

TOSHIBA Transistor Silicon NPN Triple Diffused Type

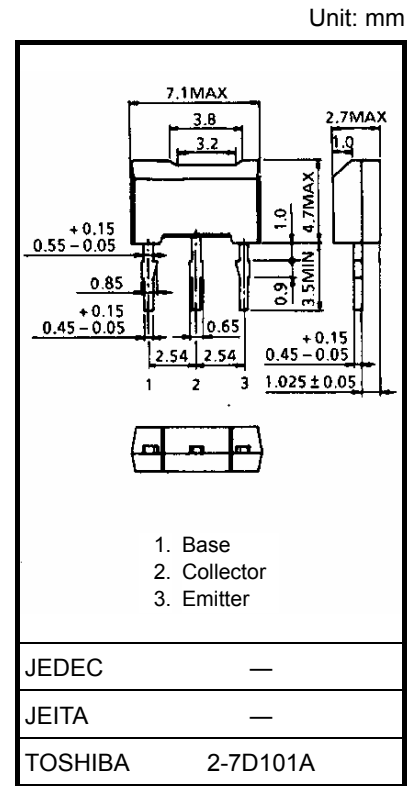
2SC6040

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

- High-speed switching: $t_f = 0.2 \mu s$ (max) ($I_C = 0.3 A$)
- High breakdown voltage: $V_{CES} = 800 V$, $V_{CEO} = 410 V$

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

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	800	V
Collector-emitter voltage	V_{CES}	800	V
Collector-emitter voltage	V_{CEO}	410	V
Emitter-base voltage	V_{EBO}	8	V
Collector current	DC	I_C	1.0
	Pulse	I_{CP}	2.0
Base current	I_B	0.5	A
Collector power dissipation	$T_a = 25^\circ C$	P_C	1.0
Junction temperature	T_j	150	$^\circ C$
Storage temperature range	T_{stg}	-55 to 150	$^\circ C$



Weight: 0.2 g (typ.)

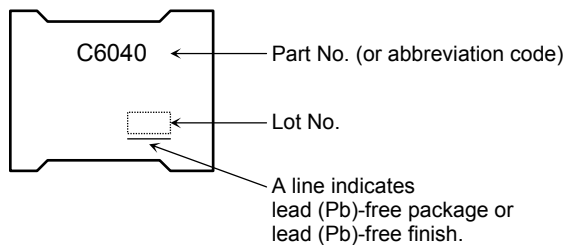
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

