

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

2SC3803

High Frequency Amplifier Applications

Video Amplifier Applications

High Speed Switching Applications

- High transition frequency: $f_T = 200$ MHz (typ.)
- Low collector output capacitance: $C_{ob} = 3.5$ pF (typ.)
- Complementary to 2SA1483

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

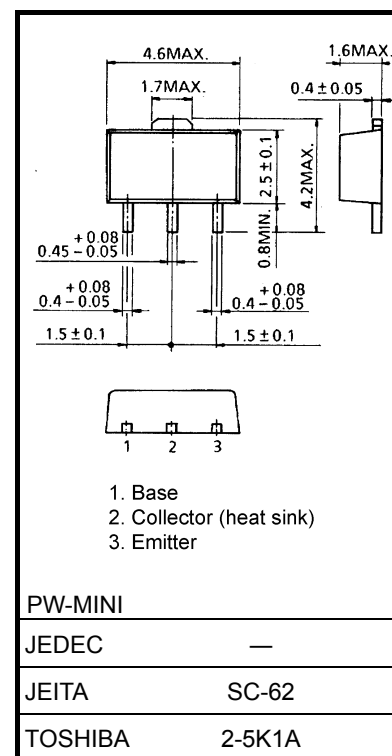
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	60	V
Collector-emitter voltage	V_{CEO}	45	V
Emitter-base voltage	V_{EBO}	5	V
Continuous collector current	I_C	200	mA
Continuous base current	I_B	50	mA
Collector power dissipation	P_C	500	mW
	P_C (Note 1)	1000	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to 150	$^\circ\text{C}$

Note 1: Mounted on a ceramic substrate ($250\text{ mm}^2 \times 0.8\text{ t}$)

Note 2: 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.

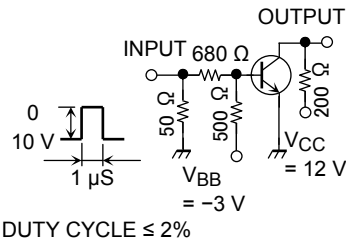
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Unit: mm



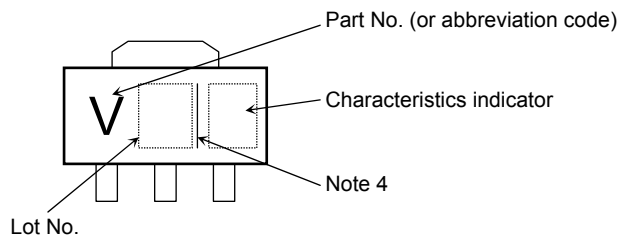
Weight: 0.05 g (typ.)

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 45 \text{ V}, I_E = 0$	—	—	0.1	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 5 \text{ V}, I_C = 0$	—	—	0.1	μA
DC current gain	$h_{FE} (1)$ (Note 3)		$V_{CE} = 1 \text{ V}, I_C = 10 \text{ mA}$	40	—	240	
	$h_{FE} (2)$		$V_{CE} = 3 \text{ V}, I_C = 200 \text{ mA}$	20	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$	—	—	0.3	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$	—	—	1.0	V
Transition frequency		f_T	$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$	100	200	—	MHz
Input impedance (real part)		$R_e (h_{ie})$	$V_{CE} = 10 \text{ V}, I_E = -10 \text{ mA}, f = 200 \text{ MHz}$	—	—	120	Ω
Collector output capacitance		C_{ob}	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$	—	3.5	5.0	pF
Switching time	Turn-on time	t_{on}	 DUTY CYCLE $\leq 2\%$	—	40	—	ns
	Storage time	t_{stg}		—	250	—	
	Fall time	t_f		—	30	—	

