

# 2SC2613

Silicon NPN Triple Diffused

# HITACHI

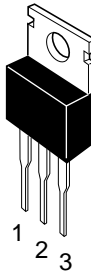
ADE-208-886 (Z)  
1st. Edition  
Sep. 2000

## Application

High voltage, high speed and high power switching

## Outline

TO-220AB



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

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

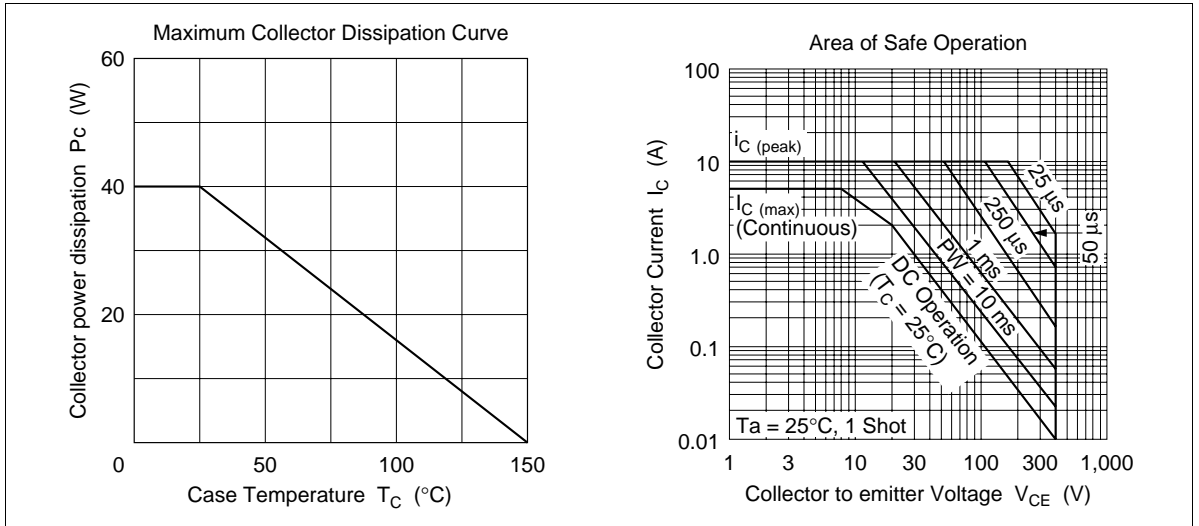
Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{\text{CBO}}$	500	V
Collector to emitter voltage	$V_{\text{CEO}}$	400	V
Emitter to base voltage	$V_{\text{EBO}}$	7	V
Collector current	$I_{\text{C}}$	5	A
Collector peak current	$I_{\text{C(peak)}}$	10	A
Base current	$I_{\text{B}}$	2.5	A
Collector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

