

TOSHIBA Transistor Silicon NPN Triple Diffused Type

# 2SC5075

Switching Regulator and High-Voltage Switching Applications

High-Speed DC-DC Converter Applications

- High-speed switching:  $t_r = 1.0 \mu s$  (max),  $t_f = 1.0 \mu s$  (max)
- High breakdown voltage:  $V_{CEO} = 400 V$

### Absolute Maximum Ratings ( $T_a = 25^\circ C$ )

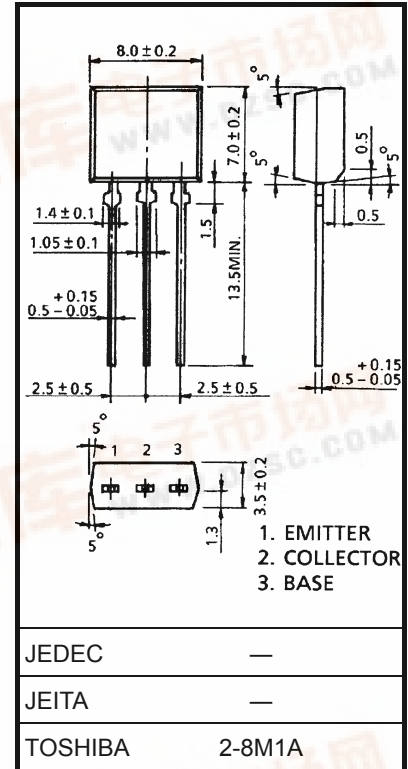
Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	500	V
Collector-emitter voltage	$V_{CEO}$	400	V
Emitter-base voltage	$V_{EBO}$	7	V
Collector current	$I_C$	2	A
Base current	$I_B$	0.5	A
Collector power dissipation	$P_C$	1.3	W
Junction temperature	$T_j$	150	$^\circ C$
Storage temperature range	$T_{stg}$	-55 to 150	$^\circ C$

Note: 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).

