

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

HN1C03F

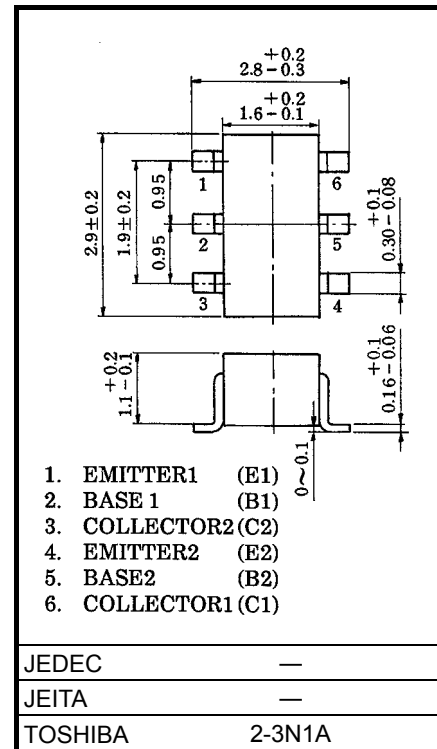
For Muting And Switching Applications

Unit: mm

- Including two devices in SM6 (Super mini type with 6 leads)
- High emitter-base voltage: $V_{EBO} = 25V$ (min)
- High reverse h_{FE} : reverse $h_{FE} = 150$ (typ.) ($V_{CE} = -2V, I_C = -4mA$)
- Low on resistance: $R_{ON} = 1\Omega$ (typ.) ($I_B = 5mA$)

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

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEO}	20	V
Emitter-base voltage	V_{EBO}	25	V
Collector current	I_C	300	mA
Base current	I_B	60	mA
Collector power dissipation	P_C^*	300	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55 to 150	°C



Weight: 0.015g (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

Start of commercial production
1988-11

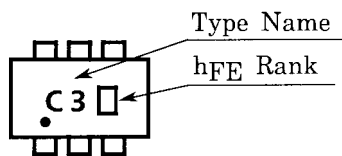
Electrical Characteristics (Ta = 25°C) (Q1,Q2 Common)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	—	$V_{CB} = 50V, I_E = 0$	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	—	$V_{EB} = 25V, I_C = 0$	—	—	0.1	μA
DC current gain	h_{FE} (Note)	—	$V_{CE} = 2V, I_C = 4mA$	200	—	1200	
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	$I_C = 30mA, I_B = 3mA$	—	0.042	0.1	V
Base-emitter voltage	V_{BE}	—	$V_{CE} = 2V, I_C = 4mA$	—	0.61	—	V
Transition frequency	f_T	—	$V_{CE} = 6V, I_C = 4mA$	—	30	—	MHz
Collector output capacitance	C_{ob}	—	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	4.8	7	pF
Switching time	Turn-on time	—	<p>DUTY CYCLE $\leq 2\%$</p>	—	160	—	ns
	Storage Time	—		—	500	—	
	Fall time	—		—	—	130	

