

TOSHIBA Transistor Silicon NPN Triple Diffused Type

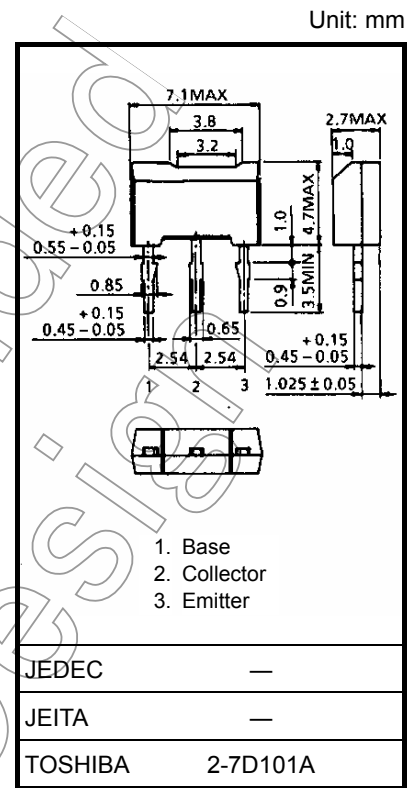
# 2SC6042

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	$^\circ C$



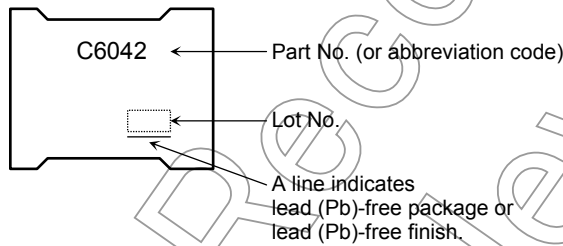
Weight: 0.2 g (typ.)

