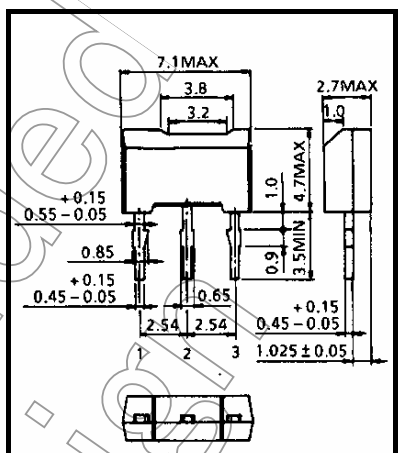
TOSHIBA Transistor Silicon NPN Triple Diffused Type

2SC6010

High Voltage Switching Applications
Switching Regulator Applications
DC-DC Converter Applications

- High speed switching: t_f = 0.24μs (max) (I_C = 0.3A)

Unit: mm



1. Base
2. Collector
3. Emitter

JEDEC	—
JEITA	—
TOSHIBA	2-7D101A

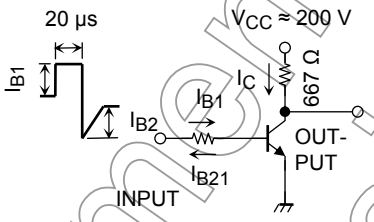
Weight: g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

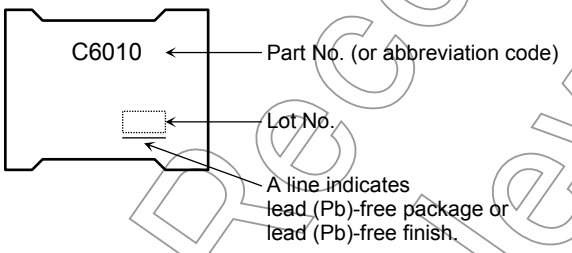
Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	600	V
Collector-emitter voltage		V_{CEX}	600	V
Collector-emitter voltage		V_{CEO}	285	V
Emitter-base voltage		V_{EBO}	8	V
Collector current	DC	I_C	1.0	A
	Pulse	I_{CP}	2.0	
Base current		I_B	0.5	A
Collector power dissipation	Ta = 25°C	P_C	1.0	W
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).

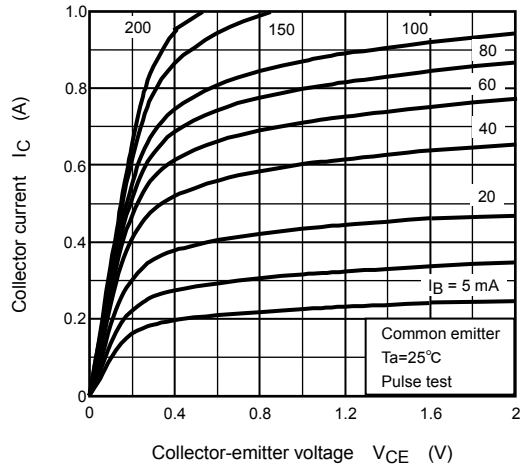
Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = 600 V, I_E = 0	—	—	100	μA
Emitter cut-off current		I_{EBO}	V_{EB} = 8 V, I_C = 0	—	—	100	μA
Collector-base breakdown voltage		$V_{(BR)\ CBO}$	I_C = 1 mA, I_B = 0	600	—	—	V
Collector-emitter breakdown voltage		$V_{(BR)\ CEO}$	I_C = 10 mA, I_B = 0	285	—	—	V
DC current gain		$h_{FE\ (1)}$	V_{CE} = 5 V, I_C = 1 mA	80	—	200	
		$h_{FE\ (2)}$	V_{CE} = 5 V, I_C = 0.1 A	100	—	200	
		$h_{FE\ (3)}$	V_{CE} = 5 V, I_C = 0.2 A	60	—	—	
Collector emitter saturation voltage		$V_{CE\ (sat)}$	I_C = 0.6 A, I_B = 75 mA	—	—	1.0	V
Base-emitter saturation voltage		$V_{BE\ (sat)}$	I_C = 0.6 A, I_B = 75 mA	—	—	1.3	V
Switching time	Rise time	t_r		—	—	0.4	μs
	Storage time	t_{stg}		—	—	3.0	
	Fall time	t_f	I_{B1} = 20 mA, $-I_{B2}$ = 50 mA DUTY CYCLE ≤ 1%	—	—	0.24	

