

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

2SA1451A

High-Speed, High-Current Switching Applications

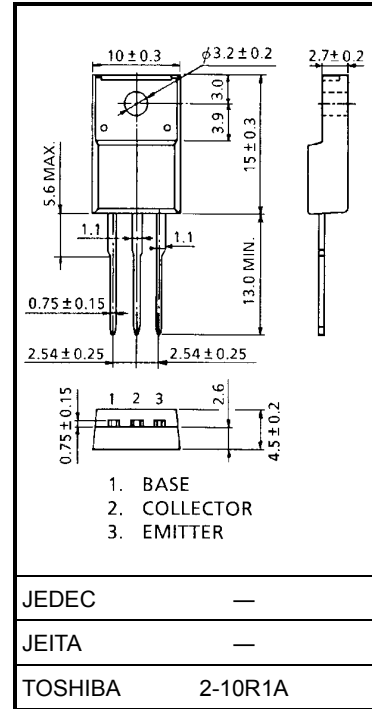
- Low collector saturation voltage
: $V_{CE(sat)} = -0.4 \text{ V (max)}$ ($I_C = -6 \text{ A}$)
- High-speed switching: $t_{stg} = 1.0 \mu\text{s}$ (typ.)
- Complementary to 2SC3709A

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).

Unit: mm



Weight: 1.7 g (typ.)

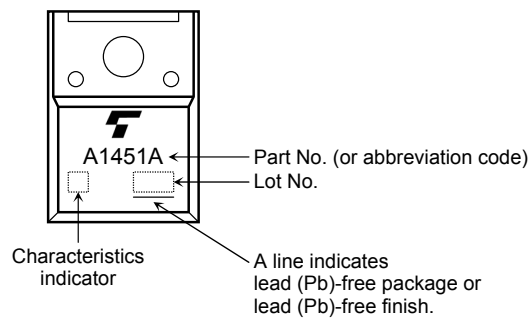
Electrical Characteristics (Tc = 25°C)

