

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 (Ta = 25°C)

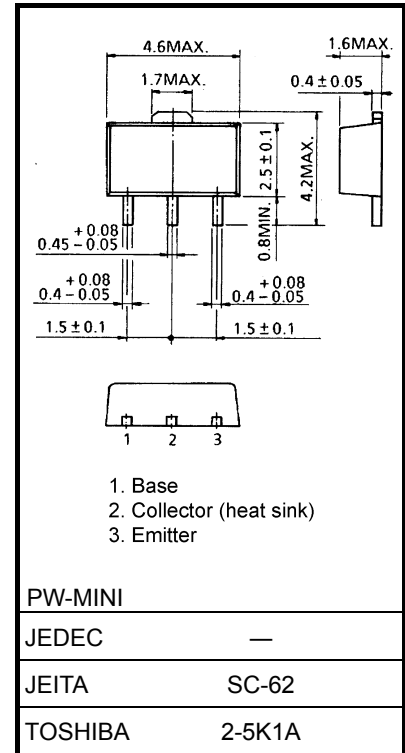
Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	60	V
Collector-emitter voltage	$V_{CEO}$	45	V
Emitter-base voltage	$V_{EBO}$	5	V
Continuous collector current	$I_C$	200	mA
Continuous base current	$I_B$	50	mA
Collector power dissipation	$P_C$	500	mW
	$P_C$ (Note 1)	1000	
Junction temperature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

Note 1: Mounted on a ceramic substrate (250 mm<sup>2</sup> × 0.8 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



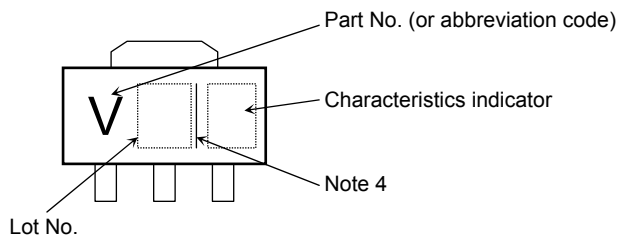
Weight: 0.05 g (typ.)

## 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	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = 5\text{ V}, I_C = 0$	—	—	0.1	$\mu\text{A}$
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)		$Re(h_{ie})$	$V_{CE} = 10\text{ V}, I_E = -10\text{ mA}, f = 200\text{ MHz}$	—	—	120	$\Omega$
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	$t_{on}$	<p>DUTY CYCLE <math>\leq 2\%</math></p>	—	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