Industrial Applications

Unit: mm

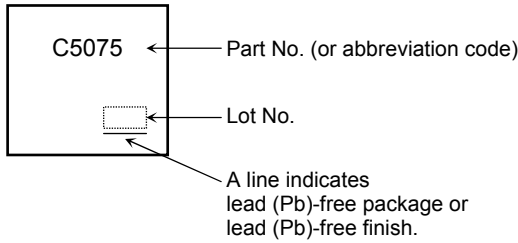


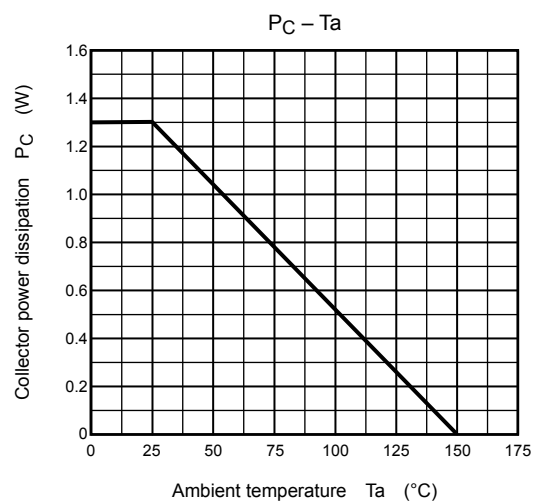
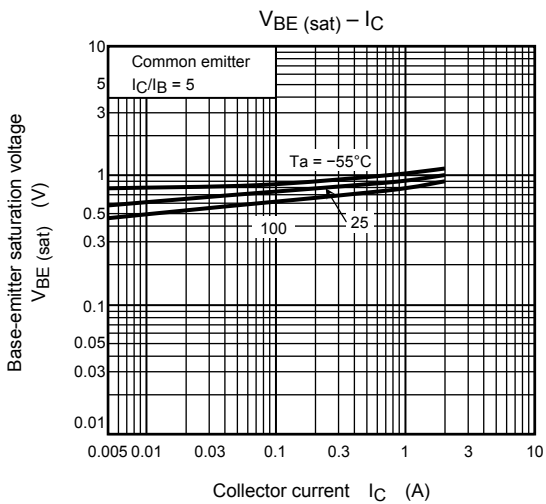
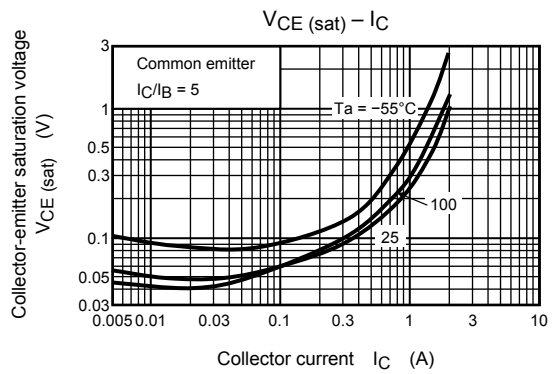
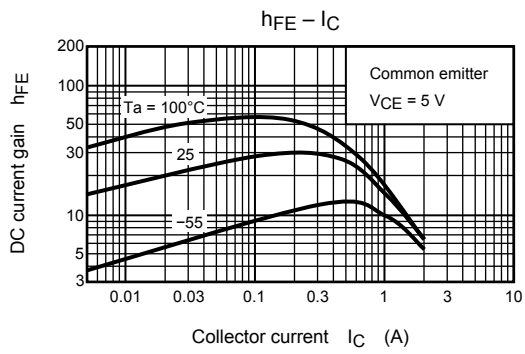
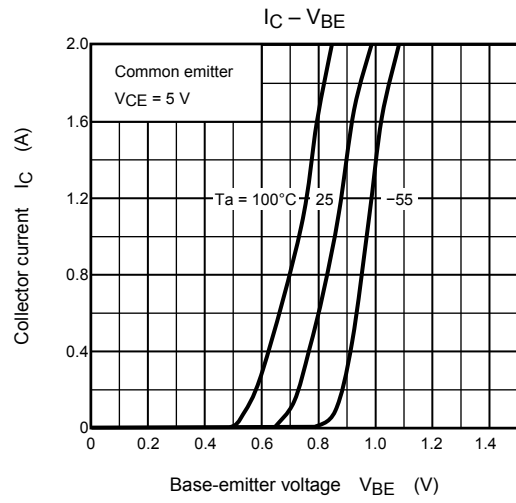
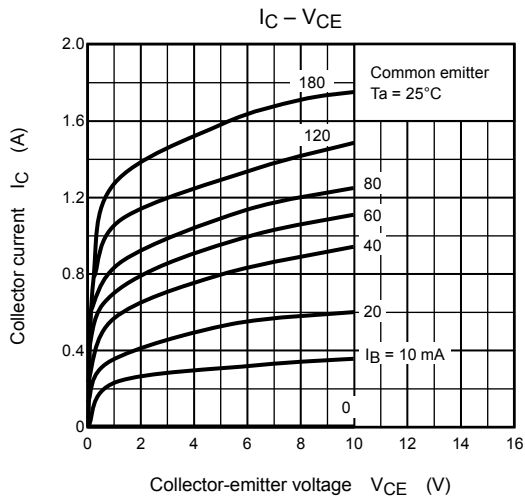
Weight: 0.55 g (typ.)

