

# 2SC1881(K)

Silicon NPN Triple Diffused

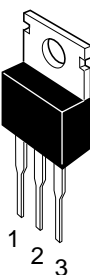
# HITACHI

## Application

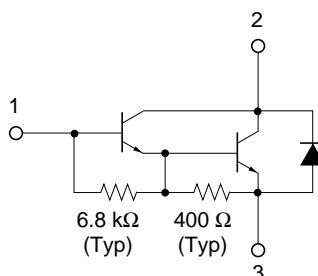
High gain amplifier power switching

## Outline

TO-220AB



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



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

Item	Symbol	Rated	Unit
Collector to base voltage	$V_{CBO}$	60	V
Collector to emitter voltage	$V_{CEO}$	60	V
Emitter to base voltage	$V_{EBO}$	7	V
Collector current	$I_C$	3	A
Collector peak current	$I_{C(peak)}$	6	A
Collector power dissipation	$P_C^{*1}$	30	W
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

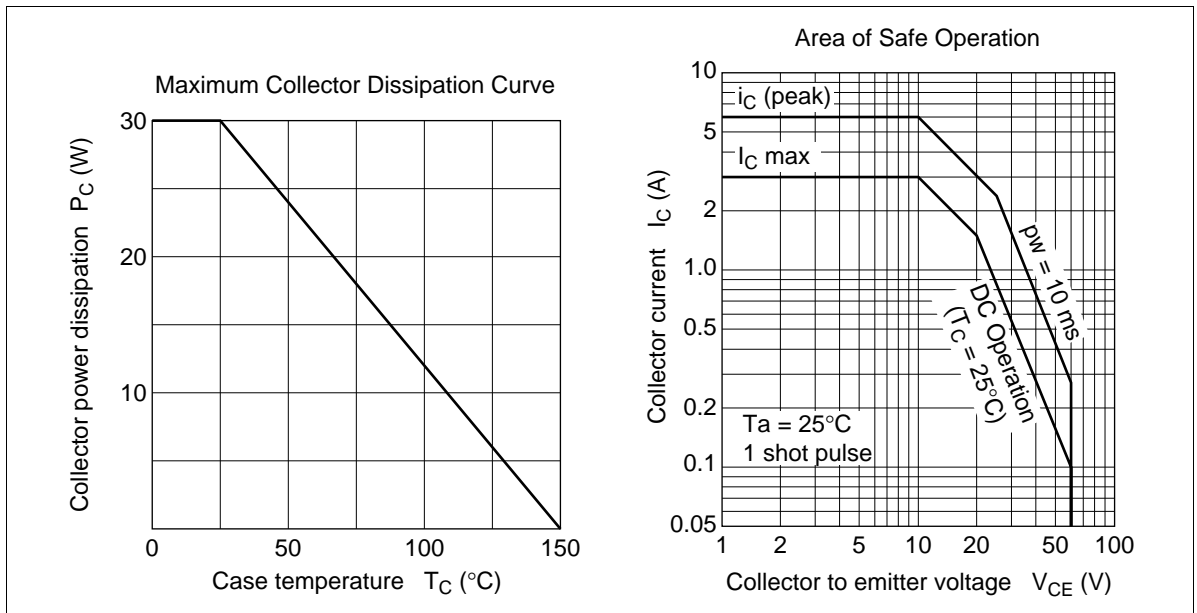
Note: 1. Value at  $T_c = 25^\circ\text{C}$ .

# 2SC1881(K)

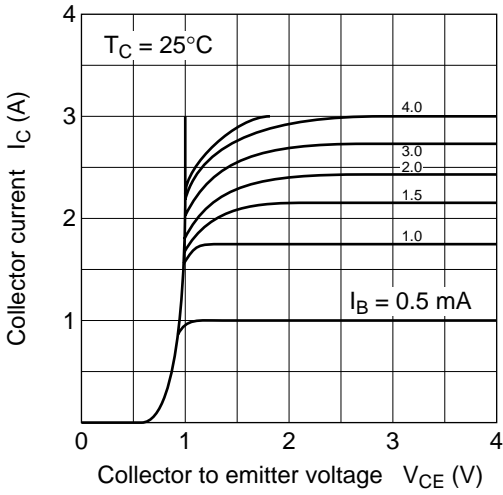
## Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	60	—	—	V	$I_C = 50 \text{ mA}$ , $R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	7	—	—	V	$I_E = 50 \text{ mA}$ , $I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	0.2	mA	$V_{CB} = 60 \text{ V}$ , $I_E = 0$
	$I_{CEO}$	—	—	0.4	mA	$V_{CE} = 30 \text{ V}$ , $R_{BE} = \infty$
DC current transfer ratio	$h_{FE}$	1000	—	—		$V_{CE} = 1.5 \text{ V}$
		500	—	—		$I_C = 1.5 \text{ A}^{*1}$ $I_C = 2.5 \text{ A}^{*1}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	1.2	V	$I_C = 2.5 \text{ A}$ , $I_B = 20 \text{ mA}^{*1}$
Turn on time	$t_{on}$	—	1	—	$\mu\text{s}$	$V_{CC} = 11 \text{ V}$ , $I_C = 2 \text{ A}$ ,
Turn off time	$t_{off}$	—	5	—	$\mu\text{s}$	$I_{B1} = -I_{B2} = 8 \text{ mA}$

