

## Silicon NPN Power Transistors

## 2SD1985 2SD1985A

## DESCRIPTION

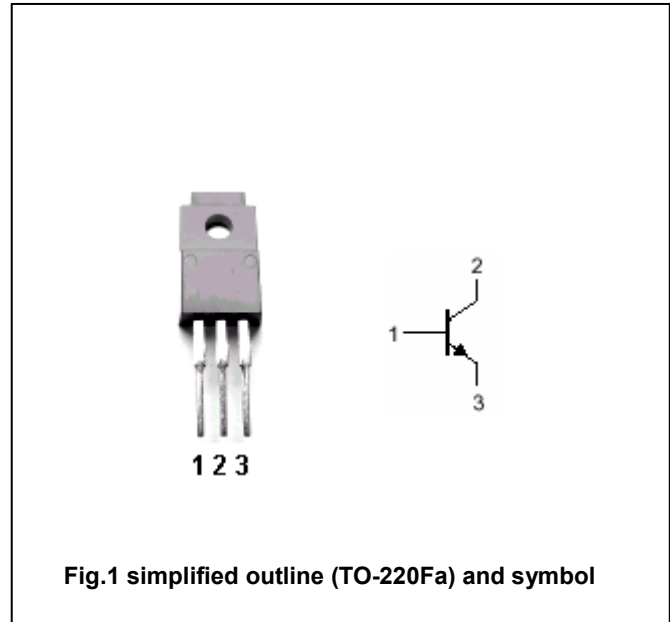
- With TO-220Fa package
- High forward current transfer ratio  $h_{FE}$  which has satisfactory linearity
- Low collector saturation voltage
- Complement to type 2SB1393 /1393A

## APPLICATIONS

- For power amplification

## PINNING

PIN	DESCRIPTION
1	Base
2	Collector
3	Emitter

Absolute maximum ratings( $T_a=25^\circ\text{C}$ )

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	2SD1985	60	V
		2SD1985A	80	
$V_{CEO}$	Collector-emitter voltage	2SD1985	60	V
		2SD1985A	80	
$V_{EBO}$	Emitter-base voltage	Open collector	6	V
$I_C$	Collector current (DC)		3	A
$I_{CM}$	Collector current-peak		5	A
$P_C$	Collector power dissipation	$T_C=25^\circ\text{C}$	25	W
		$T_a=25^\circ\text{C}$	2	
$T_j$	Junction temperature		150	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-55~150	$^\circ\text{C}$

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## CHARACTERISTICS

T<sub>j</sub>=25°C unless otherwise specified

SYMBOL	PARAMETER		CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>CEO</sub>	Collector-emitter breakdown voltage	2SD1985	I <sub>C</sub> =30mA, I <sub>B</sub> =0	60			V
		2SD1985A		80			
V <sub>CEsat</sub>	Collector-emitter saturation voltage		I <sub>C</sub> =3A; I <sub>B</sub> =0.375A			1.2	V
V <sub>BE</sub>	Base-emitter voltage		V <sub>CE</sub> =4V; I <sub>C</sub> =3A			1.8	V
I <sub>CES</sub>	Collector cut-off current	2SD1985	V <sub>CE</sub> =60V; I <sub>B</sub> =0			200	μA
		2SD1985A	V <sub>CE</sub> =80V; I <sub>B</sub> =0				
I <sub>CEO</sub>	Collector cut-off current	2SD1985	V <sub>CE</sub> =30V; I <sub>B</sub> =0			300	μA
		2SD1985A	V <sub>CE</sub> =60V; I <sub>B</sub> =0				
I <sub>EBO</sub>	Emitter cut-off current		V <sub>EB</sub> =6V; I <sub>C</sub> =0			1	mA
h <sub>FE-1</sub>	DC current gain		I <sub>C</sub> =1A; V <sub>CE</sub> =4V	70		250	
h <sub>FE-2</sub>	DC current gain		I <sub>C</sub> =3A; V <sub>CE</sub> =4V	10			
f <sub>T</sub>	Transition frequency		I <sub>C</sub> =0.5A; V <sub>CE</sub> =5V; f=10MHz		30		MHz

