

To our customers,

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## Old Company Name in Catalogs and Other Documents

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On April 1<sup>st</sup>, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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EOL product

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To all our customers

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Renesas Technology Home Page: <http://www.renesas.com>

Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

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# 2SC2816

Silicon NPN Triple Diffused

## RENESAS

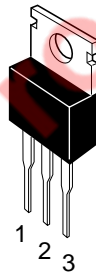
ADE-208-887 (Z)  
1st. Edition  
September 2000

### Application

High voltage, high speed and high power switching

### Outline

TO-220AB



1. Base
2. Collector (Flange)
3. Emitter

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

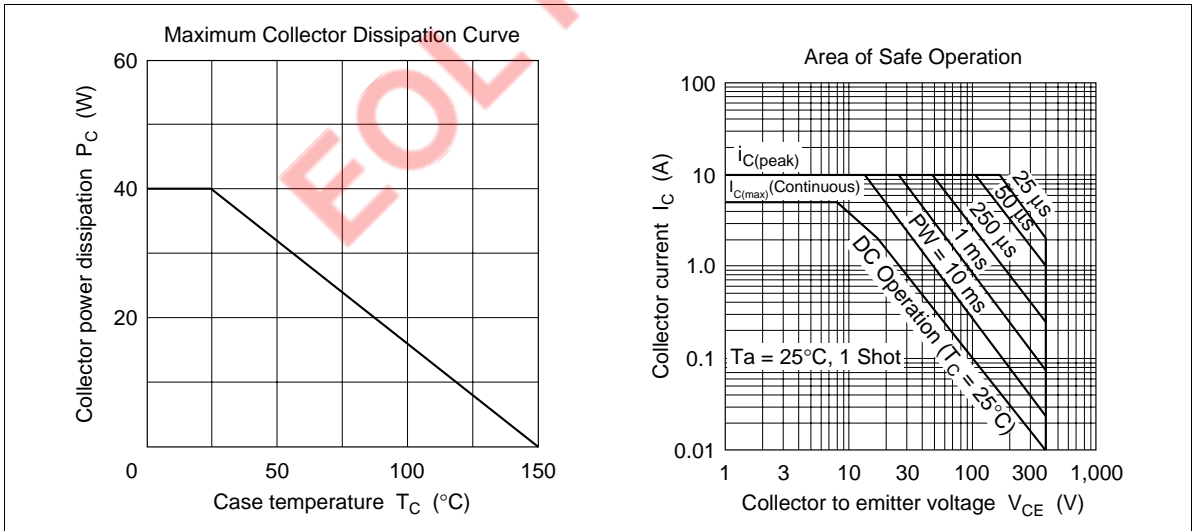
Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	500	V
Collector to emitter voltage	$V_{CEO}$	400	V
Emitter to base voltage	$V_{EBO}$	7	V
Collector current	$I_C$	5	A
Collector peak current	$I_{C(peak)}$	10	A
Base current	$I_B$	2.5	A
Collector power dissipation	$P_C^{*1}$	40	W
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

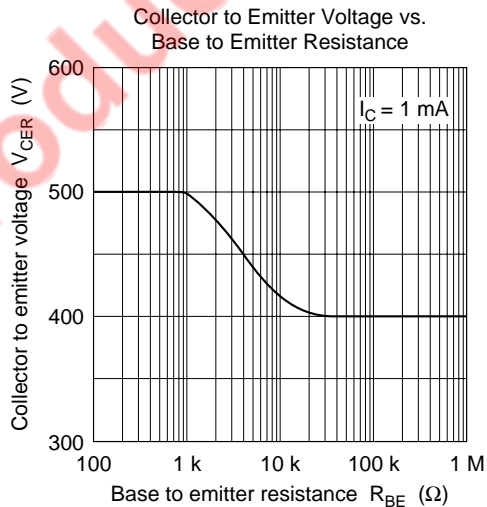
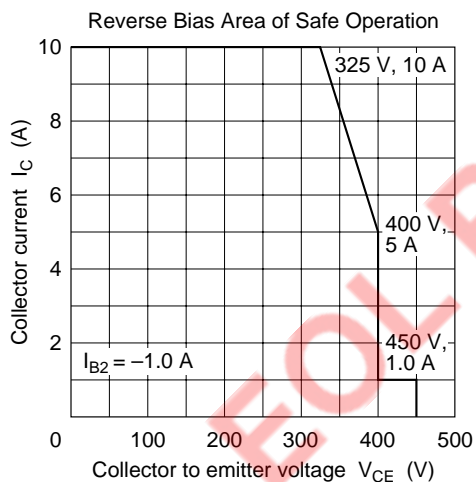
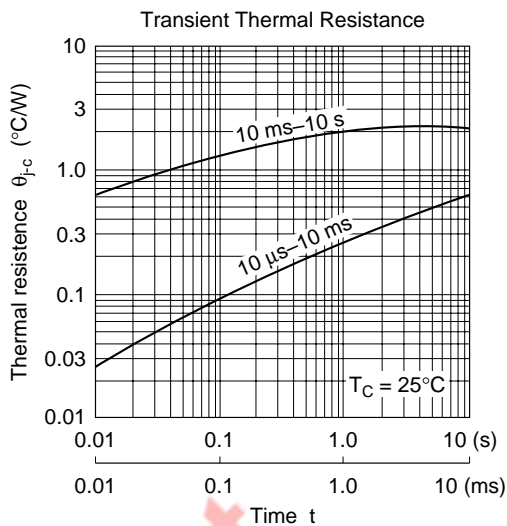
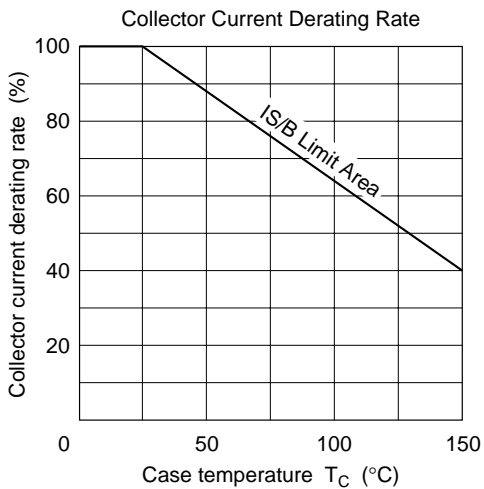
Note: 1. Value at  $T_C = 25^\circ\text{C}$ .

