

To all our customers

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

Cautions

Keep safety first in your circuit designs!

1. Renesas Technology Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage.

Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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Silicon NPN Triple Diffused

RENESAS

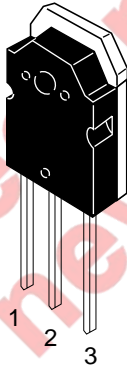
ADE-208-892 (Z)
1st. Edition
September 2000

Application

High voltage, high speed and high power switching

Outline

TO-3P



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

Absolute Maximum Ratings (Ta = 25°C)

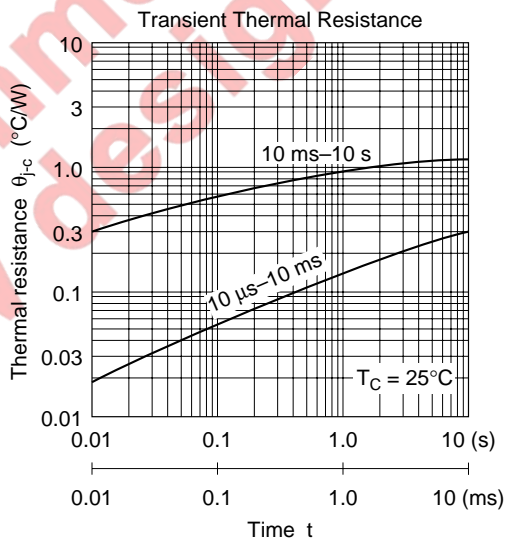
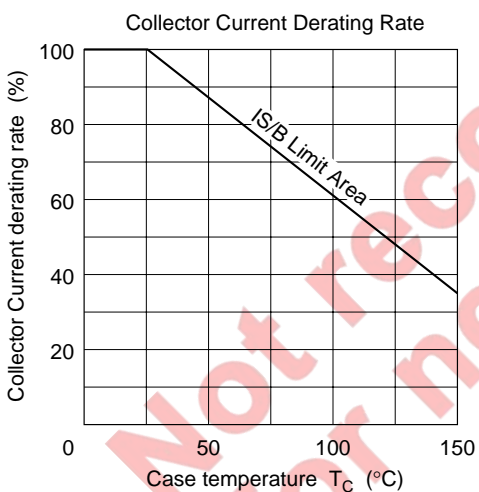
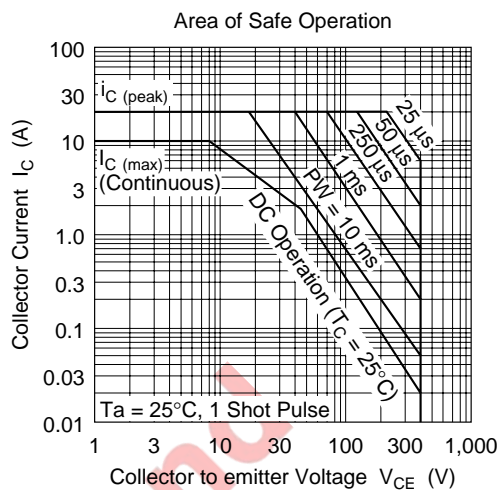
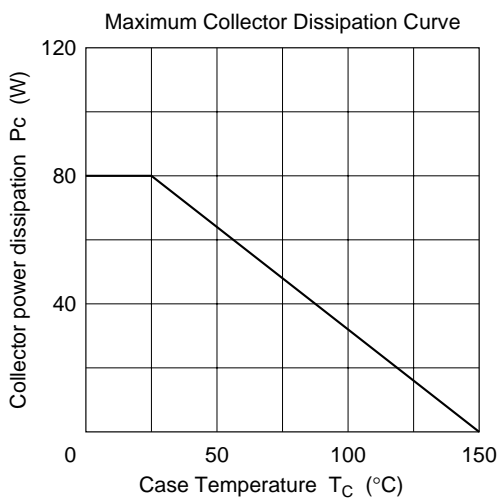
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	500	V
Collector to emitter voltage	V_{CEO}	400	V
Emitter to base voltage	V_{EBO}	10	V
Collector current	I_C	10	A
Collector peak current	$I_{C(peak)}$	20	A
Base current	I_B	5	A
Collector power dissipation	P_C^{*1}	80	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

