

TOSHIBA Transistor Silicon NPN Epitaxial Type

2SC5976

High-Speed Switching Applications

DC-DC Converter Applications

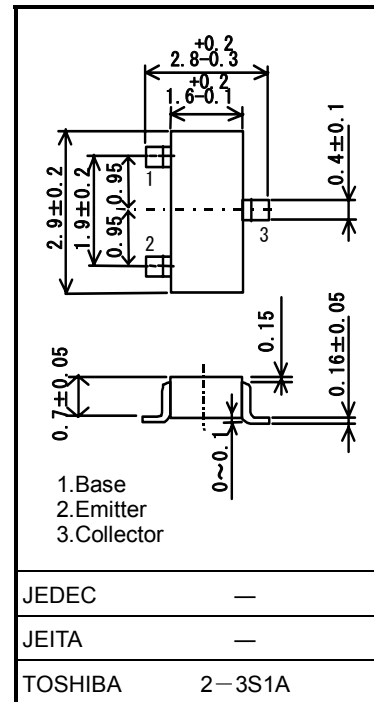
Strobe Flash Applications

Unit: mm

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

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

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	A
	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	$\mu\text{ A}$
Emitter cut-off current		I_{EBO}	$V_{EB} = 6\text{ V}, I_C = 0$	—	—	0.1	$\mu\text{ A}$
Collector-emitter breakdown voltage		$V_{(BR) CEO}$	$I_C = 10\text{ mA}, I_B = 0$	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		$V_{CE (sat)}$	$I_C = 1.0\text{ A}, I_B = 33\text{ mA}$	—	—	0.14	V
Base-emitter saturation voltage		$V_{BE (sat)}$	$I_C = 1.0\text{ A}, I_B = 33\text{ mA}$	—	—	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	—	

