

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

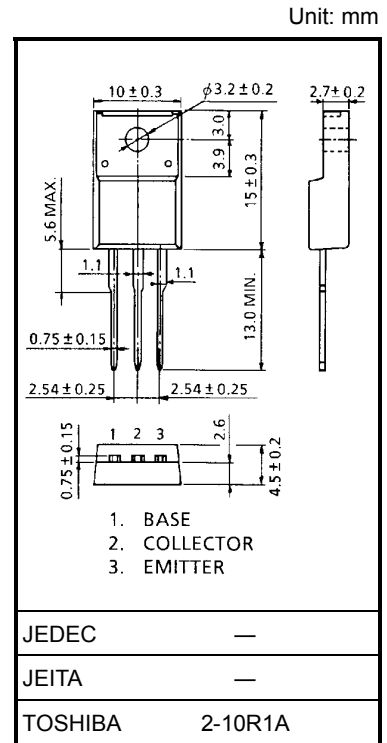
2SC3709A

High-Current Switching Applications

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

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	$^\circ\text{C}$



Electrical Characteristics ($T_c = 25^\circ\text{C}$)

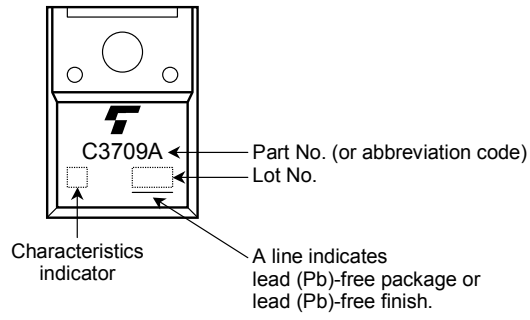
Weight: 1.7 g (typ.)