## Switching times

t <sub>on</sub>	Turn-on time	I <sub>C</sub> =1A; I <sub>B1</sub> =0.1A I <sub>B2</sub> =-0.1A; V <sub>CC</sub> =50V		0.5		μs
t <sub>s</sub>	Storage time			2.5		μs
t <sub>f</sub>	Fall time			0.4		μs

◆ h<sub>FE-1</sub> Classifications

Q	P
70-150	120-250

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PACKAGE OUTLINE

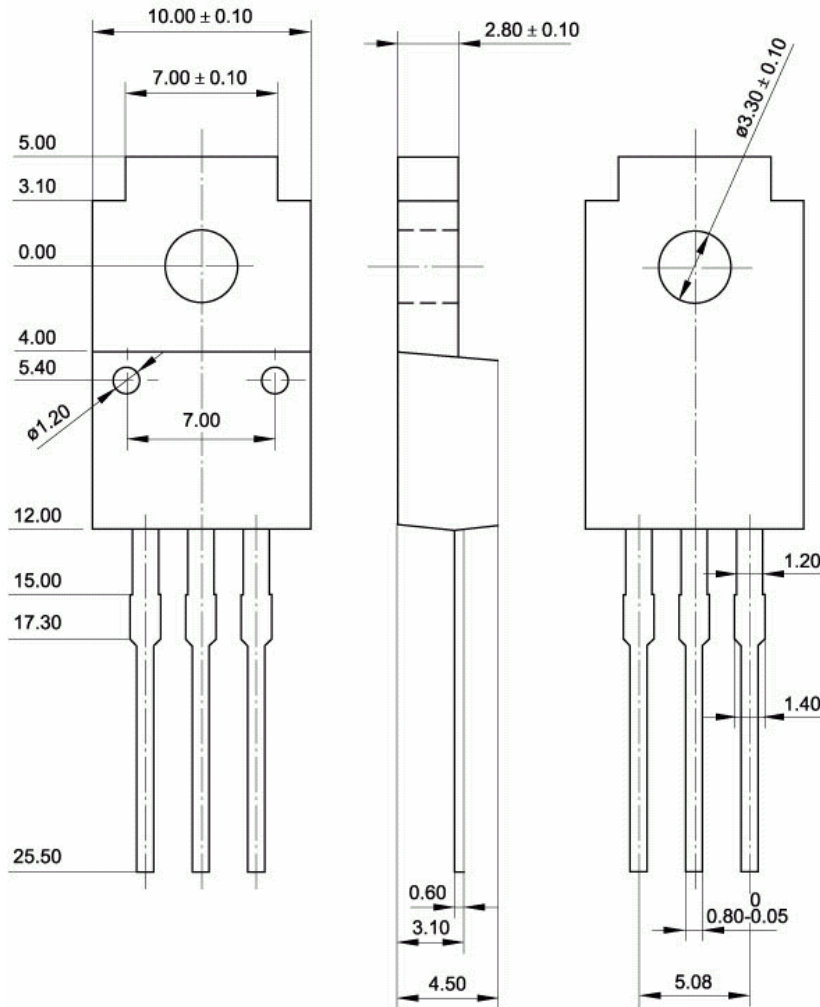


Fig.2 Outline dimensions (unindicated tolerance:  $\pm 0.15$  mm)

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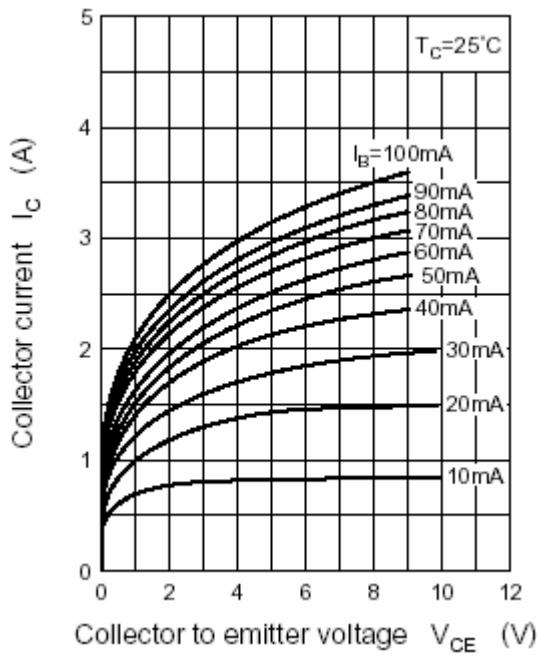