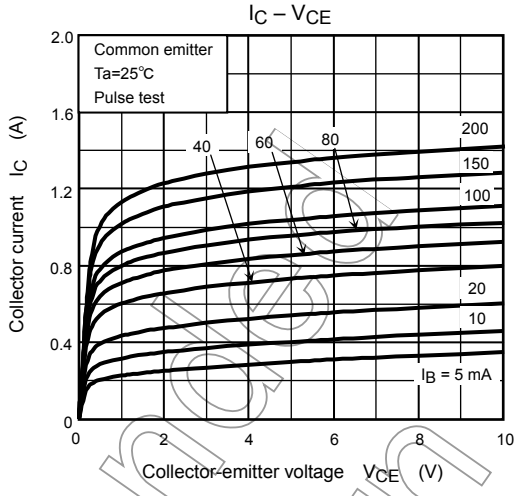
Marking



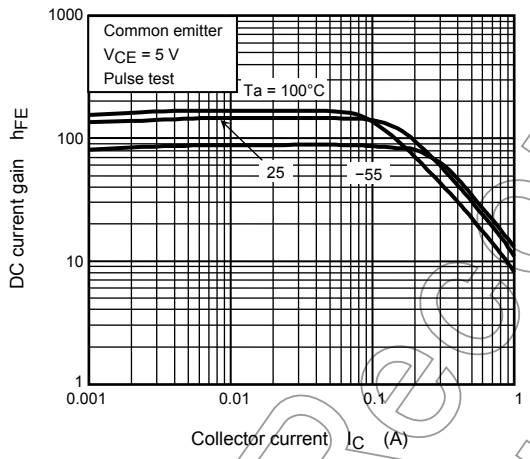
$I_C - V_{CE}$



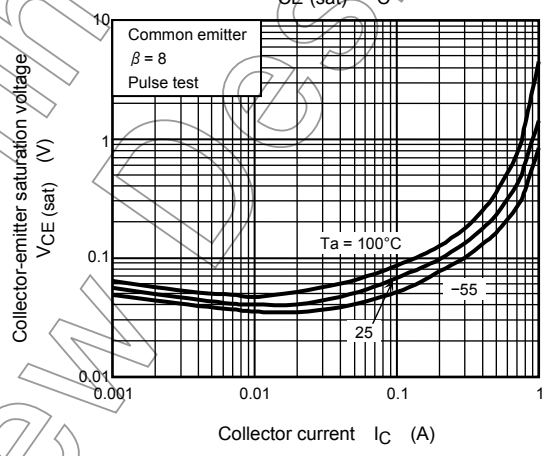
$I_C - V_{CE}$



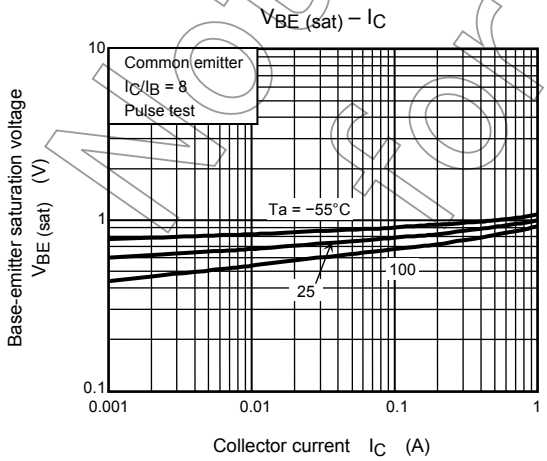
$h_{FE} - I_C$



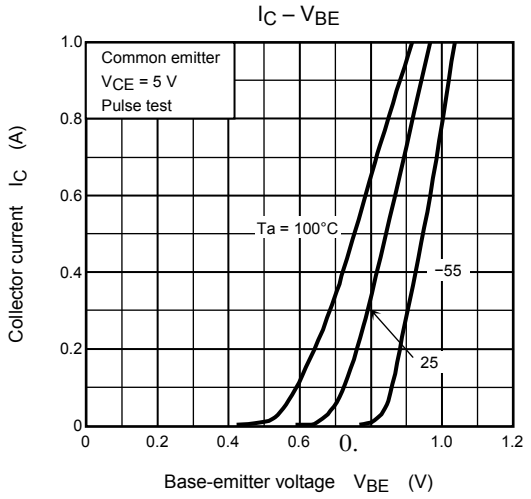
$V_{CE\ (sat)} - I_C$



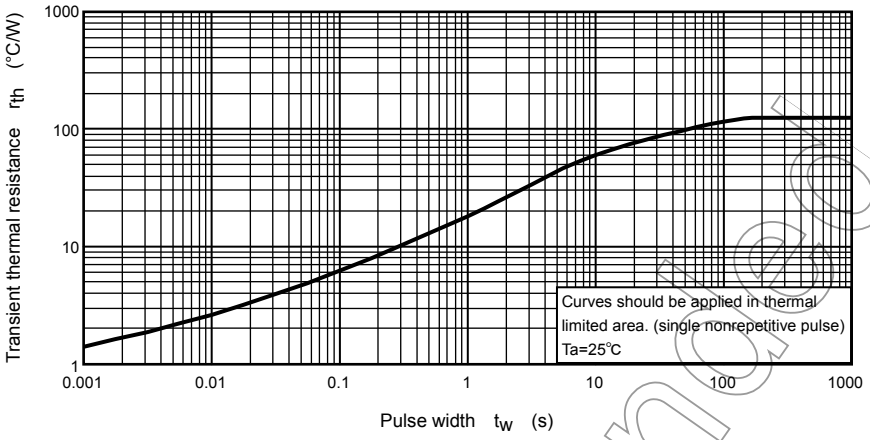
