

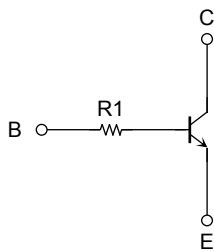
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

# RN1544

For use in Muting and Switching Applications

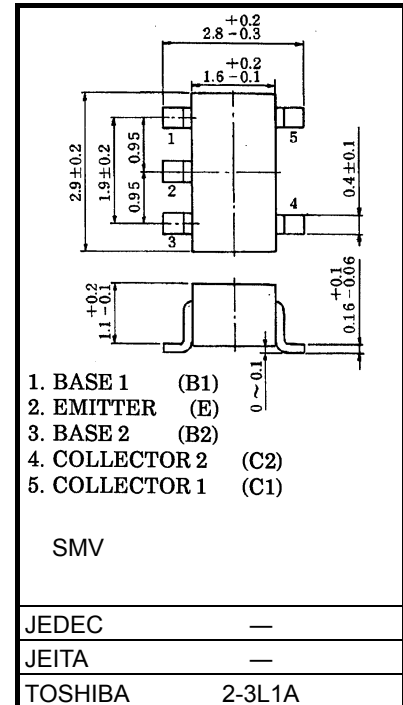
- Emitter-base voltage is high:  $V_{EBO} = 25\text{ V}$  (max)
- Incorporating a bias resistor into a transistor reduces parts count. Reducing the parts count enable the manufacture of ever more compact equipment and save assembly cost.

## Equivalent Circuit



$h_{FE}$ classification	A	B
Marking	44A	44B

Unit: mm



Weight: 0.014g (typ.)

## Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ ) (Q1, Q2 common)

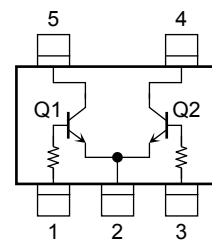
Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	50	V
Collector-emitter voltage	$V_{CEO}$	20	V
Emitter-base voltage	$V_{EBO}$	25	V
Collector current	$I_C$	300	mA
Collector power dissipation	$P_C$ (Note1)	300	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55~150	$^\circ\text{C}$

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).

Note1: Total rating

## Equivalent Circuit (top view)

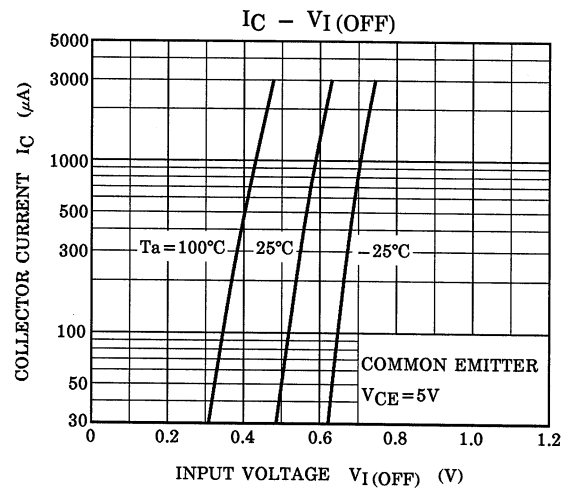
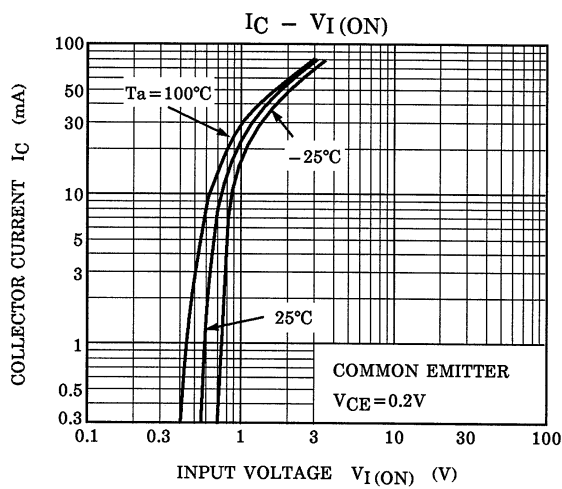
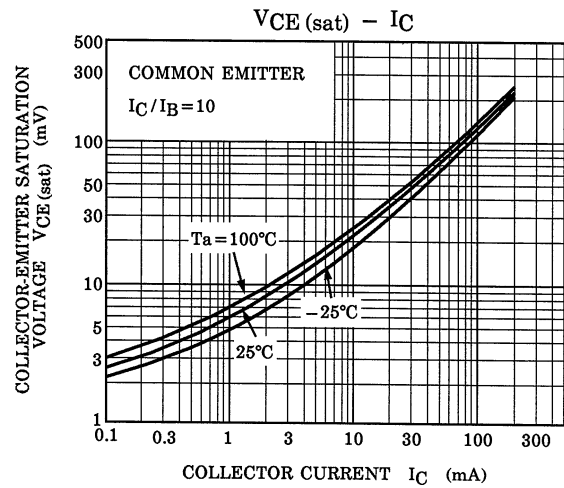
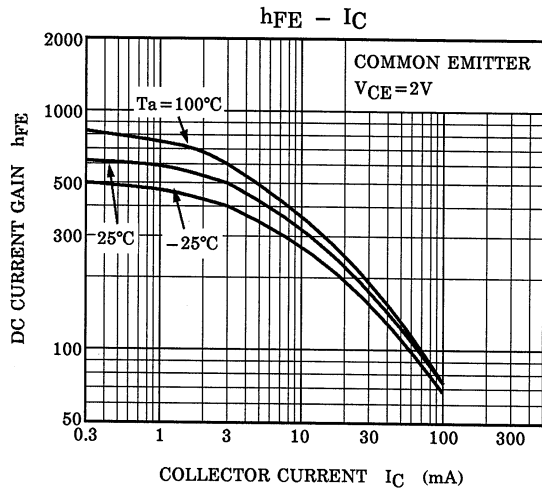
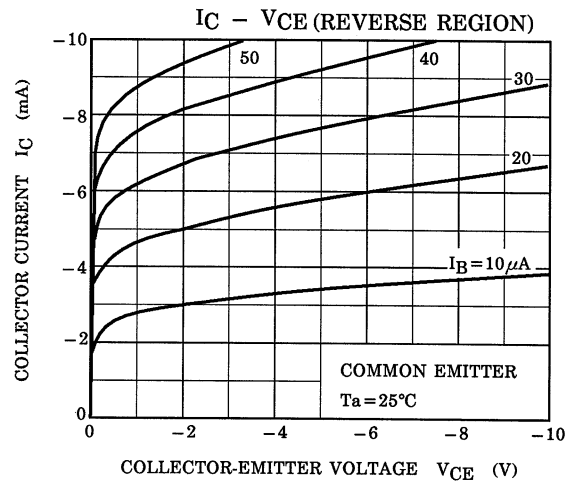
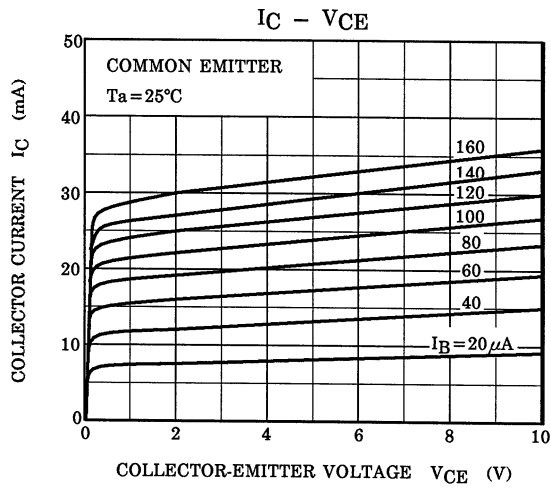


