

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

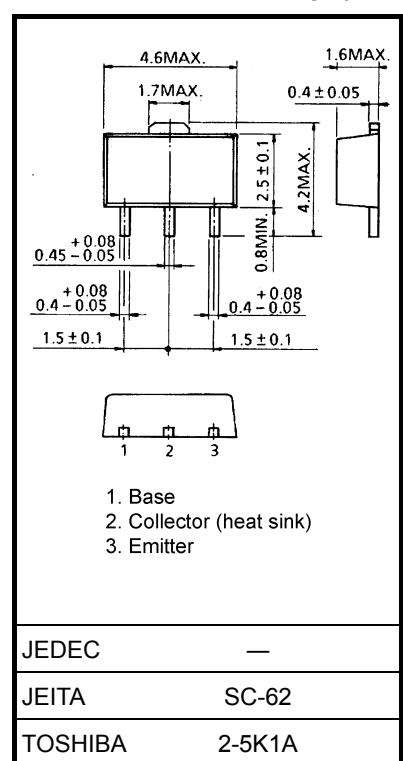
2SC4409

Power Amplifier Applications
Power switching applications

- Low collector saturation voltage: $V_{CE}(\text{sat}) = 0.5V$ (max) (at $I_C = 1A$)
- High speed switching time: $t_{\text{stg}} = 500\text{ns}$ (typ.)
- Small flat package
- $P_C = 1\sim 2\text{ W}$ (Mounted on a ceramic substrate)
- Complementary to 2SA1681

Absolute Maximum Ratings (Ta = 25°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	500	mW
Collector power dissipation	P_C (Note 1)	1000	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55~150	°C



Weight: 0.05 g (typ.)

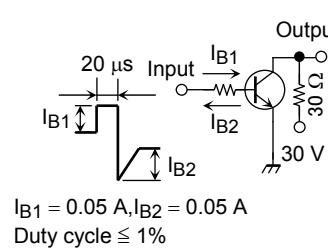
Note 1: 2SC4409 mounted on a ceramic substrate (250 mm² × 0.8 t)

Note 2: 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.

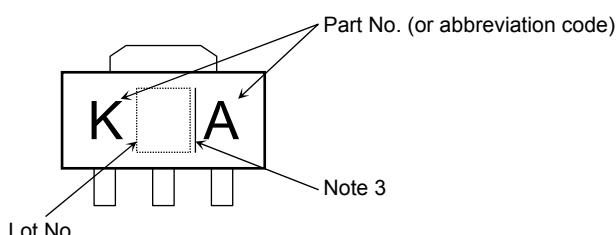
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I _{CBO}	V _{CB} = 80 V, I _E = 0	—	—	0.1	μA
Emitter cut-off current	I _{EBO}	V _{EB} = 6 V, I _C = 0	—	—	0.1	μA
Collector-emitter breakdown voltage	V _(BR) CEO	I _C = 10 mA, I _B = 0	50	—	—	V
DC current gain	h _{FE} (1)	V _{CE} = 2 V, I _C = 100 mA	120	—	400	
	h _{FE} (2)	V _{CE} = 2 V, I _C = 1.5 A	40	—	—	
Collector-emitter saturation voltage	V _{CE} (sat)	I _C = 1 A, I _B = 0.05 A	—	—	0.5	V
Base-emitter saturation voltage	V _{BE} (sat)	I _C = 1 A, I _B = 0.05 A	—	—	1.2	V
Transition frequency	f _T	V _{CE} = 2 V, I _C = 100 mA	—	100	—	MHz
Collector output capacitance	C _{ob}	V _{CB} = 10 V, I _E = 0, f = 1 MHz	—	14	—	pF
Switching time	Turn-on time	t _{on}	—	0.1	—	μs
	Storage time	t _{stg}	—	0.5	—	
	Fall time	t _f	—	0.1	—	



