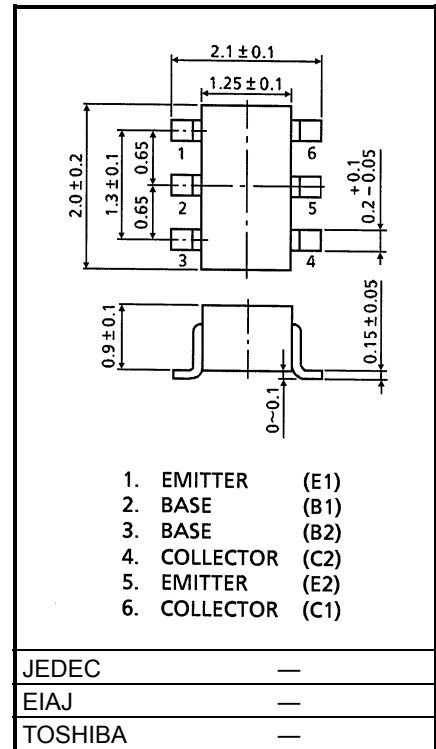
- High voltage : $V_{CEO} = 60V$
- High current : $I_C = 150mA$ (max)
- High h_{FE} : $h_{FE} = 120\sim 400$
- Excellent h_{FE} linearity : $h_{FE}(I_C = 0.1mA) / (I_C = 2mA) = 0.95$ (typ.)

Q1 Maximum Ratings ($T_a = 25^\circ C$)

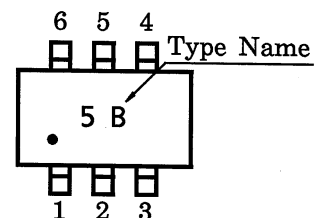
Characteristic	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	-50	V
Collector-emitter voltage	V_{CEO}	-50	V
Emitter-base voltage	V_{EBO}	-5	V
Collector current	I_C	-150	mA
Base current	I_B	-50	mA

Q2 Maximum Ratings ($T_a = 25^\circ C$)

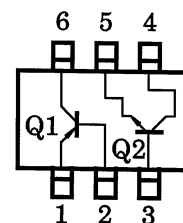
Characteristic	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	60	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	150	mA
Base current	I_B	30	mA



Marking



Equivalent Circuit (Top View)



Q1 Q2 Common Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector power dissipation	P_C (*)	200	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	-55~125	°C

*: Total rating

Q1 Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	—	$V_{CB} = -50V, I_E = 0$	—	—	-0.1	μA
Emitter cut-off current	I_{EBO}	—	$V_{EB} = -5V, I_C = 0$	—	—	-0.1	μA
DC current gain	h_{FE}	—	$V_{CE} = -6V, I_C = -2mA$	120	—	400	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	$I_C = -100mA, I_B = -10mA$	—	-0.1	-0.3	V
Transition frequency	f_T	—	$V_{CE} = -10V, I_C = -1mA$	—	120	—	MHz
Collector output capacitance	C_{ob}	—	$V_{CB} = -10V, I_E = 0, f = 1MHz$	—	4	—	pF

Q2 Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	—	$V_{CB} = 60V, I_E = 0$	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	—	$V_{EB} = 5V, I_C = 0$	—	—	0.1	μA
DC current gain	h_{FE}	—	$V_{CE} = 6V, I_C = 2mA$	120	—	400	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	$I_C = 100mA, I_B = 10mA$	—	0.1	0.25	V
Transition frequency	f_T	—	$V_{CE} = 10V, I_C = 1mA$	—	150	—	MHz
Collector output capacitance	C_{ob}	—	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	2	—	pF

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