## Electrical Characteristics (Ta = 25°C)

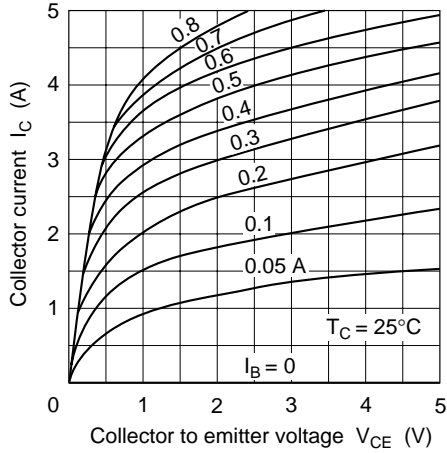
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter sustain voltage	$V_{CEO(sus)}$	400	—	—	V	$I_C = 0.2 \text{ A}$ , $R_{BE} = \infty$ , $L = 100 \text{ mH}$
	$V_{CEX(sus)}$	400	—	—	V	$I_C = 5 \text{ A}$ , $I_{B1} = -I_{B2} = 1.0 \text{ A}$ $V_{BE} = -5.0 \text{ V}$ , $L = 180 \text{ } \mu\text{H}$ , Clamped
Emitter to base breakdown voltage	$V_{(BR)EBO}$	7	—	—	V	$I_E = 10 \text{ mA}$ , $I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	50	$\mu\text{A}$	$V_{CB} = 400 \text{ V}$ , $I_E = 0$
	$I_{CEO}$	—	—	50	$\mu\text{A}$	$V_{CE} = 350 \text{ V}$ , $R_{BE} = \infty$
DC current transfer ratio	$h_{FE1}$	15	—	—		$V_{CE} = 5.0 \text{ V}$ , $I_C = 2.5 \text{ A}^{*1}$
	$h_{FE2}$	7	—	—		$V_{CE} = 5.0 \text{ V}$ , $I_C = 5 \text{ A}^{*1}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.0	V	$I_C = 2.5 \text{ A}$ , $I_B = 0.5 \text{ A}^{*1}$
Base to emitter saturation voltage	$V_{BE(sat)}$	—	—	1.5	V	$I_C = 2.5 \text{ A}$ , $I_B = 0.5 \text{ A}^{*1}$
Turn on time	$t_{on}$	—	—	0.5	$\mu\text{s}$	$I_C = 5 \text{ A}$ , $I_{B1} = -I_{B2} = 1.0 \text{ A}$ ,
Storage time	$t_{stg}$	—	—	1.5	$\mu\text{s}$	$V_{CC} \cong 150 \text{ V}$
Fall time	$t_f$	—	0.3	0.5	$\mu\text{s}$	

Note: 1. Pulse test.

