

HN1C05FE

Low Frequency Amplifier Applications

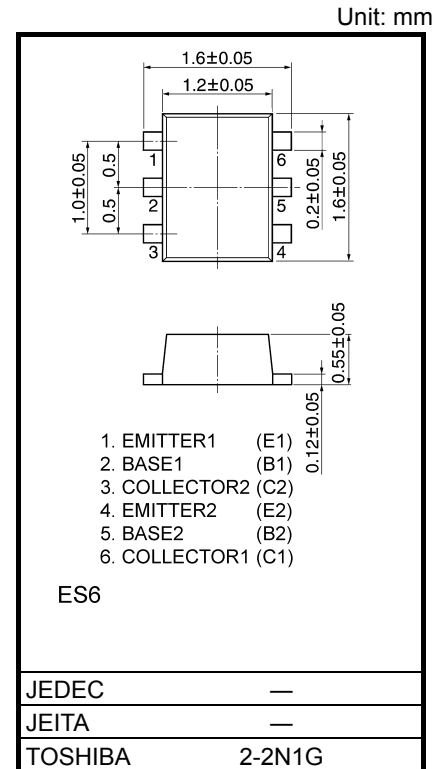
Muting Application

Switching Application

- 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^*	100	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55 to 150	°C



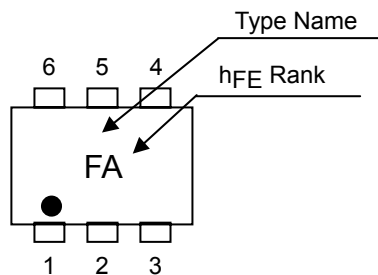
Weight: 3.0 mg (typ.)

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.

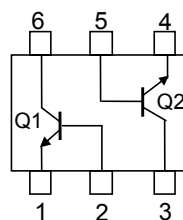
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

*:Total rating.

Marking



Equivalent Circuit (Top View)



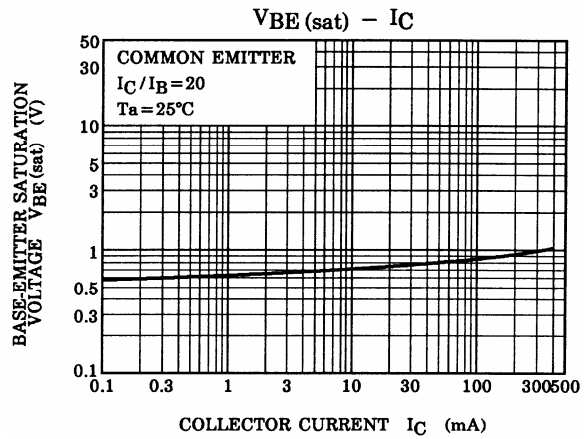
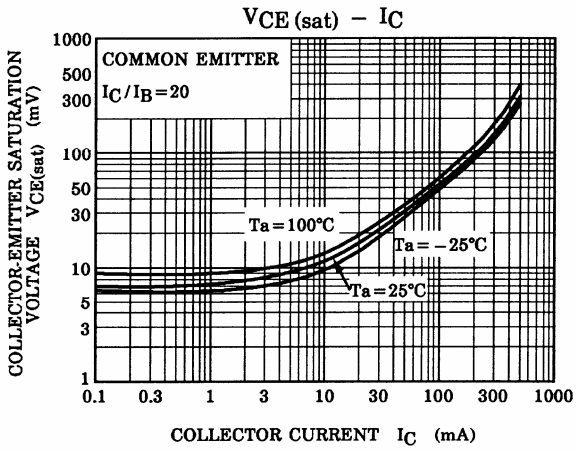
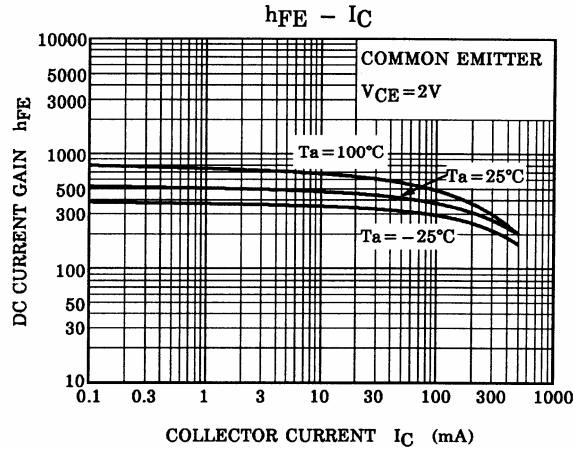
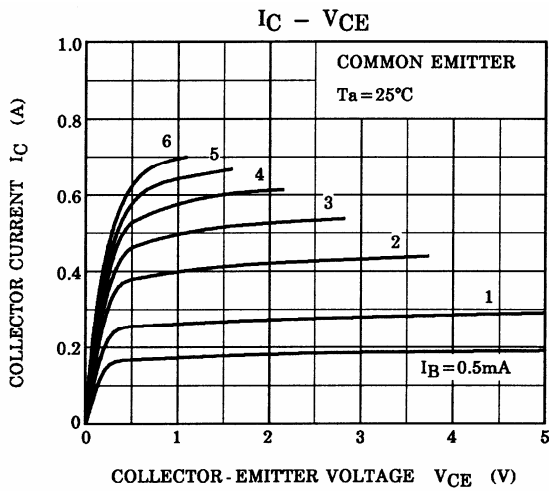
Start of commercial production
2003-02

