

TOSHIBA Transistor Silicon NPN Triple Diffused Type

## 2SC3405

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), ( $I_C = 0.3 A$ )
- High collector breakdown voltage:  $V_{CEO} = 800 V$

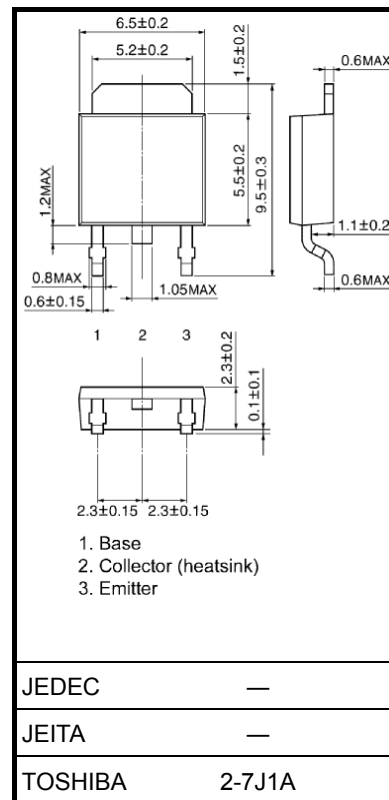
### Absolute Maximum Ratings ( $T_a = 25^\circ C$ )

Characteristics		Symbol	Rating	Unit
Collector-base voltage		$V_{CBO}$	900	V
Collector-emitter voltage		$V_{CEO}$	800	V
Emitter-base voltage		$V_{EBO}$	8	V
Collector current	DC	$I_C$	0.8	A
	Pulse	$I_{CP}$	1.5	
Base current		$I_B$	0.2	A
Collector power dissipation	$T_a = 25^\circ C$	$P_C$	1.0	W
	$T_c = 25^\circ C$		20	
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).

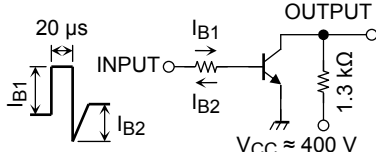
Industrial Applications

Unit: mm

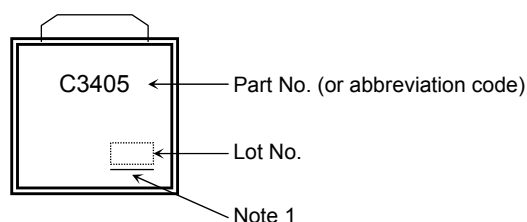


Weight: 0.36 g (typ.)

## Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = 800\text{ V}, I_E = 0$	—	—	100	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = 8\text{ V}, I_C = 0$	—	—	1	$\text{mA}$
Collector-base breakdown voltage		$V_{(BR)\text{ CBO}}$	$I_C = 1\text{ mA}, I_E = 0$	900	—	—	$\text{V}$
Collector-emitter breakdown voltage		$V_{(BR)\text{ CEO}}$	$I_C = 10\text{ mA}, I_B = 0$	800	—	—	$\text{V}$
DC current gain		$h_{FE}$	$V_{CE} = 5\text{ V}, I_C = 1\text{ mA}$	6	—	—	
			$V_{CE} = 5\text{ V}, I_C = 0.3\text{ A}$	10	—	—	
Collector-emitter saturation voltage		$V_{CE(\text{sat})}$	$I_C = 0.3\text{ A}, I_B = 0.06\text{ A}$	—	—	0.5	$\text{V}$
Base-emitter saturation voltage		$V_{BE(\text{sat})}$	$I_C = 0.3\text{ A}, I_B = 0.06\text{ A}$	—	—	1.2	$\text{V}$
Switching time	Rise time	$t_r$		—	—	1.0	$\mu\text{s}$
	Storage time	$t_{\text{stg}}$		—	—	4.0	
	Fall time	$t_f$		$I_{B1} = -I_{B2} = 0.06\text{ A},$ $\text{DUTY CYCLE} \leq 1\%$	—	—	

