

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

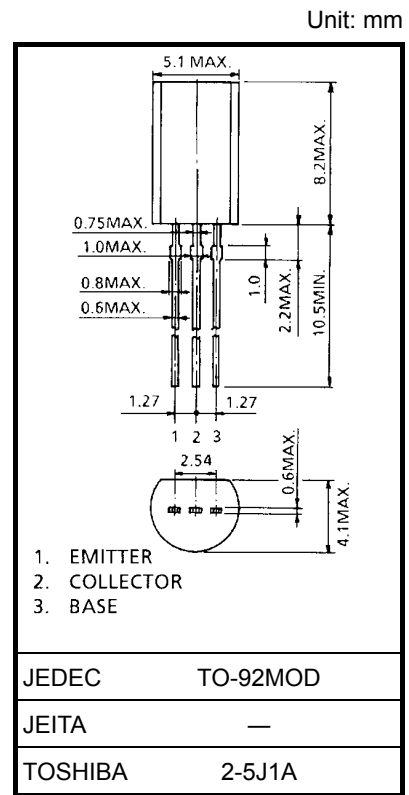
2SC4408

Power Amplifier Applications
 Power Switching Applications

- Low saturation voltage: $V_{CE(sat)} = 0.5\text{ V (max)}$ ($I_C = 1\text{ A}$)
- High collector power dissipation: $P_C = 900\text{ mW}$
- High-speed switching: $t_{stg} = 500\text{ ns (typ.)}$
- Complementary to 2SA1680

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

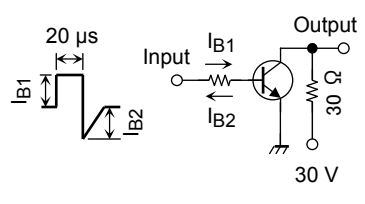
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	80	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	6	V
Collector current	I_C	2	A
Base current	I_B	0.2	A
Collector power dissipation	P_C	900	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to 150	$^\circ\text{C}$



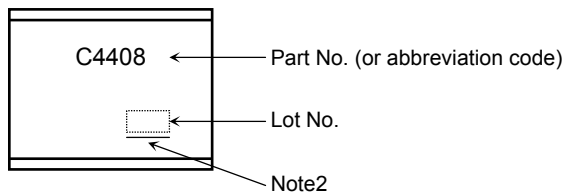
Weight: 0.36 g (typ.)

Note1: 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)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 80\text{ V}, I_E = 0$	—	—	1.0	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 6\text{ V}, I_C = 0$	—	—	1.0	μA
Collector-emitter breakdown voltage		$V_{(BR) CEO}$	$I_C = 10\text{ mA}, I_B = 0$	50	—	—	V
DC current gain		$h_{FE (1)}$	$V_{CE} = 2\text{ V}, I_C = 100\text{ mA}$	120	—	400	
		$h_{FE (2)}$	$V_{CE} = 2\text{ V}, I_C = 1.5\text{ A}$	40	—	—	
Collector-emitter saturation voltage		$V_{CE (sat)}$	$I_C = 1\text{ A}, I_B = 0.05\text{ A}$	—	—	0.5	V
Base-emitter saturation voltage		$V_{BE (sat)}$	$I_C = 1\text{ A}, I_B = 0.05\text{ A}$	—	—	1.2	V
Transition frequency		f_T	$V_{CE} = 2\text{ V}, I_C = 100\text{ mA}$	—	100	—	MHz
Collector output capacitance		C_{ob}	$V_{CB} = 10\text{ V}, I_C = 0, f = 1\text{ MHz}$	—	14	—	pF
Switching time	Turn-on time	t_{on}		—	0.1	—	μs
	Storage time	t_{stg}		—	0.5	—	
	Fall time	t_f		$I_{B1} = 0.05\text{ A}, I_{B2} = 0.05\text{ A},$ duty cycle $\leq 1\%$	—	0.1	

