

**Silicon NPN Power Transistors**

**2SD959**

**DESCRIPTION**

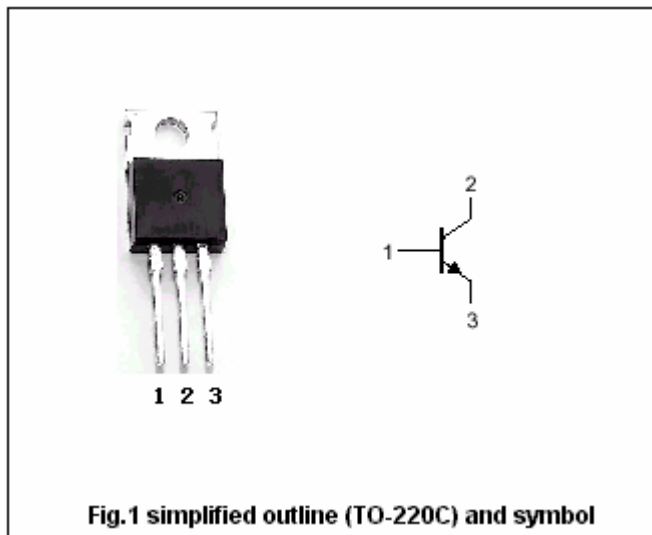
- With TO-220 package
- Low collector saturation voltage
- Complement to type 2SB867
- Excellent linearity of  $h_{FE}$

**APPLICATIONS**

- For power switching applications

**PINNING**

PIN	DESCRIPTION
1	Base
2	Collector;connected to mounting base
3	Emitter



**Absolute maximum ratings (Ta=25°C)**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	Open emitter	130	V
$V_{CEO}$	Collector-emitter voltage	Open base	80	V
$V_{EBO}$	Emitter-base voltage	Open collector	7	V
$I_C$	Collector current (DC)		3	A
$I_{CM}$	Collector current-peak		6	A
$P_C$	Collector power dissipation	$T_C=25^\circ C$	30	W
$T_j$	Junction temperature		150	°C
$T_{stg}$	Storage temperature		-55~150	°C

## Silicon NPN Power Transistors

## 2SD959

## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>(BR)CEO</sub>	Collector-emitter breakdown voltage	I <sub>C</sub> =10mA ; I <sub>E</sub> =0	80			V
V <sub>CEsat</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =2A; I <sub>B</sub> =0.1A			0.5	V
V <sub>BEsat</sub>	Base-emitter saturation voltage	I <sub>C</sub> =2A; I <sub>B</sub> =0.1A			1.5	V
I <sub>CBO</sub>	Collector cut-off current	V <sub>CB</sub> =100V; I <sub>E</sub> =0			10	μA
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =5V; I <sub>C</sub> =0			50	μA
h <sub>FE-1</sub>	DC current gain	I <sub>C</sub> =0.1A ; V <sub>CE</sub> =2V	45			
h <sub>FE-2</sub>	DC current gain	I <sub>C</sub> =0.5A ; V <sub>CE</sub> =2V	60		260	
f <sub>T</sub>	Transition frequency	I <sub>C</sub> =0.5A ; V <sub>CE</sub> =10V		30		MHz

## Switching times

t <sub>on</sub>	Turn-on time	I <sub>C</sub> =0.5A I <sub>B1</sub> =-I <sub>B2</sub> =50mA		0.5		μs
t <sub>s</sub>	Storage time			2.5		μs
t <sub>f</sub>	Fall time			0.15		μs

