

TOSHIBA Transistor Silicon NPN Epitaxial Type

2SC5703

High-Speed Switching Applications
 DC-DC Converter Applications
 Strobe Applications

- High DC current gain: $h_{FE} = 400$ to 1000 ($I_C = 0.5$ A)
- Low collector-emitter saturation voltage: $V_{CE(sat)} = 0.12$ V (max)
- High-speed switching: $t_f = 55$ ns (typ.)

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

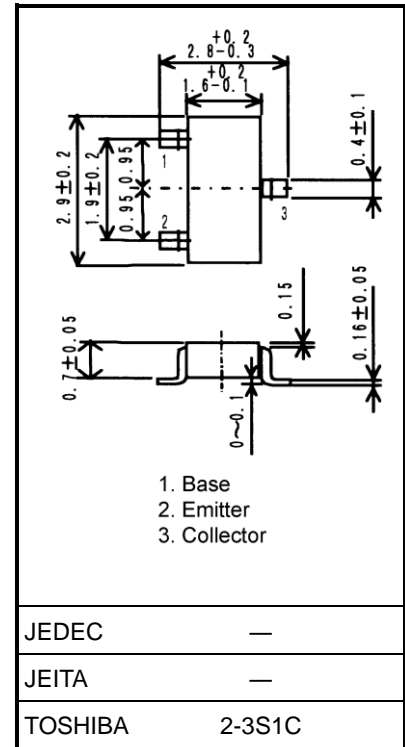
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	100	V
Collector-emitter voltage	V_{CEX}	80	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	7	V
Collector current	DC	I_C	A
	Pulse	I_{CP}	
Base current	I_B	400	mA
Collector power dissipation	DC	P_C	mW
	$t = 10$ s	(Note 1)	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to 150	$^\circ\text{C}$

Note 1: Mounted on an FR4 board (glass epoxy, 1.6 mm thick, Cu area: 645 mm²)

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: 0.01 g (typ.)

Start of commercial production
2000-05

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit	
Collector cut-off current	ICBO	V _{CB} = 100 V, I _E = 0 A	—	—	100	nA	
Emitter cut-off current	IEBO	V _{EB} = 7 V, I _C = 0 A	—	—	100	nA	
Collector-emitter breakdown voltage	V _(BR) CEO	I _C = 10 mA, I _B = 0 A	50	—	—	V	
DC current gain	hFE (1)	V _{CE} = 2 V, I _C = 0.5 A	400	—	1000	—	
	hFE (2)	V _{CE} = 2 V, I _C = 1.6 A	200	—	—		
Collector-emitter saturation voltage	V _{CE (sat)}	I _C = 1.6 A, I _B = 32 mA	—	—	0.12	V	
Base-emitter saturation voltage	V _{BE (sat)}	I _C = 1.6 A, I _B = 32 mA	—	—	1.10	V	
Collector output capacitance	C _{ob}	V _{CB} = 10 V, I _E = 0 A, f = 1 MHz	—	26	—	pF	
Switching time	Rise time	t _r	See Figure 1 circuit diagram.		—	45	ns
	Storage time	t _{stg}	V _{CC} ≈ 30 V, R _L = 19 Ω		—	700	
	Fall time	t _f	I _{B1} = -I _{B2} = 53.3 mA		—	55	

