

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

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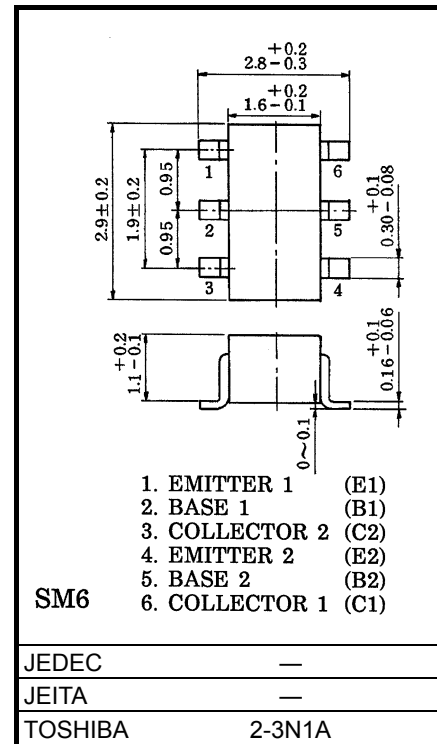
Audio-Frequency General-Purpose Amplifier Applications

Unit: mm

- Small package (dual type)
- High voltage and high current
: $V_{CE0} = 50\text{ V}$, $I_C = 150\text{ mA}$ (max)
- High h_{FE} : $h_{FE} = 120\sim 400$
- Excellent h_{FE} linearity
: $h_{FE}(I_C = 0.1\text{ mA}) / h_{FE}(I_C = 2\text{ mA}) = 0.95$ (typ.)

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$) (Q1, Q2 Common)

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
Collector power dissipation	P_C^*	300	mW
Junction temperature	T_j	125	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55~125	$^\circ\text{C}$



Weight: 0.015 g (typ.)

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

* Total rating

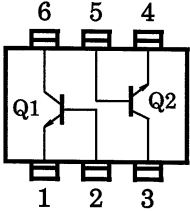
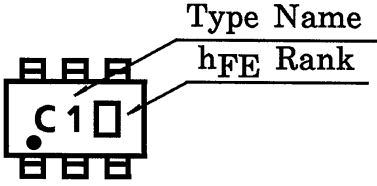
Electrical Characteristics ($T_a = 25^\circ\text{C}$) (Q1, Q2 Common)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	—	$V_{CB} = 60\text{ V}$, $I_E = 0$	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	—	$V_{EB} = 5\text{ V}$, $I_C = 0$	—	—	0.1	μA
DC current gain	h_{FE} (Note)	—	$V_{CE} = 6\text{ V}$, $I_C = 2\text{ mA}$	120	—	400	
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	$I_C = 100\text{ mA}$, $I_B = 10\text{ mA}$	—	0.1	0.25	V
Transition frequency	f_T	—	$V_{CE} = 10\text{ V}$, $I_C = 1\text{ mA}$	80	—	—	MHz
Collector output capacitance	C_{ob}	—	$V_{CB} = 10\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$	—	2	3.5	pF

