

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

2SC3709A

High-Current Switching Applications

Unit: mm

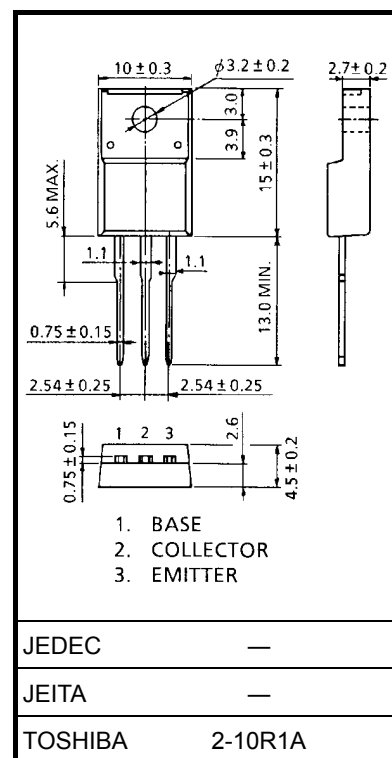
- Low collector saturation voltage: $V_{CE(sat)} = 0.4 \text{ V (max)}$
- High-speed switching: $t_{stg} = 1.0 \text{ } \mu\text{s (typ.)}$
- Complementary to 2SA1451A

Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	60	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	6	V
Collector current	I_C	12	A
Base current	I_B	2	A
Collector power dissipation ($T_c = 25^\circ\text{C}$)	P_C	30	W
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to 150	$^\circ\text{C}$

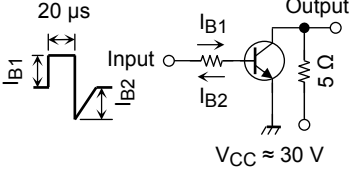
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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



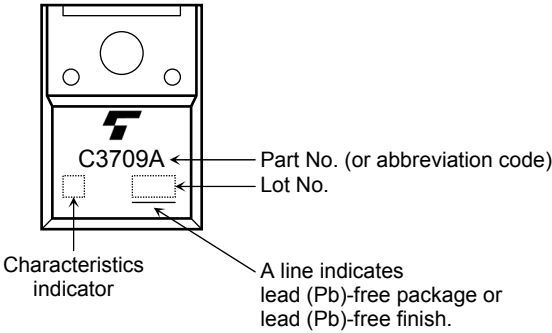
Weight: 1.7 g (typ.)

