

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

HN4C05JU

Low Frequency Amplifier Applications

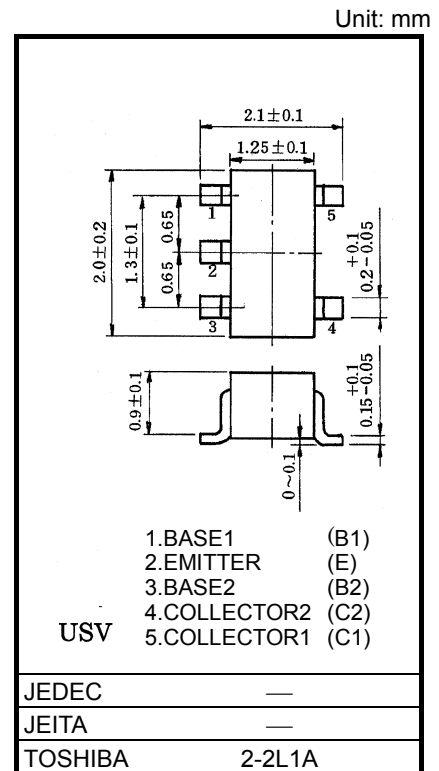
Muting Applications

Switching Applications

- Low Saturation Voltage : $V_{CE(sat)}(1)=15\text{mV}$ (Typ.)
: @ $I_C = 10\text{mA}$ / $I_B = 0.5\text{mA}$
- High Collector Current : $I_C=400\text{mA}$ (Max.)

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

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	15	V
Collector-emitter voltage	V_{CEO}	12	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	400	mA
Base current	I_B	50	mA
Collector power dissipation	P_C^*	200	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	-55~125	°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).

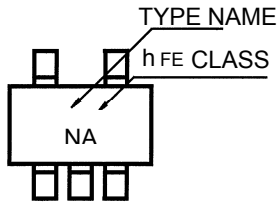
*Total rating. Power dissipation per element should not exceed 130mW.

Electrical Characteristics (Ta = 25°C) (Q1, Q2 Common)

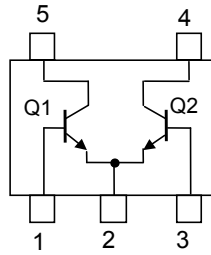
Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB} = 15\text{V}, I_E = 0$	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 5\text{V}, I_C = 0$	—	—	0.1	μA
DC current gain	h_{FE} (Note)	$V_{CE} = 2\text{V}, I_C = 10\text{mA}$	300	—	1000	
Collector-emitter saturation voltage	$V_{CE(sat)}(1)$	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$	—	15	30	mV
	$V_{CE(sat)}(2)$	$I_C = 200\text{mA}, I_B = 10\text{mA}$	—	110	250	
Collector-emitter saturation voltage	$V_{BE(sat)}$	$V_{CE} = 200\text{mA}, I_C = 10\text{mA}$	—	0.87	1.2	V
Transition frequency	f_T	$V_{CE} = 2\text{V}, I_C = 10\text{mA}$	80	130	—	MHz
Collector output capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	—	4.2	—	pF
"ON" resistance	R_{on}	$I_B = 1\text{mA}, V_{in} = 1\text{V}_{rms}, f = 1\text{kHz}$	—	0.9	—	Ω
Switching time	Turn on time	<p>Duty cycle $\leq 2\%$ $V_{BB} = V_{CC} = 6\text{V}$ $I_{B1} = -I_{B2} = 5\text{mA}$</p>	—	85	—	ns
	Storage time		—	170	—	
	Fall down time		—	40	—	

