TOSHIBA Transistor Silicon NPN Triple Diffused Type

2SC3405

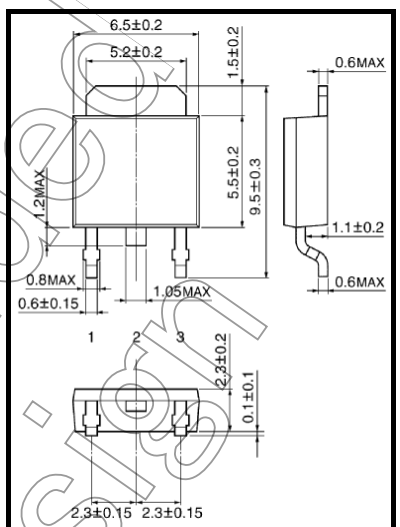
Industrial Applications

Switching Regulator and High Voltage Switching Applications

High Speed DC-DC Converter Applications

- Excellent switching times: t_r = 1.0 μs (max)
  t_f = 1.0 μs (max), (I_C = 0.3 A)
- High collector breakdown voltage: V_{CEO} = 800 V

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-7J1A

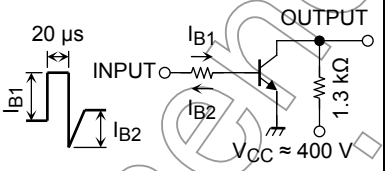
Weight: 0.36 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

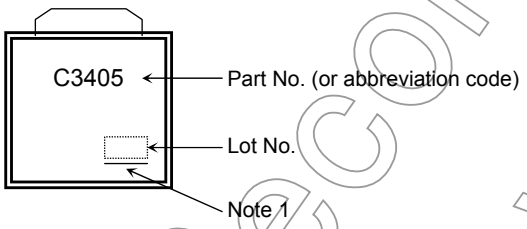
Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	900	V
Collector-emitter voltage		V_{CEO}	800	V
Emitter-base voltage		V_{EBO}	8	V
Collector current	DC	I_C	0.8	A
	Pulse	I_{CP}	1.5	
Base current		I_B	0.2	A
Collector power dissipation	Ta = 25°C	P_C	1.0	W
	Tc = 25°C		20	
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55 to 150	°C

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).

Electrical Characteristics (Ta = 25°C)

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

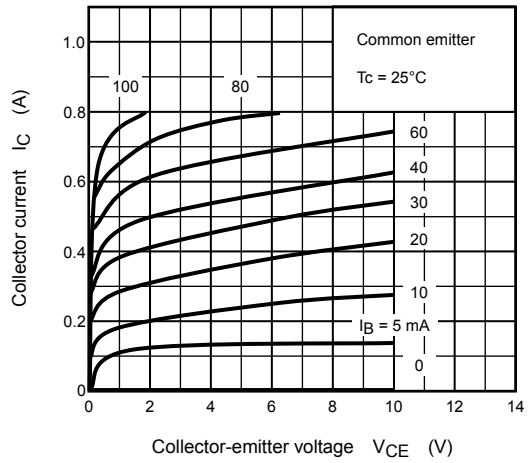
Marking



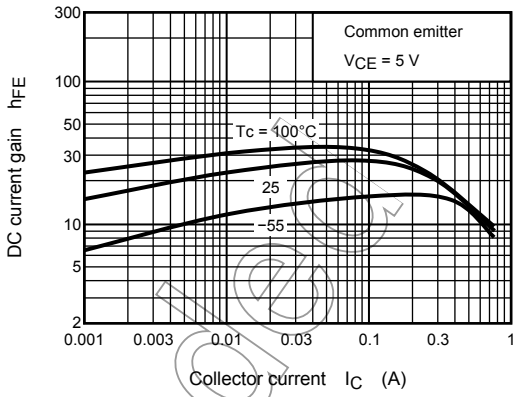
Note 1: A line under a Lot No. identifies the indication of product Labels.
Not underlined: [[Pb]]/INCLUDES > MCV
Underlined: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

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.

