

TOSHIBA Transistor Silicon NPN Epitaxial Type

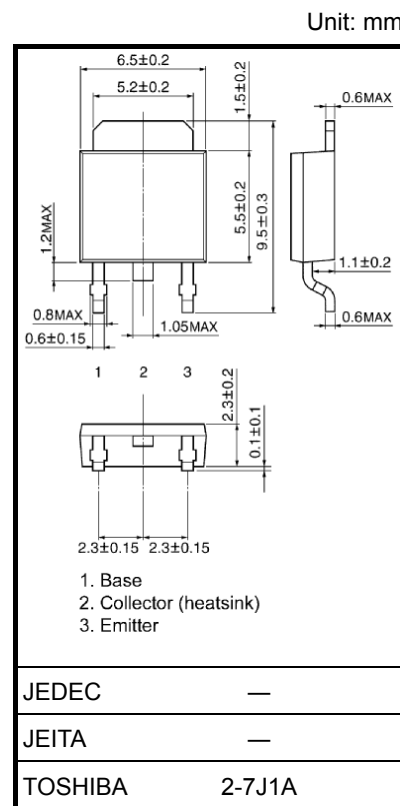
# 2SC5886A

High-Speed Switching Applications  
DC/DC Converter Applications

- High DC current gain:  $h_{FE} = 400$  to  $1000$  ( $I_C = 0.5$  A)
- Low collector-emitter saturation:  $V_{CE(sat)} = 0.22$  V (max)
- High-speed switching:  $t_f = 95$  ns (typ.)

## Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristic		Symbol	Rating	Unit
Collector-base voltage		$V_{CBO}$	120	V
Collector-emitter voltage		$V_{CEX}$	100	V
		$V_{CEO}$	50	
Emitter-base voltage		$V_{EBO}$	9	V
Collector current	DC	$I_C$	5	A
	Pulse	$I_{CP}$	10	
Base current		$I_B$	0.5	A
Collector power dissipation	$T_a = 25^\circ\text{C}$	$P_c$	1	W
	$T_c = 25^\circ\text{C}$		20	
Junction temperature		$T_j$	150	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	-55 to 150	$^\circ\text{C}$



Weight: 0.36 g (typ.)

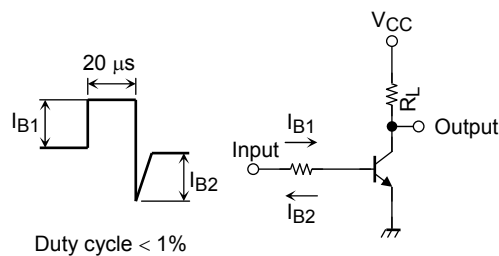
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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).

Start of commercial production  
2004-05

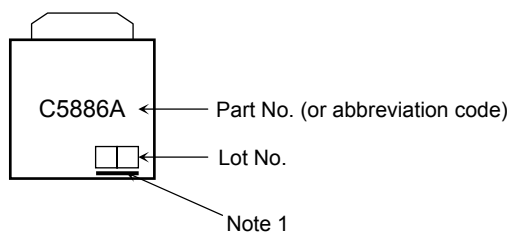
## Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current		$I_{CBO}$	$V_{CB} = 120\text{ V}, I_E = 0$	—	—	100	nA
Emitter cutoff current		$I_{EBO}$	$V_{EB} = 9\text{ V}, I_C = 0$	—	—	100	nA
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	$I_C = 10\text{ mA}, I_B = 0$	50	—	—	V
DC current gain		$h_{FE}(1)$	$V_{CE} = 2\text{ V}, I_C = 0.5\text{ A}$	400	—	1000	
		$h_{FE}(2)$	$V_{CE} = 2\text{ V}, I_C = 1.6\text{ A}$	200	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 1.6\text{ A}, I_B = 32\text{ mA}$	—	—	0.22	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = 1.6\text{ A}, I_B = 32\text{ mA}$	—	—	1.10	V
Switching time	Rise time	$t_r$	See Figure 1. $V_{CC} \approx 24\text{ V}, R_L = 15\ \Omega$ $I_{B1} = 32\text{ mA}, I_{B2} = -53\text{ mA}$	—	60	—	ns
	Storage time	$t_{stg}$		—	500	—	
	Fall time	$t_f$		—	95	—	