Marking

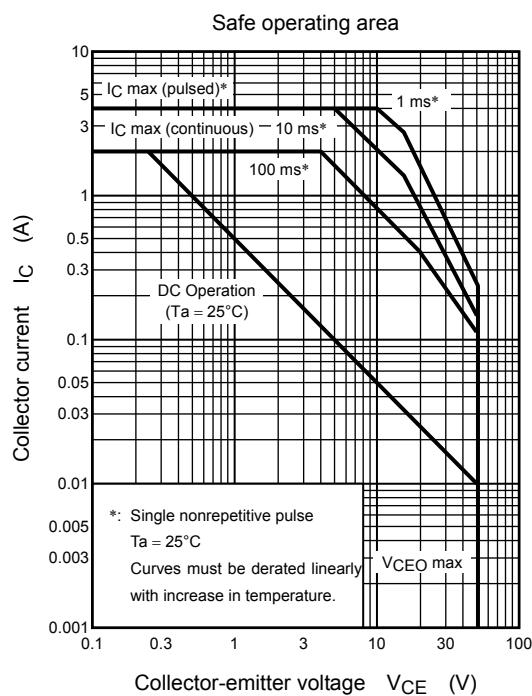
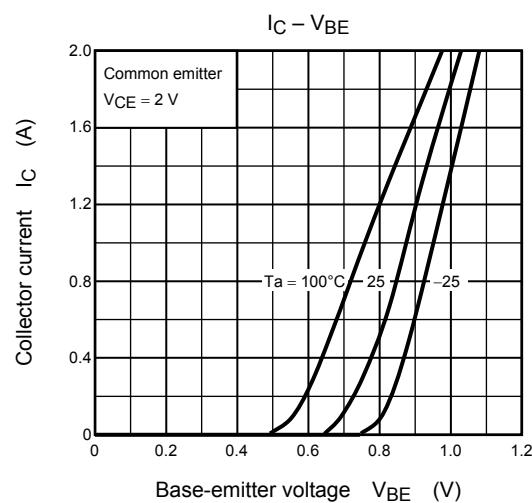
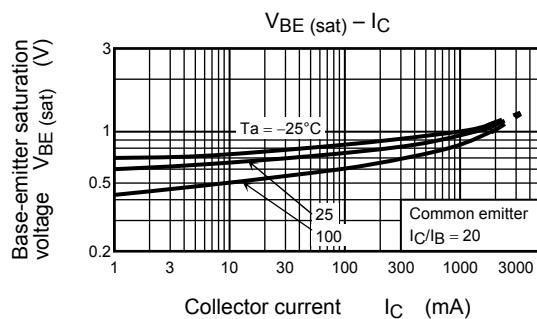
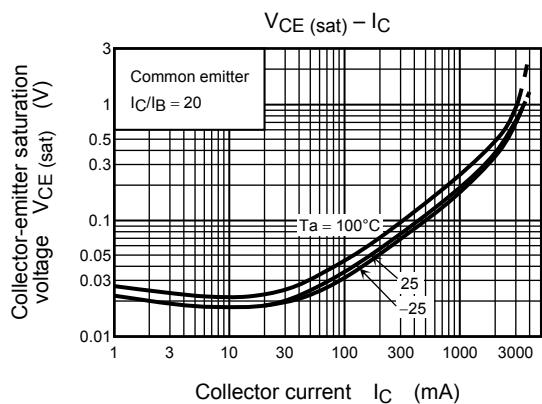
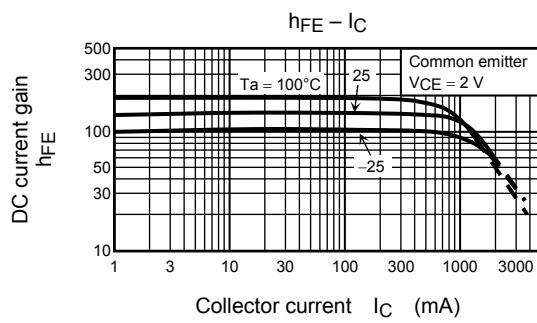
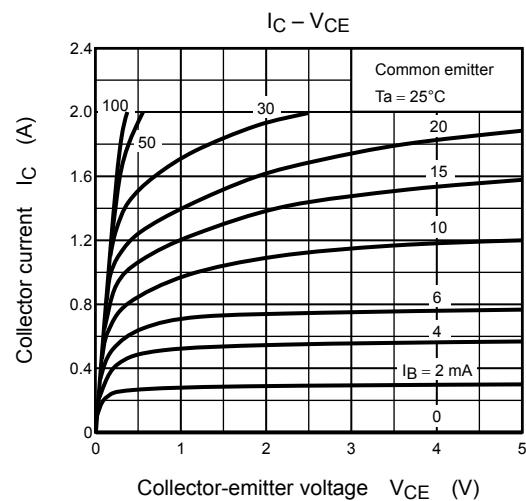


Note 3: A line to the right of a Lot No. identifies the indication of product Labels.

Without a line: [[Pb]]/INCLUDES > MCV

With a line: [[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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