◆ h<sub>FE-2</sub> classifications

R	Q	P
60-120	90-180	130-260

Silicon NPN Power Transistors

2SD959

PACKAGE OUTLINE

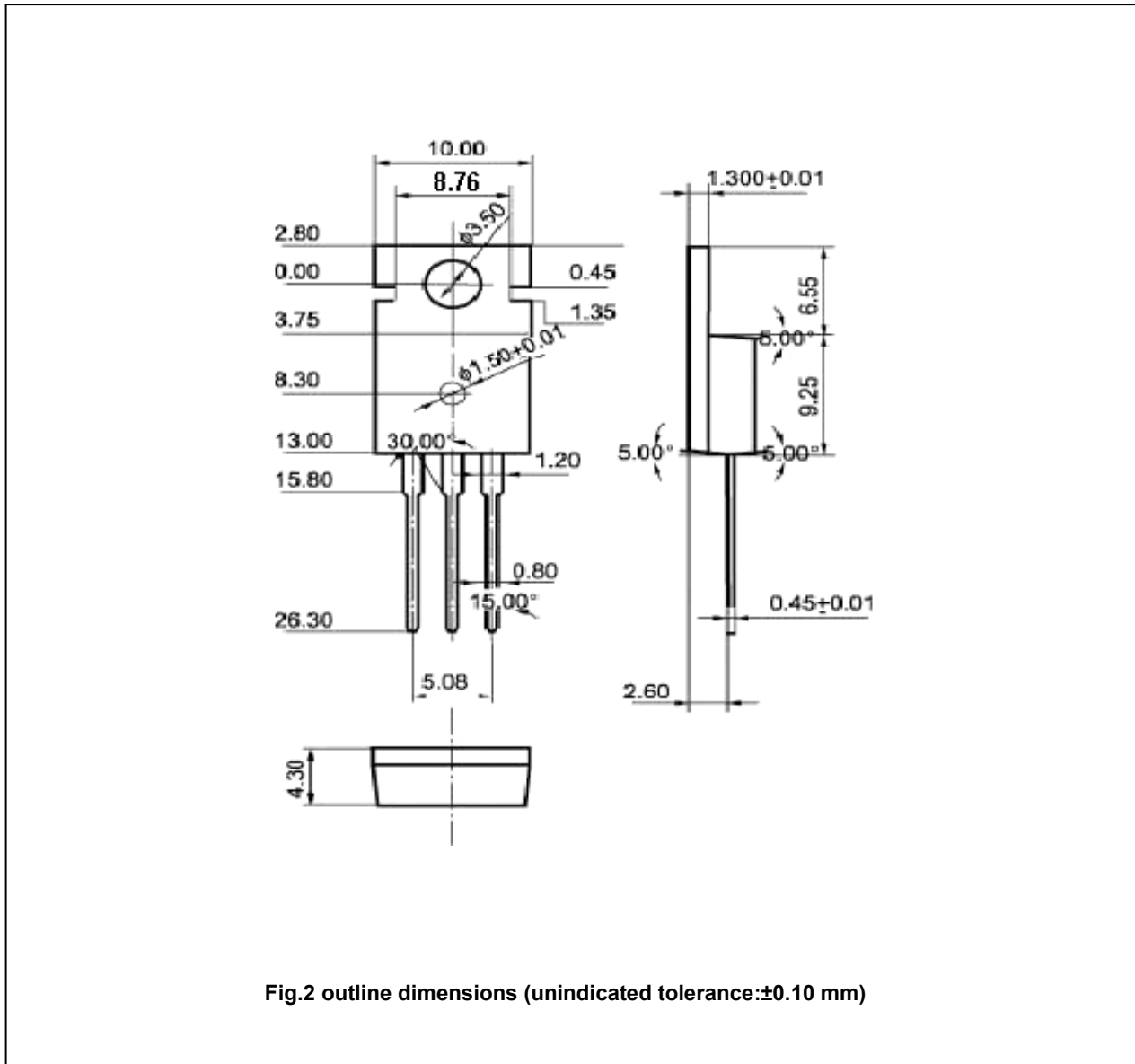


Fig.2 outline dimensions (unindicated tolerance:  $\pm 0.10$  mm)