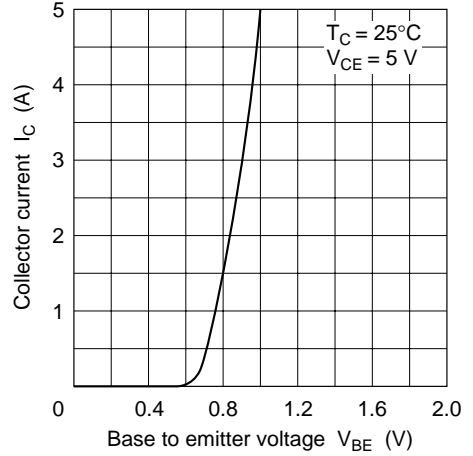




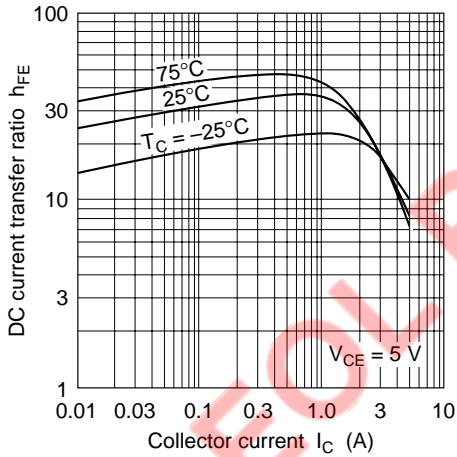
Typical Output Characteristics



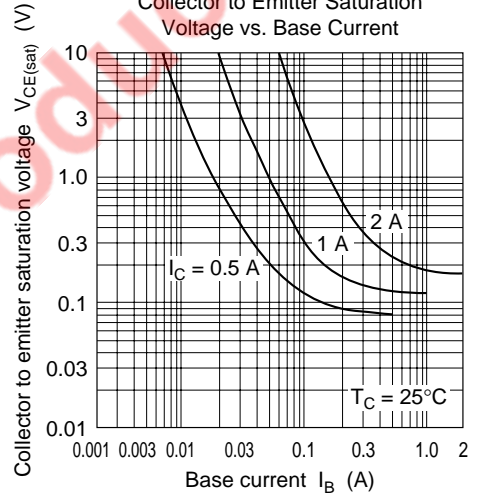
Typical Transfer Characteristics



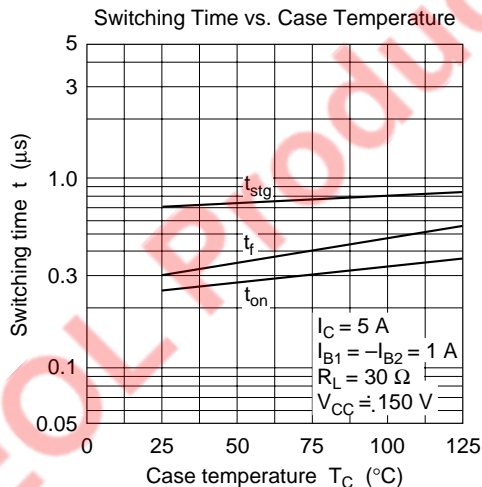
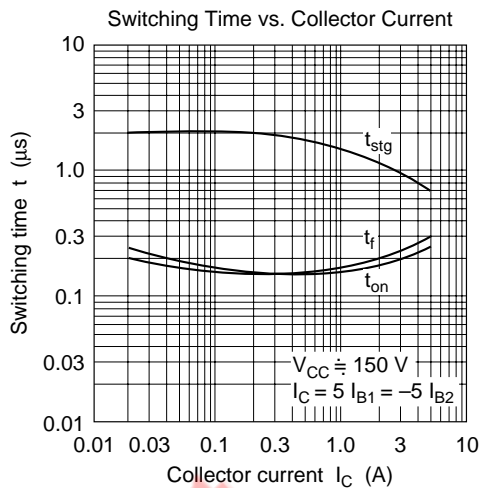
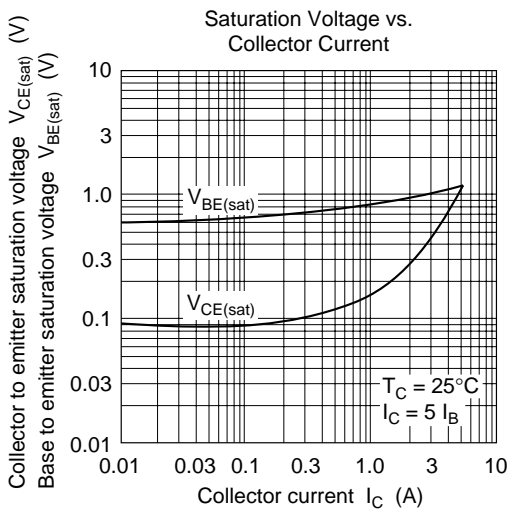
DC Current Transfer Ratio vs. Collector Current



Collector to Emitter Saturation Voltage vs. Base Current







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