

2SD1976

Silicon NPN Triple Diffused

HITACHI

Application

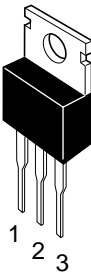
High voltage switching, igniter

Feature

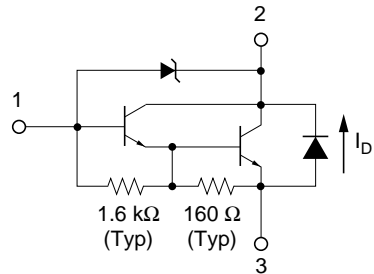
- Built-in High voltage zener diode (300 V)
- High Speed switching

Outline

TO-220AB



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



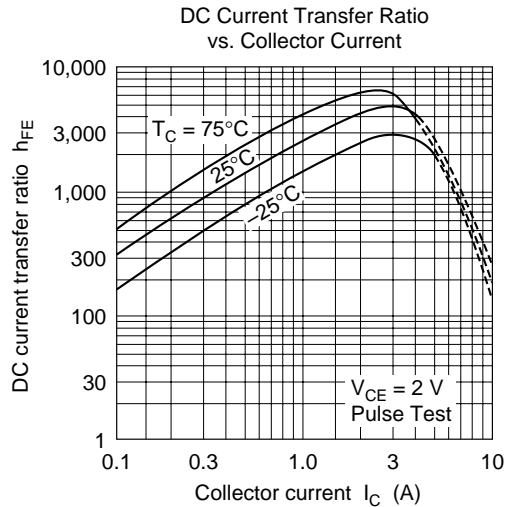
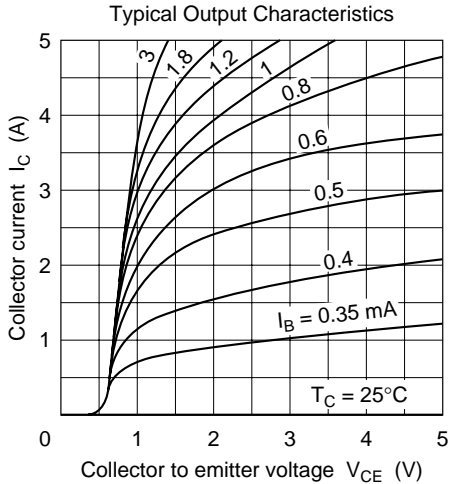
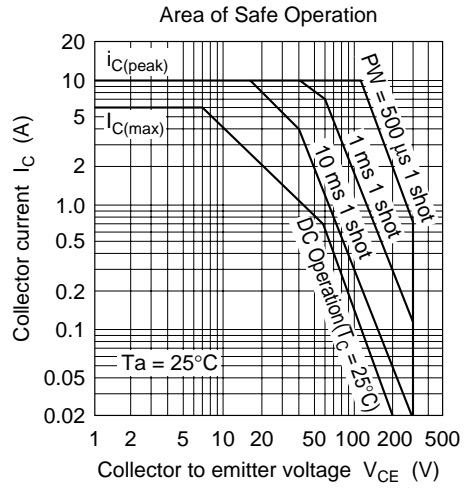
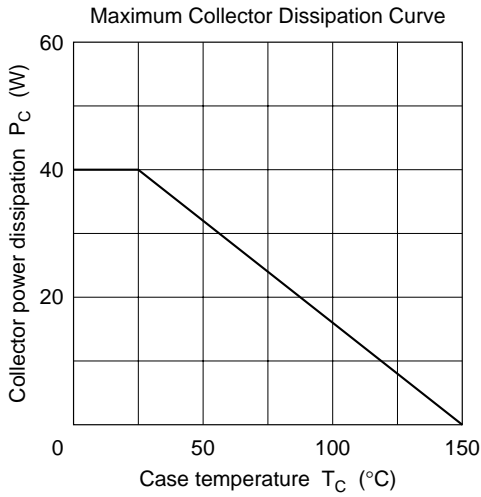
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

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	$I_{\text{C(peak)}}$	10	A
Collector power dissipation	P_{C}^{*1}	40	W
Junction temperature	T_{j}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

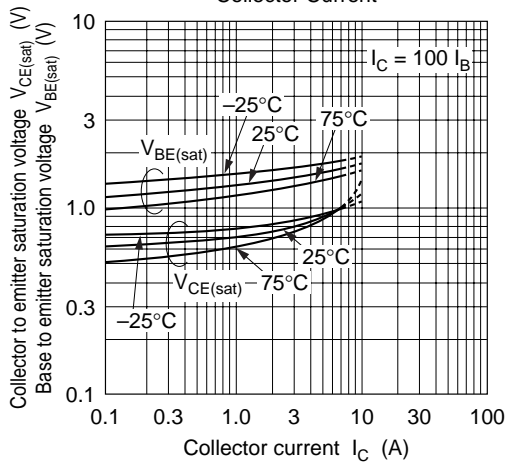
Note: 1. Value at $T_{\text{C}} = 25^\circ\text{C}$.

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

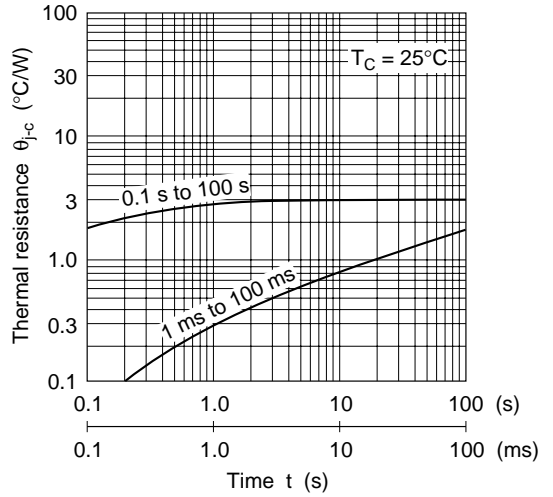
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(\text{BR})\text{CBO}}$	300	—	420	V	$I_{\text{C}} = 0.1 \text{ mA}$, $I_{\text{E}} = 0$
Collector to emitter sustain voltage	$V_{\text{CEO}(\text{SUS})}$	300	—	—	V	$I_{\text{C}} = 3 \text{ A}$, $R_{\text{BE}} = \infty$,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



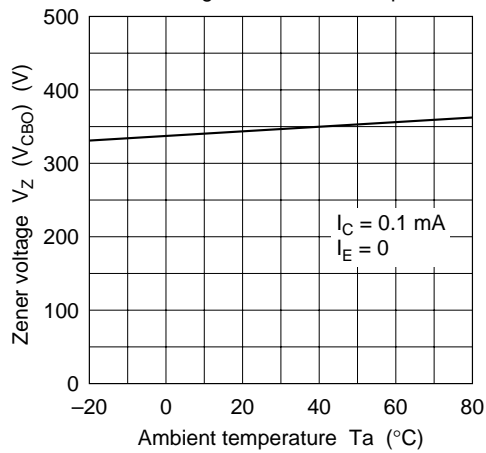
Saturation Voltage vs. Collector Current

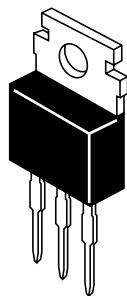


Transient Thermal Resistance



Zener Voltage vs. Ambient Temperature





Hitachi Code	TO-220AB
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.8 g

Cautions

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