

TOSHIBA Transistor Silicon PNP Epitaxial Type

TTA007

High-Speed Switching Applications
DC-DC Converter Applications

- High DC current gain : $h_{FE} = 200$ to 500 ($I_C = -0.1$ A)
- Low collector-emitter saturation voltage : $V_{CE(sat)} = -0.2$ V (max)
- High-speed switching : $t_f = 70$ ns (typ.)

Absolute Maximum Ratings (Ta = 25°C)

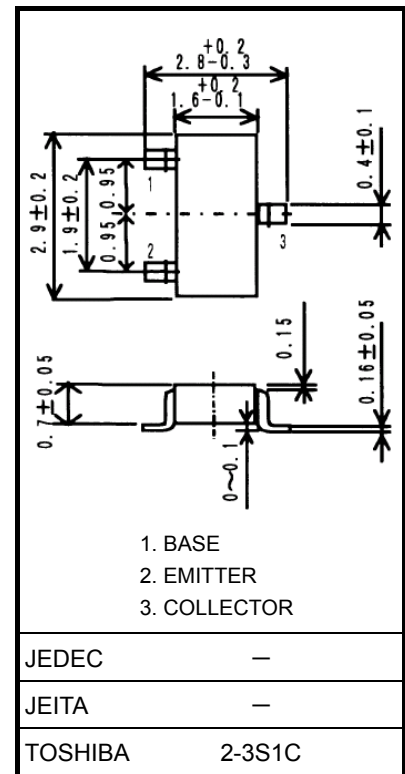
Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	-50	V
Collector-emitter voltage		V_{CEO}	-50	V
Emitter-base voltage		V_{EBO}	-7	V
Collector current	DC	I_C	-1	A
	Pulse	I_{CP}	-2	
Base current		I_B	-0.1	A
Collector power dissipation	t = 10 s	P_C	1.1	W
	DC	(Note 1)	0.7	
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-55 to 150	°C

Note1: Mounted on FR4 board (glass epoxy; 645 mm², 1.6 mm thick; Cu area: 645 mm²)

Note2: 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
2010-01

Electrical Characteristics (Ta = 25°C)

Characteristic	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}	$V_{EB} = -7\text{ V}, I_C = 0$	—	—	-100	nA
Collector-emitter breakdown voltage	$V_{(BR) CEO}$	$I_C = -10\text{ mA}, I_B = 0$	-50	—	—	V
DC current gain	$h_{FE (1)}$	$V_{CE} = -2\text{ V}, I_C = -0.1\text{ A}$	200	—	500	—
	$h_{FE (2)}$	$V_{CE} = -2\text{ V}, I_C = -0.3\text{ A}$	125	—	—	
Collector-emitter saturation voltage	$V_{CE (sat)}$	$I_C = -0.3\text{ A}, I_B = -10\text{ mA}$	—	—	-0.2	V
Base-emitter saturation voltage	$V_{BE (sat)}$	$I_C = -0.3\text{ A}, I_B = -10\text{ mA}$	—	—	-1.1	V
Collector output capacitance	C_{ob}	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	8	—	pF
Switching time	Rise time	t_r	See Figure 1		—	ns
	Storage time	t_{stg}	$V_{CC} = -30\text{ V}, R_L = 100\ \Omega$		—	
	Fall time	t_f	$I_{B1} = I_{B2} = 10\text{ mA}$		70	