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

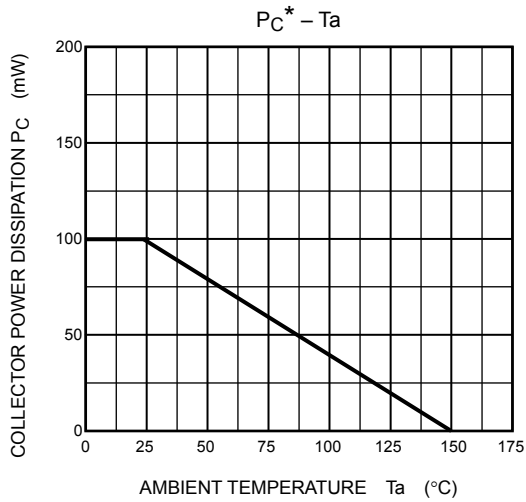
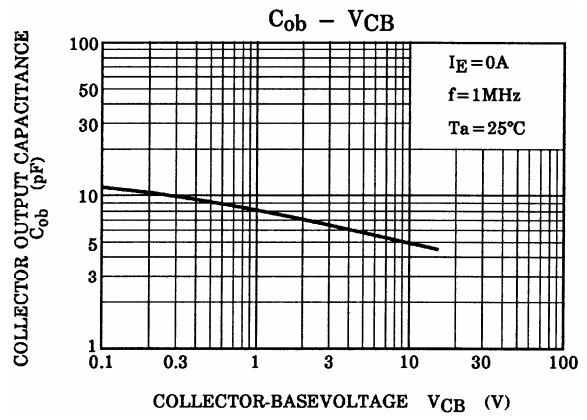
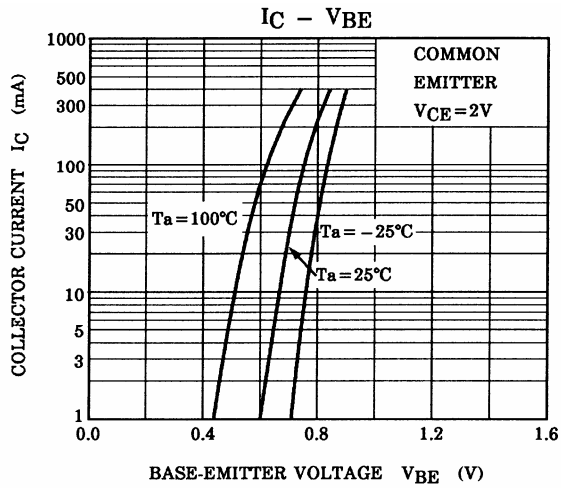
Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 15V, I_E = 0$	—	—	100	nA
Emitter cut-off current		I_{EBO}	$V_{EB} = 5V, I_C = 0$	—	—	100	nA
DC current gain		h_{FE} (Note)	$V_{CE} = 2V, I_C = 10mA$	300	—	1000	
Collector-emitter saturation voltage		$V_{CE(sat)(1)}$	$I_C = 10mA, I_B = 0.5mA$	—	15	30	mV
		$V_{CE(sat)(2)}$	$I_C = 200mA, I_B = 10mA$	—	110	250	
Collector-emitter saturation voltage		$V_{BE(sat)}$	$V_{CE} = 200mA, I_C = 10mA$	—	0.87	1.2	V
Transition frequency		f_T	$V_{CE} = 2V, I_C = 10mA$	—	130	—	MHz
Collector output capacitance		C_{ob}	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	4.2	—	pF
"ON" resistance		R_{on}	$I_B = 1mA, V_{in} = 1V_{rms}, f = 1kHz$	—	0.9	—	Ω
Switching time	Turn on time	t_{on}	<p>Duty cycle $\leq 2\%$ $I_{B1} = -I_{B2} = 5\text{ mA}$</p>	—	85	—	ns
	Storage time	t_{stg}		—	170	—	
	Fall down time	t_f		—	40	—	

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

(Q1, Q2 Common)



(Q1, Q2 Common)



*:Total Rating

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