Unit: mm

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

# 2SC4408

**Power Amplifier Applications Power Switching Applications** 

- Low saturation voltage: VCE (sat) = 0.5 V (max) (IC = 1 A)
- High collector power dissipation: PC = 900 mW
- High-speed switching:  $t_{stg} = 500$  ns (typ.)
- Complementary to 2SA1680

#### **Absolute Maximum Ratings (Ta = 25°C)**

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V <sub>CBO</sub>	80	V
Collector-emitter voltage	V <sub>CEO</sub>	50	V
Emitter-base voltage	V <sub>EBO</sub>	6	V
Collector current	IC	2	Α
Base current	ΙΒ	0.2	Α
Collector power dissipation	PC	900	mW
Junction temperature	Tj	150	°C
Storage temperature range	T <sub>stg</sub>	-55 to 150	°C

Weight: 0.36 g (typ.) Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in

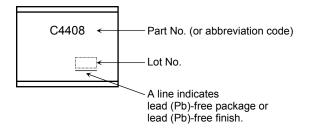
0.75MAX 1.0MAX 0.8MAX 0.6MAX 1. EMITTER 2. COLLECTOR BASE **JEDEC** TO-92MOD JEITA TOSHIBA 2-5J1A

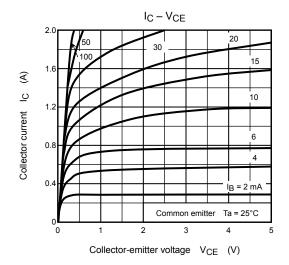
temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

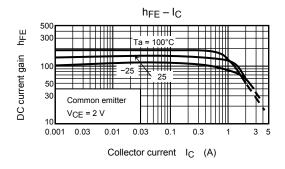
## **Electrical Characteristics (Ta = 25°C)**

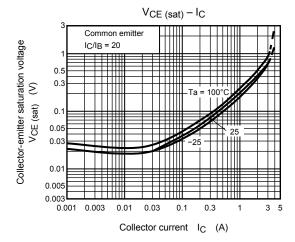
Chara	octeristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current		I <sub>CBO</sub>	V <sub>CB</sub> = 80 V, I <sub>E</sub> = 0	_	_	1.0	μΑ
Emitter cut-off current		I <sub>EBO</sub>	V <sub>EB</sub> = 6 V, I <sub>C</sub> = 0	_	_	1.0	μΑ
Collector-emitter breakdown voltage		V (BR) CEO	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0	50	_	_	V
DC current gain		h <sub>FE (1)</sub>	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 100 mA	120	_	400	
		h <sub>FE (2)</sub>	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 1.5 A	40	_	_	
Collector-emitter saturation voltage V <sub>CE (sat)</sub> I		I <sub>C</sub> = 1 A, I <sub>B</sub> = 0.05 A	_	_	0.5	V	
Base-emitter saturation voltage		V <sub>BE (sat)</sub>	I <sub>C</sub> = 1 A, I <sub>B</sub> = 0.05 A	_	_	1.2	V
Transition frequency		f <sub>T</sub>	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 100 mA	_	100	_	MHz
Collector output capacitance		C <sub>ob</sub>	V <sub>CB</sub> = 10 V, I <sub>C</sub> = 0, f = 1 MHz	-	14	_	pF
Switching time	Turn-on time	t <sub>on</sub>	20 $\mu$ s Input $\stackrel{ _{B1}}{\longrightarrow}$ $\stackrel{ _{C0}}{\longrightarrow}$ $\stackrel{ _{C0}}{\longrightarrow}$ $\stackrel{ _{B2}}{\longrightarrow}$ $\stackrel{ _{B2}}{\longrightarrow}$ $\stackrel{ _{B2}}{\longrightarrow}$ $\stackrel{ _{B1}}{\longrightarrow}$ $\stackrel{ _{B1}}{\longrightarrow}$ $\stackrel{ _{B2}}{\longrightarrow}$ $\stackrel{ _{B2}}{\longrightarrow}$ $\stackrel{ _{B2}}{\longrightarrow}$ $\stackrel{ _{B2}}{\longrightarrow}$ $\stackrel{ _{B1}}{\longrightarrow}$ $\stackrel{ _{B2}}{\longrightarrow}$ $ _{$	_	0.1	_	
	Storage time	t <sub>stg</sub>		_	0.5	_	μs
	Fall time	t <sub>f</sub>		_	0.1	_	

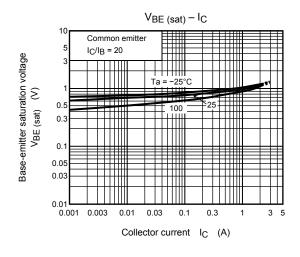
## Marking

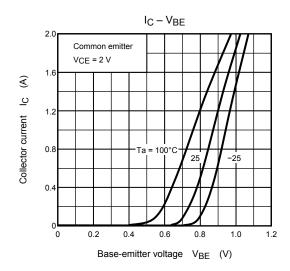


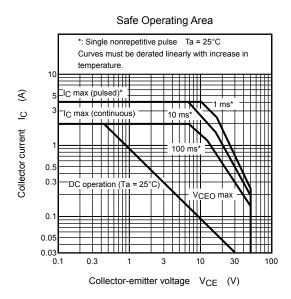












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