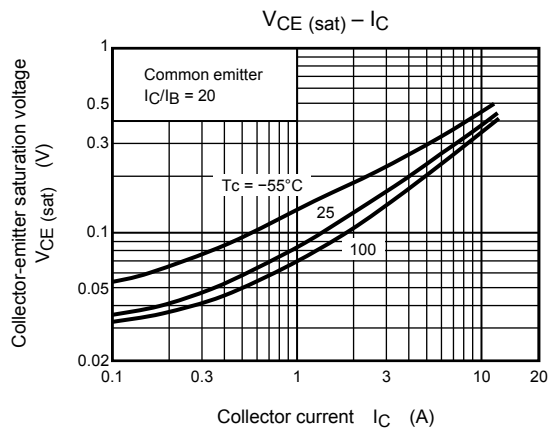
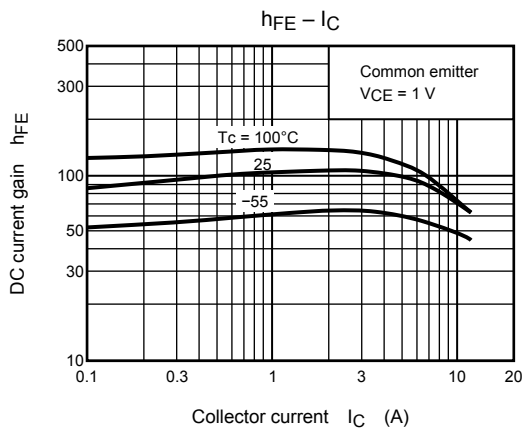
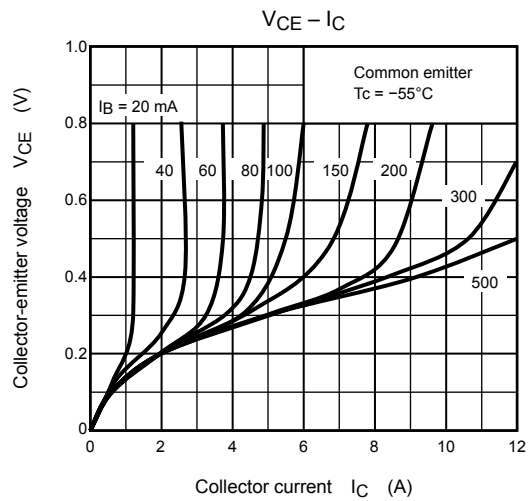
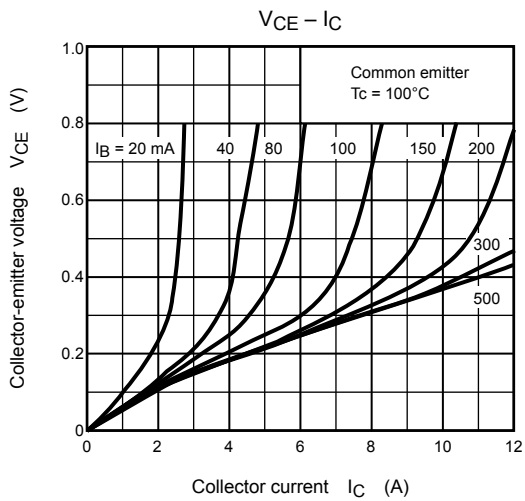
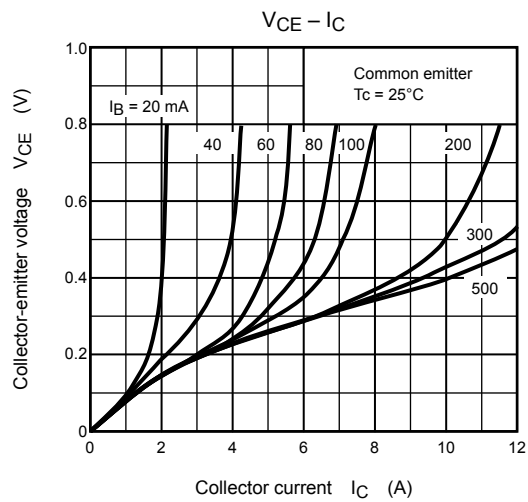
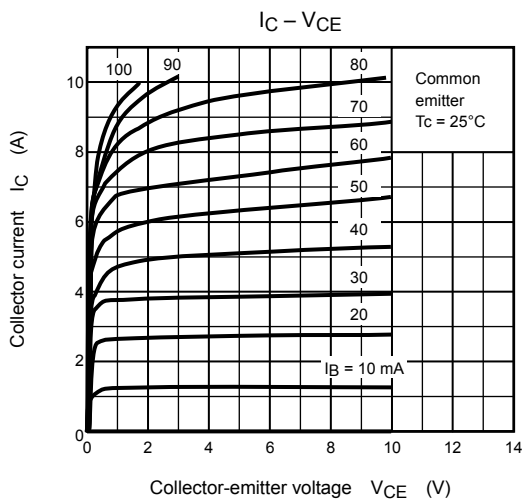
Electrical Characteristics (Tc = 25°C)

