

TOSHIBA Transistor Silicon NPN Epitaxial Type

2SC5976

High-Speed Switching Applications

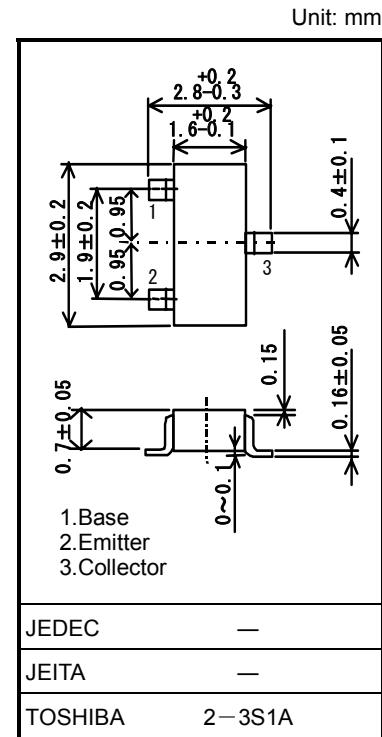
DC-DC Converter Applications

Strobe Flash Applications

- High DC current gain: $hFE = 250$ to 400 ($I_C = 0.3$ A)
- Low collector-emitter saturation voltage: $V_{CE}(\text{sat}) = 0.14$ V (max)
- High-speed switching: $t_f = 25$ ns (typ.)

Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEX}	50	V
Collector-emitter voltage	V_{CEO}	30	V
Emitter-base voltage	V_{EBO}	6	V
Collector current	DC	I_C	3.0
	Pulse	I_{CP}	5.0
Base current	I_B	0.3	A
Collector power dissipation (t=10s)	P_C (Note.1)	1.00	W
Total collector power dissipation (DC)		0.625	
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55 to 150	°C



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

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB} = 50 \text{ V}, I_E = 0$	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 6 \text{ V}, I_C = 0$	—	—	0.1	μA
Collector-emitter breakdown voltage	$V_{(\text{BR})\text{CEO}}$	$I_C = 10 \text{ mA}, I_B = 0$	30	—	—	V
DC current gain	$h_{FE} (1)$	$V_{CE} = 2 \text{ V}, I_C = 0.3 \text{ A}$	250	—	400	
	$h_{FE} (2)$	$V_{CE} = 2 \text{ V}, I_C = 1.0 \text{ A}$	120	—	—	
Collector-emitter saturation voltage	$V_{CE(\text{sat})}$	$I_C = 1.0 \text{ A}, I_B = 33 \text{ mA}$	—	—	0.14	V
Base-emitter saturation voltage	$V_{BE(\text{sat})}$	$I_C = 1.0 \text{ A}, I_B = 33 \text{ mA}$	—	—	1.10	V
Collector output capacitance	C_{ob}	$V_{CB} = 10 \text{ V}, I_E = 0, f=1\text{MHz}$	18	—	—	pF
Switching time	Rise time	t_r	See Figure 1. $V_{CC} \approx 12 \text{ V}, R_L = 12 \Omega$ $I_{B1} = -I_{B2} = 33 \text{ mA}$	—	40	ns
	Storage time	t_{stg}		—	320	
	Fall time	t_f		—	25	

