TOSHIBA Transistor Silicon NPN Epitaxial Type

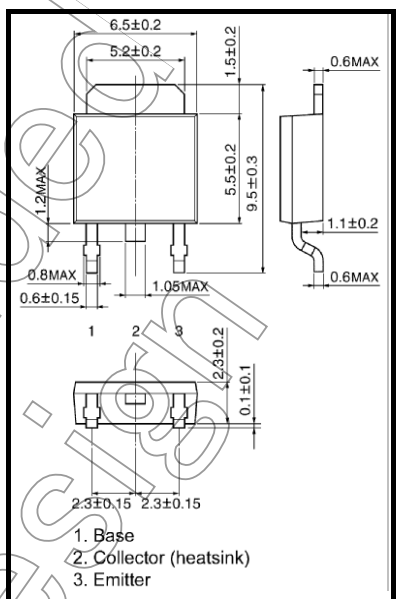
2SC4684

Strobe Flash Applications

Medium Power Amplifier Applications

- High DC current gain
  : $h_{FE\ (1)}$ = 800 to 3200 (V_{CE} = 2 V, I_C = 0.5 A)
  : $h_{FE\ (2)}$ = 250 (V_{CE} = 2 V, I_C = 4 A)
- Low collector saturation voltage
  : $V_{CE\ (sat)}$ = 0.5 V (max) (I_C = 4 A, I_B = 40 mA)
- High power dissipation
  : P_C = 10 W (Tc = 25°C), P_C = 1.0 W (Ta = 25°C)

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-7J1A

Weight: 0.36 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	50	V
Collector-emitter voltage		V_{CES}	40	V
		V_{CEO}	20	
Emitter-base voltage		V_{EBO}	8	V
Collector current	DC	I_C	5	A
	Pulse (Note 1)	I_{CP}	8	
Base current		I_B	0.5	A
Collector power dissipation	Ta = 25°C	P_C	1.0	W
	Tc = 25°C		10	
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55 to 150	°C

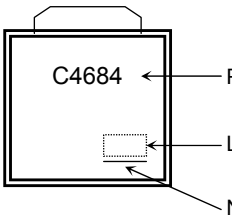
Note 1: Pulse test: Pulse width = 10 ms (max), duty cycle = 30% (max)

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 (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = 50 V, I_E = 0	—	—	100	nA
Emitter cut-off current	I_{EBO}	V_{EB} = 8 V, I_C = 0	—	—	100	nA
Collector-emitter breakdown voltage	V_{CEO}	I_C = 10 mA, I_B = 0	20	—	—	V
DC current gain	$h_{FE\ (1)}$	V_{CE} = 2 V, I_C = 0.5 A	800	—	3200	
	$h_{FE\ (2)}$	V_{CE} = 2 V, I_C = 4 A	250	—	—	
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	I_C = 4 A, I_B = 40 mA	—	—	0.5	V
Base-emitter voltage	V_{BE}	V_{CE} = 2 V, I_C = 4 A	—	—	1.2	V
Transition frequency	f_T	V_{CE} = 2 V, I_C = 0.5 A	—	150	—	MHz
Collector output capacitance	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	45	—	pF

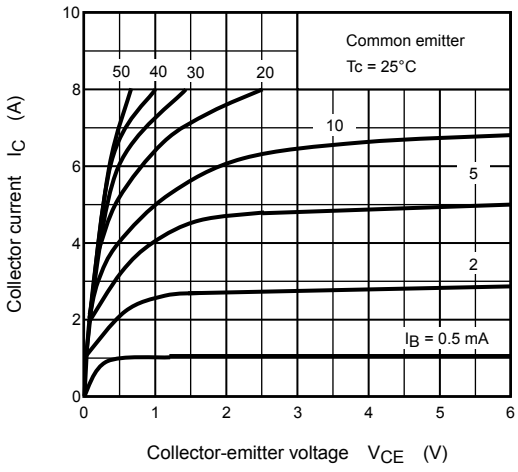
Marking



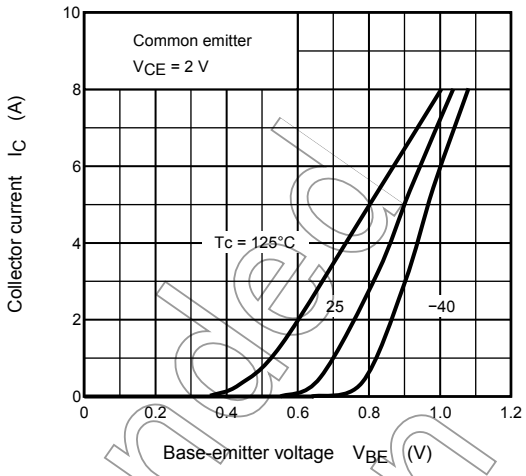
Note 3: A line under a Lot No. identifies the indication of product Labels.
Not underlined: [[Pb]]/INCLUDES > MCV
Underlined: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

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.