$V_{BE\ (sat)} - I_C$



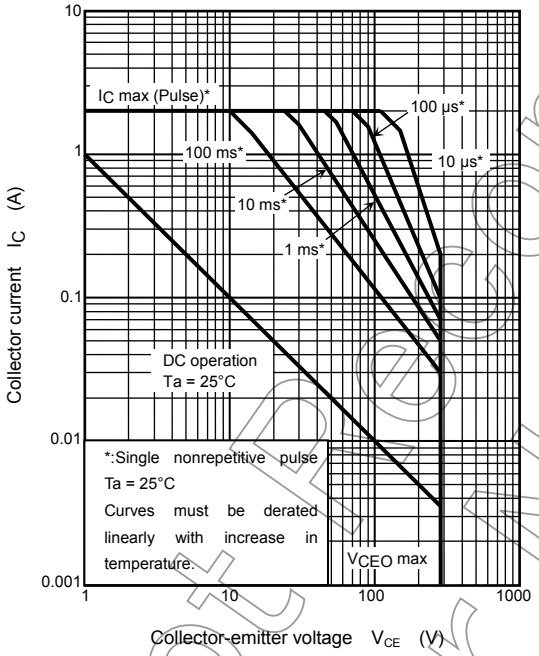
$I_C - V_{BE}$



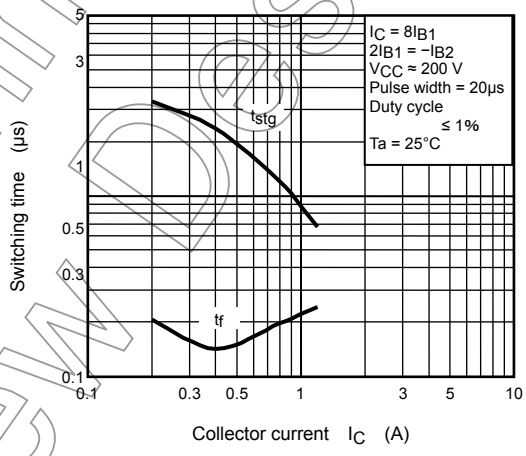
$r_{th} - t_w$



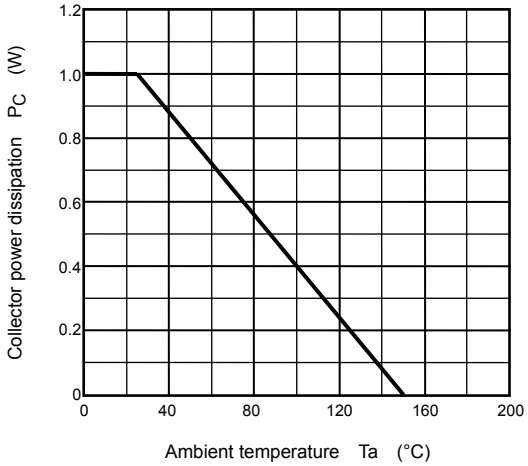
Safe Operating Area



Switching Characteristics – I_C



P_C – Ta



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