

Silicon NPN Power Transistors

2SD1047

**DESCRIPTION**

- Complement to type 2SB817
- With TO-3PN package

**APPLICATIONS**

- Power amplification
- Low frequency and audio band

**PINNING**

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

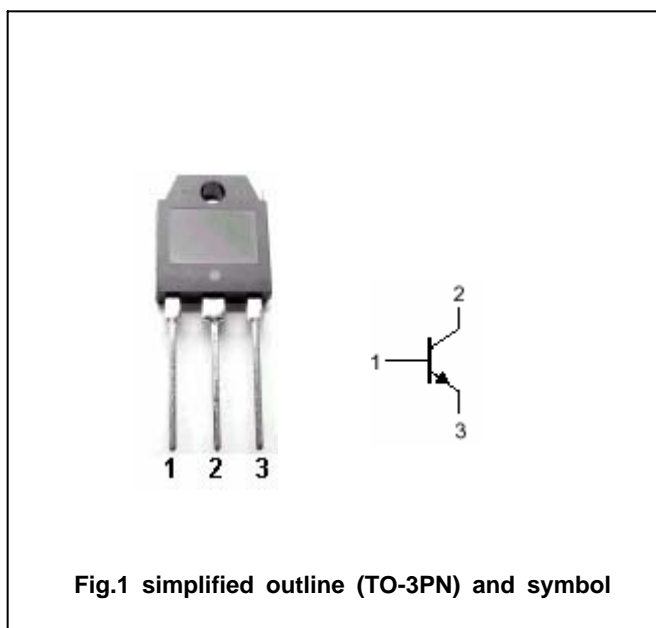


Fig.1 simplified outline (TO-3PN) and symbol

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

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V <sub>CBO</sub>	Collector-base voltage	Open emitter	160	V
V <sub>CEO</sub>	Collector-emitter voltage	Open base	140	V
V <sub>EBO</sub>	Emitter-base voltage	Open collector	6	V
I <sub>C</sub>	Collector current (DC)		12	A
I <sub>CM</sub>	Collector current-peak		15	A
P <sub>C</sub>	Collector power dissipation	T <sub>C</sub> =25	100	W
T <sub>j</sub>	Junction temperature		150	
T <sub>stg</sub>	Storage temperature		-40~150	

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## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>(BR)CEO</sub>	Collector-emitter breakdown voltage	I <sub>C</sub> =50mA ; I <sub>B</sub> =0	140			V
V <sub>(BR)CBO</sub>	Collector-base breakdown voltage	I <sub>C</sub> =5mA ; I <sub>E</sub> =0	160			V
V <sub>(BR)EBO</sub>	Emitter-base breakdown voltage	I <sub>E</sub> =5mA ; I <sub>C</sub> =0	6			V
V <sub>CEsat</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =5A ; I <sub>B</sub> =0.5A			2.5	V
V <sub>BE</sub>	Base-emitter on voltage	I <sub>C</sub> =1A ; V <sub>CE</sub> =5V			1.5	V
I <sub>CBO</sub>	Collector cut-off current	V <sub>CB</sub> =80V ; I <sub>E</sub> =0			0.1	mA
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =4V ; I <sub>C</sub> =0			0.1	mA
h <sub>FE-1</sub>	DC current gain	I <sub>C</sub> =1A ; V <sub>CE</sub> =5V	60		200	
h <sub>FE-2</sub>	DC current gain	I <sub>C</sub> =6A ; V <sub>CE</sub> =5V	20			
f <sub>T</sub>	Transition frequency	I <sub>C</sub> =1A ; V <sub>CE</sub> =5V		15		MHz
C <sub>OB</sub>	Collector output capacitance	f=1MHz ; V <sub>CB</sub> =10V		210		pF

## Switching times

t <sub>on</sub>	Turn-on time	I <sub>C</sub> =1.0A ; I <sub>B1</sub> =-I <sub>B2</sub> =0.1A V <sub>CC</sub> =20V , R <sub>L</sub> =20		0.26		μs
t <sub>s</sub>	Storage time			6.88		μs
t <sub>f</sub>	Fall time			0.68		μs

