

TOSHIBA Transistor Silicon NPN Triple Diffused Type (PCT process)

# 2SC5172

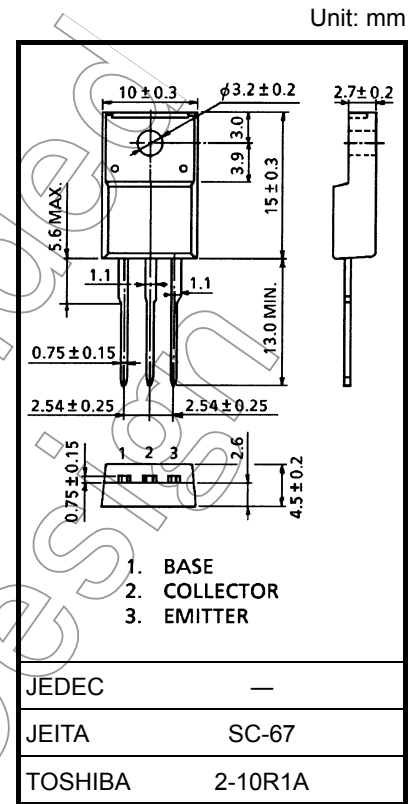
Switching Regulator and High-Voltage Switching Applications

High-Speed DC-DC Converter Applications

- Excellent switching times:  $t_r = 0.5 \mu\text{s}$  (max),  
 $t_f = 0.3 \mu\text{s}$  (max) at  $I_C = 2 \text{ A}$
- High collector breakdown voltage:  $V_{CEO} = 400 \text{ V}$

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

Characteristics		Symbol	Rating	Unit
Collector-base voltage		$V_{CBO}$	600	V
Collector-emitter voltage		$V_{CEO}$	400	V
Emitter-base voltage		$V_{EBO}$	7	V
Collector current	DC	$I_C$	5	A
	Pulse	$I_{CP}$	7	
Base current		$I_B$	2	A
Collector power dissipation	$T_a = 25^\circ\text{C}$	$P_C$	2.0	W
	$T_c = 25^\circ\text{C}$		25	
Junction temperature		$T_j$	150	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	-55 to 150	$^\circ\text{C}$



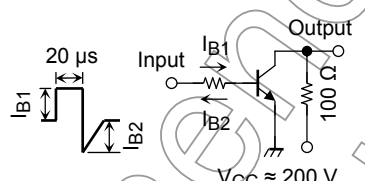
Weight: 1.7 g (typ.)

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.

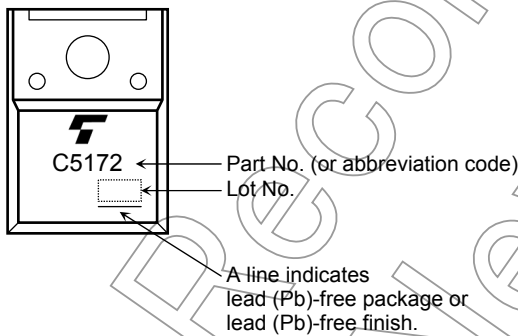
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

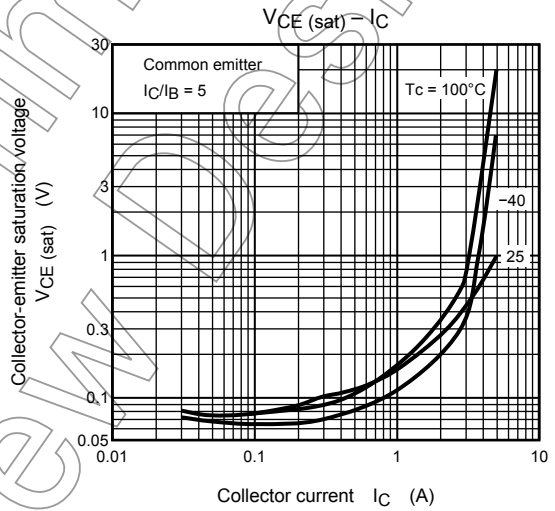
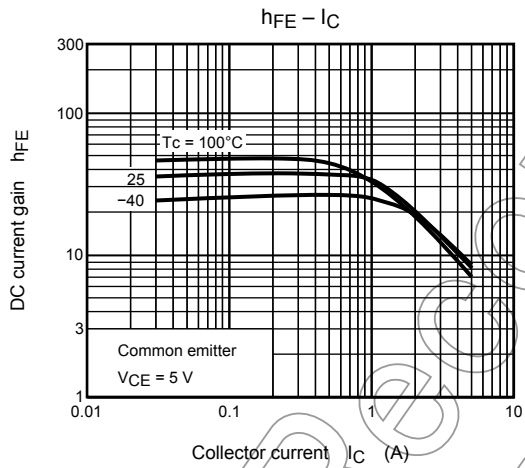
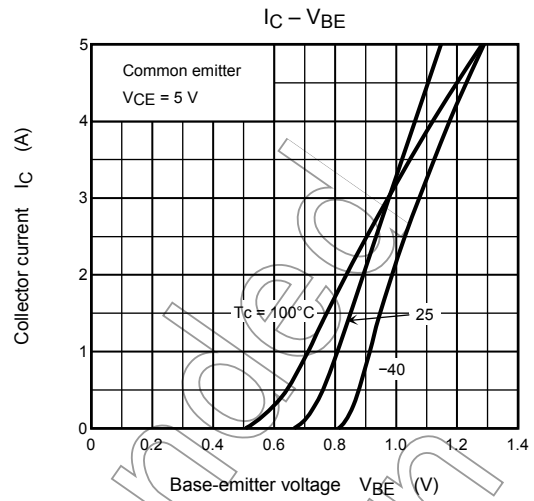
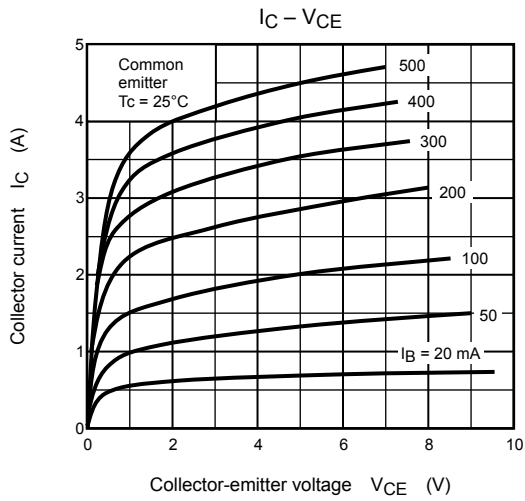
Not for sale