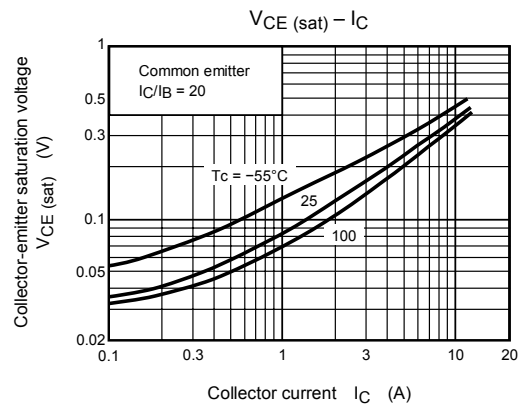
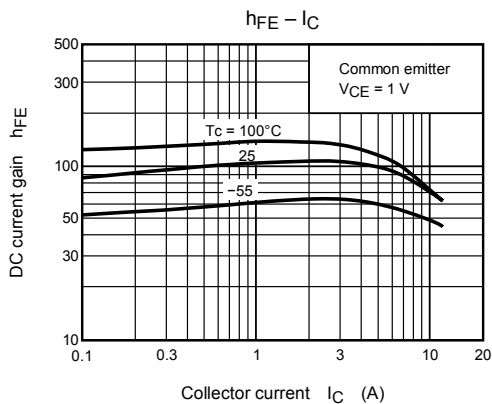
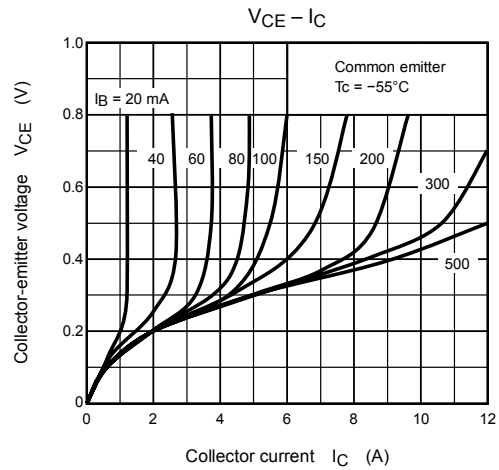
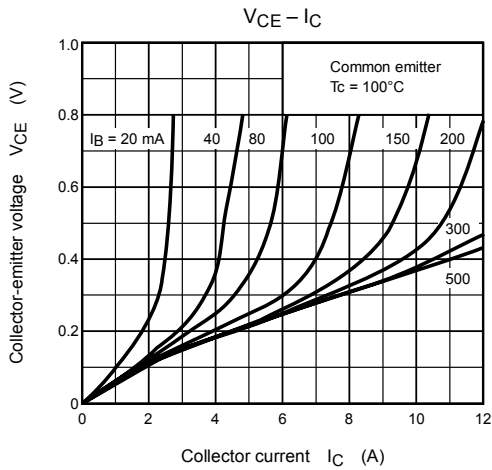
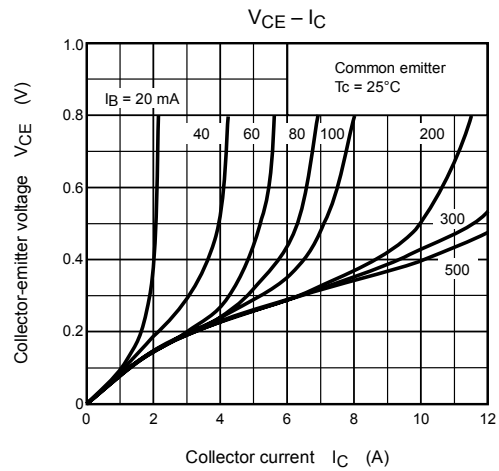
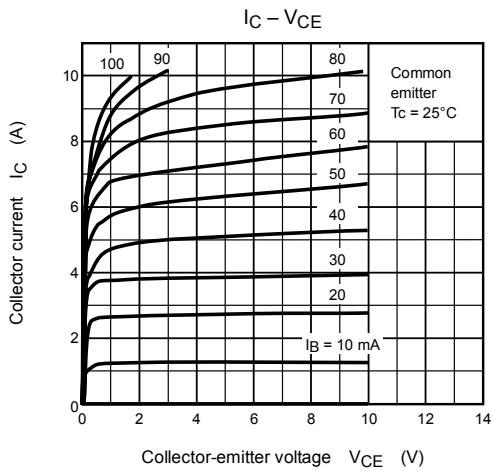
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit			
Collector cut-off current	I_{CBO}	$V_{CB} = 60 \text{ V}, I_E = 0$	—	—	10	μA			
Emitter cut-off current	I_{EBO}	$V_{EB} = 6 \text{ V}, I_C = 0$	—	—	10	μA			
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 50 \text{ mA}, I_B = 0$	50	—	—	V			
DC current gain	$h_{FE(1)}$ (Note)	$V_{CE} = 1 \text{ V}, I_C = 1 \text{ A}$	70	—	240				
	$h_{FE(2)}$	$V_{CE} = 1 \text{ V}, I_C = 6 \text{ A}$	40	—	—				
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 6 \text{ A}, I_B = 0.3 \text{ A}$	—	0.25	0.4	V			
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 6 \text{ A}, I_B = 0.3 \text{ A}$	—	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}				—	0.2	—	μs
	Storage time	t_{stg}				—	1.0	—	
	Fall time	t_f				—	0.2	—	