Fig.3 Static Characteristic

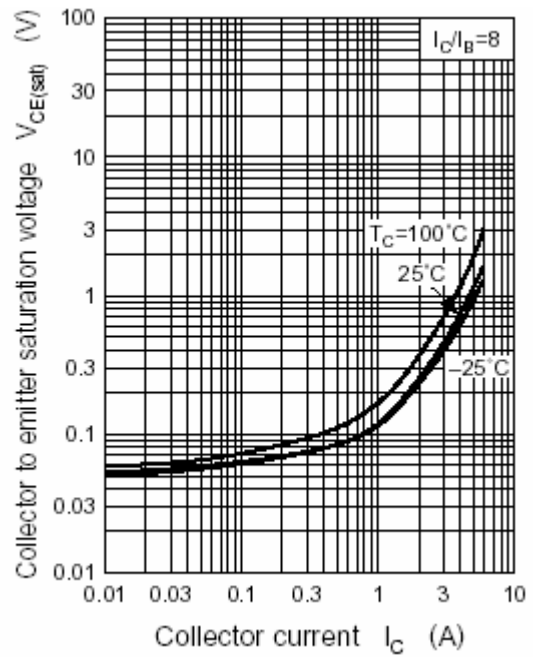


Fig.4 Collector-Emitter Saturation Voltage

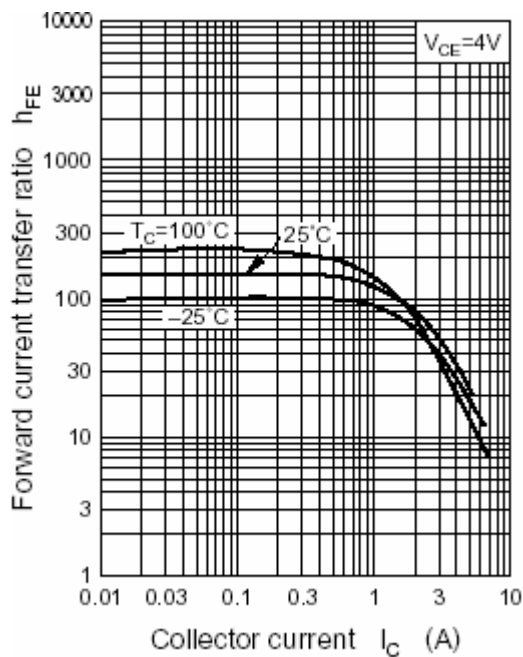


Fig.5 DC current Gain

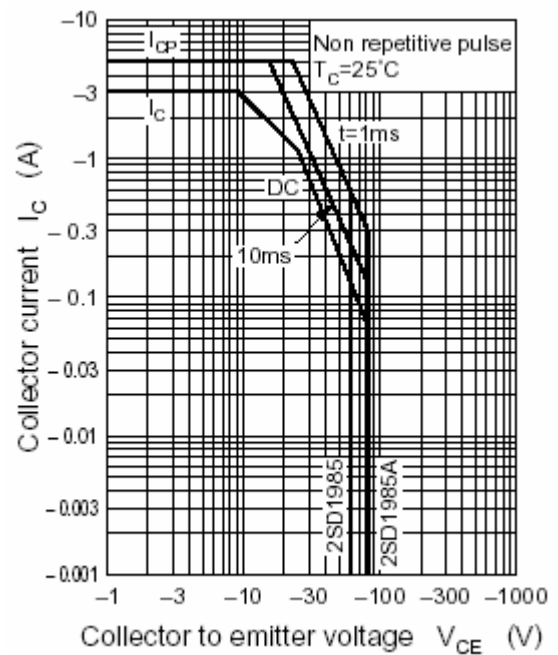


Fig.6 Safe Operating Area