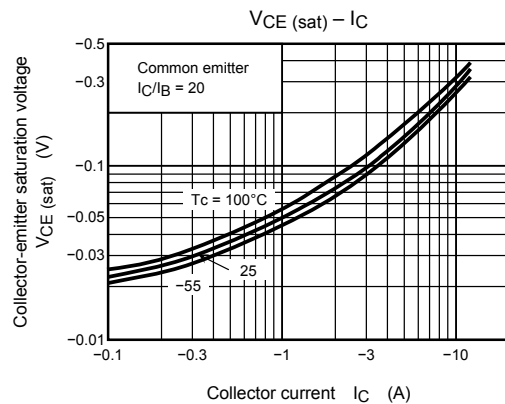
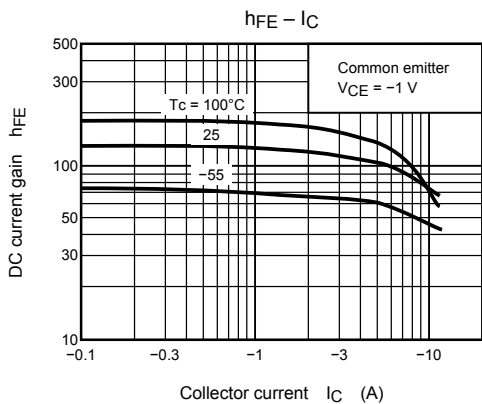
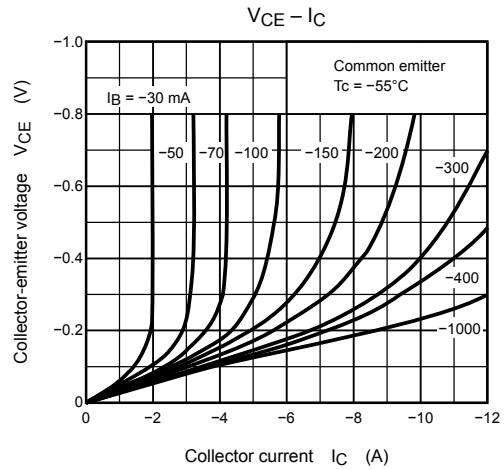
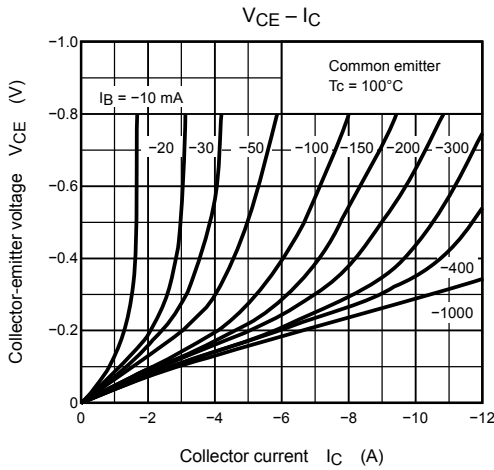
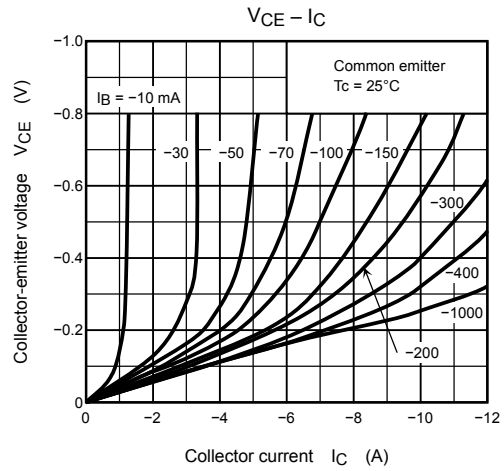
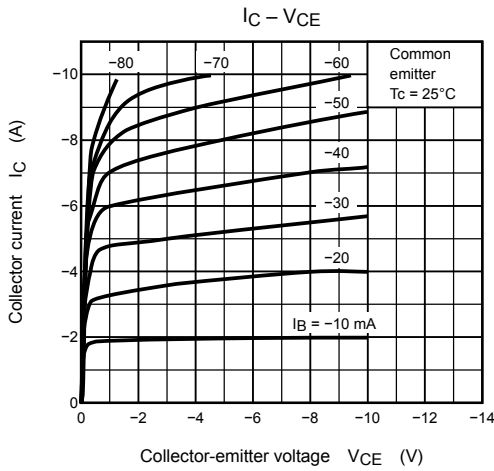
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = -60 \text{ V}, I_E = 0$	—	—	-10	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = -6 \text{ V}, I_C = 0$	—	—	-10	μA
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	$I_C = -50 \text{ mA}, I_B = 0$	-50	—	—	V
DC current gain	$h_{FE(1)}$ (Note)		$V_{CE} = -1 \text{ V}, I_C = -1 \text{ A}$	70	—	240	
	$h_{FE(2)}$						
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = -6 \text{ A}, I_B = -0.3 \text{ A}$	—	-0.15	-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	
Transition frequency		f_T	$V_{CE} = -5 \text{ V}, I_C = -1 \text{ A}$	—	70	—	MHz
Collector output capacitance		C_{ob}	$V_{CB} = -10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$	—	320	—	pF
Switching time	Turn-on time	t_{on}	<p style="text-align: center;">$V_{CC} \approx -30 \text{ V}$</p>	—	0.3	—	μs
	Storage time	t_{stg}		—	1.0	—	
	Fall time	t_f		—	0.2	—	

