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!

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   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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2SD1976

Silicon NPN Triple Diffused

ADE-208-918 (Z)
1st. Edition
September 2000

Application

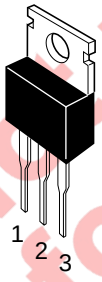
High voltage switching, igniter

Feature

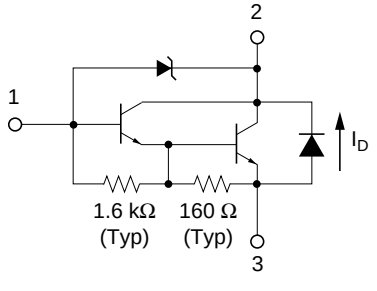
- Built-in High voltage zener diode (300 V)
- High Speed switching

Outline

TO-220AB



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



Absolute Maximum Ratings (Ta = 25°C)

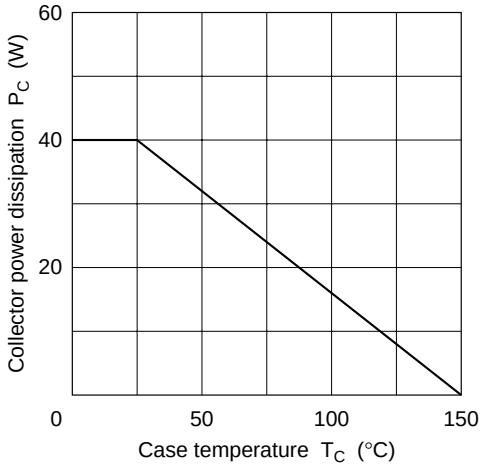
Item	Symbol	Rating	Unit
Collector to base voltage	V_{CBO}	300	V
Collector to emitter voltage	V_{CEO}	300	V
Emitter to base voltage	V_{EBO}	7	V
Collector current	I_C	6	A
Diode current	I_D*[1]	6	A
Collector peak current	$I_{C(peak)}$	10	A
Collector power dissipation	P_C*[1]	40	W
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

Note: 1. Value at T_C = 25°C.

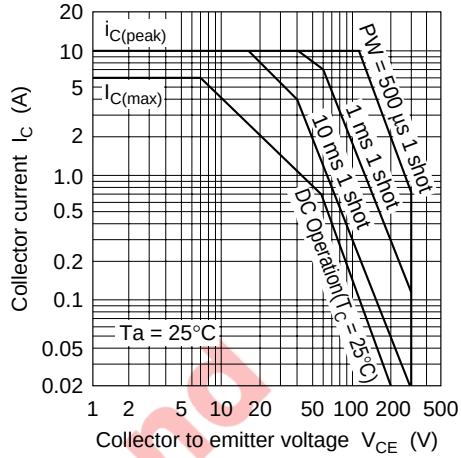
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	300	—	420	V	I_C = 0.1 mA, I_E = 0
Collector to emitter sustain voltage	$V_{CEO(SUS)}$	300	—	—	V	I_C = 3 A, R_{BE} = ∞, L = 10 mH
Emitter to base breakdown voltage	$V_{(BR)EBO}$	7	—	—	V	I_E = 50 mA, I_C = 0
Collector cutoff current	I_{CEO}	—	—	100	µA	V_{CE} = 300 V, R_{BE} = ∞
DC current transfer ratio	h_{FE}	500	—	—		V_{CE} = 2 V, I_C = 4 A
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.5	V	I_C = 4 A, I_B = 40 mA
Base to emitter saturation voltage	$V_{BE(sat)}$	—	—	2.0	V	I_C = 4 A, I_B = 40 mA
Emitter to collector diode forward voltage	V_{ECF}	—	—	3.5	V	I_F = 6 A
Turn on time	t_{on}	—	1.2	—	µs	I_C = 4 A, V_{CC} = 20 V
Storage time	t_{stg}	—	8.0			I_{B1} = –I_{B2} = 40 mA
Fall time	t_f	—	8.0	—		

