TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

2SC3803

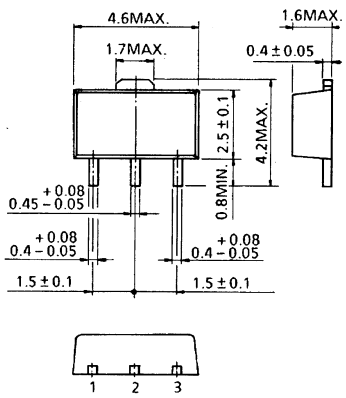
High Frequency Amplifier Applications
Video Amplifier Applications
High Speed Switching Applications

- 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

Unit: mm



1. Base
2. Collector (heat sink)
3. Emitter

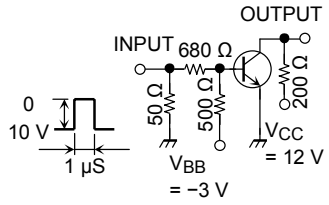
PW-MINI	
JEDEC	—
JEITA	SC-62
TOSHIBA	2-5K1A

Weight: 0.05 g (typ.)

Note 1: Mounted on a ceramic substrate (250 mm^2 × 0.8 t)

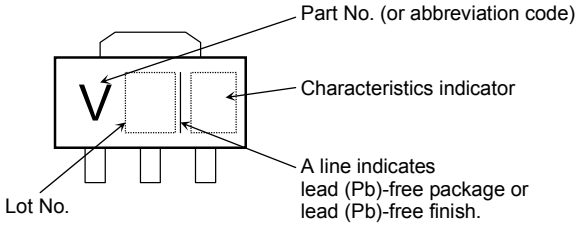
Note 2: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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).

Electrical Characteristics (Ta = 25°C)

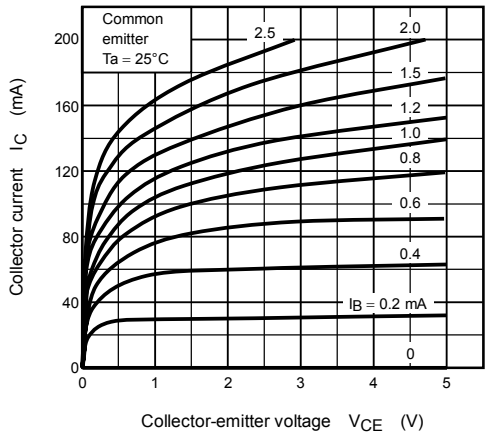
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = 45 V, I_E = 0	—	—	0.1	μA
Emitter cut-off current		I_{EBO}	V_{EB} = 5 V, I_C = 0	—	—	0.1	μA
DC current gain		$h_{FE\ (1)}$ (Note 3)	V_{CE} = 1 V, I_C = 10 mA	40	—	240	
		$h_{FE\ (2)}$	V_{CE} = 3 V, I_C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

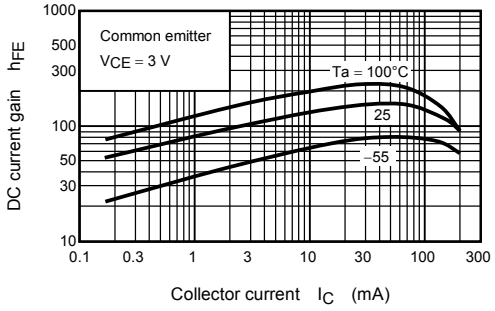
Marking



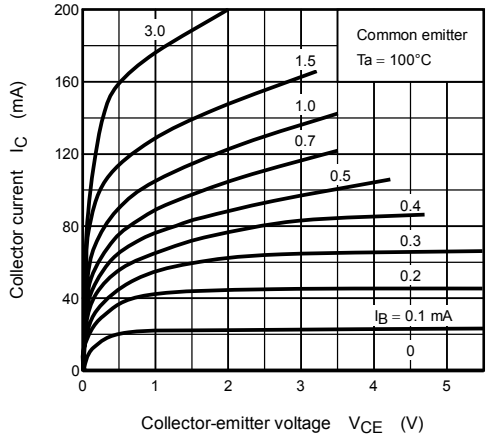
$I_C - V_{CE}$



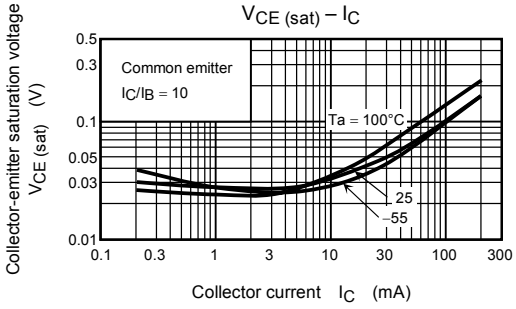
$h_{FE} - I_C$



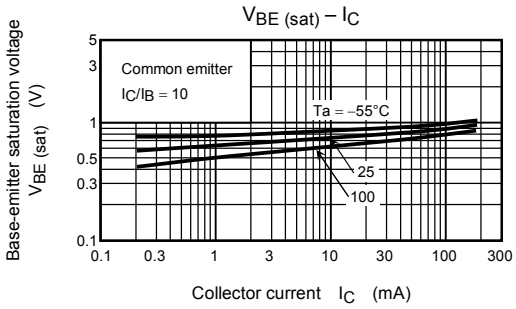
$I_C - V_{CE}$



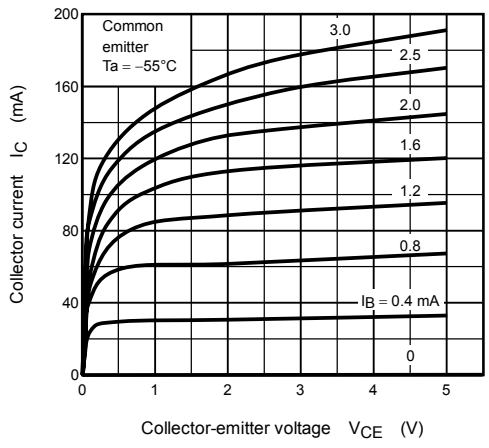
$V_{CE\ (sat)} - I_C$



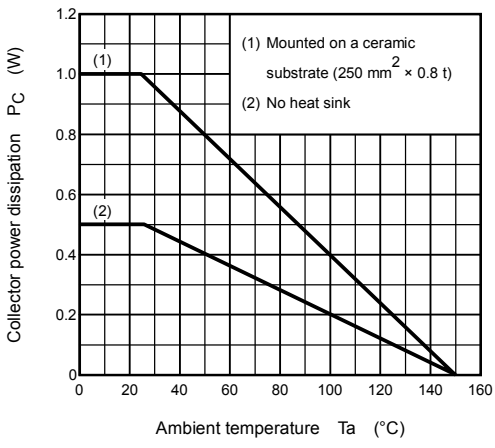
$V_{BE\ (sat)} - I_C$



$I_C - V_{CE}$



$P_C - Ta$



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