## Marking

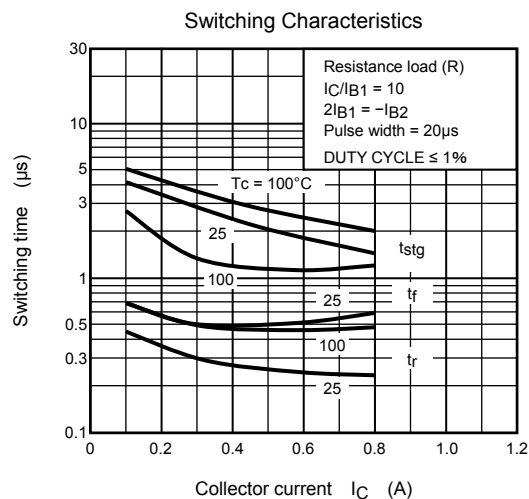
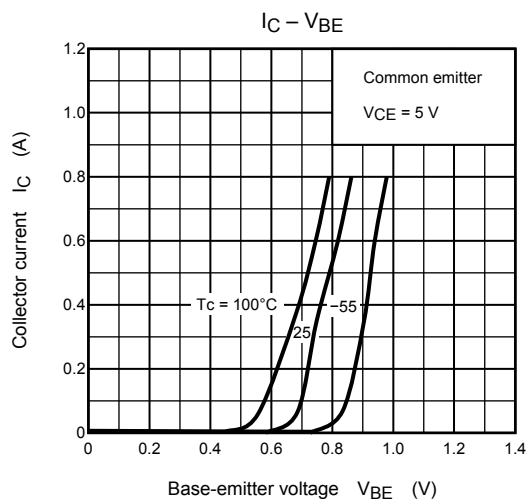
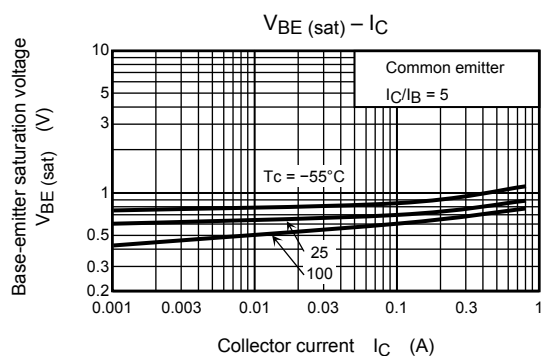
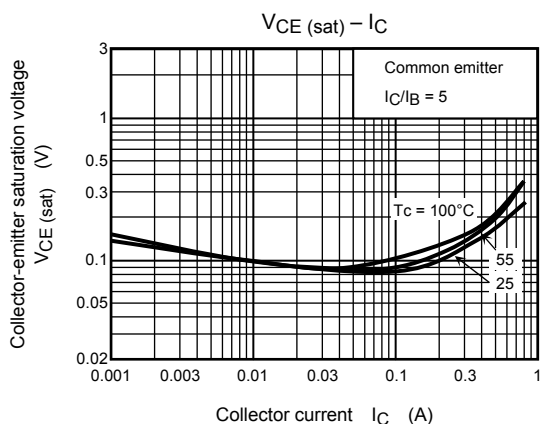
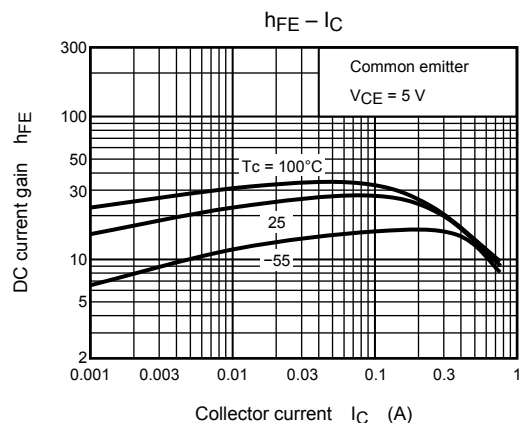
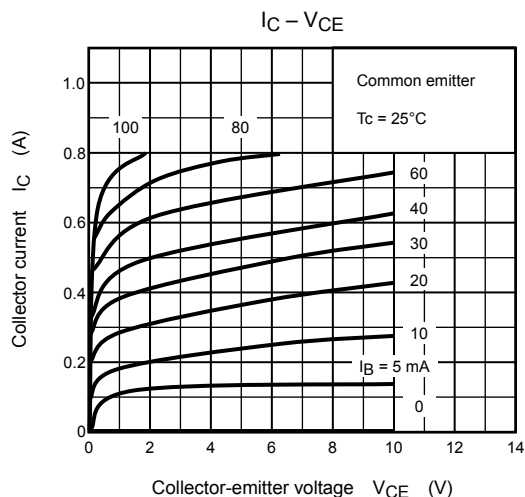


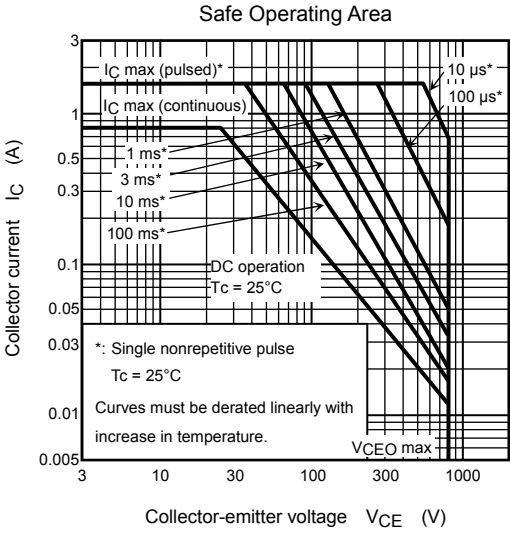
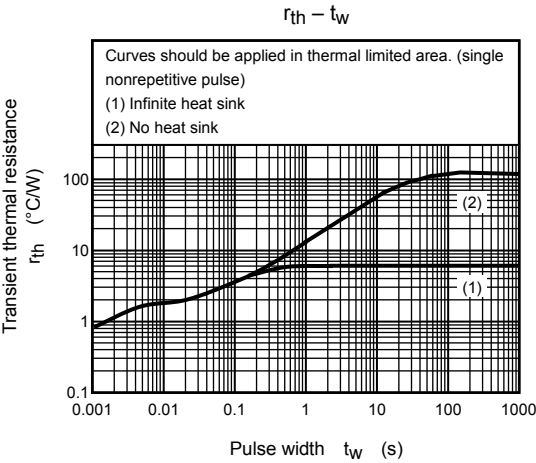
Note 1: A line under a Lot No. identifies the indication of product Labels.

Not underlined: [[Pb]]/INCLUDES > MCV

Underlined: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.





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