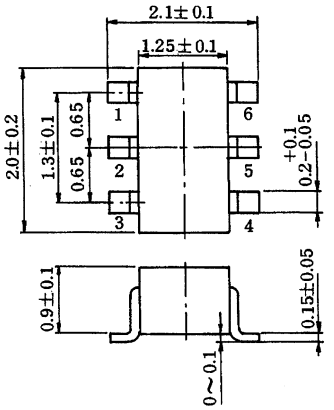
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

HN1C01FU

Audio Frequency General Purpose Amplifier Applications

- Small package (Dual type)
- High voltage and high current
  : V_{CEO} = 50V, I_C = 150mA (max)
- High h_{FE} : h_{FE} = 120 to 400
- Excellent h_{FE} linearity
  : h_{FE} (I_C = 0.1mA) / h_{FE} (I_C = 2mA) = 0.95 (typ.)

Unit: mm



1. EMITTER 1 (E1)
2. BASE 1 (B1)
3. COLLECTOR 2 (C2)
4. EMITTER 2 (E2)
5. BASE 2 (B2)
6. COLLECTOR 1 (C1)

US6

JEDEC	—
JEITA	—
TOSHIBA	2-2J1A

Weight: 6.8mg (typ.)

Absolute Maximum Ratings (Ta = 25°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*	200	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	−55 to 125	°C

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 (Ta = 25°C) (Q1,Q2 Common)

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} (Note)	—	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	80	—	—	MHz
Collector output capacitance	C_{ob}	—	V_{CB} = 10V, I_E = 0, f = 1MHz	—	2	3.5	pF

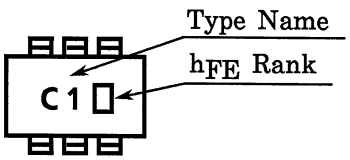
Note: h_{FE} Classification

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

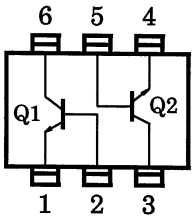
( ) Marking Symbol

Start of commercial production
1990-10

Marking

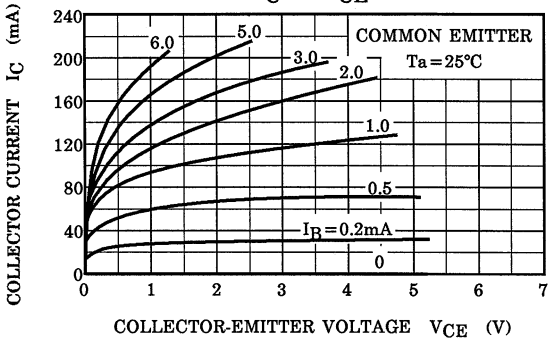


Equivalent Circuit (Top View)

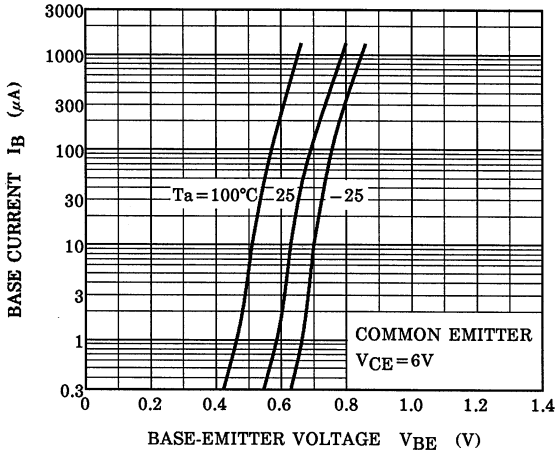


(Q1,Q2 Common)

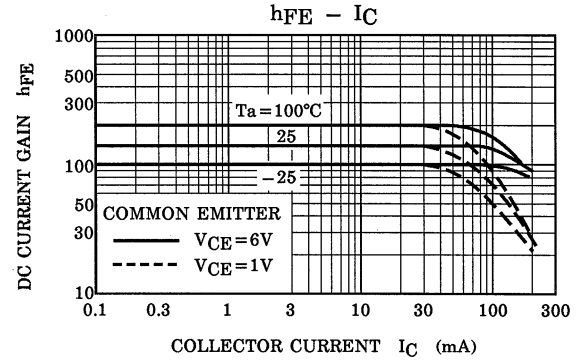
$I_C - V_{CE}$



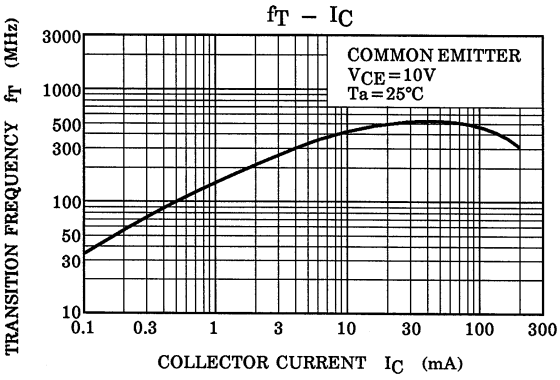
$I_B - V_{BE}$



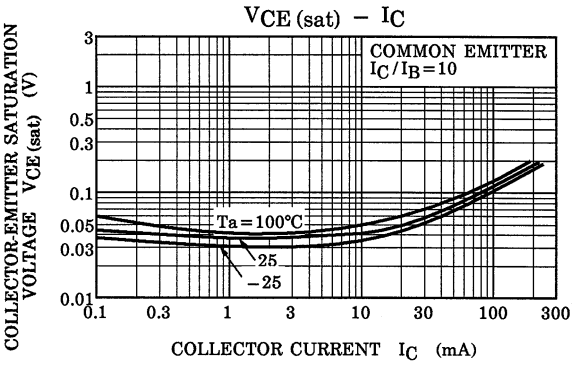
$h_{FE} - I_C$



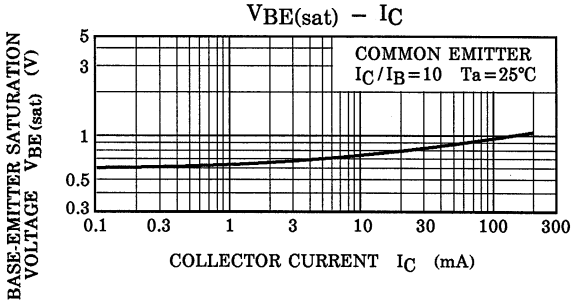
$f_T - I_C$



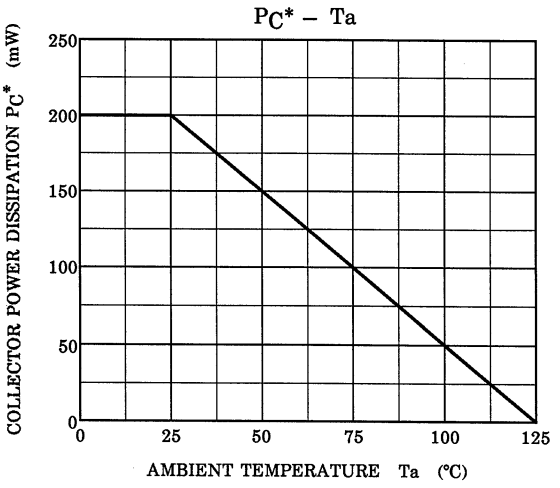
$V_{CE(sat)} - I_C$



$V_{BE(sat)} - I_C$



$P_C^* - Ta$



*: Total Rating

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