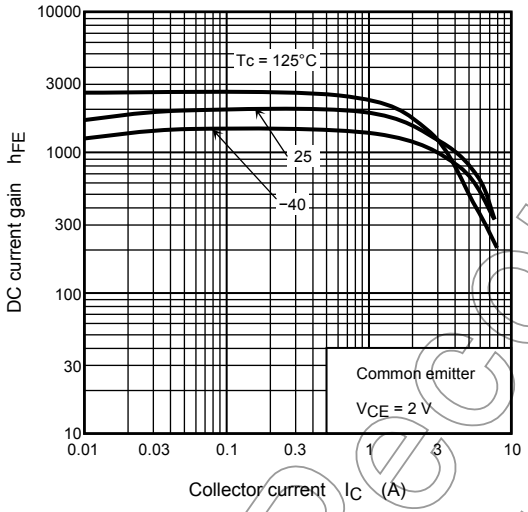
$I_C - V_{CE}$



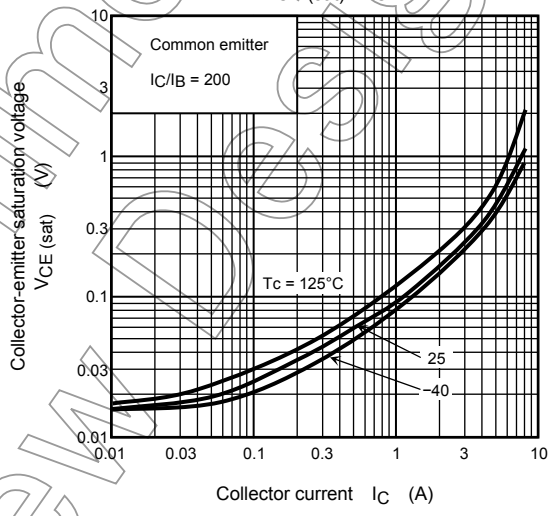
$I_C - V_{BE}$



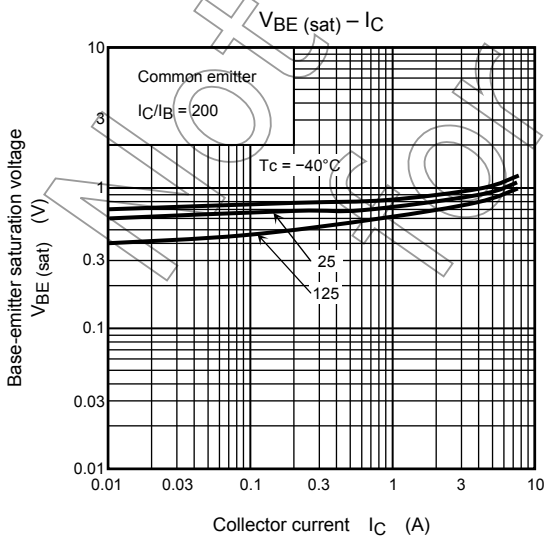
$h_{FE} - I_C$



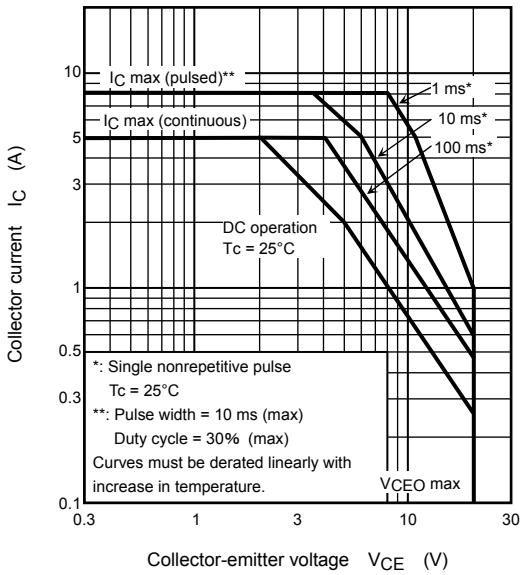
$V_{CE\ (sat)} - I_C$



$V_{BE\ (sat)} - I_C$



Safe Operating Area



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