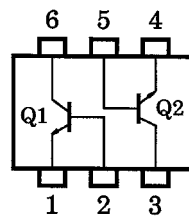
Note: h_{FE} Classification

A: 200 to 700, B: 350 to 1200

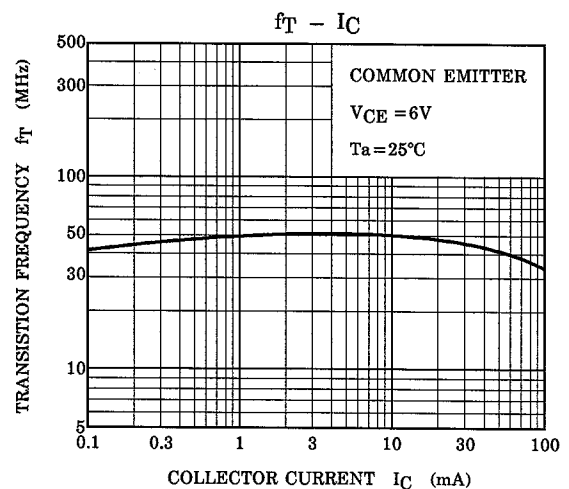
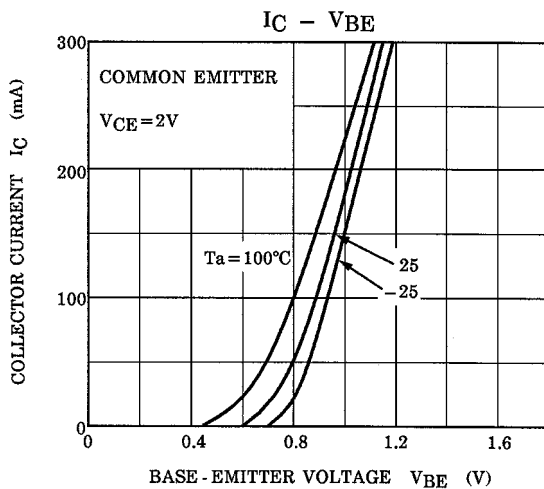
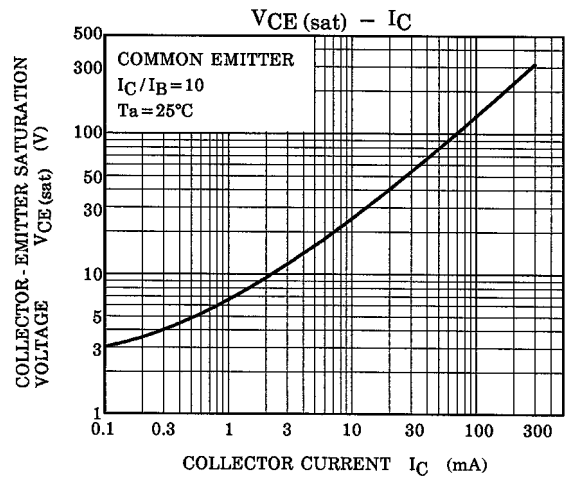
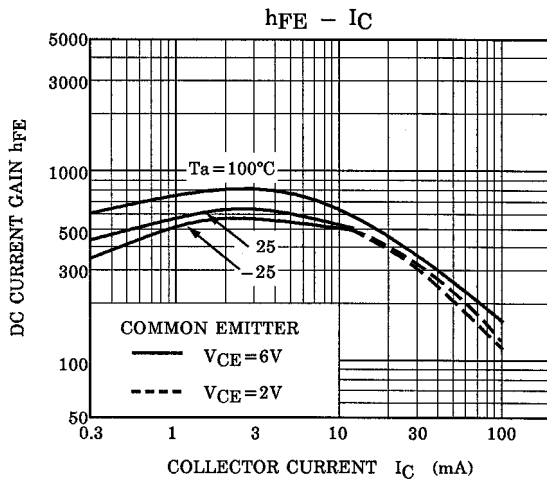
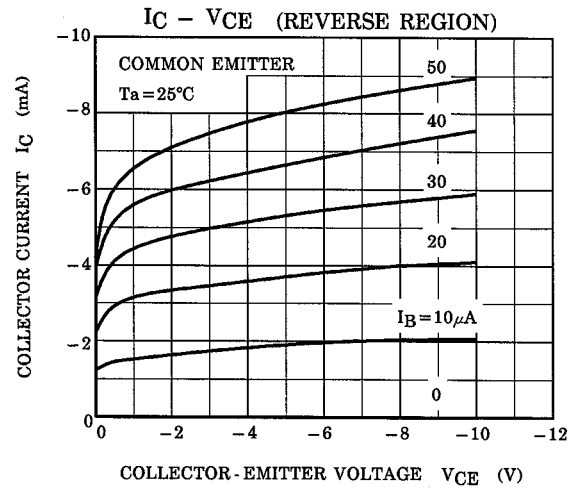
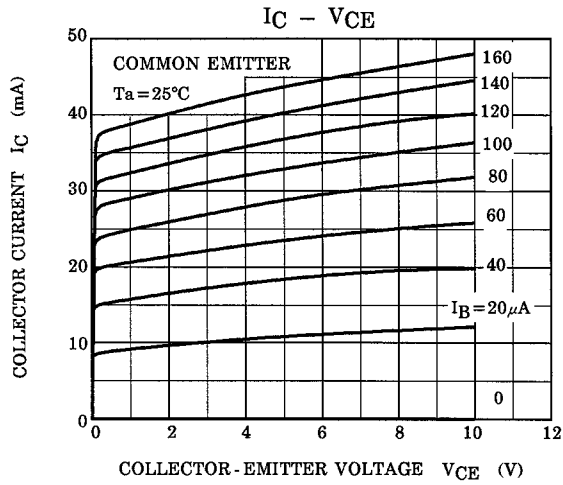
Marking