## Electrical Characteristics (Tc = 25°C)

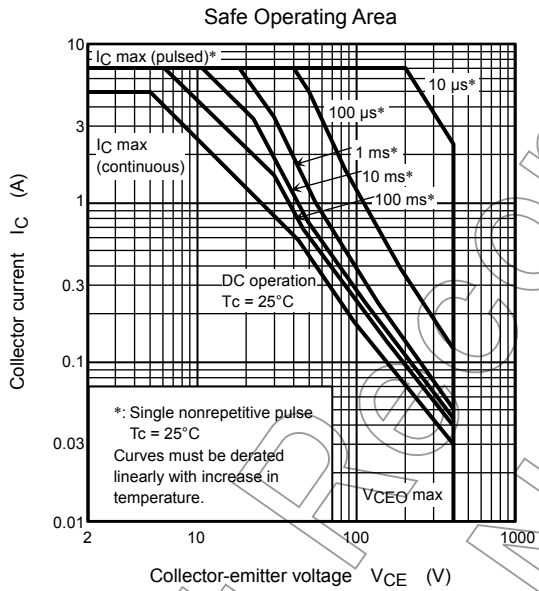
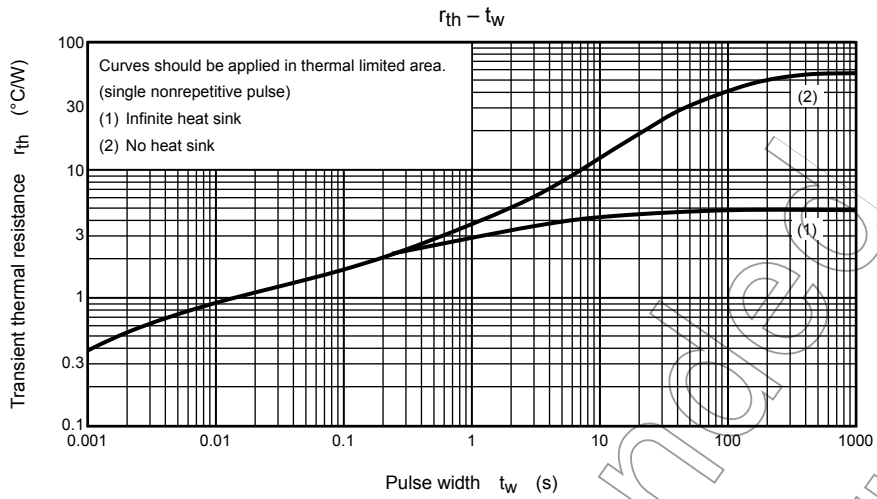
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = 500\text{ V}, I_E = 0$	—	—	20	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = 7\text{ V}, I_C = 0$	—	—	100	nA
Collector-base breakdown voltage		$V_{(BR)CBO}$	$I_C = 1\text{ mA}, I_E = 0$	600	—	—	V
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	$I_C = 10\text{ mA}, I_B = 0$	400	—	—	V
DC current gain		$h_{FE(1)}$	$V_{CE} = 5\text{ V}, I_C = 1\text{ mA}$	13	—	—	
		$h_{FE(2)}$	$V_{CE} = 5\text{ V}, I_C = 0.5\text{ A}$	20	—	65	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 2\text{ A}, I_B = 0.25\text{ A}$	—	—	1.0	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = 2\text{ A}, I_B = 0.25\text{ A}$	—	—	1.3	V
Switching time	Rise time	$t_r$	 <p><math>I_{B1} = 0.25\text{ A}, I_{B2} = -0.5\text{ A},</math> duty cycle &lt; 1%</p>	—	—	0.5	$\mu\text{s}$
	Storage time	$t_{stg}$		—	—	2.0	
	Fall time	$t_f$		—	—	0.3	

## Marking





Not for New Product Development



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