Note 3: $h_{FE} (1)$ classification R: 40 to 80, O: 70 to 140, Y: 120 to 240

Marking

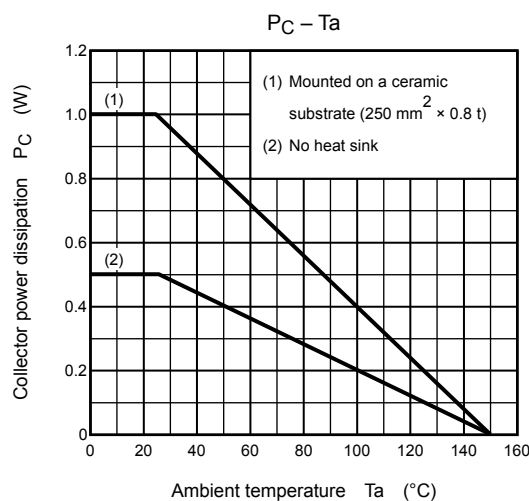
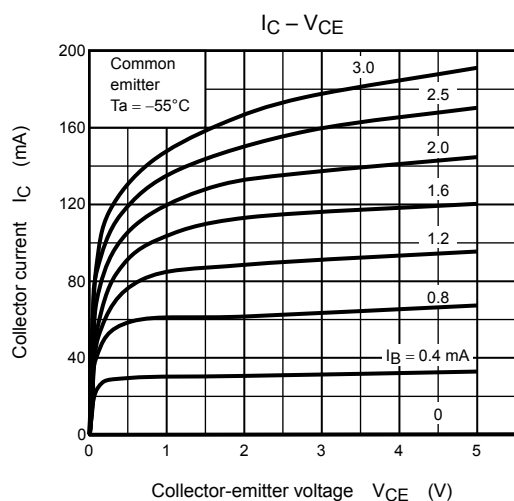
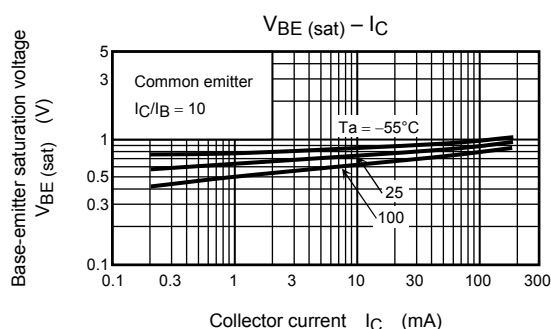
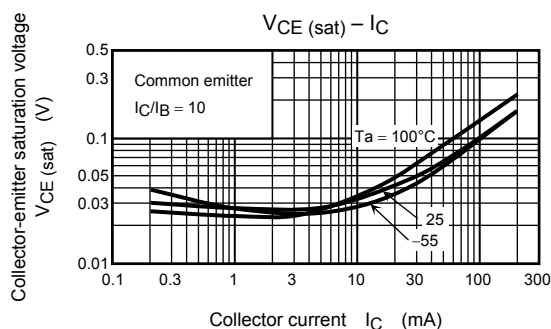
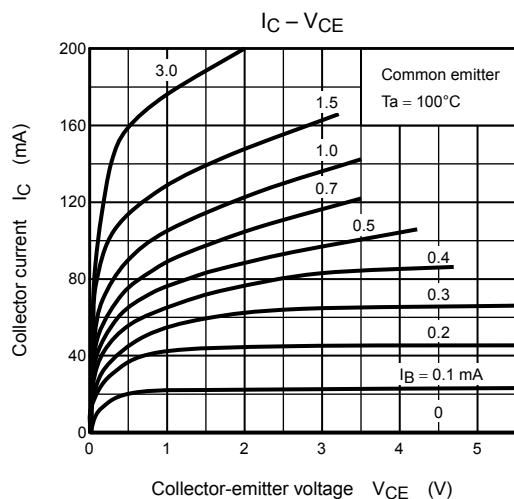
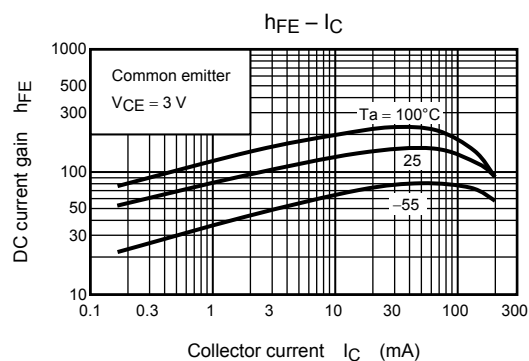
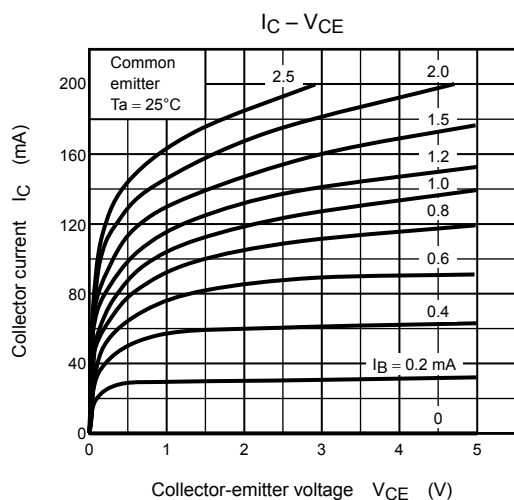


Note 4: A line to the right of a Lot No. identifies the indication of product Labels.

Without a line: $[[Pb]]/INCLUDES > MCV$

With a line: $[[G]]/RoHS COMPATIBLE$ or $[[G]]/RoHS [[Pb]]$

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.



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