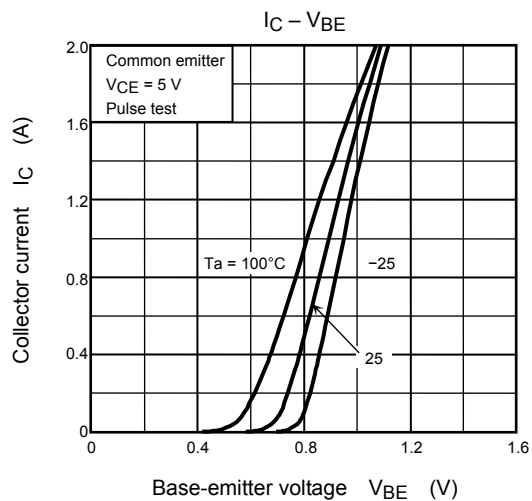
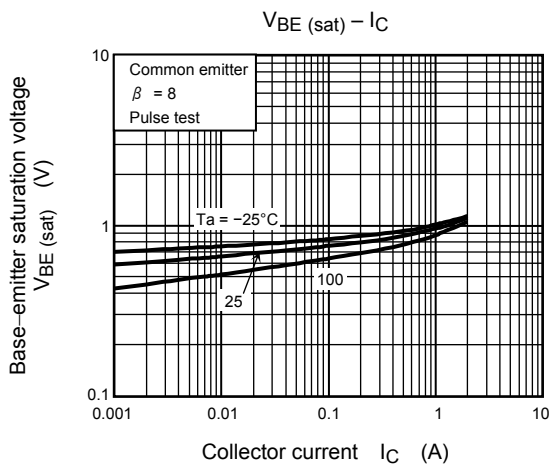
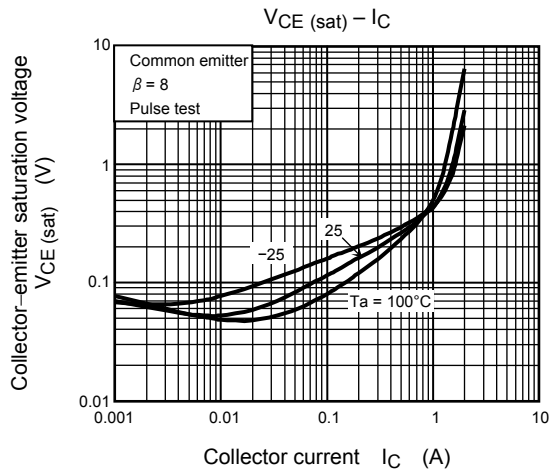
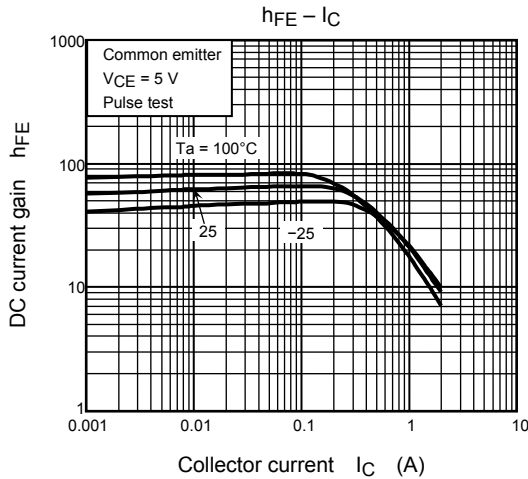
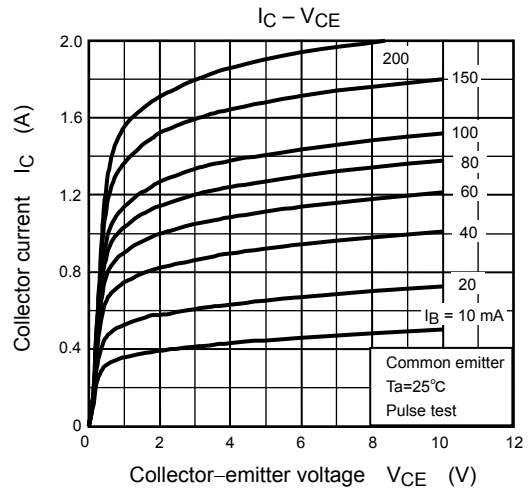
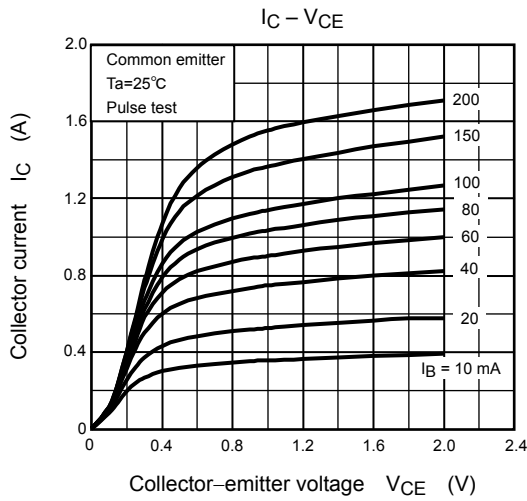
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