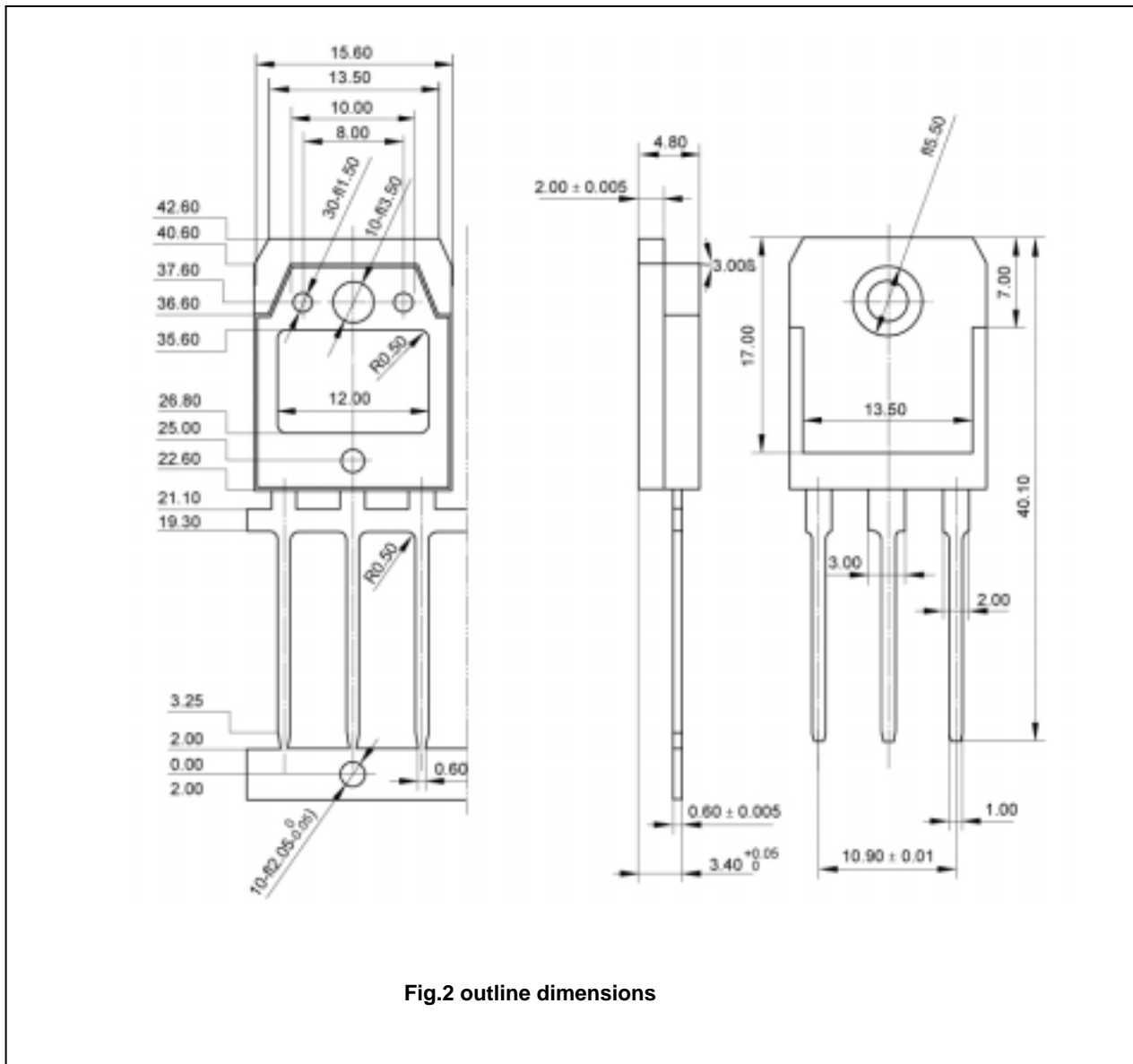
◆ h<sub>FE-1</sub> Classifications

D	E
60-120	100-200

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PACKAGE OUTLINE



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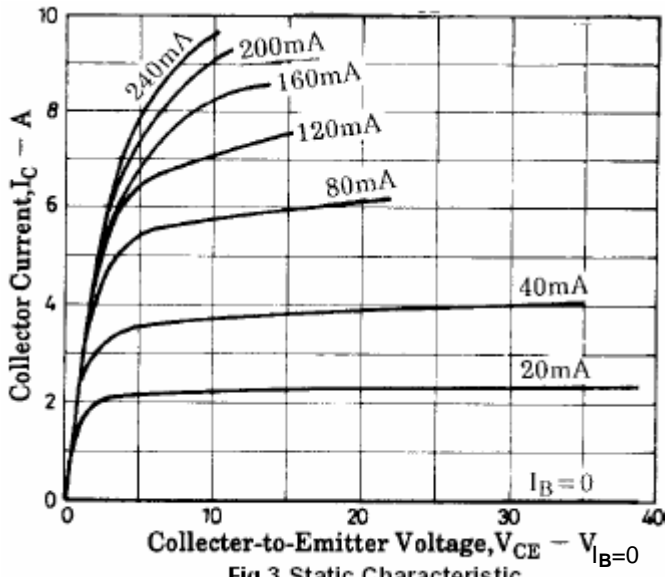