## Electrical Characteristics ( $T_a = 25^\circ\text{C}$ ) (Q1, Q2 common)

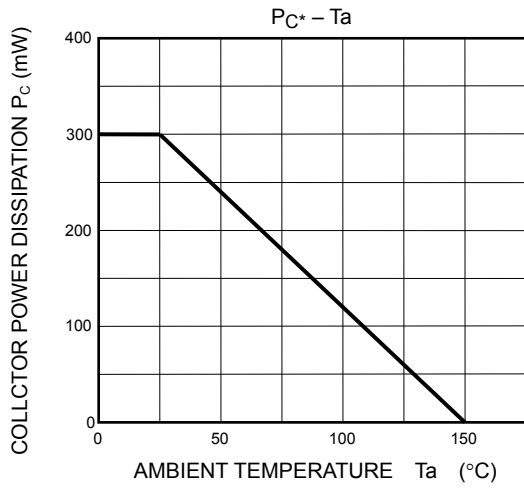
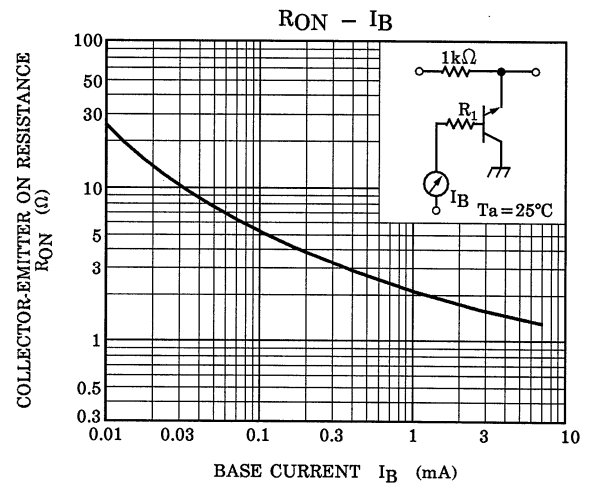
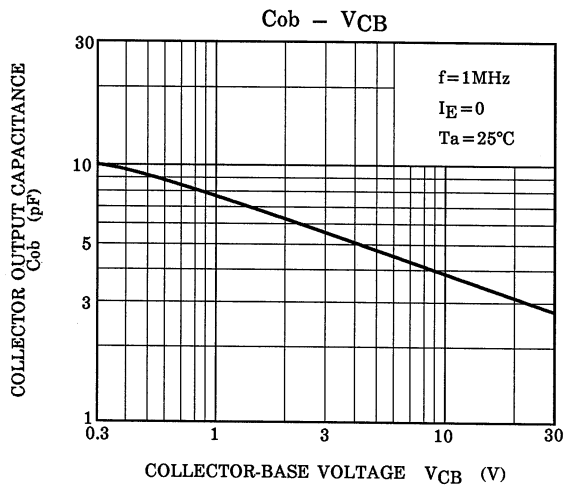
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = 50\text{ V}, I_E = 0$	—	—	100	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 25\text{ V}, I_C = 0$	—	—	100	nA
DC current gain	$h_{FE}$ (Note2)	$V_{CE} = 2\text{ V}, I_C = 4\text{ mA}$	200	—	1200	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10\text{ mA}, I_B = 1\text{ mA}$	—	—	0.1	V
Transition frequency	$f_T$	$V_{CE} = 6\text{ V}, I_C = 4\text{ mA}$	—	30	—	MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	—	7	pF
Input resistor	R1	—	1.54	2.2	2.86	k $\Omega$

Note2:  $h_{FE}$  classification A: 200~700, B: 350~1200

## Q1,Q2 Common



## Q1,Q2 Common



\*: Total rating

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