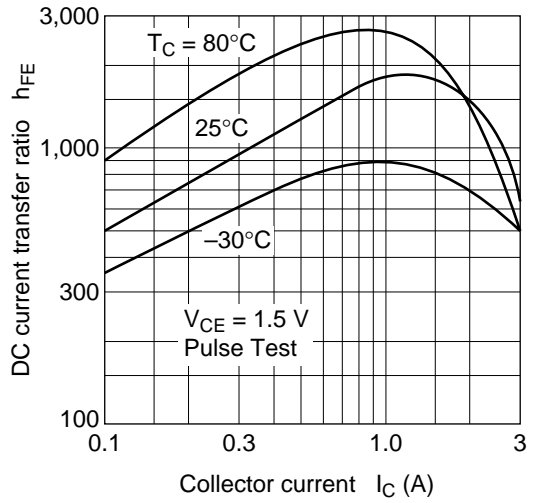
Note: 1. Pulse test.



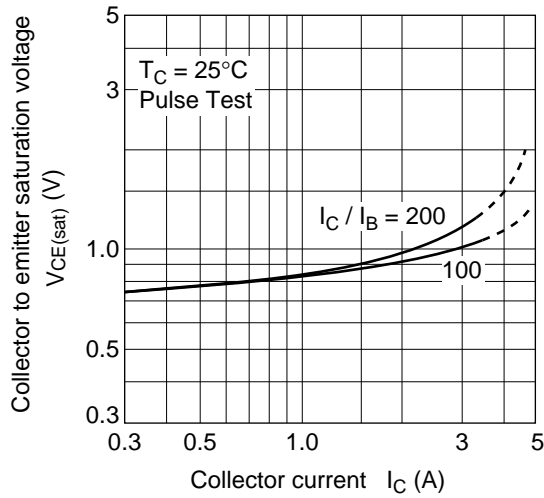
Typical Output Characteristics



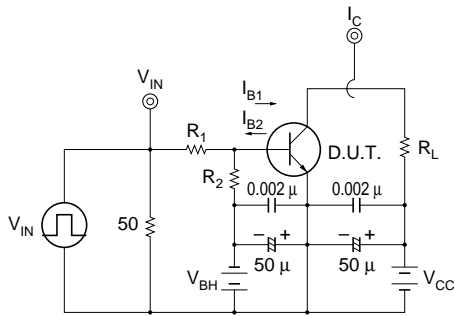
DC Current Transfer Ratio vs. Collector Current



Collector to Emitter Saturation Voltage vs. Collector Current



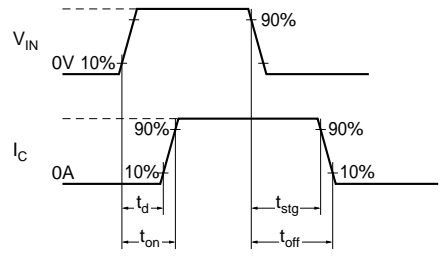
### Switching Time Test Circuit



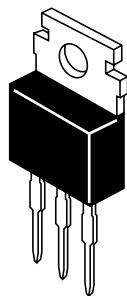
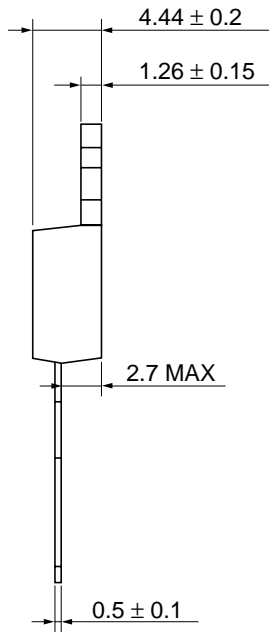
$t_r, t_f \leq 10 \text{ ns}$   
 $\text{pw} \geq 100 \mu\text{s}$   
 $\text{duty ratio} \leq 10\%$

Unit R :  $\Omega$   
 C : F

### Response Waveform



$I_C$	$I_{B1}$	$I_{B2}$	$V_{CC}$	$V_{BB}$	$V_{IN}$	$R_L$	$R_1$	$R_2$
A	mA	mA	V	V	V	$\Omega$	$\Omega$	$\Omega$
2	8	-8	11	-4	7.2	5	620	910



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

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