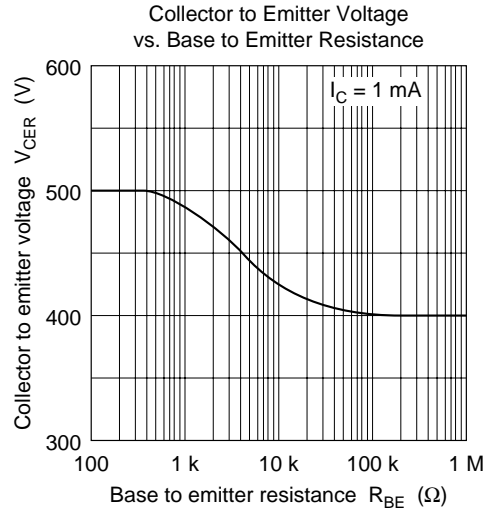
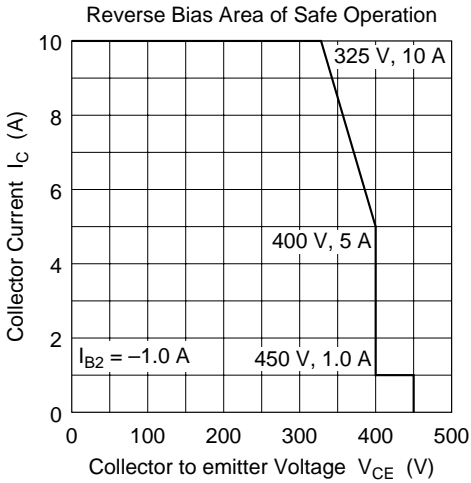
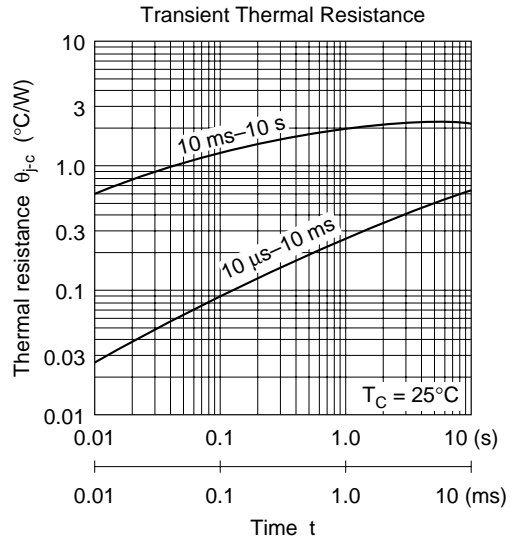
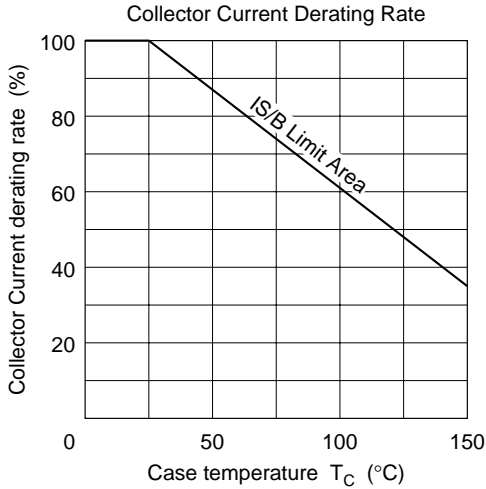
Note: 1. Value at  $T_{\text{c}} = 25^\circ\text{C}$ .

## Electrical Characteristics (Ta = 25°C)

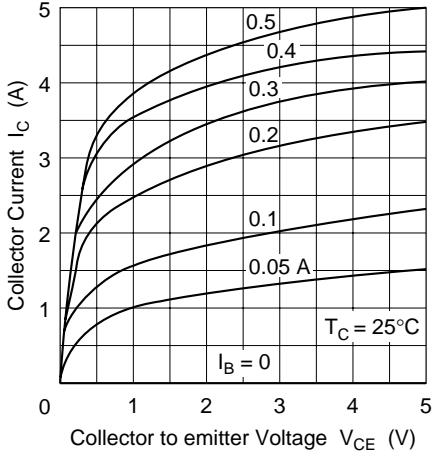
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter sustain voltage	$V_{CEO(sus)}$	400	—	—	V	$I_C = 0.2\text{ A}$ , $R_{BE} = \infty$ , $L = 100\text{ mH}$
	$V_{CEX(sus)}$	400	—	—	V	$I_C = 5\text{ A}$ , $I_{B1} = -I_{B2} = 1\text{ A}$ $V_{BE} = -5\text{ V}$ , $L = 180\text{ }\mu\text{H}$ , Clamped
Emitter to base breakdown voltage	$V_{(BR)EBO}$	7	—	—	V	$I_E = 10\text{ mA}$ , $I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	100	$\mu\text{A}$	$V_{CB} = 400\text{ V}$ , $I_E = 0$
	$I_{CEO}$	—	—	100	$\mu\text{A}$	$V_{CE} = 350\text{ V}$ , $R_{BE} = \infty$
DC current transfer ratio	$h_{FE1}$	15	—	—		$V_{CE} = 5\text{ V}$ , $I_C = 2.5\text{ A}^{*1}$
	$h_{FE2}$	7	—	—		$V_{CE} = 5\text{ V}$ , $I_C = 5\text{ A}^{*1}$
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	$t_{on}$	—	—	1.0	$\mu\text{s}$	$I_C = 5\text{ A}$ , $I_{B1} = -I_{B2} = 1\text{ A}$ ,
Storage time	$t_{stg}$	—	1.2	2.5	$\mu\text{s}$	$V_{CC} \cong 150\text{ V}$
Fall time	$t_f$	—	—	1.0	$\mu\text{s}$	