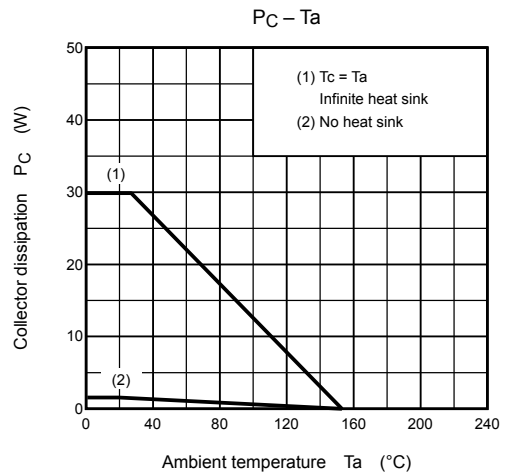
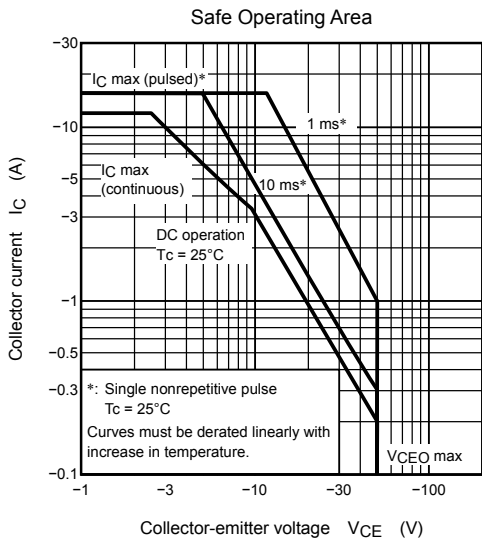
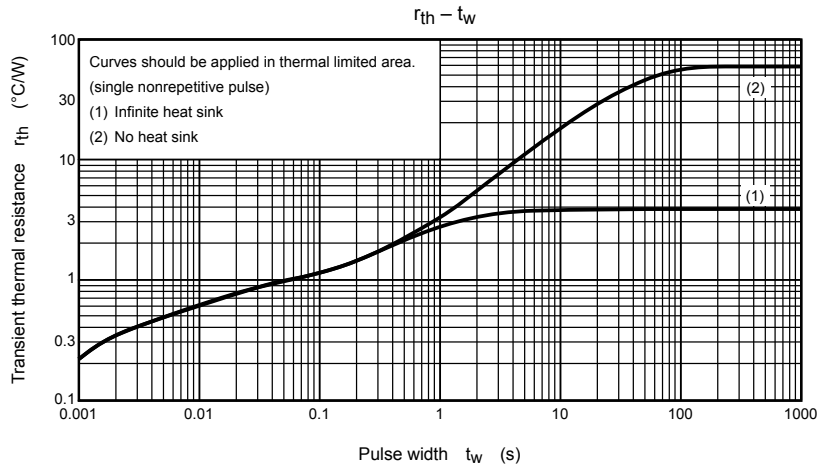
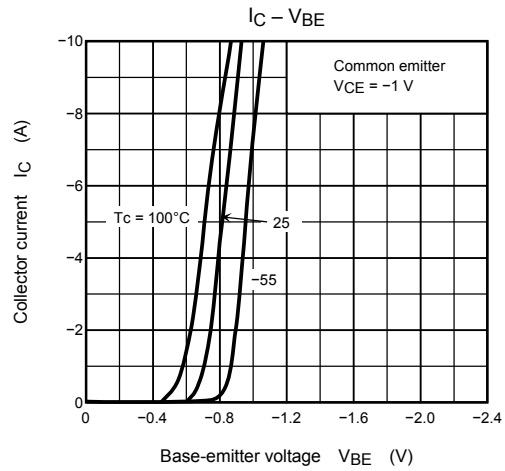
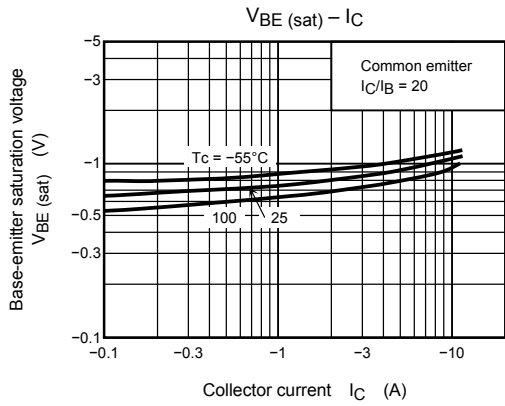
$-I_{B1} = I_{B2} = 0.3 \text{ A}, \text{ duty cycle } \leq 1\%$

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

Marking







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20070701-EN

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