Unit: mm

TOSHIBA Transistor Silicon NPN Epitaxial Type

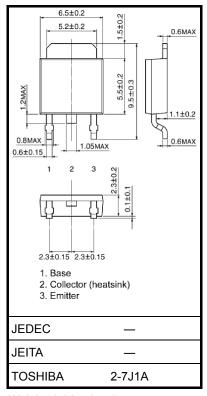
## 2SC5886A

# 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<sub>CE</sub> (sat) = 0.22 V (max)
- High-speed switching: t<sub>f</sub> = 95 ns (typ.)

### Absolute Maximum Ratings (Ta = 25°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	Ic	5	Α	
	Pulse	I <sub>CP</sub>	10		
Base current		ΙΒ	0.5	Α	
Collector power dissipation	Ta = 25°C	Pc	1	W	
	Tc = 25°C	PC	20		
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 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)**

Characteristic		Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cutoff curre	nt	I <sub>CBO</sub>	V <sub>CB</sub> = 120 V, I <sub>E</sub> = 0	_	_	100	nA
Emitter cutoff current	t	I <sub>EBO</sub>	V <sub>EB</sub> = 9 V, I <sub>C</sub> = 0	_	_	100	nA
Collector-emitter brea	akdown voltage	V (BR) CEO	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0	50	_	_	V
DC current gain		h <sub>FE</sub> (1)	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 0.5 A	400	_	1000	
		h <sub>FE</sub> (2)	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 1.6 A	200	_	_	
Collector-emitter saturation voltage		V <sub>CE</sub> (sat)	I <sub>C</sub> = 1.6 A, I <sub>B</sub> = 32 mA	_	_	0.22	V
Base-emitter saturation voltage		V <sub>BE</sub> (sat)	I <sub>C</sub> = 1.6 A, I <sub>B</sub> = 32 mA	_	_	1.10	V
Switching time	Rise time	t <sub>r</sub>	See Figure 1. $V_{CC} \simeq 24 \text{ V, R}_L = 15 \Omega$ $I_{B1} = 32 \text{ mA, } I_{B2} = -53 \text{ mA}$	_	60	_	
	Storage time	t <sub>stg</sub>		_	500	_	ns
	Fall time	t <sub>f</sub>		_	95	_	

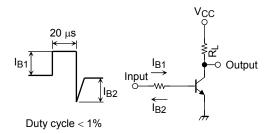
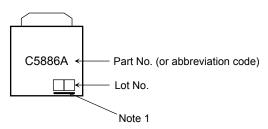


Figure 1 Switching Time Test Circuit & Timing Chart

#### Marking



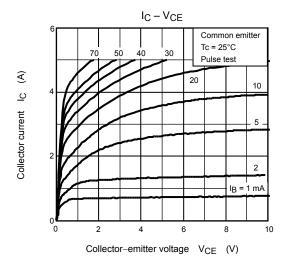
Note 1: A line under a Lot No. identifies the indication of product Labels.

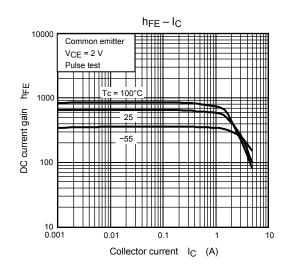
Not underlined: [[Pb]]/INCLUDES > MCV

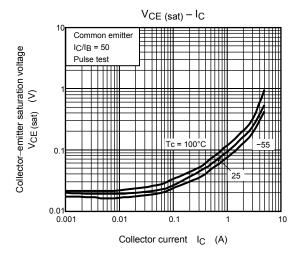
Underlined: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

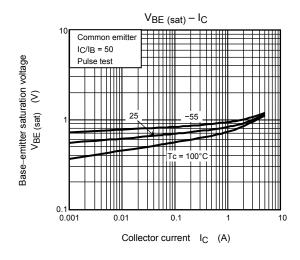
Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

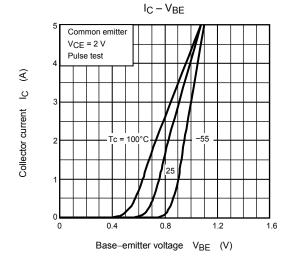
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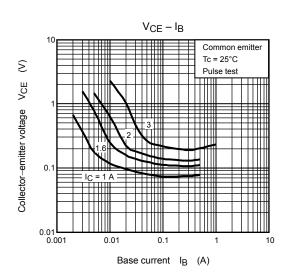


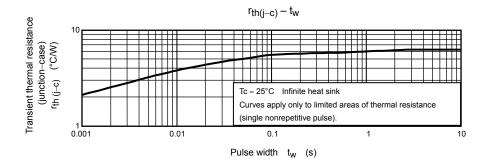


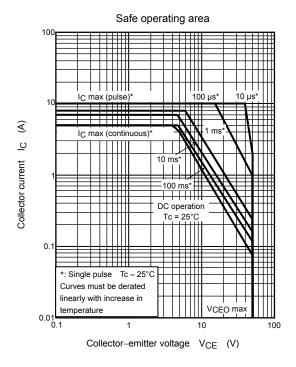












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