Note: 1. Pulse test.

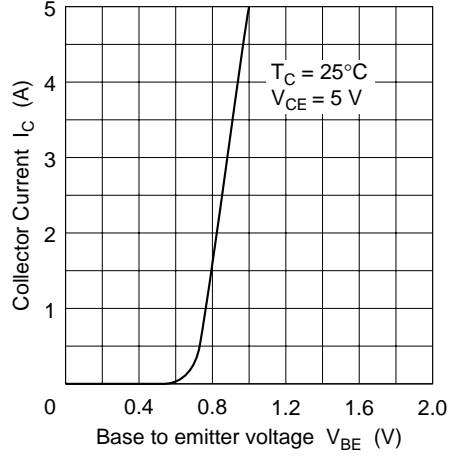




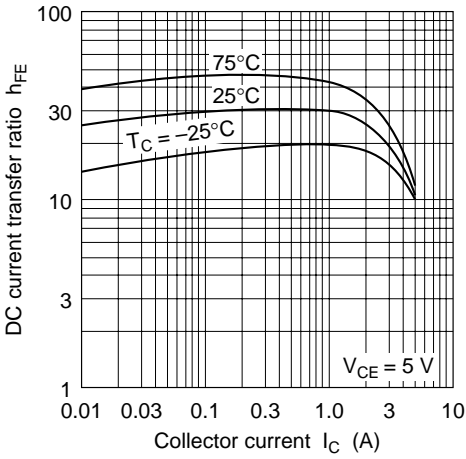
Typical Output Characteristics



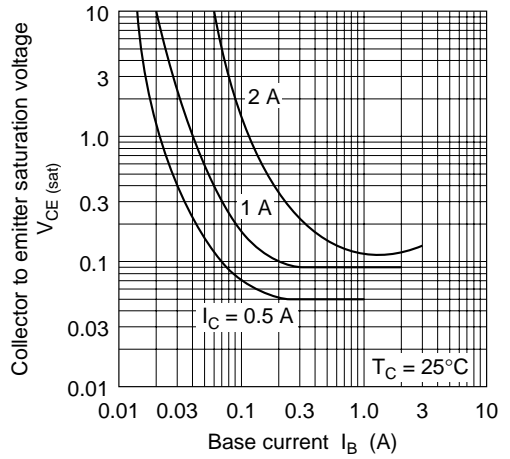
Typical Transfer Characteristics



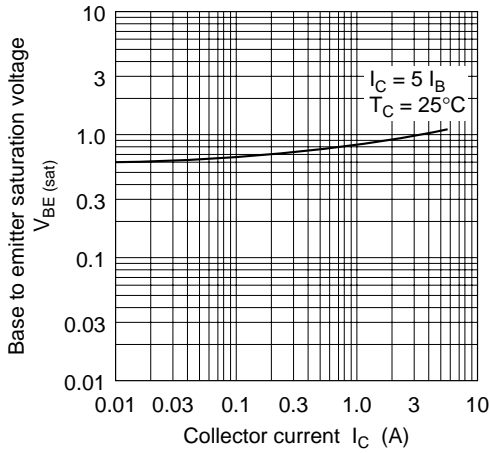
DC Current Transfer Ratio vs. Collector Current