Silicon NPN Power Transistors

2SD959

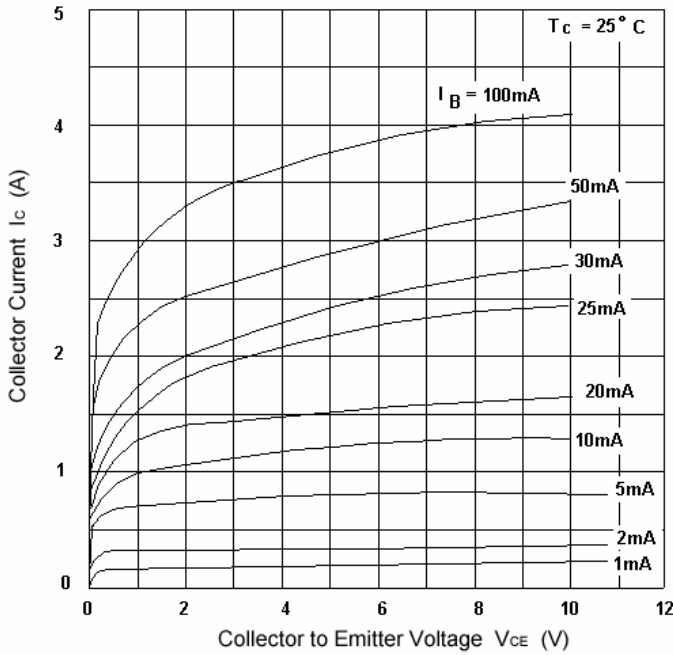


Fig.3 Static Characteristic

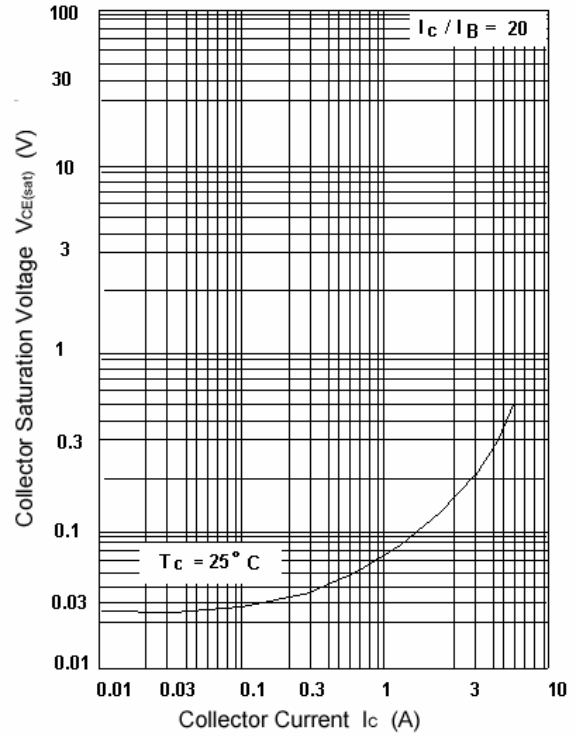


Fig.4 Collector-Emitter Saturation Voltage

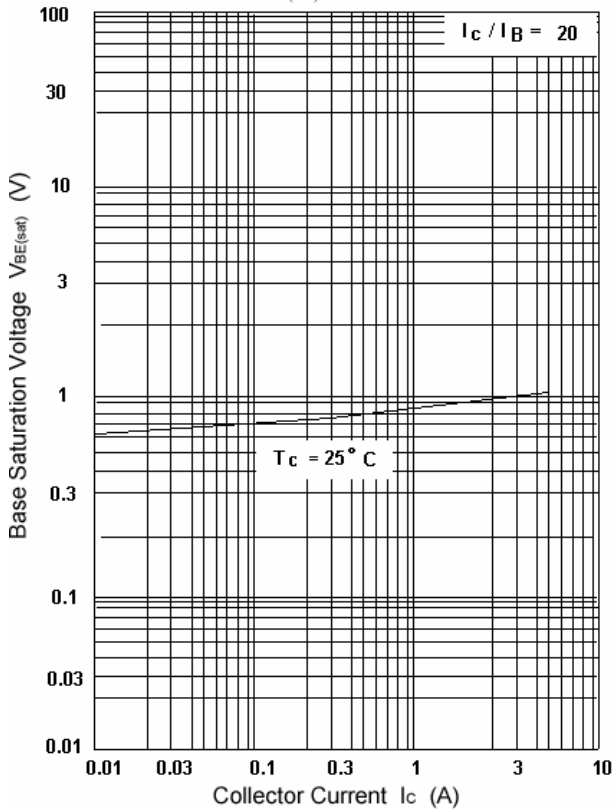