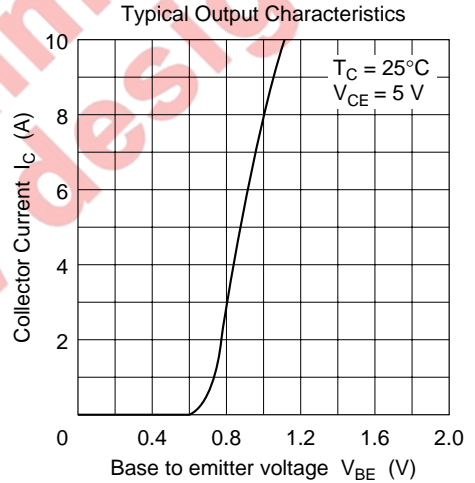
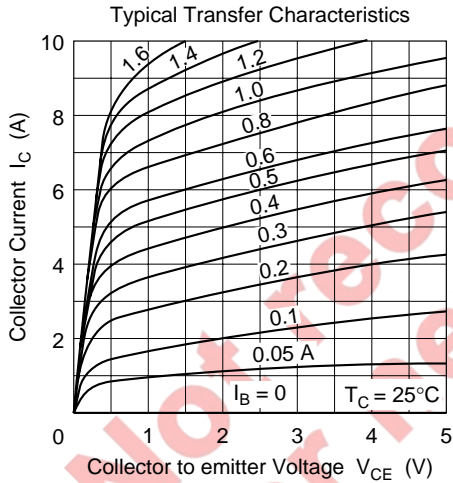
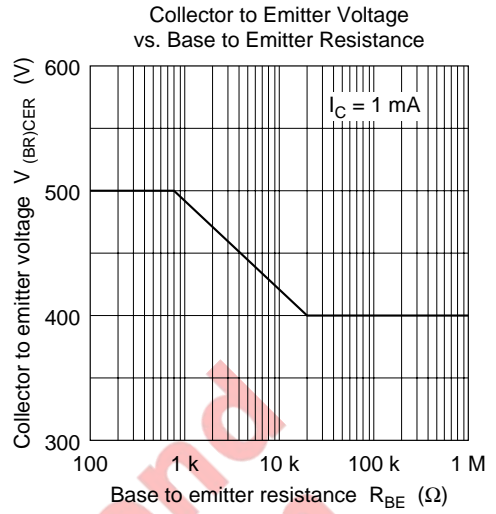
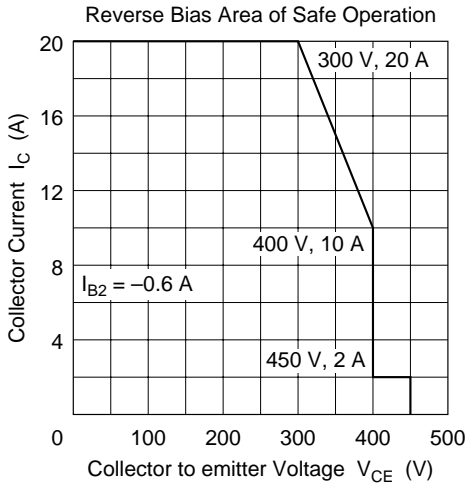
Note: 1. Value at $T_C = 25^\circ\text{C}$

Electrical Characteristics (Ta = 25°C)

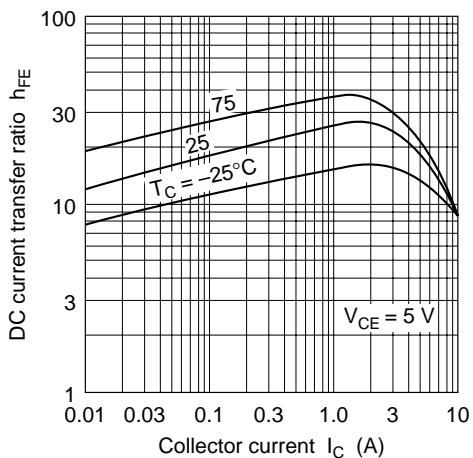
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter sustain voltage	$V_{CEO(sus)}$	400	—	—	V	$I_C = 0.2\text{ A}$, $R_{BE} = \infty$, $L = 100\text{ mH}$
	$V_{CEX(sus)}$	400	—	—	V	$I_C = 10\text{ A}$, $I_{B1} = 2\text{ A}$, $I_{B2} = -0.6\text{ A}$, $V_{BE} = -5.0\text{ V}$, $L = 180\text{ }\mu\text{H}$, Clamped
Emitter to base breakdown voltage	$V_{(BR)EBO}$	10	—	—	V	$I_E = 10\text{ mA}$, $I_C = 0$
Collector cutoff current	I_{CBO}	—	—	50	μA	$V_{CB} = 400\text{ V}$, $I_E = 0$
	I_{CEO}	—	—	50	μA	$V_{CE} = 350\text{ V}$, $R_{BE} = \infty$
DC current transfer ratio	h_{FE1}	12	—	—		$V_{CE} = 5.0\text{ V}$, $I_C = 5\text{ A}^{*1}$
	h_{FE2}	5	—	—		$V_{CE} = 5.0\text{ V}$, $I_C = 10\text{ A}^{*1}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.0	V	$I_C = 5\text{ A}$, $I_B = 1\text{ A}^{*1}$
Base to emitter saturation voltage	$V_{BE(sat)}$	—	—	1.5	V	
Turn on time	t_{on}	—	—	1.0	μs	$I_C = 10\text{ A}$, $I_{B1} = -I_{B2} = 2\text{ A}$,
Storage time	t_{stg}	—	—	2.5	μs	$V_{CC} \cong 150\text{ V}$
Fall time	t_f	—	—	1.0	μs	

