TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

# 2SC3420

# Strobe Flash Applications Audio Power Amplifier Applications

• High DC current gain:  $h_{FE} = 140$  to 600 ( $V_{CE} = 2$  V,  $I_{C} = 0.5$  A)

 $: h_{FE} = 70 \text{ (min) } (V_{CE} = 2 \text{ V}, I_{C} = 4 \text{ A})$ 

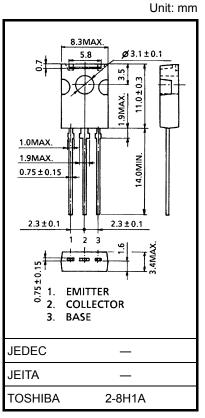
• Low saturation voltage:  $V_{CE}$  (sat) = 1.0 V (max) ( $I_{C}$  = 4 A,  $I_{B}$  = 0.1 A)

• High collector power dissipation: PC = 10 W ( $Tc = 25^{\circ}C$ ),

 $P_{C} = 1.5 \text{ W (Ta} = 25^{\circ}\text{C)}$ 

#### Absolute Maximum Ratings (Tc = 25°C)

Characteristics		Symbol	Rating	Unit	
Collector-base voltage		$V_{CBO}$	50	V	
Collector-emitter voltage		V <sub>CES</sub>	40	V	
		$V_{CEO}$	20		
Emitter-base voltage		V <sub>EBO</sub>	8	V	
Collector current	DC	IC	5		
	Pulse (Note 1)	I <sub>CP</sub>	8	А	
Base current		IB	1	Α	
Collector power dissipation	Ta = 25°C	D.	1.5	W	
	Tc = 25°C	P <sub>C</sub>	10		
Junction temperature		Tj	150	°C	
Storage temperature range		T <sub>stg</sub>	-55 to 150	°C	



Weight: 0.82 g (typ.)

Note 1: Pulse test: Pulse width = 10 ms (max) Duty cycle = 30% (max)

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.

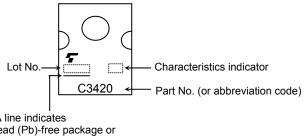
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

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

Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = 40 V, I <sub>E</sub> = 0	_	_	100	nA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 8 V, I <sub>C</sub> = 0	_	_	100	nA
Collector-emitter breakdown voltage	V (BR) CEO	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0	20	_	_	V
DC current gain	h <sub>FE (1)</sub> (Note 3)	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 0.5 A	140	_	600	
	h <sub>FE (2)</sub>	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 4 A	70	_	_	
Collector-emitter saturation voltage	V <sub>CE</sub> (sat)	I <sub>C</sub> = 4 A, I <sub>B</sub> = 0.1 A	_	_	1.0	٧
Base-emitter voltage	V <sub>BE</sub>	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 4 A	_	_	1.5	٧
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 0.5 A	_	100	_	MHz
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1 MHz	_	40	_	pF

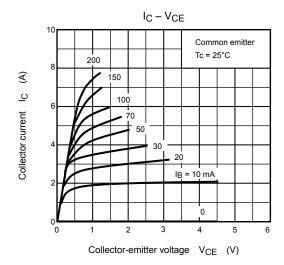
Note 3:  $h_{FE\ (1)}$  classification Y: 140 to 240, GR: 200 to 400, BL: 300 to 600

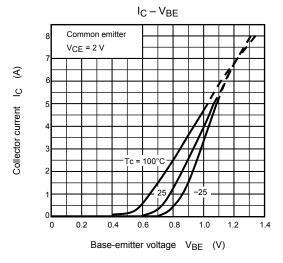
## Marking

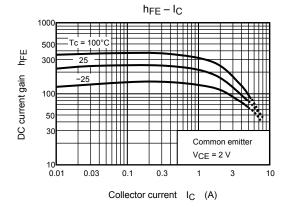


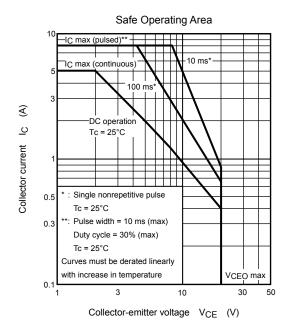
A line indicates lead (Pb)-free package or lead (Pb)-free finish.

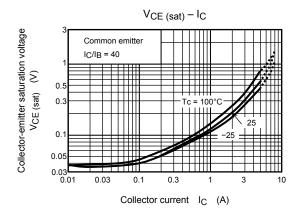
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