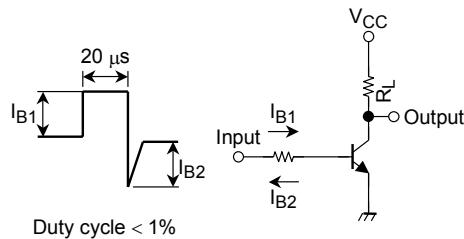
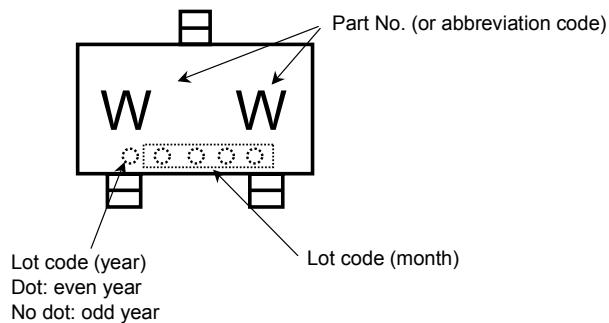
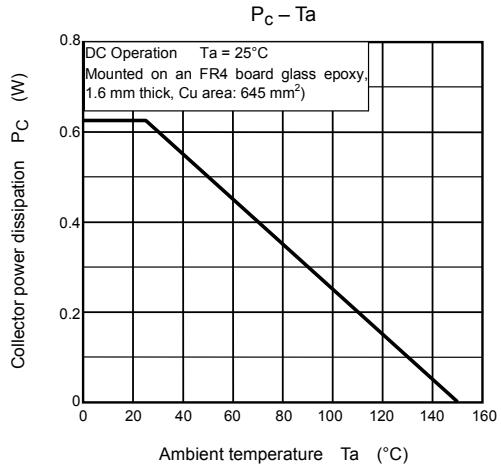
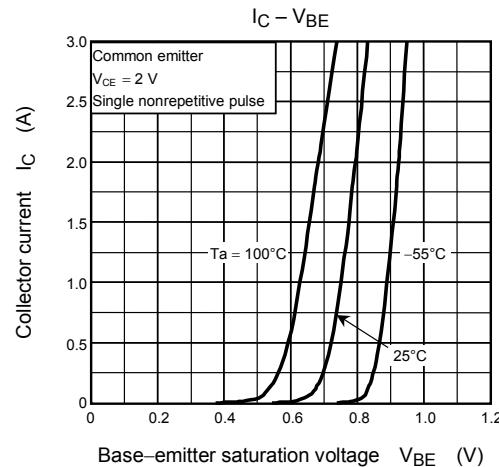
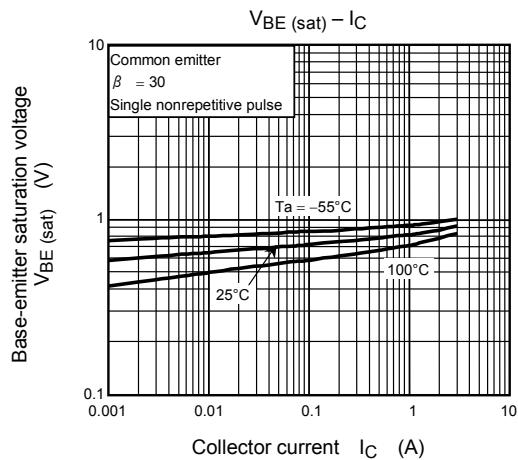
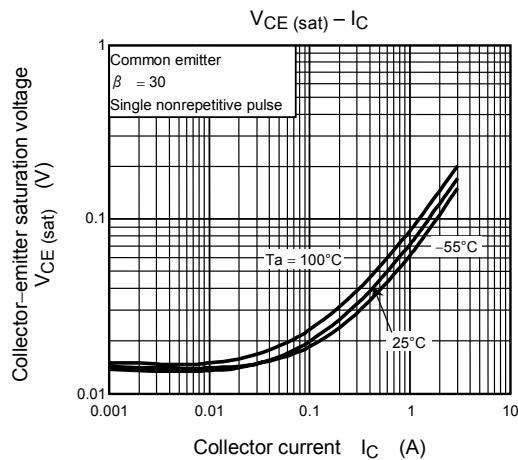
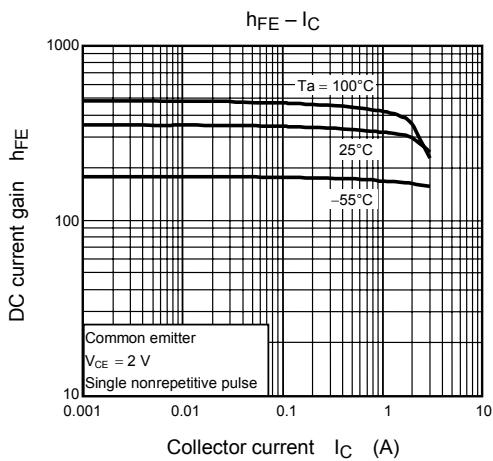
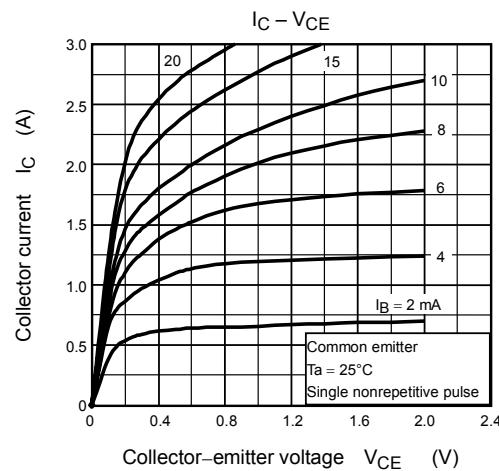
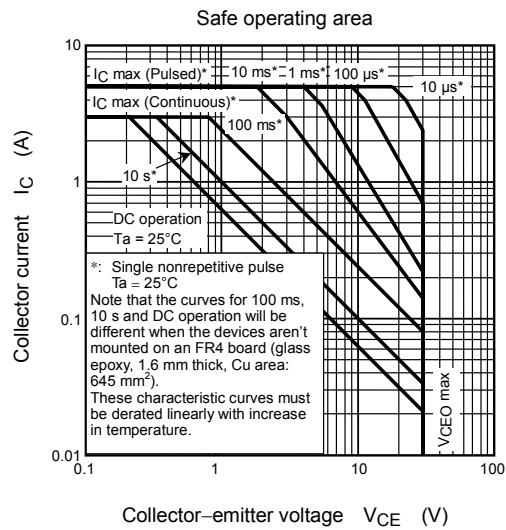
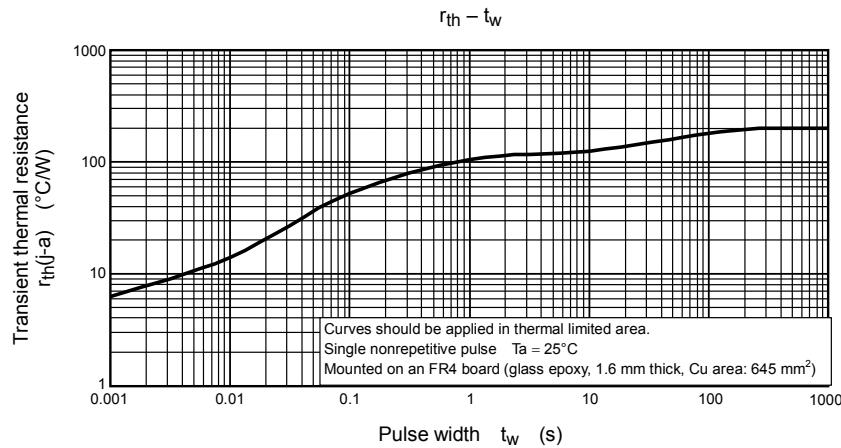


Figure 1 Switching Time Test Circuit & Timing Chart

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