(Note) h_{FE} Classifications A:300~600, B:500~1000

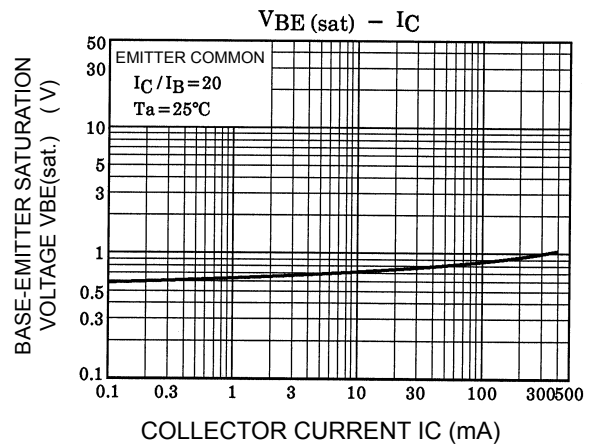
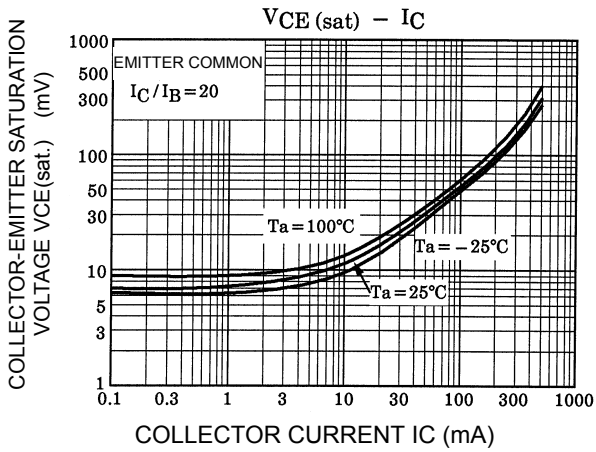
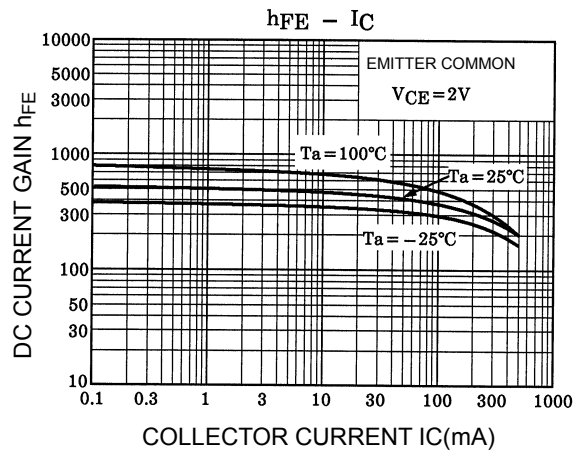
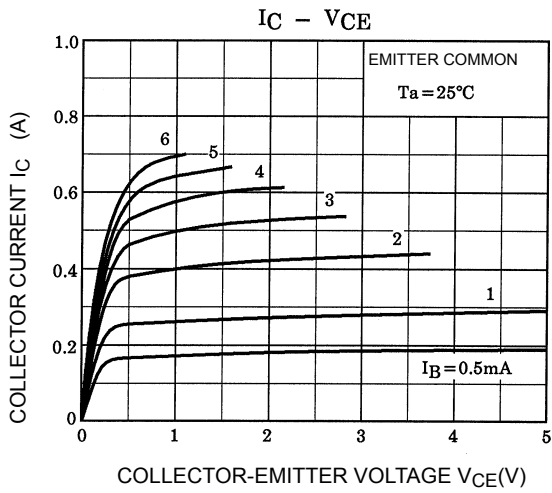
Marking



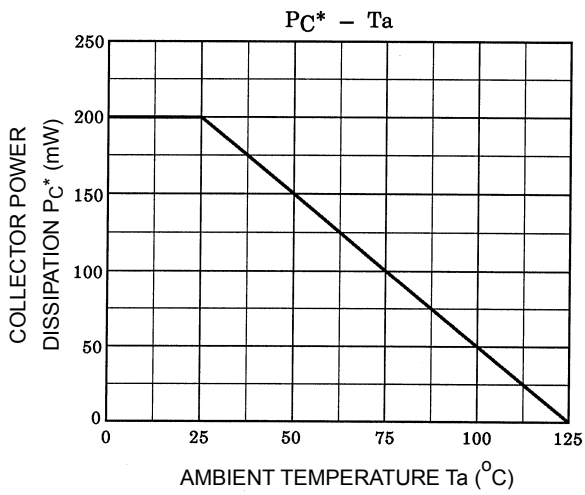
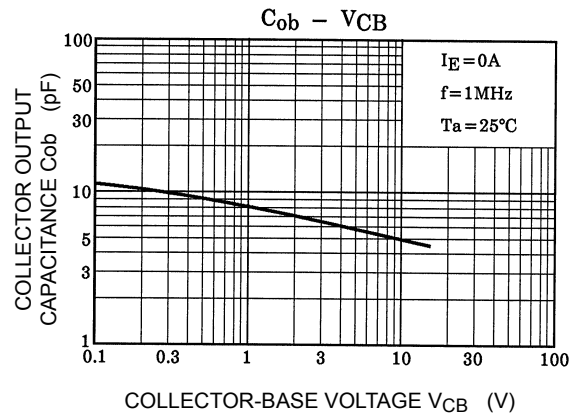
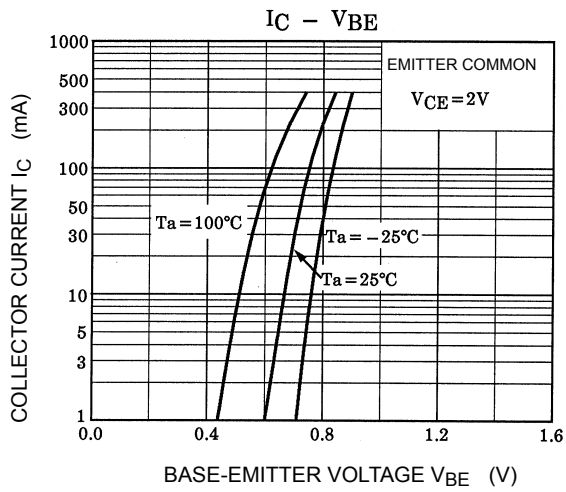
Equivalent Circuit (Top View)



(Q1, Q2 Common)



(Q1, Q2 Common)



* : Total Rating

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