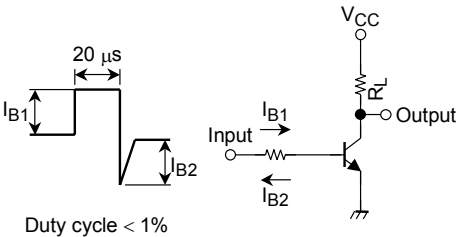
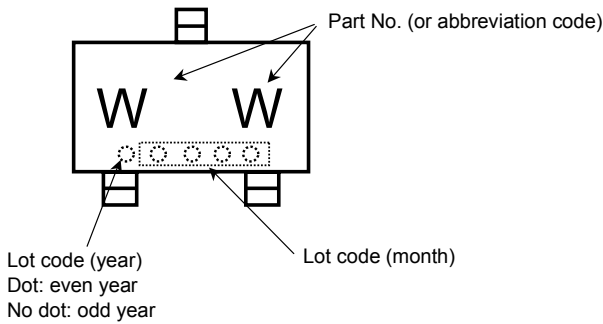
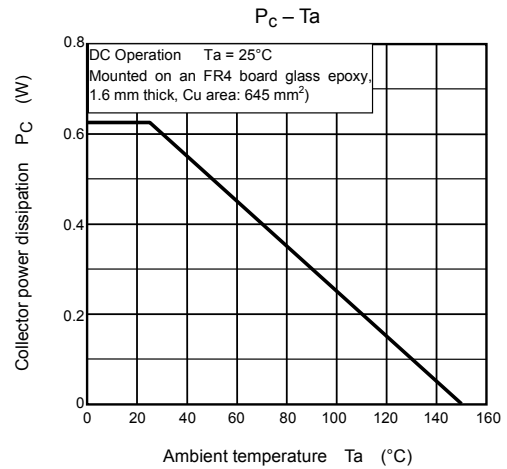
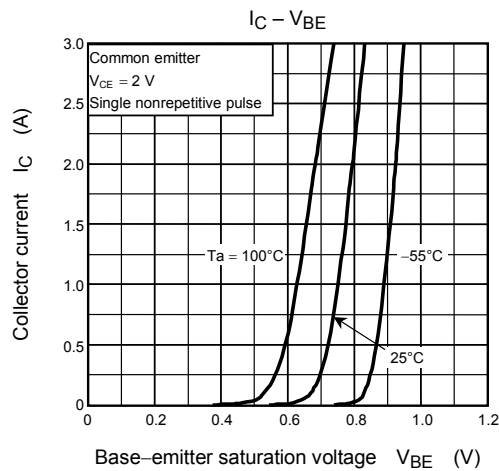
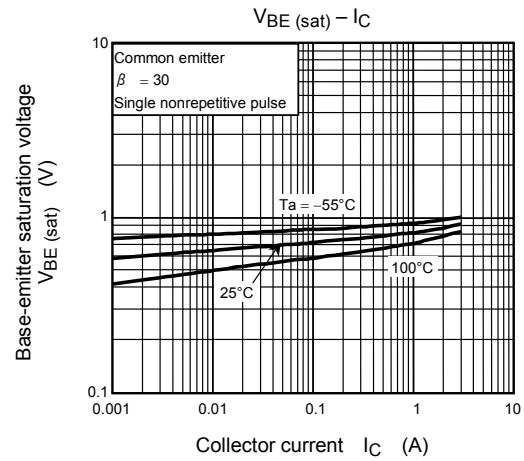
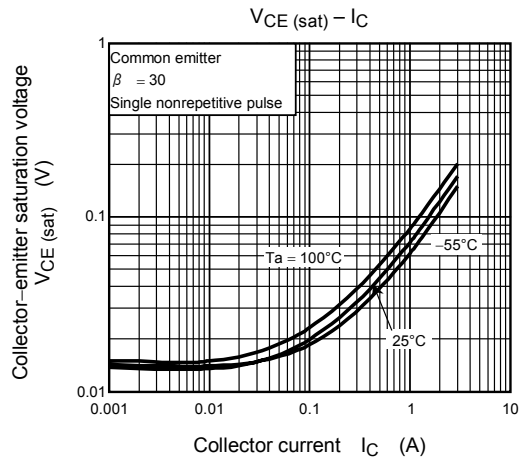
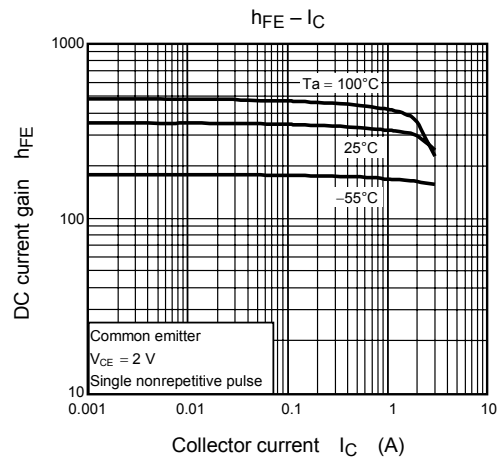
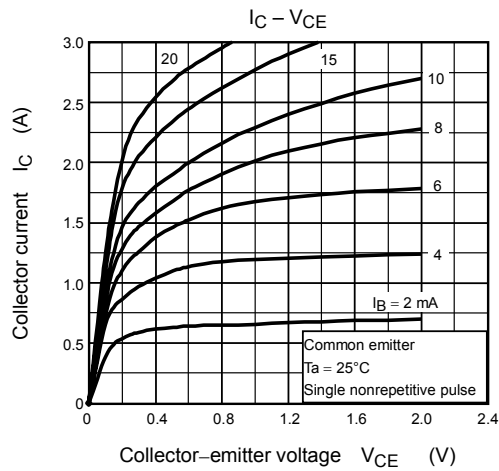
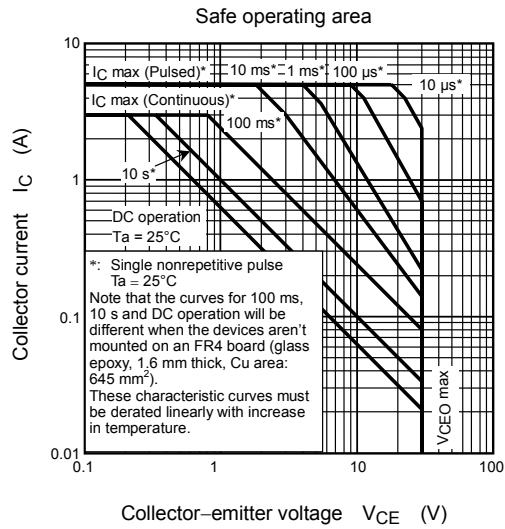
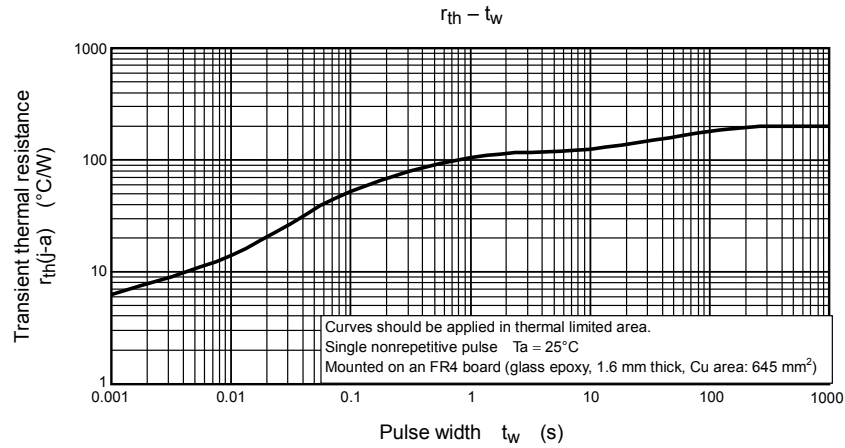


Figure 1 Switching Time Test Circuit & Timing Chart

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