Fig.5 Base-Emitter Saturation Voltage

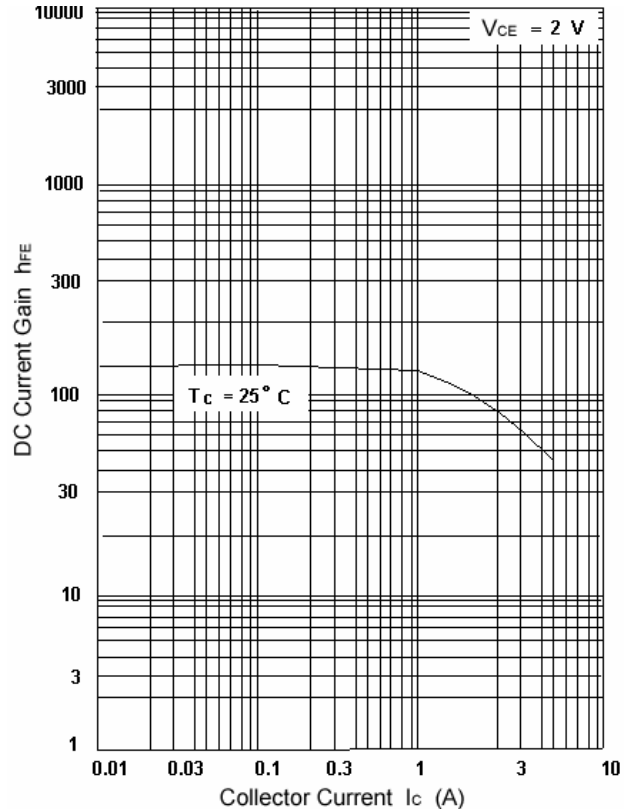


Fig.6 DC current Gain

Silicon NPN Power Transistors

2SD959

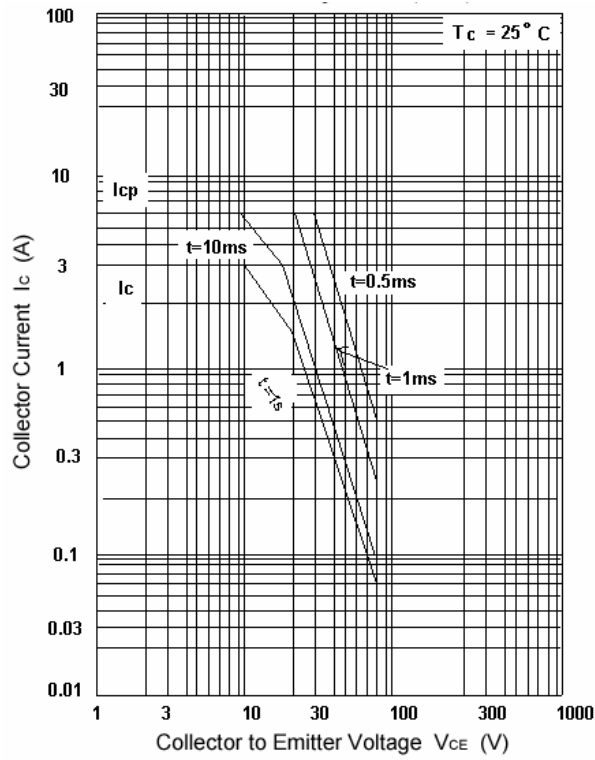


Fig.7 Safe Operating Area