

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

HN1A01F

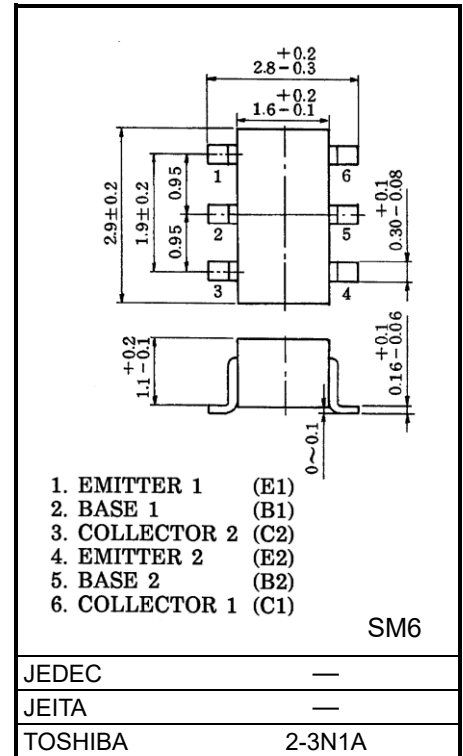
Audio Frequency General Purpose Amplifier Applications

Unit: mm

- Small package (dual type)
- High voltage and high current
: $V_{CEO} = -50\text{ V}$, $I_C = -150\text{ mA}$ (max)
- High h_{FE} : $h_{FE} = 120$ to 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}	-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	-30	mA
Collector power dissipation	P_C^*	300	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to 150	$^\circ\text{C}$



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}	—	$V_{CB} = -50\text{ V}$, $I_E = 0\text{ A}$	—	—	-0.1	μA
Emitter cut-off current	I_{EBO}	—	$V_{EB} = -5\text{ V}$, $I_C = 0\text{ A}$	—	—	-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	-0.3	V
Transition frequency	f_T	—	$V_{CE} = -10\text{ V}$, $I_C = -1\text{ mA}$	80	—	—	MHz
Collector output capacitance	C_{ob}	—	$V_{CB} = -10\text{ V}$, $I_E = 0\text{ A}$, $f = 1\text{ MHz}$	—	4	7	pF

