

TOSHIBA Transistor Silicon NPN Triple Diffused Type

2SC6042

High-Speed, High-Voltage Switching Applications

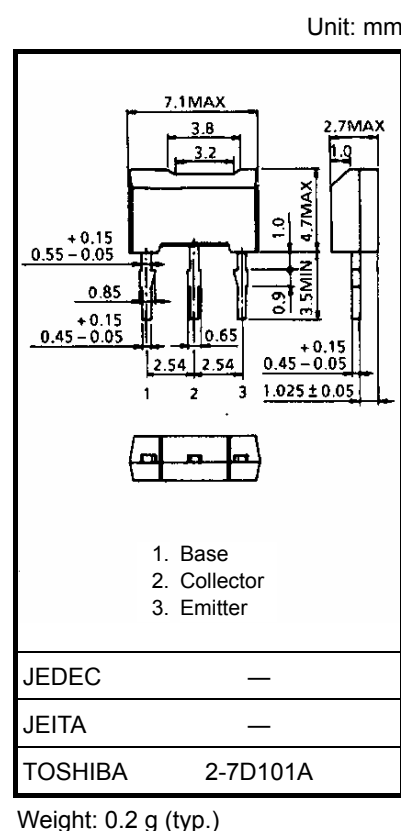
Switching Regulator Applications

DC-DC Converter Applications

- High-speed switching: $t_f = 0.2 \mu s$ (max) ($I_C = 0.3A$)
- High breakdown voltage: $V_{CES} = 800 V$, $V_{CEO} = 375 V$

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

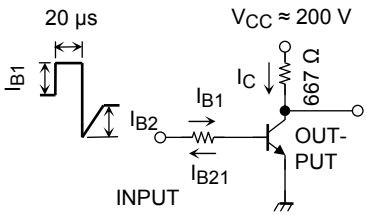
Characteristic		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	800	V
Collector-emitter voltage		V_{CES}	800	V
		V_{CEO}	375	V
Emitter-base voltage		V_{EBO}	8	V
Collector current	DC	I_C	1.0	A
	Pulse	I_{CP}	2.0	
Base current		I_B	0.5	A
Collector power dissipation	$T_a = 25^\circ C$	P_C	1.0	W
Junction temperature		T_j	150	$^\circ C$
Storage temperature range		T_{stg}	-55 to 150	$^\circ C$



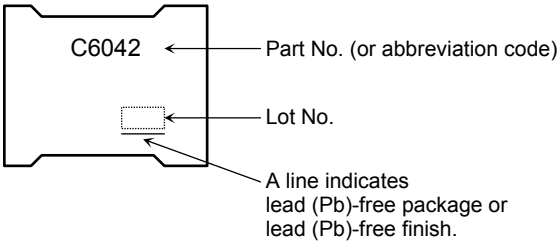
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