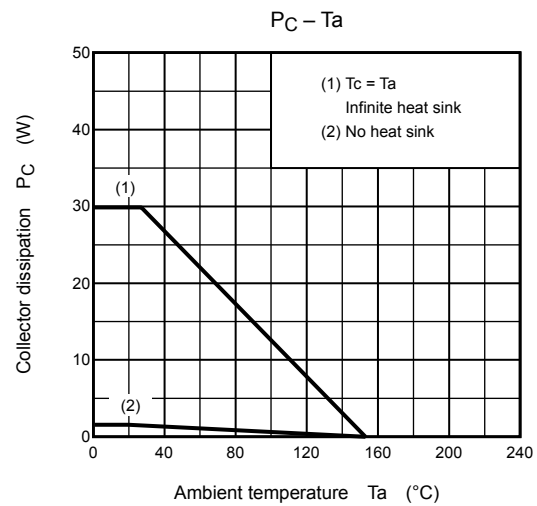
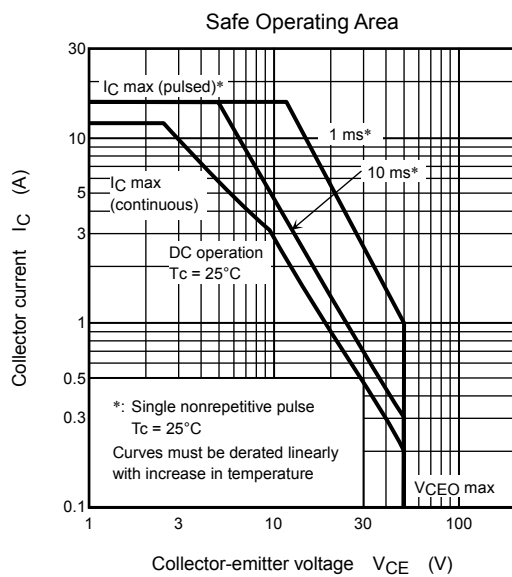
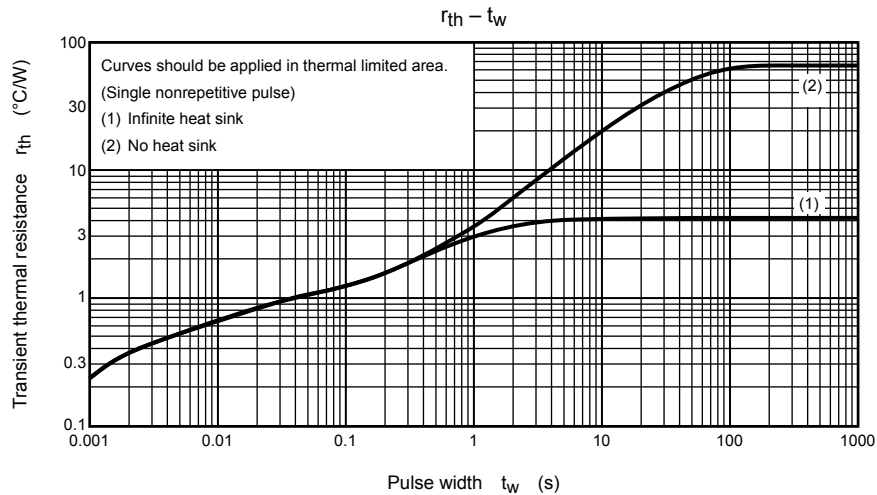
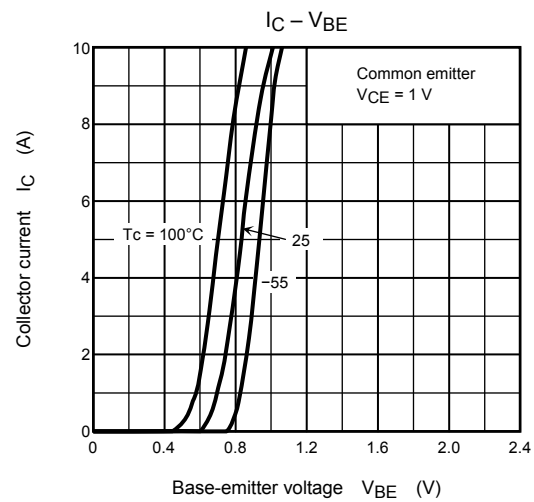
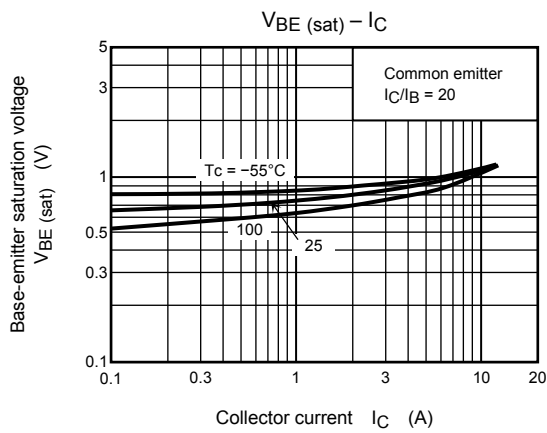
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 60\text{ V}, I_E = 0$	—	—	10	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 6\text{ V}, I_C = 0$	—	—	10	μA
Collector-emitter breakdown voltage		$V_{(BR)\text{ CEO}}$	$I_C = 50\text{ mA}, I_B = 0$	50	—	—	V
DC current gain	$h_{FE\text{ (1)}}$ (Note)		$V_{CE} = 1\text{ V}, I_C = 1\text{ A}$	70	—	240	
	$h_{FE\text{ (2)}}$		$V_{CE} = 1\text{ V}, I_C = 6\text{ A}$	40	—	—	
Collector-emitter saturation voltage		$V_{CE\text{ (sat)}}$	$I_C = 6\text{ A}, I_B = 0.3\text{ A}$	—	0.25	0.4	V
Base-emitter saturation voltage		$V_{BE\text{ (sat)}}$	$I_C = 6\text{ A}, I_B = 0.3\text{ A}$	—	0.9	1.2	V
Transition frequency		f_T	$V_{CE} = 5\text{ V}, I_C = 1\text{ A}$	—	90	—	MHz
Collector output capacitance		C_{ob}	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	180	—	pF
Switching time	Turn-on time	t_{on}	 $I_{B1} = -I_{B2} = 0.3\text{ A}, \text{ duty cycle} \leq 1\%$	—	0.2	—	μs
	Storage time	t_{stg}		—	1.0	—	
	Fall time	t_f		—	0.2	—	

Note: $h_{FE\text{ (1)}}$ classification O: 70 to 140, Y: 120 to 240

Marking







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20070701-EN

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