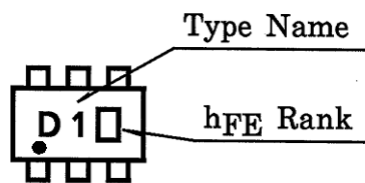
Note: h_{FE} Classification

Y (Y): 120 to 240, GR (G): 200 to 400

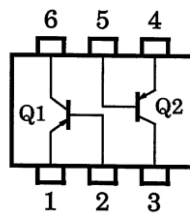
() Marking Symbol

Start of commercial production
1988-11

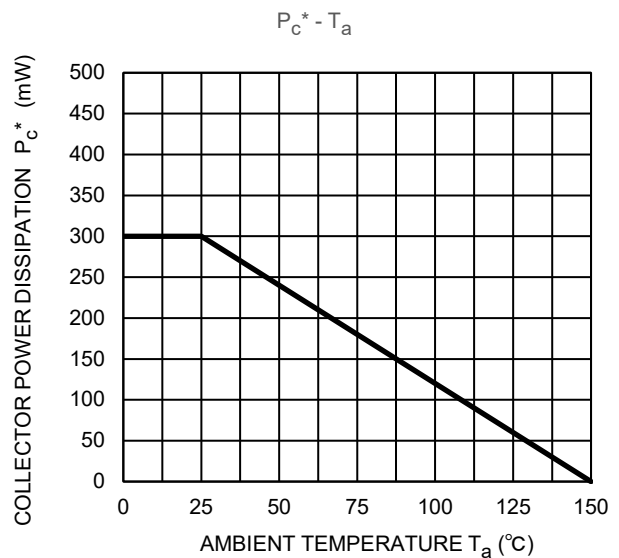
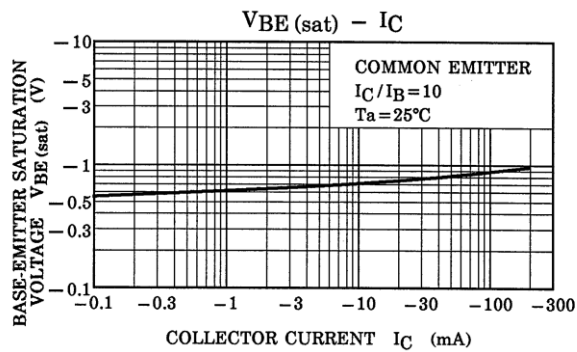
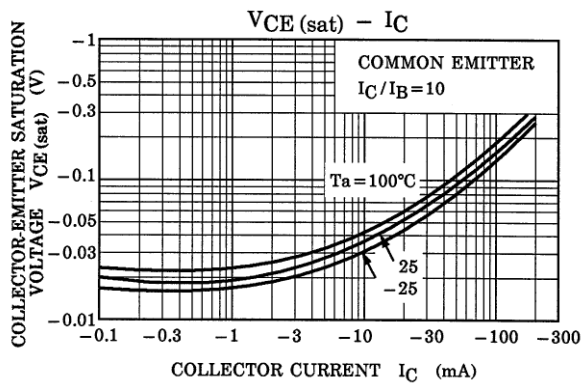
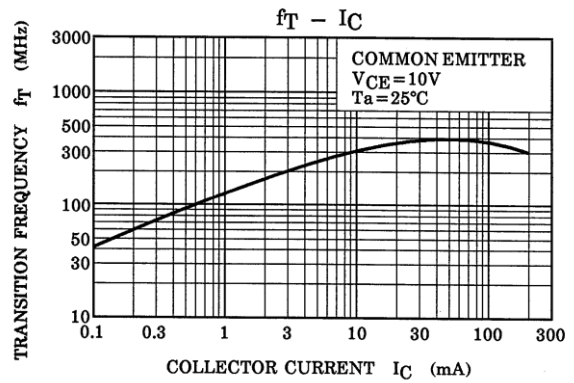
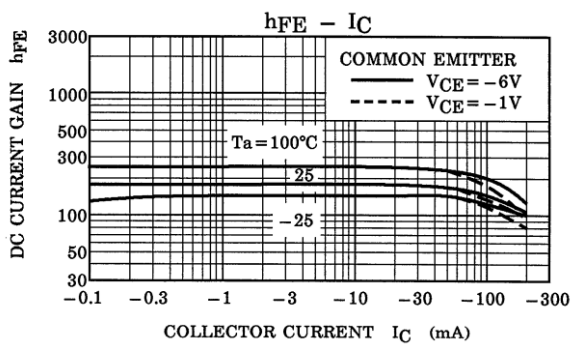
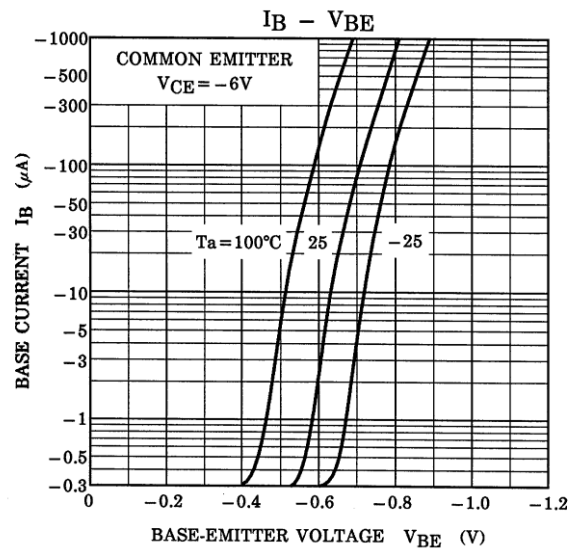
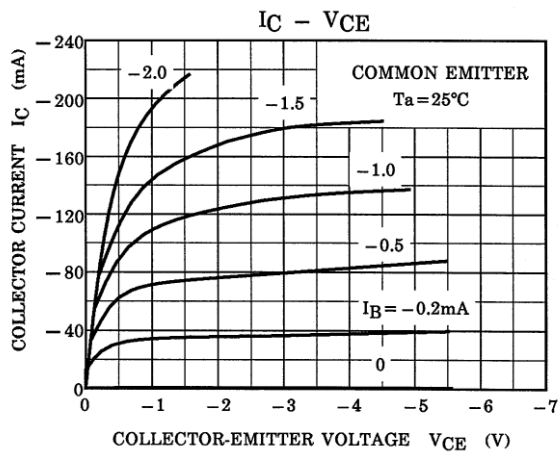
Marking



Equivalent Circuit (Top View)



Characteristics Curves (Q1, Q2 Common)



*: Total Rating

The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

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