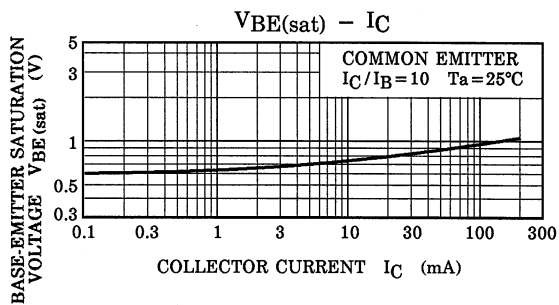
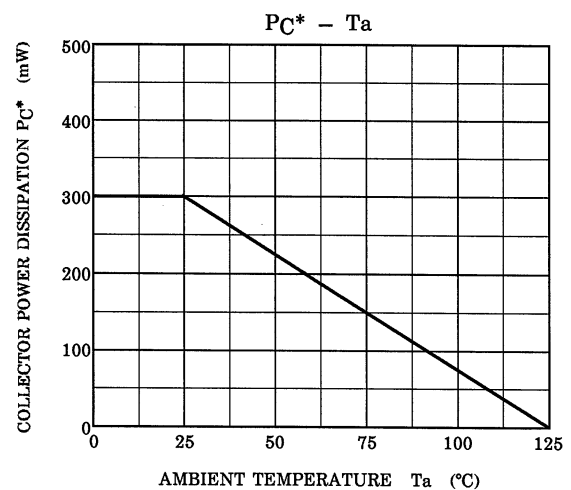
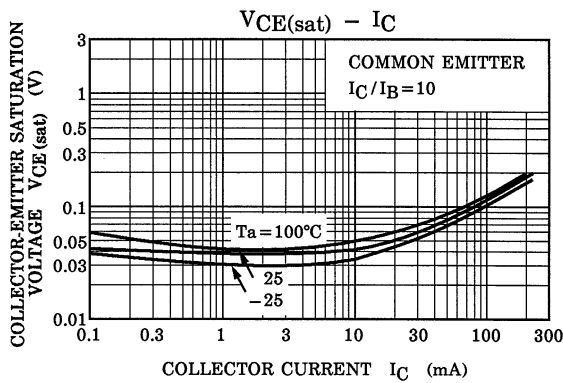
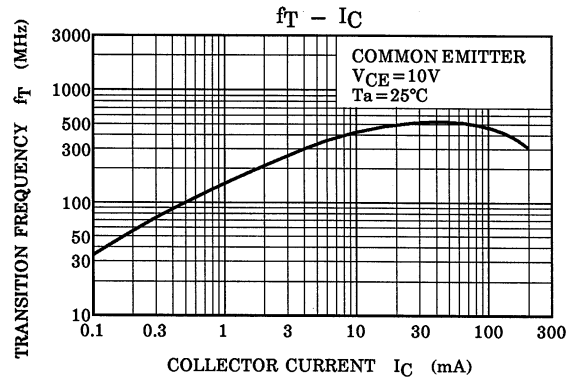
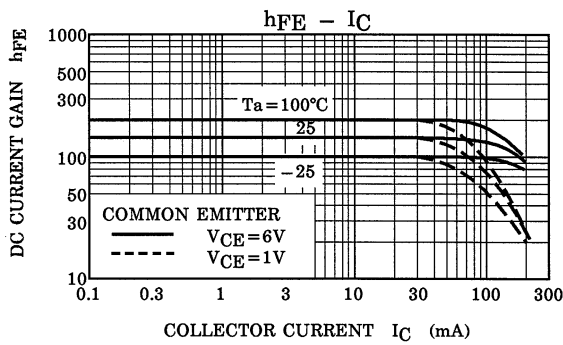
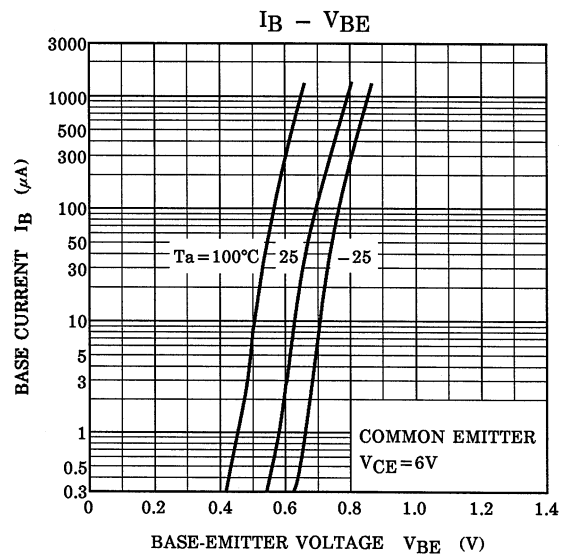
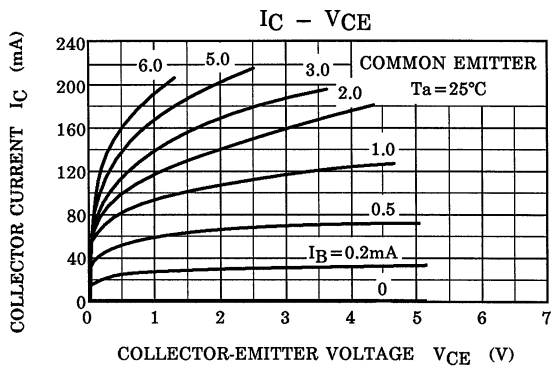
Note: h_{FE} Classification
Y (Y): 120~240, GR (G): 200~400
() Marking symbol

Marking

Equivalent Circuit (Top View)



(Q1, Q2 Common)



* : Total Rating

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20070701-EN GENERAL

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