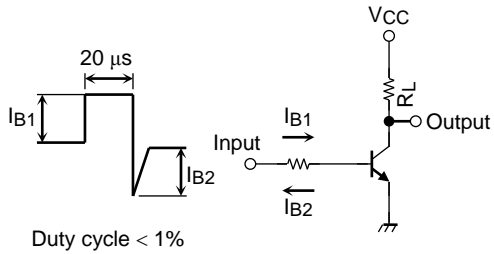
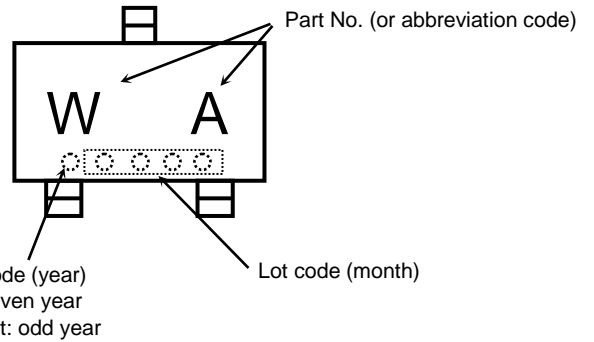
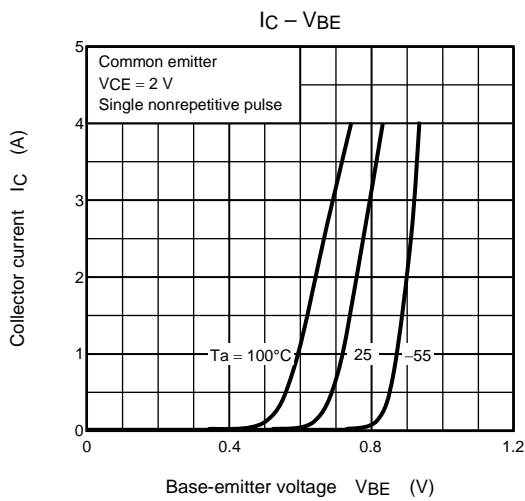
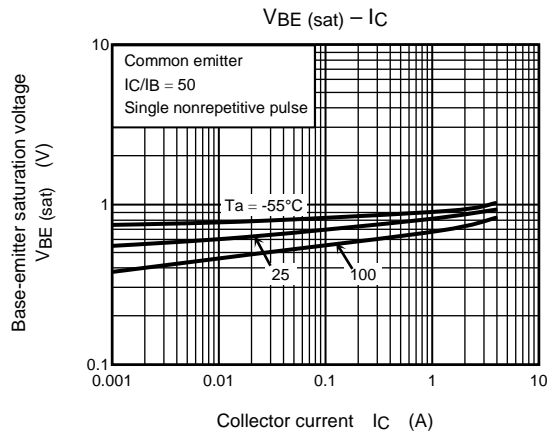
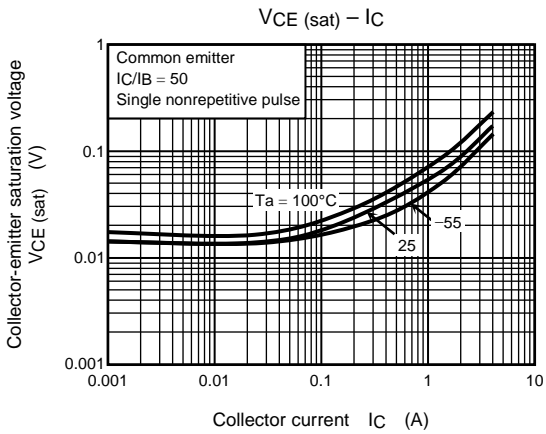
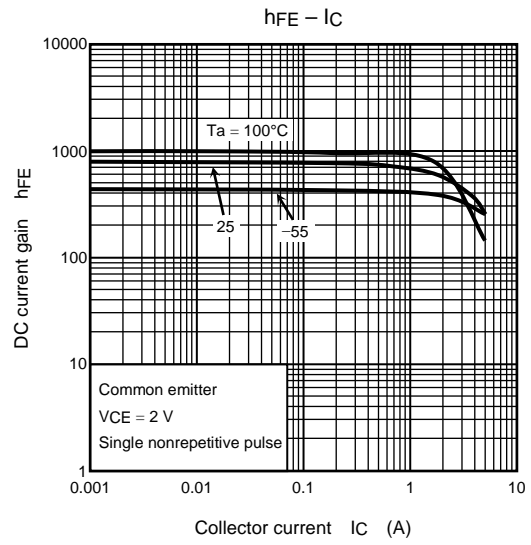
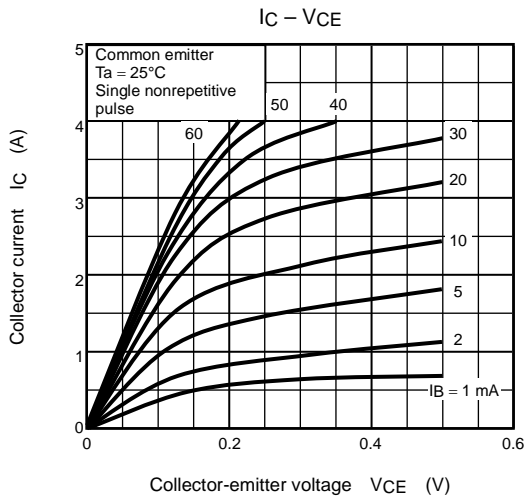
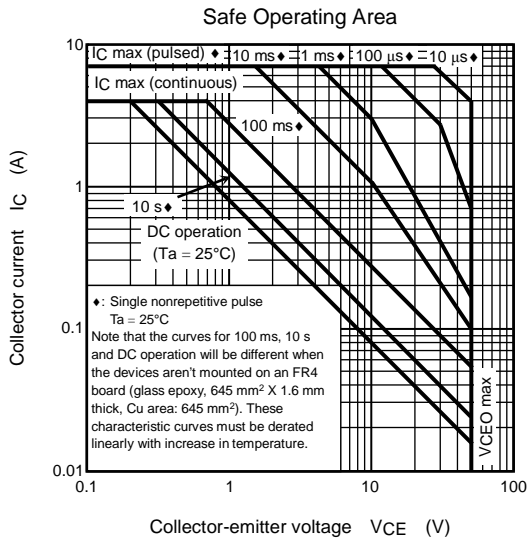
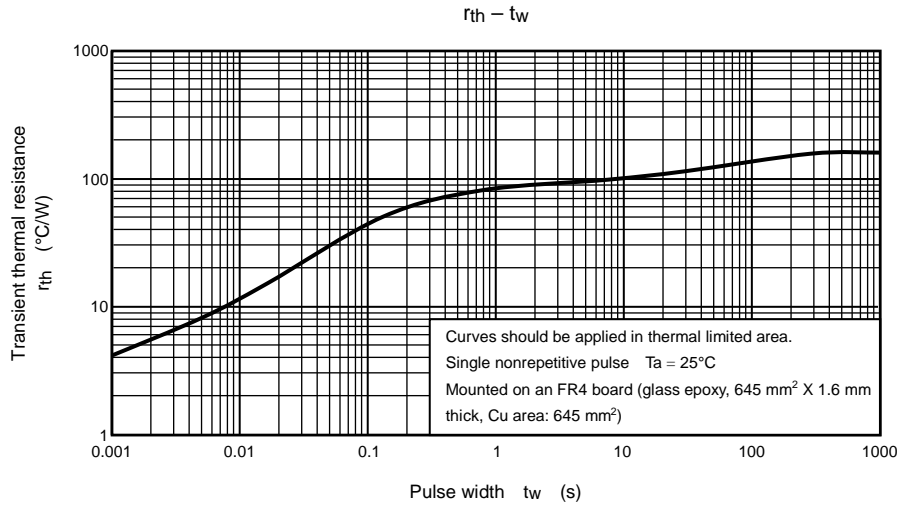


Figure 1 Switching Time Test Circuit & Timing Chart

Marking







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