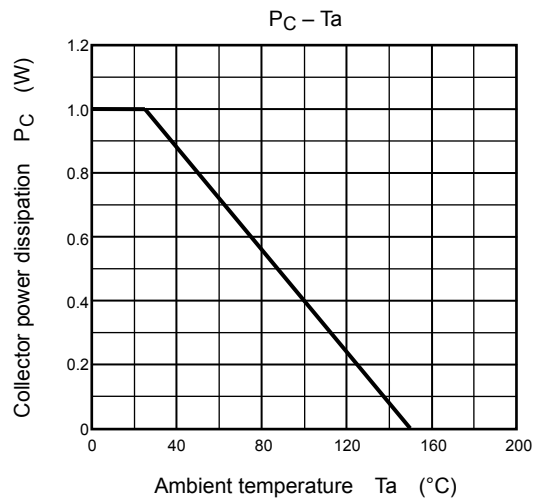
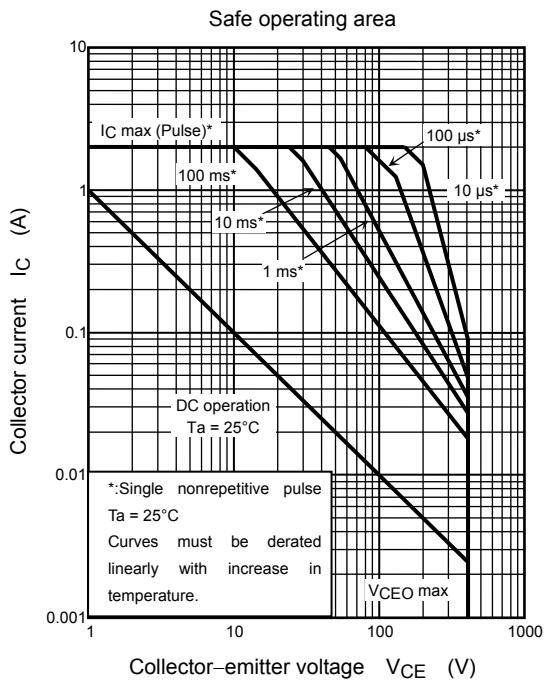
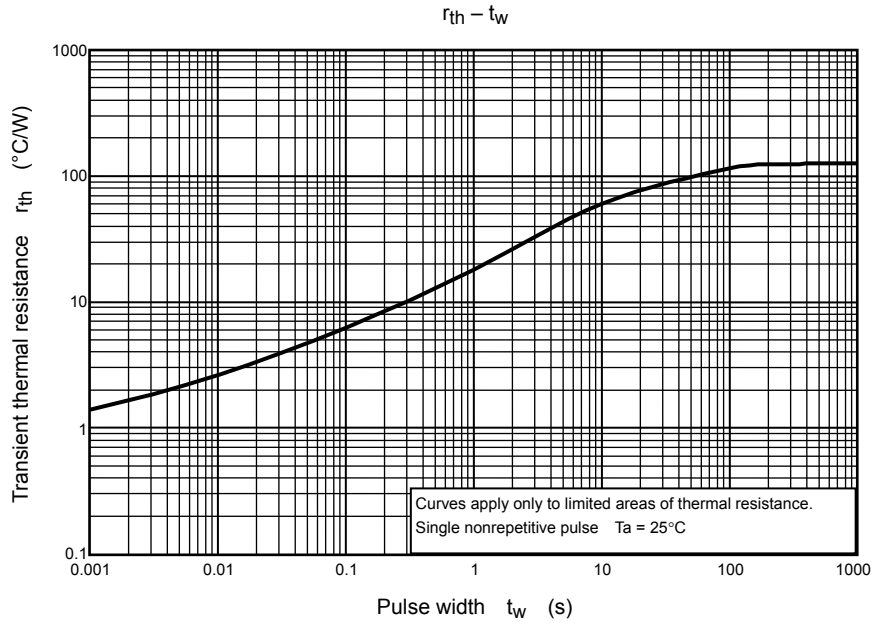
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 800\text{ V}, I_E = 0$	—	—	100	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 8\text{ V}, I_C = 0$	—	—	100	μA
Collector-base breakdown voltage		$V_{(BR) CBO}$	$I_C = 1\text{ mA}, I_B = 0$	800	—	—	V
Collector-emitter breakdown voltage		$V_{(BR) CEO}$	$I_C = 10\text{ mA}, I_B = 0$	410	—	—	V
DC current gain	$h_{FE} (1)$		$V_{CE} = 5\text{ V}, I_C = 1\text{ mA}$	50	—	—	
	$h_{FE} (2)$		$V_{CE} = 5\text{ V}, I_C = 0.1\text{ A}$	60	—	120	
	$h_{FE} (3)$		$V_{CE} = 5\text{ V}, I_C = 0.2\text{ A}$	50	—	—	
Collector emitter saturation voltage		$V_{CE(sat)}$	$I_C = 0.8\text{ A}, I_B = 0.1\text{ A}$	—	—	1.0	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = 0.8\text{ A}, I_B = 0.1\text{ A}$	—	—	1.3	V
Switching time	Rise time	t_r	<p> $I_{B1} = 0.1\text{ A}, -I_{B2} = 50\text{ mA}$ DUTY CYCLE $\leq 1\%$ </p>	—	—	0.5	μs
	Storage time	t_{stg}		—	—	4.0	
	Fall time	t_f		—	—	0.2	

Marking







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20070701-EN

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