

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

2SC4409

Power Amplifier Applications

Power switching applications

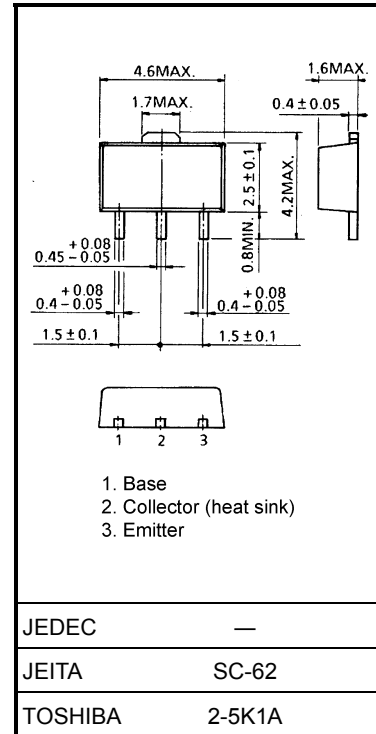
- Low collector saturation voltage: $V_{CE(sat)} = 0.5V$ (max) (at $I_C = 1A$)
- High speed switching time: $t_{stg} = 500ns$ (typ.)
- Small flat package
- $P_C = 1\sim 2$ W (Mounted on a ceramic substrate)
- Complementary to 2SA1681

Maximum Ratings ($T_a = 25^\circ C$)

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)	1000	mW
Junction temperature	T_j	150	$^\circ C$
Storage temperature range	T_{stg}	-55~150	$^\circ C$

Note: 2SC4409 mounted on a ceramic substrate ($250\text{ mm}^2 \times 0.8\text{ t}$)

Unit: mm

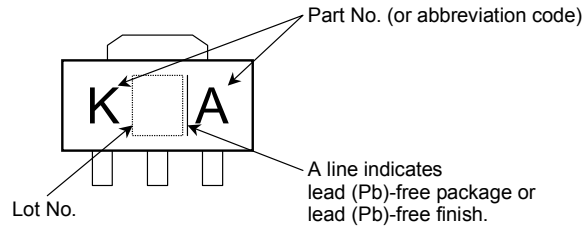


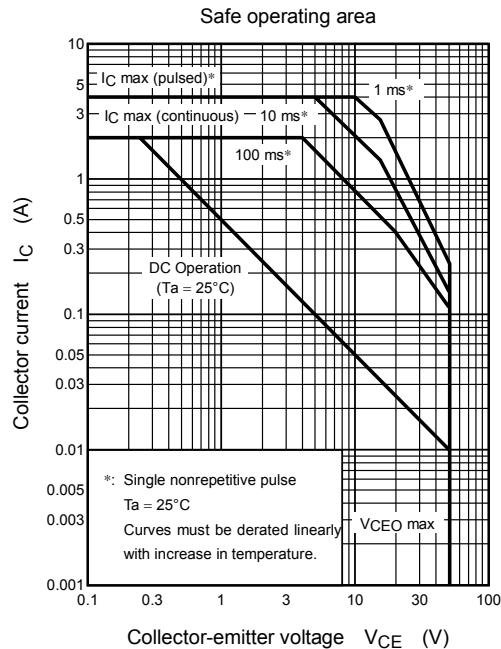
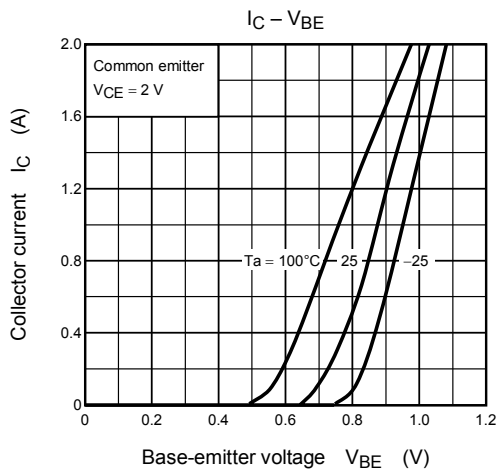
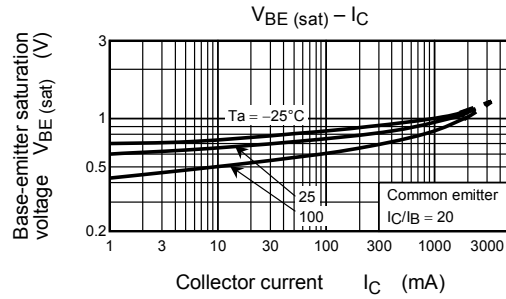
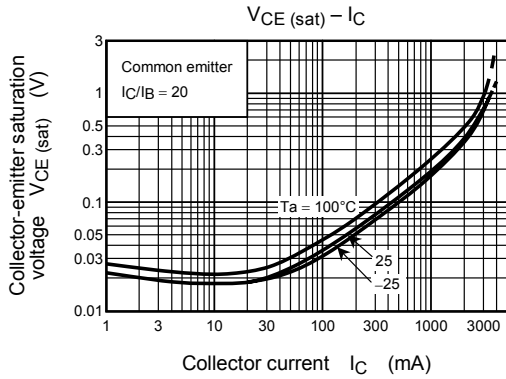
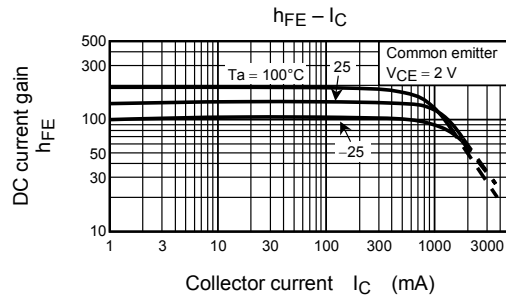
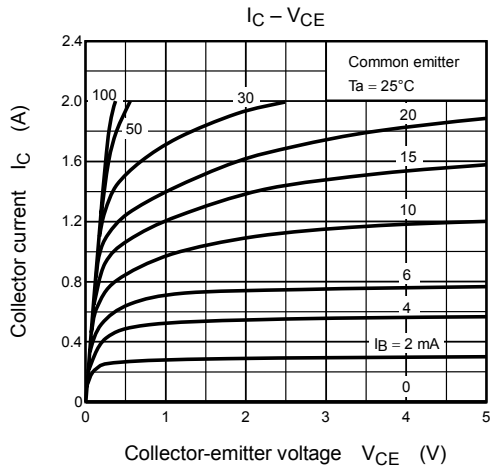
Weight: 0.05 g (typ.)

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 80 \text{ V}, I_E = 0$	—	—	0.1	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 6 \text{ V}, I_C = 0$	—	—	0.1	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}	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$	—	14	—	pF
Switching time	Turn-on time	t_{on}	<p>$I_{B1} = -I_{B2} = 0.05 \text{ A}$, Duty cycle $\leq 1\%$</p>	—	0.1	—	μs
	Storage time	t_{stg}		—	0.5	—	
	Fall time	t_f		—	0.1	—	

Marking





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