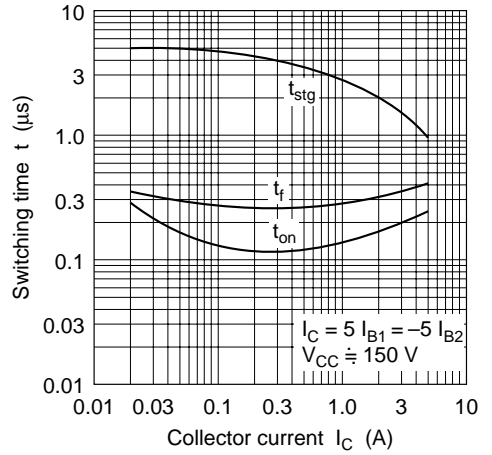
Collector to Emitter Saturation Voltage vs. Base Current



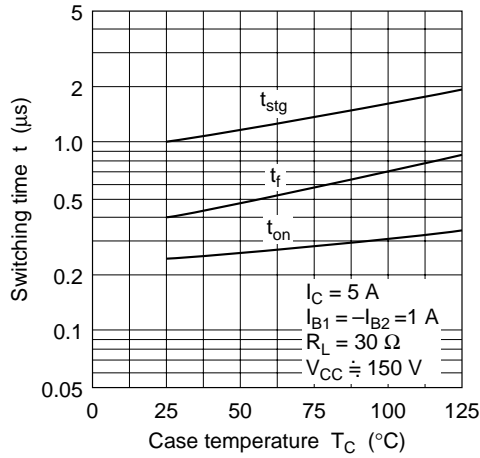
Base to Emitter Saturation Voltage vs. Collector Current



Switching Time vs. Collector Current

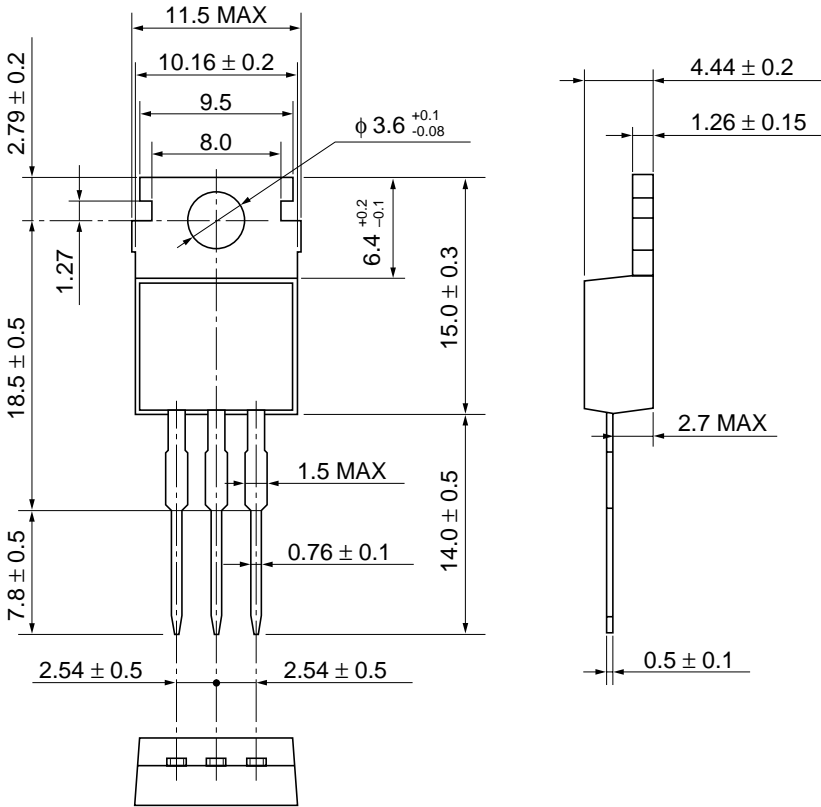


Switching Time vs. Case Temperature



Package Dimensions

Unit: mm



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

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