Marking

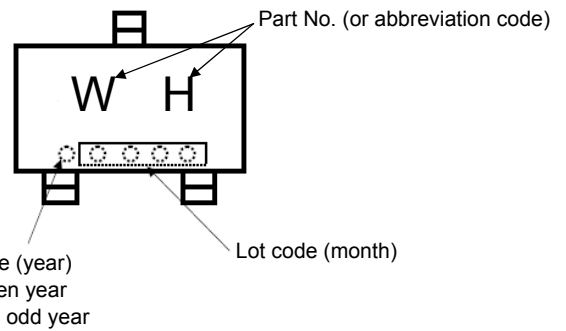
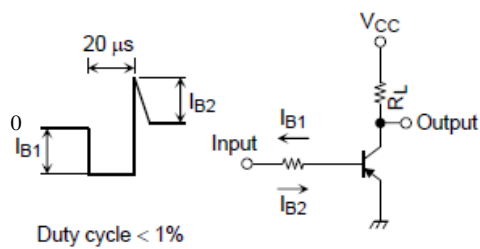
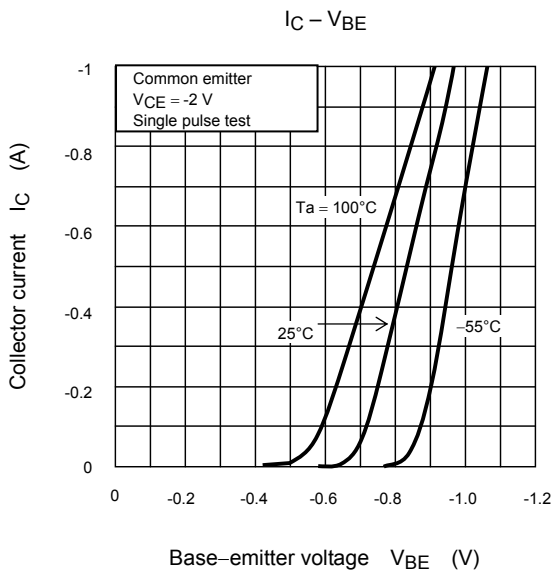
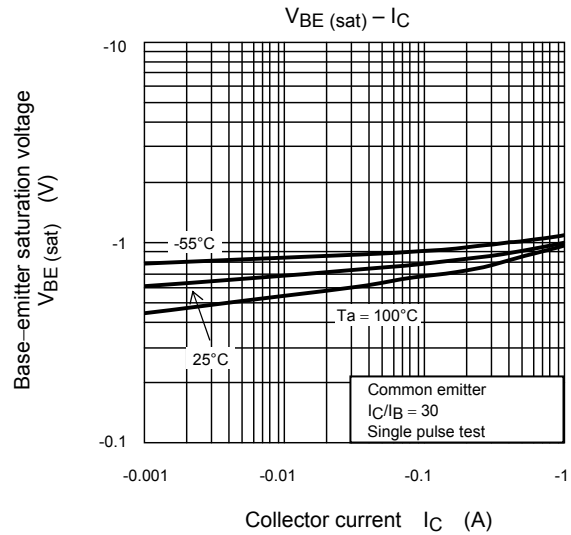
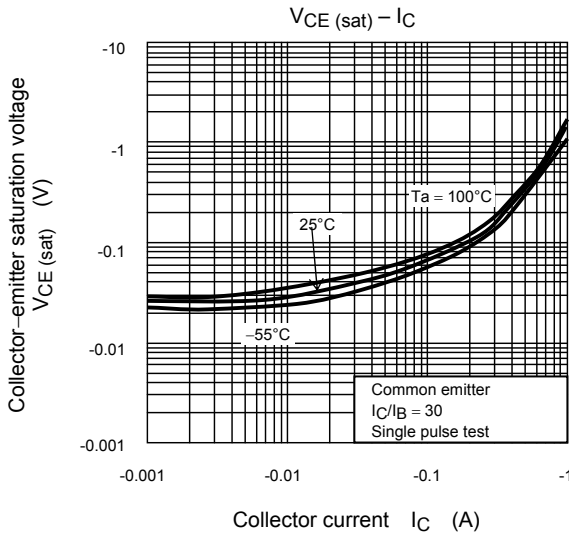
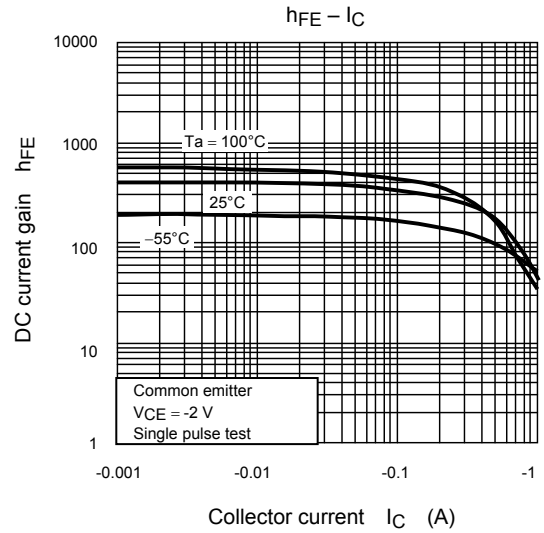