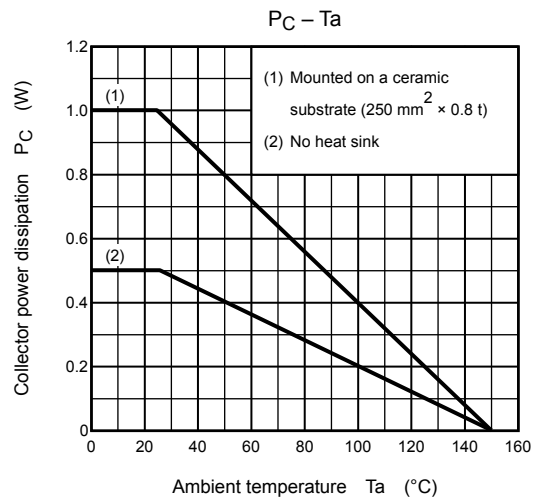
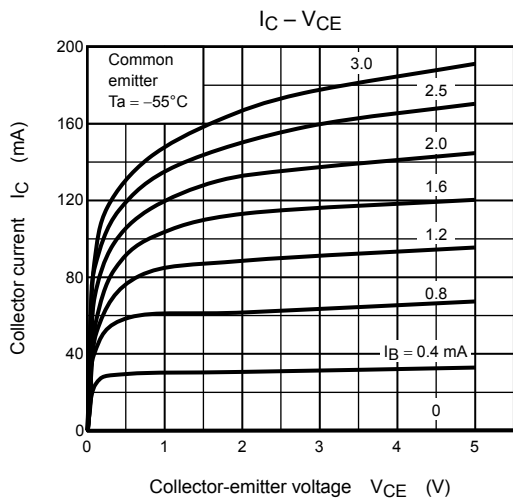
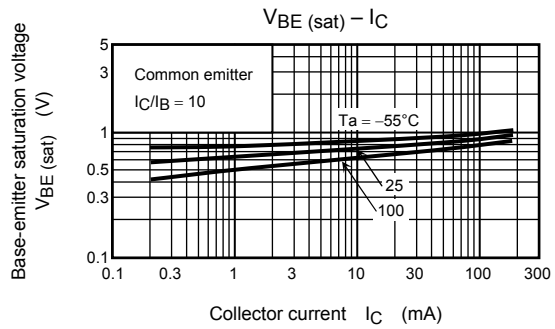
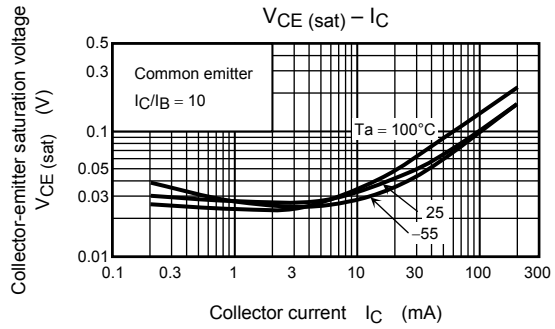
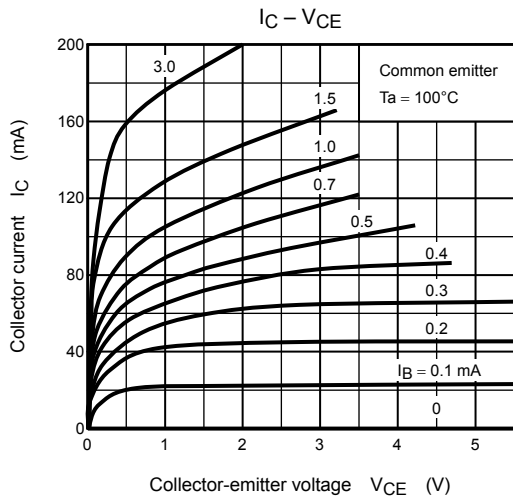
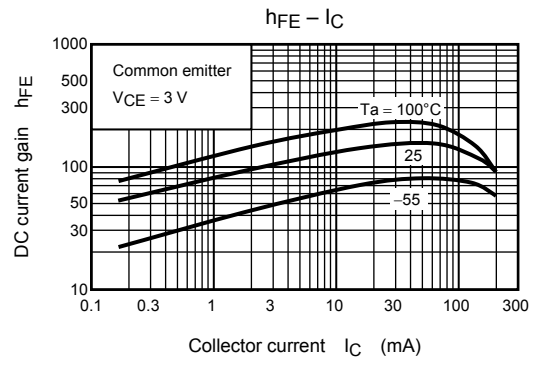
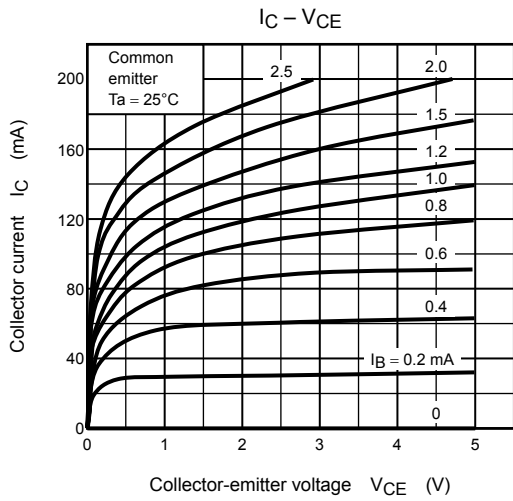


Note 4: A line to the right of a Lot No. identifies the indication of product Labels.

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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