**Figure 1 Switching Time Test Circuit & Timing Chart**

## Marking

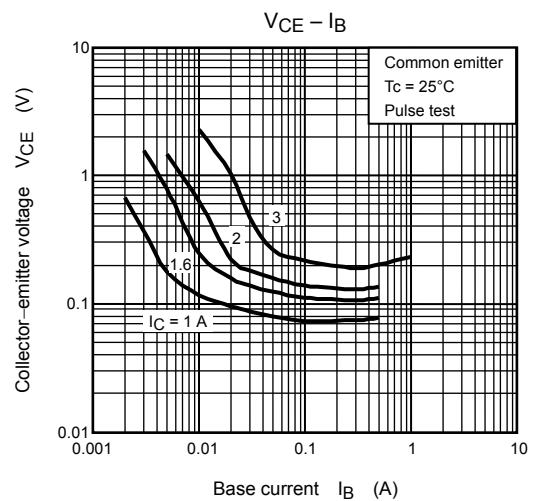
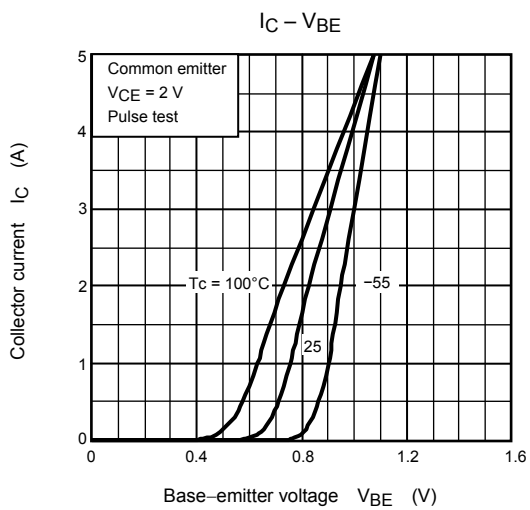
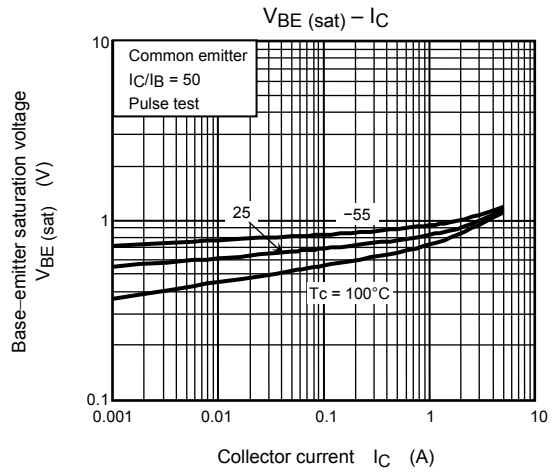
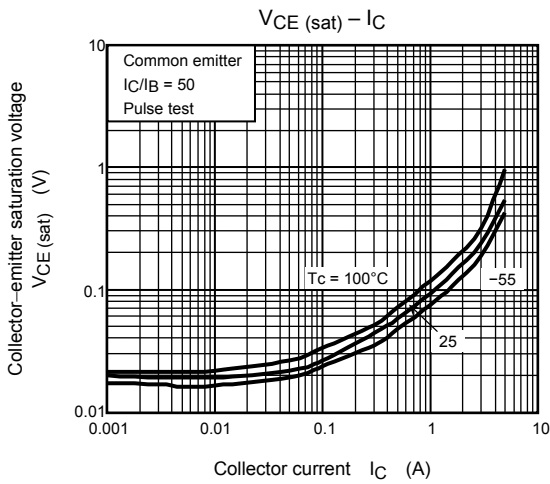
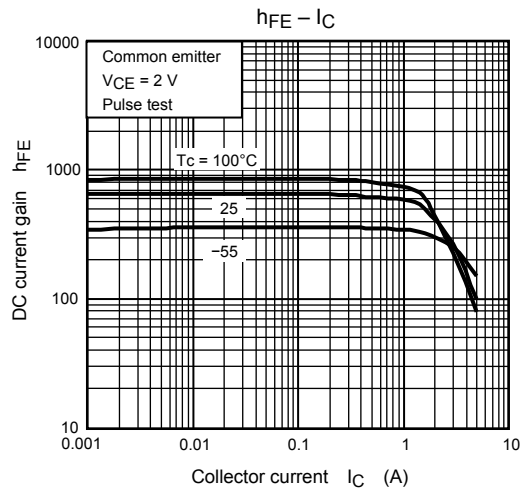
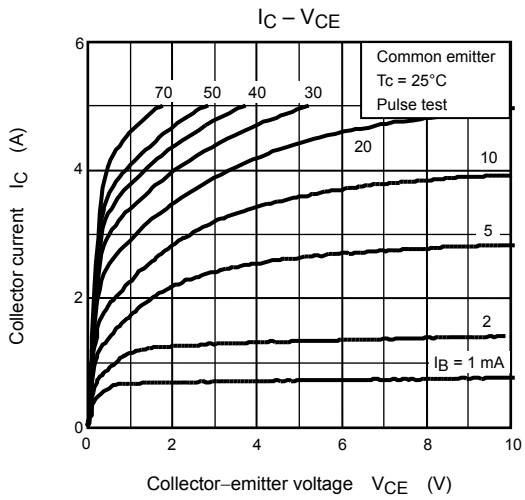