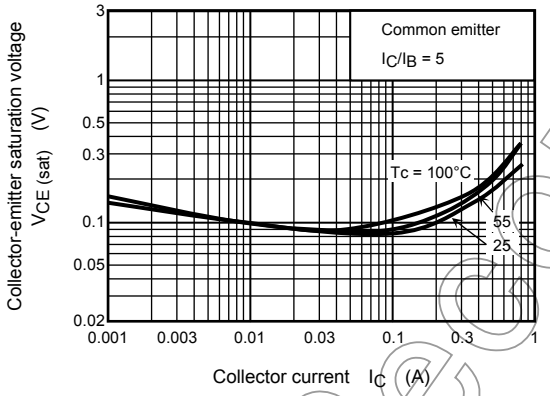
$I_C - V_{CE}$



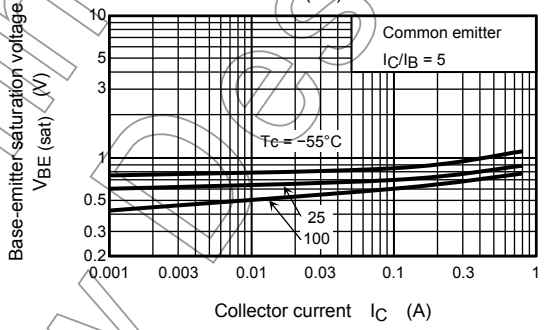
$h_{FE} - I_C$



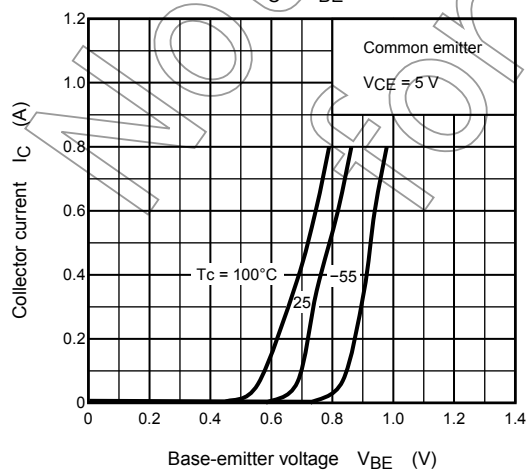
$V_{CE\ (sat)} - I_C$



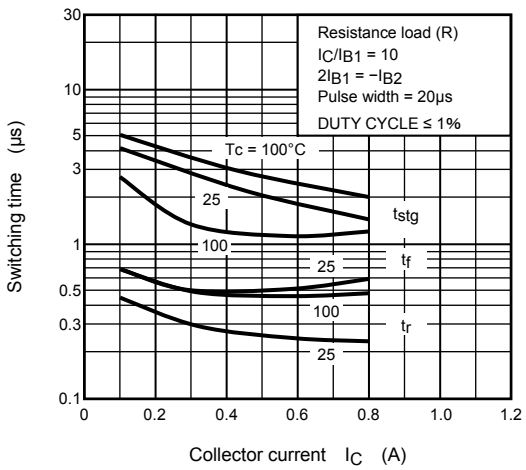
$V_{BE\ (sat)} - I_C$



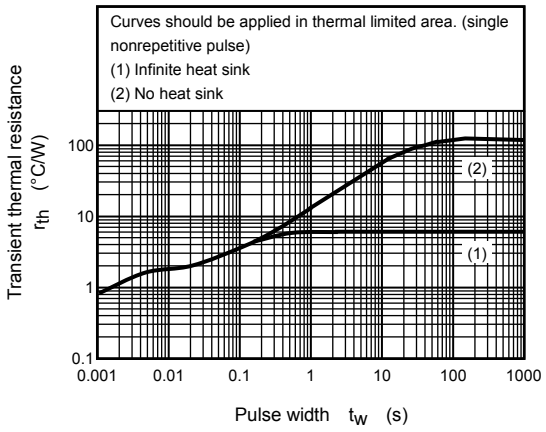
$I_C - V_{BE}$



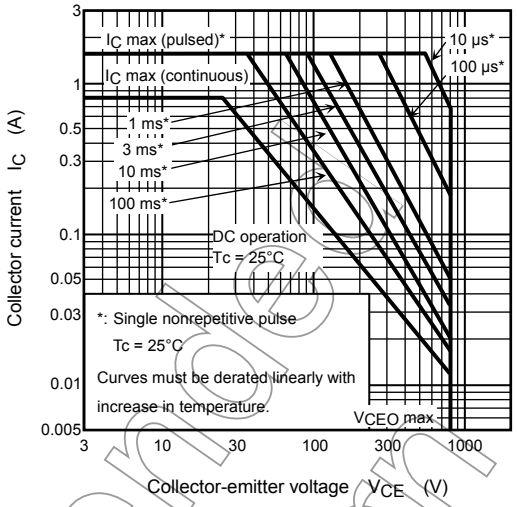
Switching Characteristics



$r_{th} - t_w$



Safe Operating Area



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