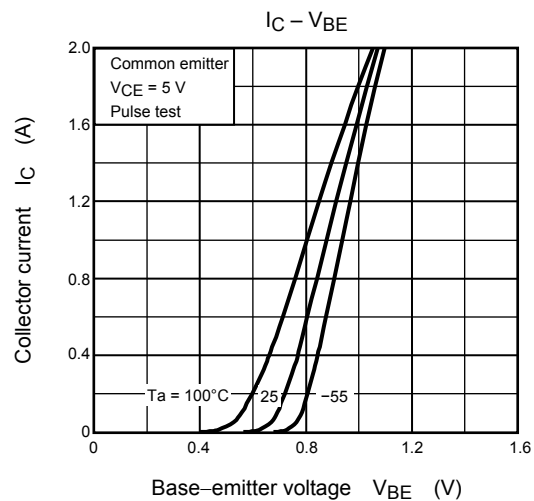
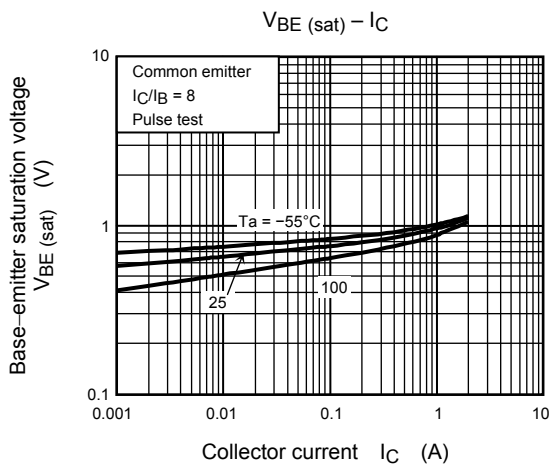
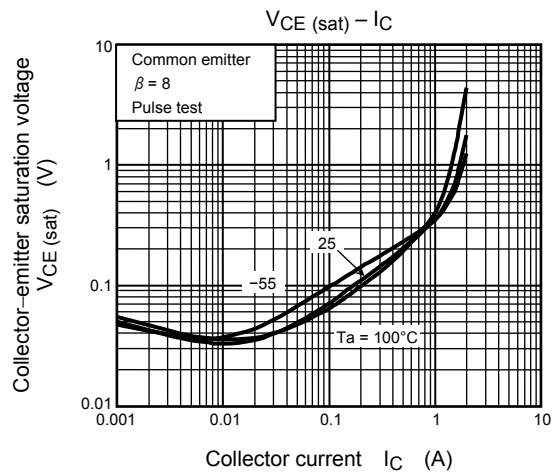
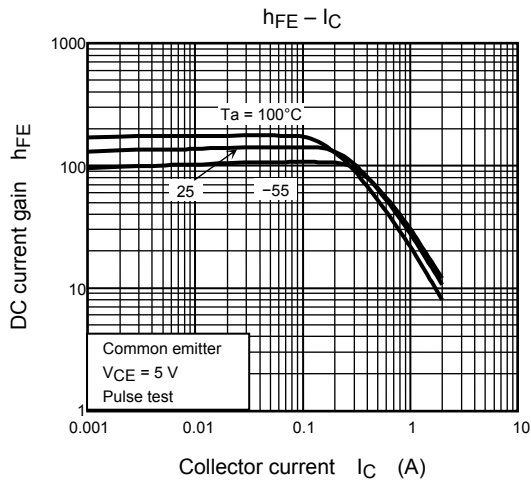
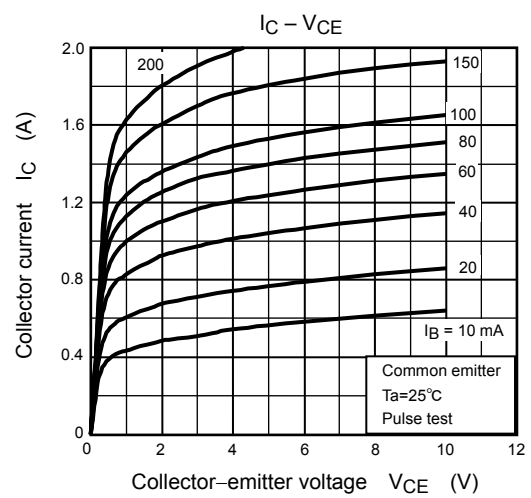
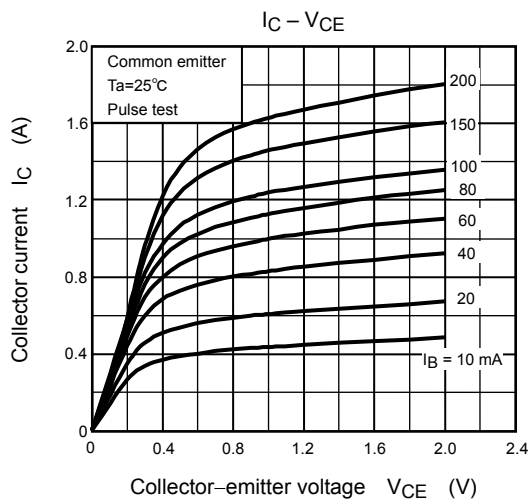
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