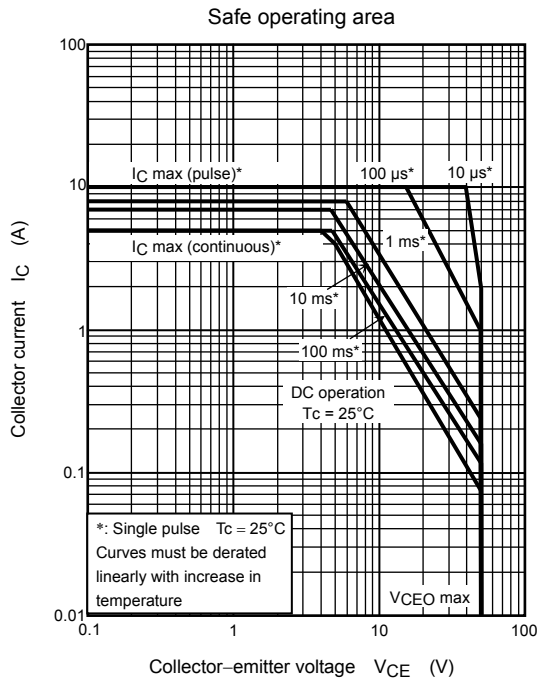
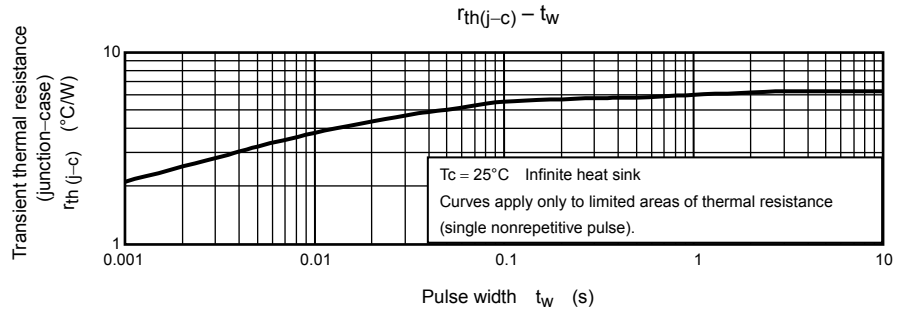
Note 1: A line under a Lot No. identifies the indication of product Labels.

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 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.





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