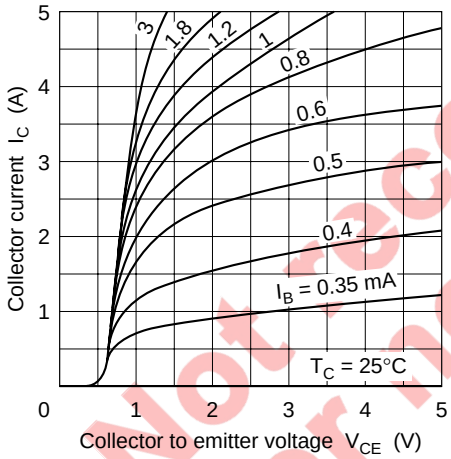
Maximum Collector Dissipation Curve



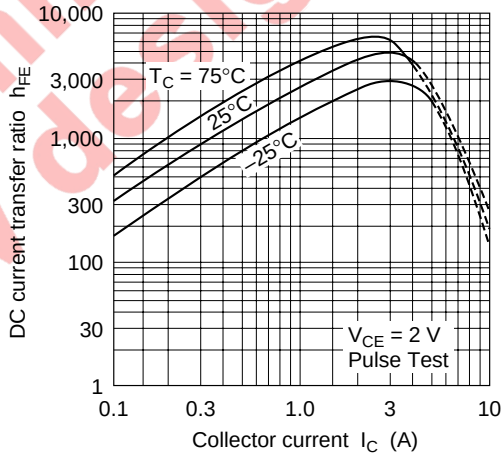
Area of Safe Operation



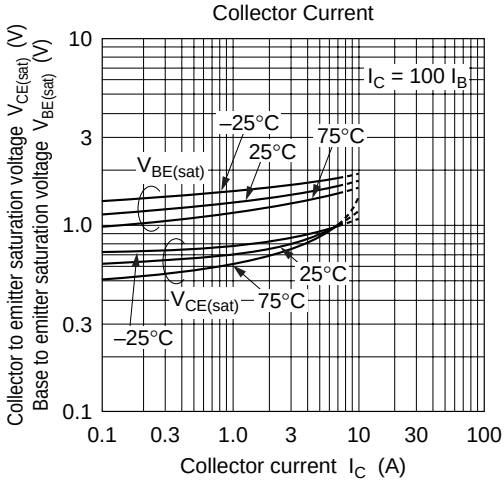
Typical Output Characteristics



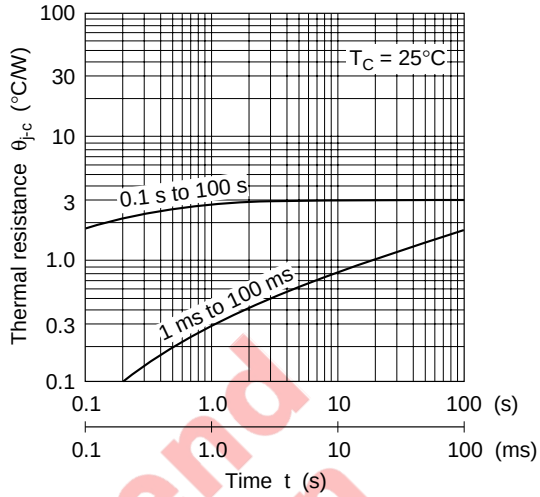
DC Current Transfer Ratio vs. Collector Current



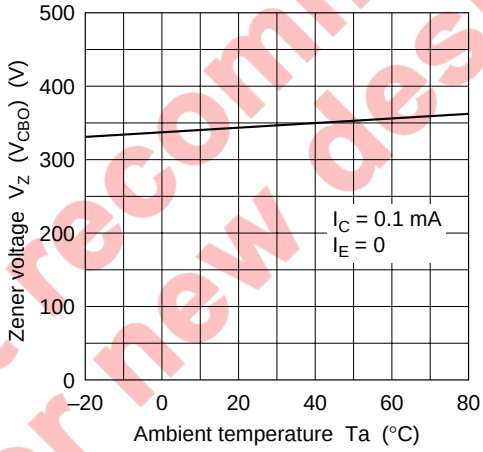
Saturation Voltage vs. Collector Current



Transient Thermal Resistance



Zener Voltage vs. Ambient Temperature



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