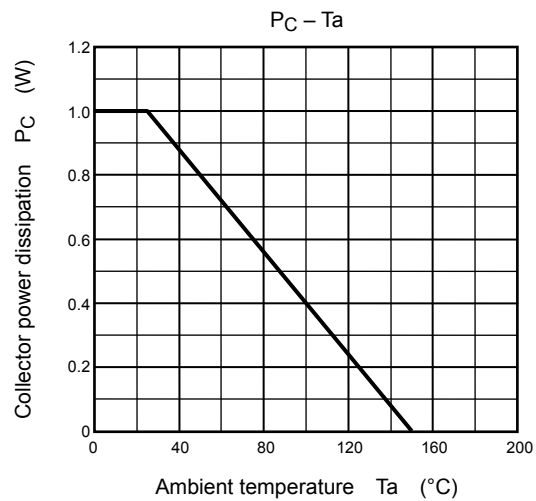
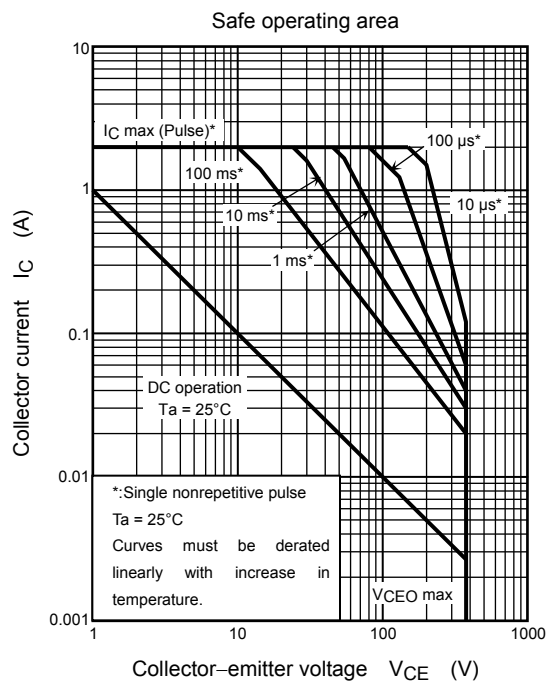
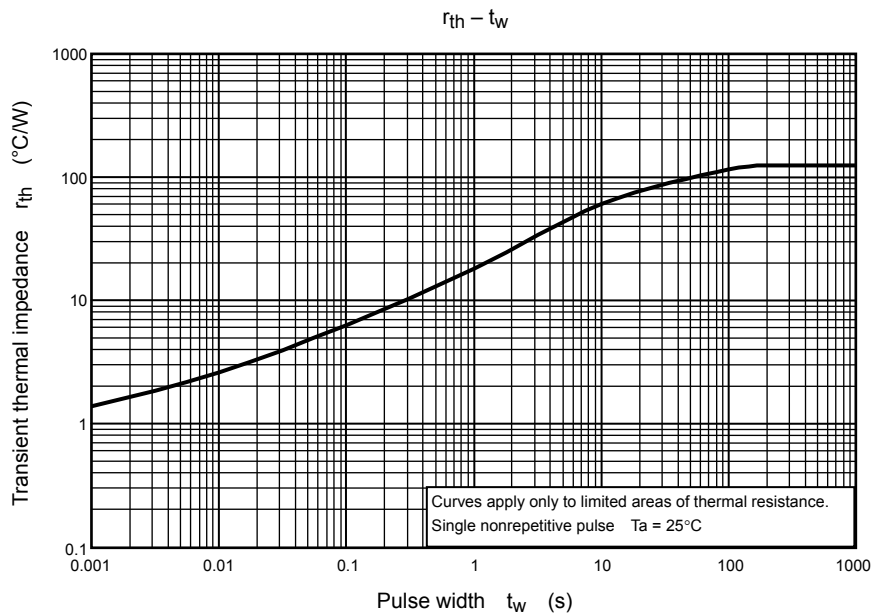
Electrical Characteristics (Ta = 25°C)

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		$V_{(BR)\text{ CBO}}$	$I_C = 1\text{ mA}, I_B = 0$	800	—	—	V
Collector-emitter breakdown voltage		$V_{(BR)\text{ CEO}}$	$I_C = 10\text{ mA}, I_B = 0$	375	—	—	V
DC current gain		$h_{FE}\text{ (1)}$	$V_{CE} = 5\text{ V}, I_C = 1\text{ mA}$	80	—	—	
		$h_{FE}\text{ (2)}$	$V_{CE} = 5\text{ V}, I_C = 0.1\text{ A}$	100	—	200	
		$h_{FE}\text{ (3)}$	$V_{CE} = 5\text{ V}, I_C = 0.2\text{ A}$	80	—	—	
Collector emitter saturation voltage		$V_{CE\text{ (sat)}}$	$I_C = 0.8\text{ A}, I_B = 0.1\text{ A}$	—	—	1.0	V
Base-emitter saturation voltage		$V_{BE\text{ (sat)}}$	$I_C = 0.8\text{ A}, I_B = 0.1\text{ A}$	—	—	1.3	V
Switching time	Rise time	t_r	 $I_{B1} = 20\text{ mA}, -I_{B2} = 50\text{ mA}$ DUTY CYCLE $\leq 1\%$	—	—	0.5	μs
	Storage time	t_{stg}		—	—	4.5	
	Fall time	t_f		—	—	0.2	

Marking







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