

TOSHIBA Transistor Silicon NPN Triple Diffused Type

2SC3233

Switching Regulator and High Voltage Switching Applications

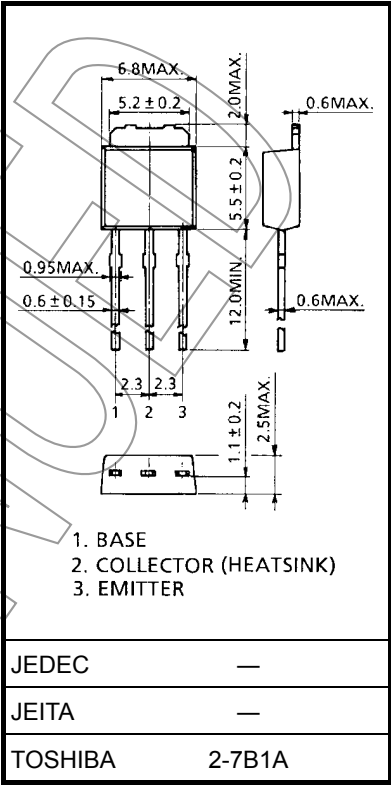
High Speed DC-DC Converter Applications

- Excellent switching times:  $t_r = 1.0 \mu s$  (max)  
 $t_f = 1.0 \mu s$  (max), ( $I_C = 0.8 A$ )
- High collector breakdown voltage:  $V_{CEO} = 400 V$

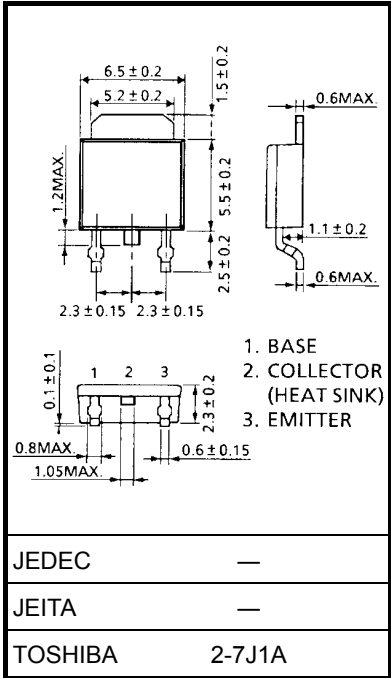
Maximum Ratings (Ta = 25°C)

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	Ta = 25°C	$P_C$	1.0	W
	Tc = 25°C		20	
Junction temperature		$T_j$	150	°C
Storage temperature range		$T_{stg}$	-55 to 150	°C

Unit: mm

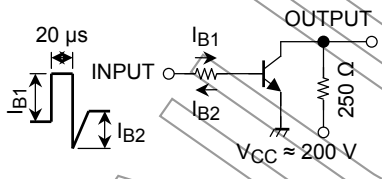


Weight: 0.36 g (typ.)

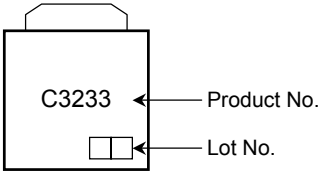


Weight: 0.36 g (typ.)

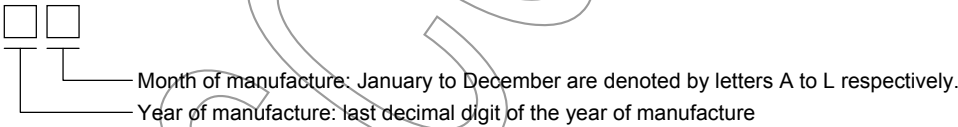
**Electrical Characteristics (Ta = 25°C)**