Fig.3 Static Characteristic

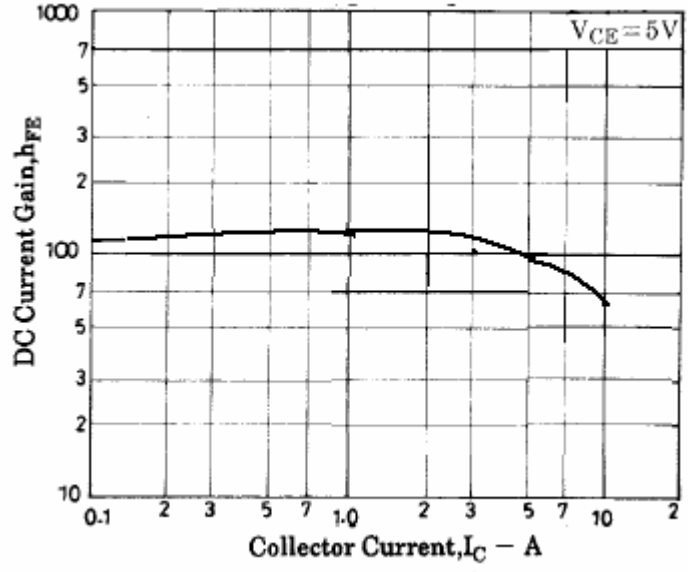


Fig.4 DC current Gain

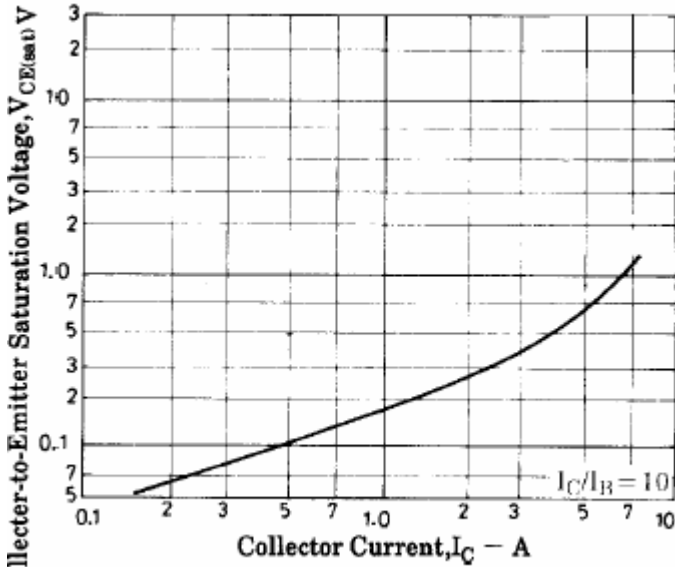


Fig.5 Collector-Emmitter Saturation Voltage

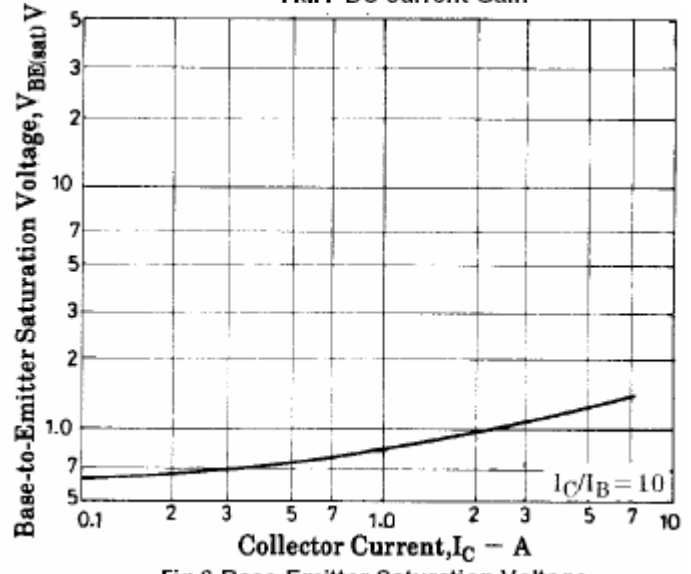


Fig.6 Base-Emmitter Saturation Voltage

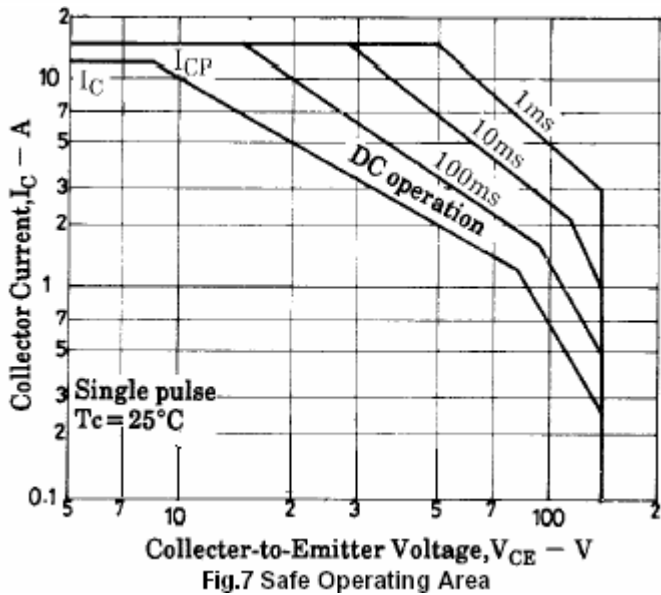


Fig.7 Safe Operating Area