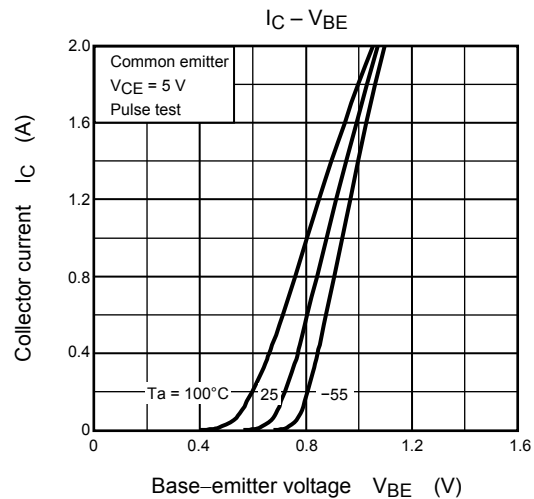
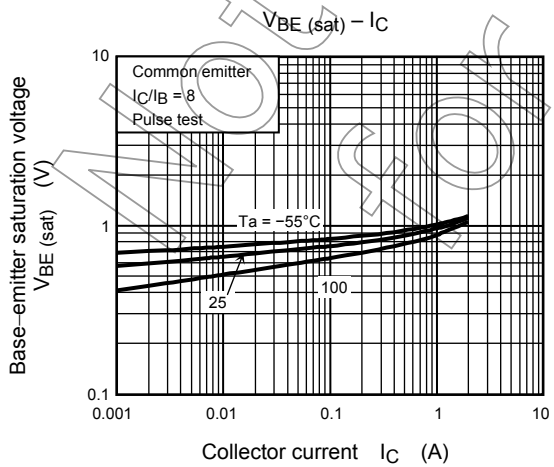
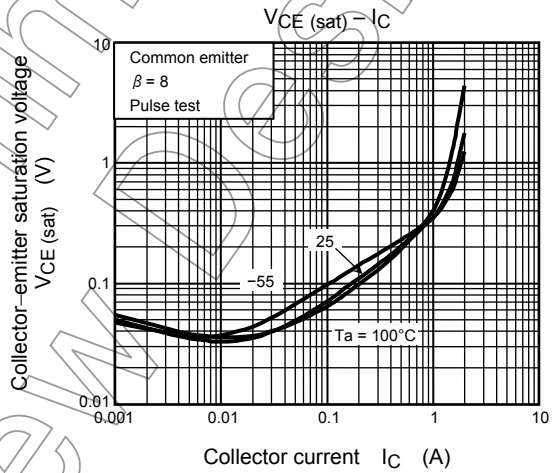
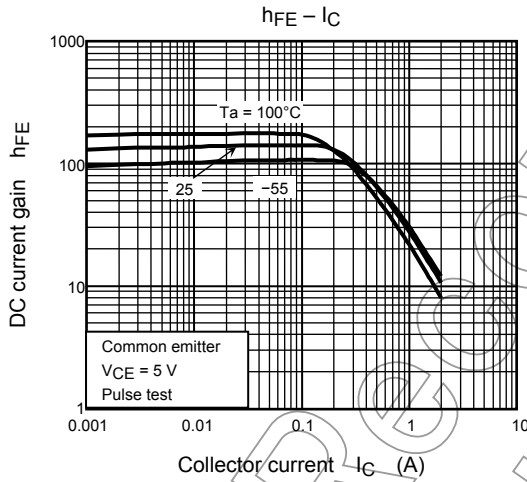
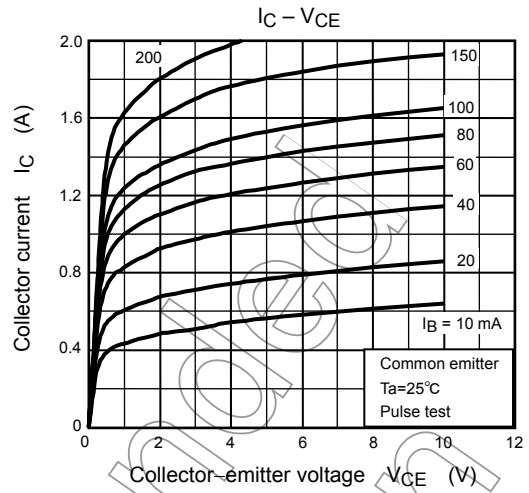
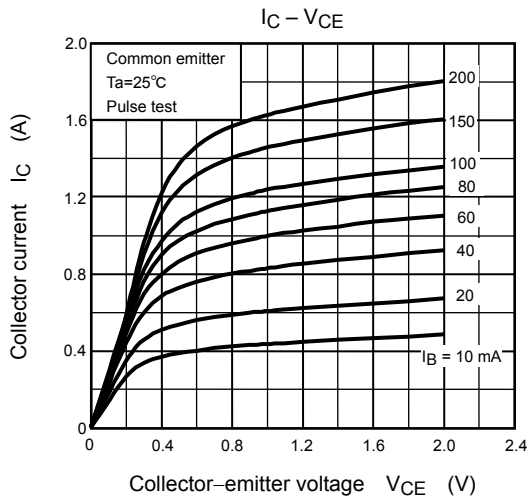
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