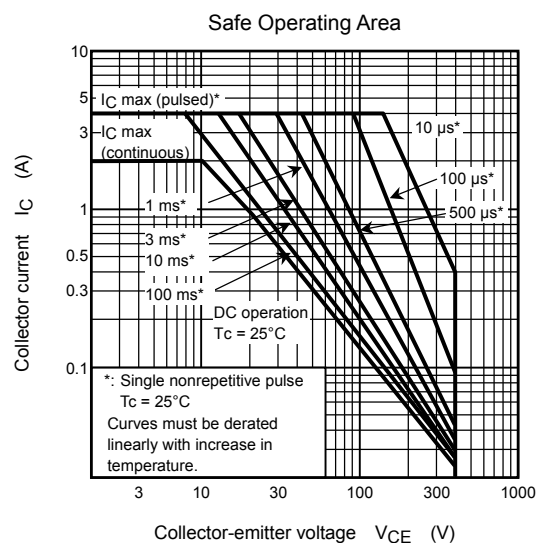
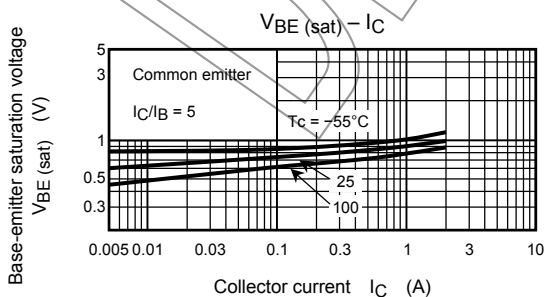
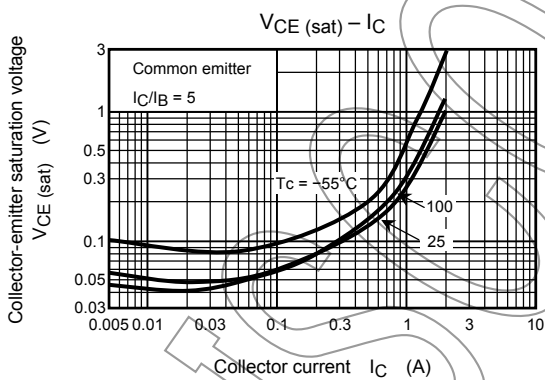
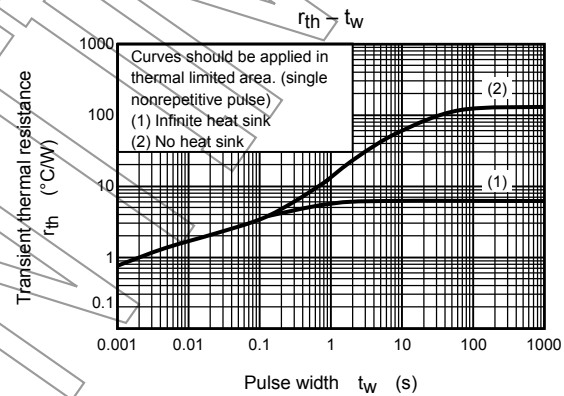
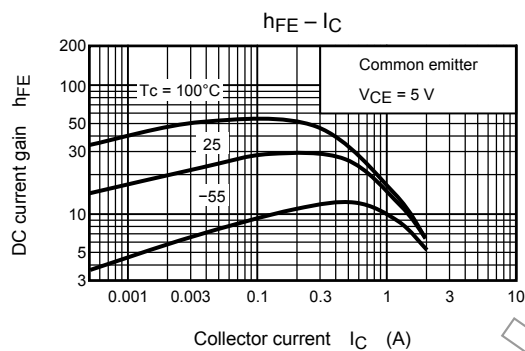
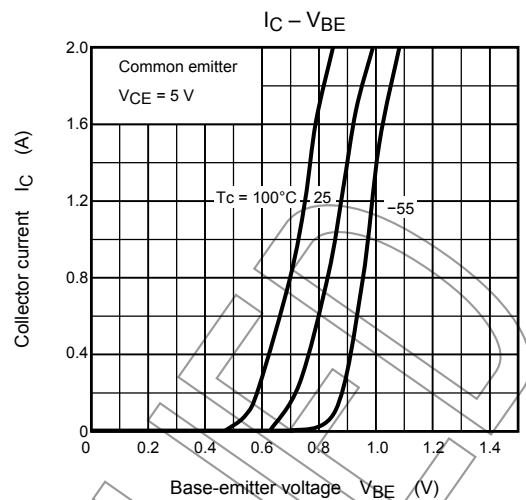
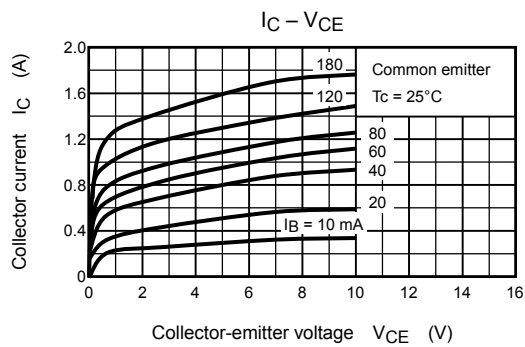
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = 400\text{ V}, I_E = 0$	—	—	100	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = 7\text{ V}, I_C = 0$	—	—	1	$\text{mA}$
Collector-base breakdown voltage		$V_{(BR) CBO}$	$I_C = 1\text{ mA}, I_E = 0$	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	$t_r$	 <p><math>I_{B1} = -I_{B2} = 0.08\text{ A}</math> DUTY CYCLE <math>\leq 1\%</math></p>	—	—	1.0	$\mu\text{s}$
	Storage time	$t_{stg}$		—	—	2.5	
	Fall time	$t_f$		—	—	1.0	

**Marking**



**Explanation of Lot No.**





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