Marking

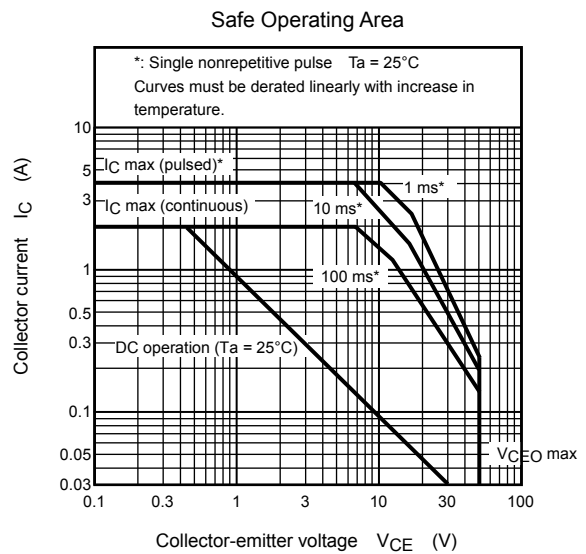
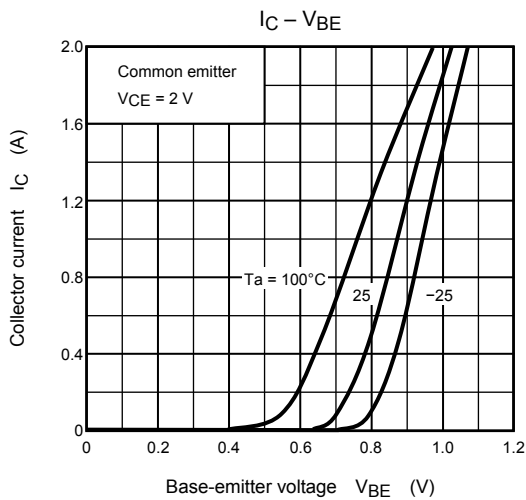
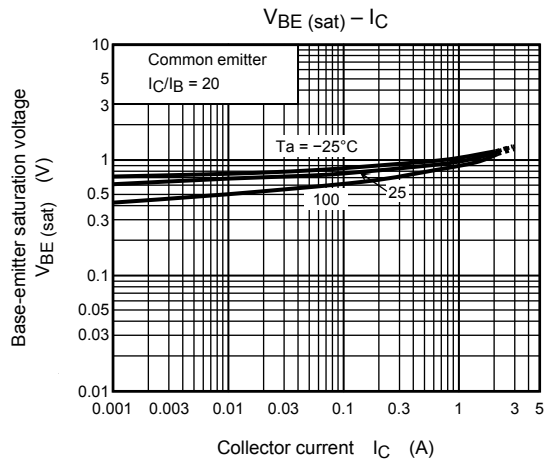
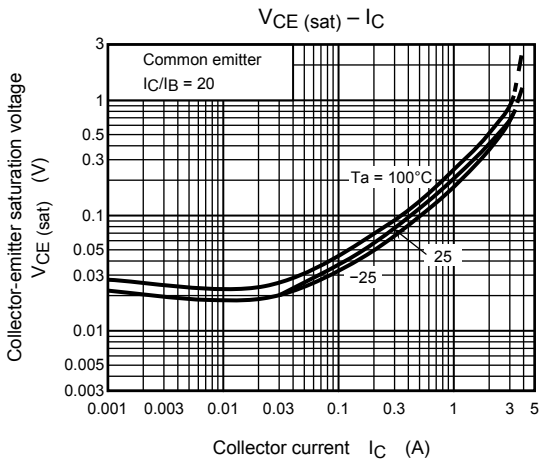
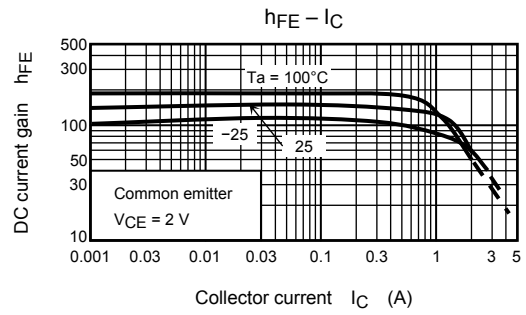
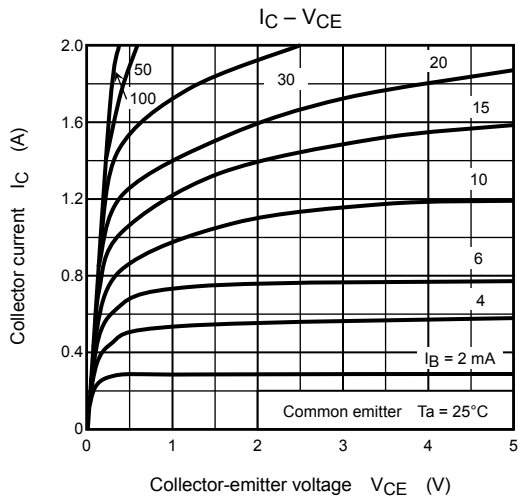


Note2: A line under a Lot No. identifies the indication of product Labels.

Not underlined: $[[Pb]]/INCLUDES > MCV$

Underlined: $[[G]]/RoHS COMPATIBLE$ or $[[G]]/RoHS [[Pb]]$

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.



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