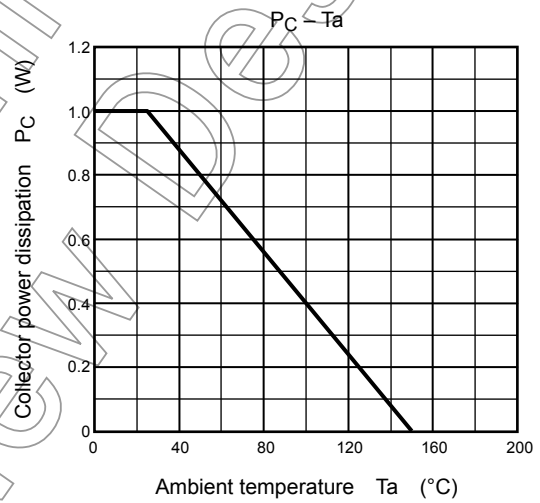
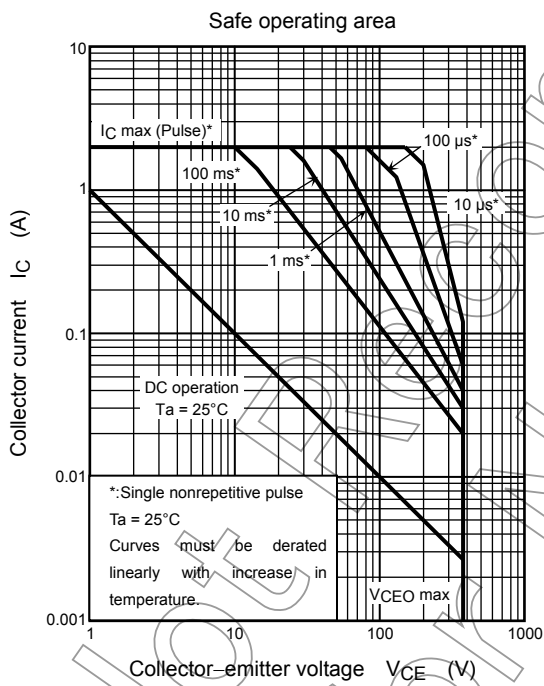
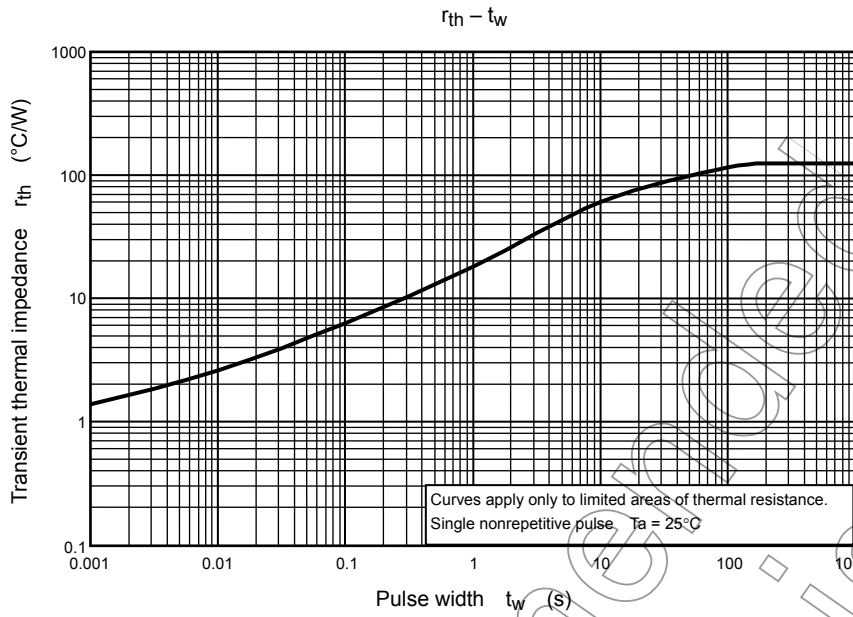
**Electrical Characteristics (Ta = 25°C)**

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = 800\text{ V}, I_E = 0$	—	—	100	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = 8\text{ V}, I_C = 0$	—	—	100	$\mu\text{A}$
Collector-base breakdown voltage		$V_{(BR) CBO}$	$I_C = 1\text{ mA}, I_B = 0$	800	—	—	V
Collector-emitter breakdown voltage		$V_{(BR) CEO}$	$I_C = 10\text{ mA}, I_B = 0$	375	—	—	V
DC current gain	$h_{FE} (1)$		$V_{CE} = 5\text{ V}, I_C = 1\text{ mA}$	80	—	—	
	$h_{FE} (2)$		$V_{CE} = 5\text{ V}, I_C = 0.1\text{ A}$	100	—	200	
	$h_{FE} (3)$		$V_{CE} = 5\text{ V}, I_C = 0.2\text{ A}$	80	—	—	
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><math>I_{B1} = 20\text{ mA}, -I_{B2} = 50\text{ mA}</math> DUTY CYCLE <math>\lesssim 1\%</math></p>	—	—	0.5	$\mu\text{s}$
	Storage time	$t_{stg}$		—	—	4.5	
	Fall time	$t_f$		—	—	0.2	

**Marking**







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