Note: 1. Pulse test

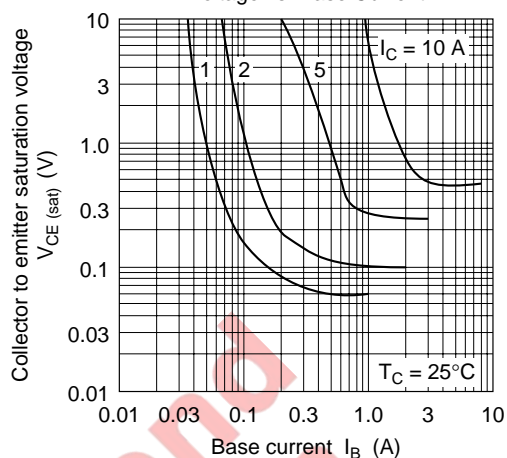




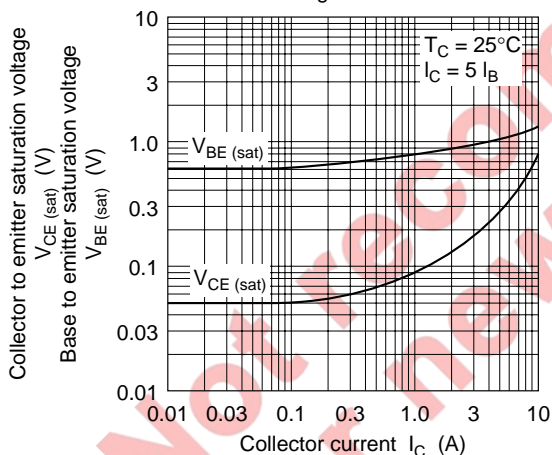
DC Current Transfer Ratio vs. Collector Current



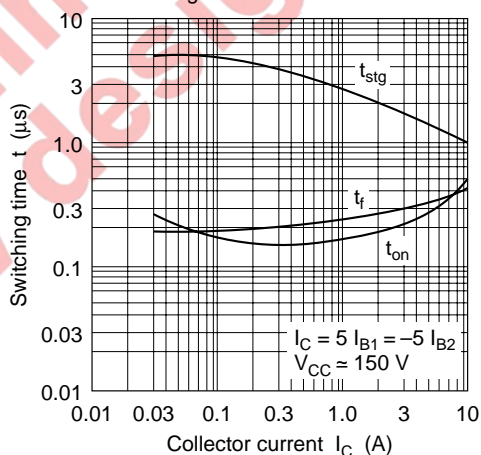
Collector to Emitter Saturation Voltage vs. Base Current

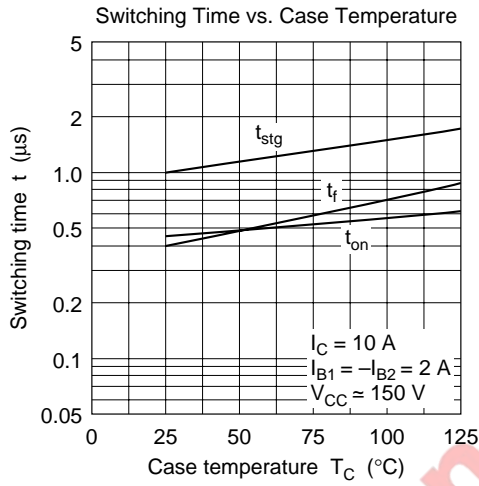


Saturation Voltage vs. Collector Current



Switching Time vs. Collector Current





Not recommended for new design

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