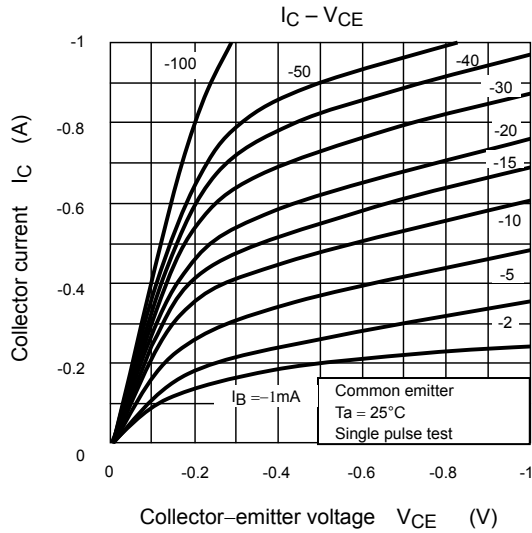
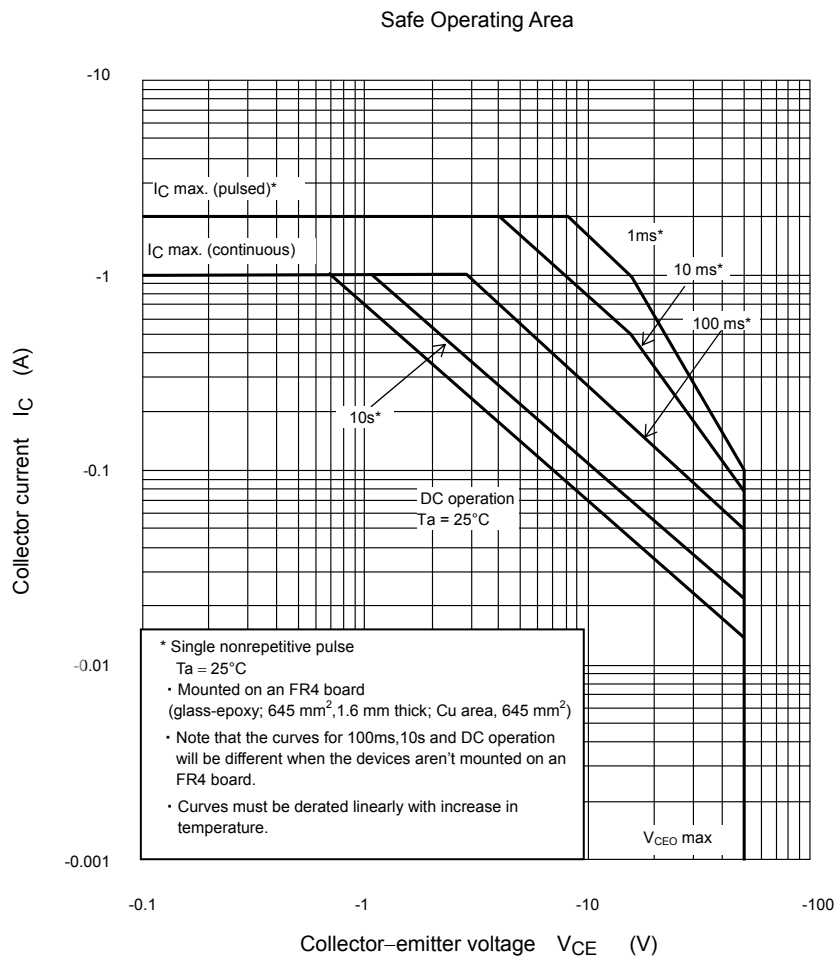
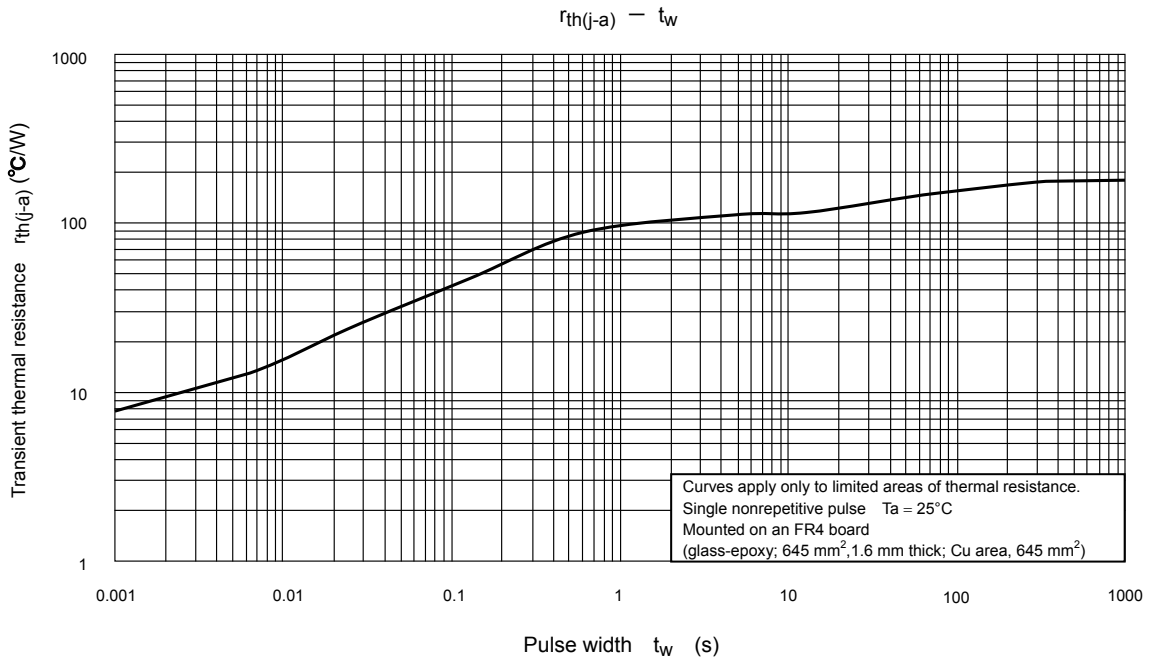


Figure 1. Switching Time Test Circuit





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