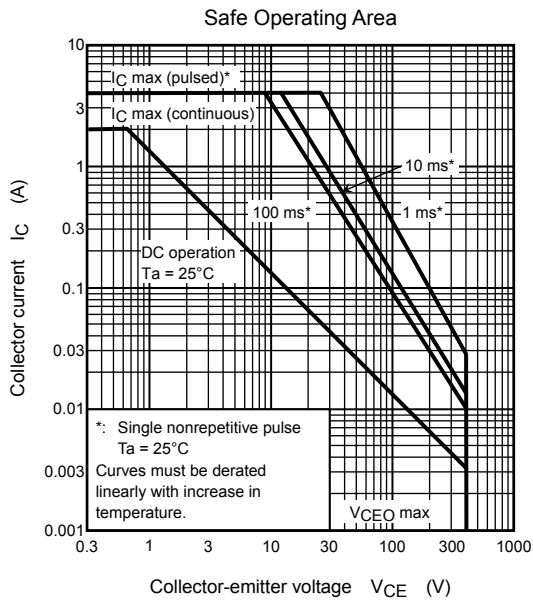
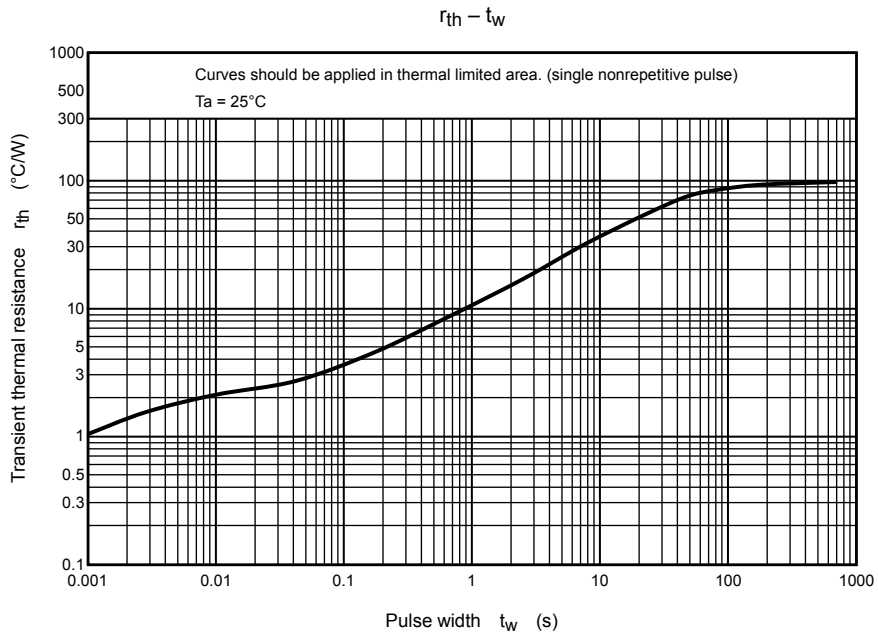
**Electrical Characteristics (Ta = 25°C)**

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = 400\text{ V}, I_E = 0$	—	—	100	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = 7\text{ V}, I_C = 0$	—	—	1	$\text{mA}$
Collector-base breakdown voltage		$V_{(BR)CBO}$	$I_C = 1\text{ mA}, I_E = 0$	500	—	—	$\text{V}$
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	$I_C = 10\text{ mA}, I_B = 0$	400	—	—	$\text{V}$
DC current gain		$h_{FE}$	$V_{CE} = 5\text{ V}, I_C = 0.1\text{ A}$	20	—	—	
			$V_{CE} = 5\text{ V}, I_C = 1\text{ A}$	8	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 1\text{ A}, I_B = 0.2\text{ A}$	—	—	1.0	$\text{V}$
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = 1\text{ A}, I_B = 0.2\text{ A}$	—	—	1.5	$\text{V}$
Switching time	Rise time	$t_{on}$	<p><math>I_{B1} = -I_{B2} = 0.08\text{ A}, \text{duty cycle} &lt; 1\%</math></p>	—	—	1.0	$\mu\text{s}$
	Storage time	$t_{stg}$		—	—	2.5	
	Fall time	$t_f$		—	—	1.0	

**Marking**







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