Equivalent Circuit (Top View)

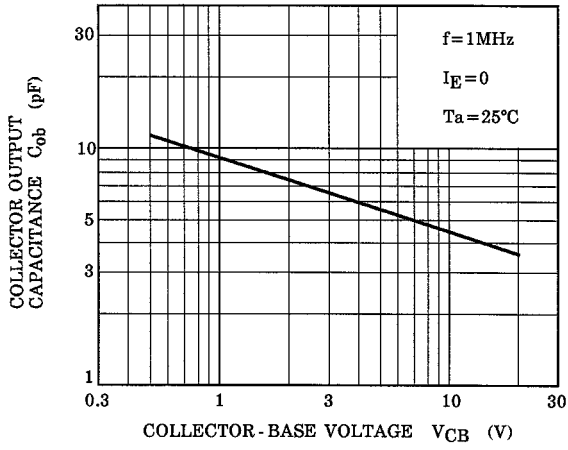


(Q1, Q2 Common)

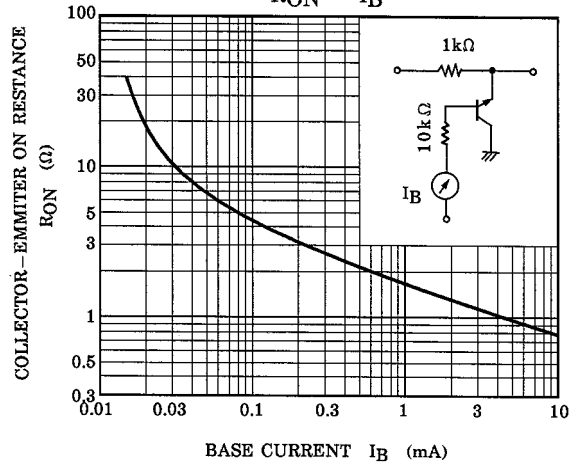


(Q1, Q2 Common)

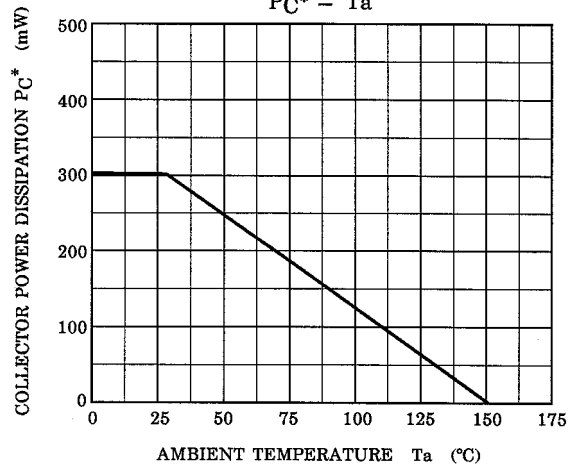
$C_{ob} - V_{CB}$



$R_{ON} - I_B$



$P_C^* - T_a$



*: Total Rating

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