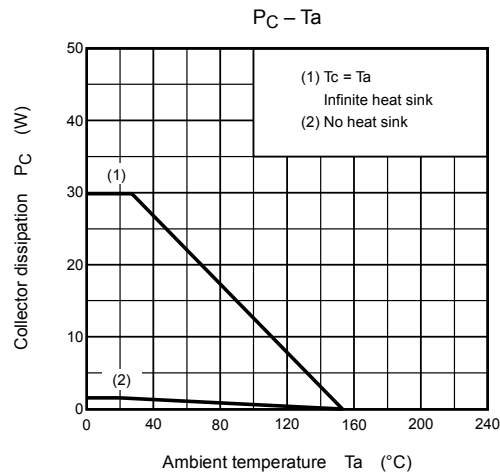
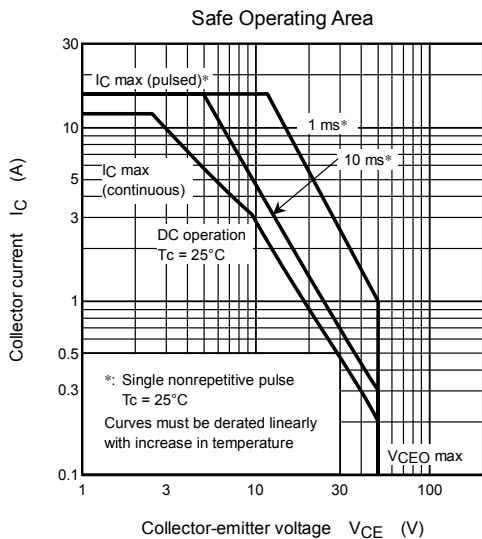
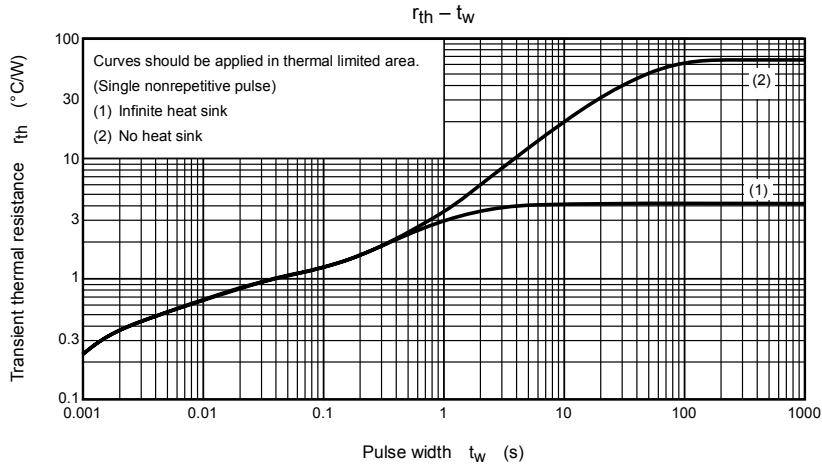
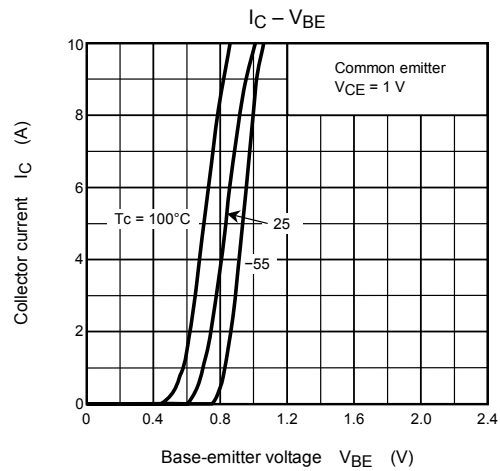
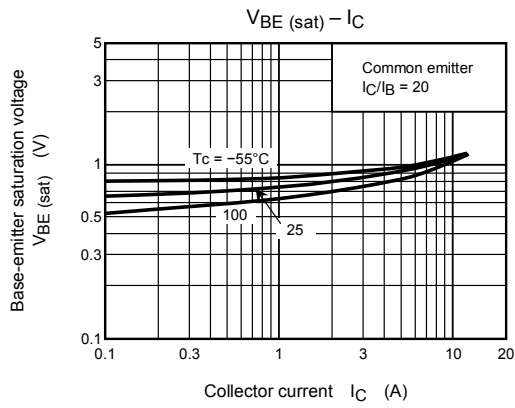
$I_{B1} = -I_{B2} = 0.3 \text{ A}, \text{ duty cycle } \leq 1\%$

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

Marking







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