

Silicon NPN Darlington Power Transistors

2SD2390

**DESCRIPTION**

- With TO-3PN package
- Complement to type 2SB1560
- High DC current gain

**APPLICATIONS**

- Audio ,regulator and general purpose

**PINNING**

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

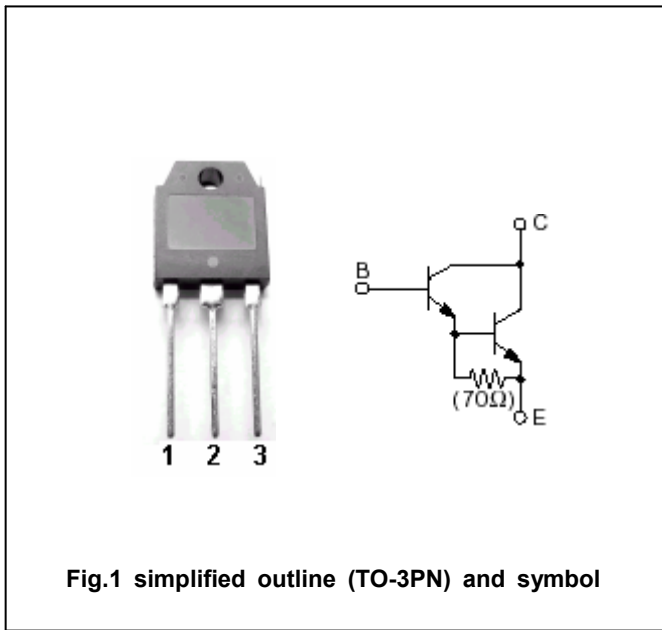


Fig.1 simplified outline (TO-3PN) and symbol

**Absolute maximum ratings(Ta=□)**

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	150	V
V <sub>EBO</sub>	Emitter-base voltage	Open collector	5	V
I <sub>C</sub>	Collector current		10	A
I <sub>B</sub>	Base current		1	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		-55~150	□

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## 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> =30mA ; I <sub>B</sub> =0	150			V
V <sub>CEsat</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =7A ; I <sub>B</sub> =7mA			2.5	V
V <sub>BEsat</sub>	Base-emitter saturation voltage	I <sub>C</sub> =7A ; I <sub>B</sub> =7mA			3.0	V
I <sub>CBO</sub>	Collector cut-off current	V <sub>CB</sub> =160V I <sub>E</sub> =0			100	μA
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =5V ; I <sub>C</sub> =0			100	μA
h <sub>FE</sub>	DC current gain	I <sub>C</sub> =7A ; V <sub>CE</sub> =4V	5000			
C <sub>ob</sub>	Output capacitance	I <sub>E</sub> =0 ; V <sub>CB</sub> =10V ; f=1MHz		95		pF
f <sub>T</sub>	Transition frequency	I <sub>C</sub> =2A ; V <sub>CE</sub> =12V		55		MHz

## Switching times

t <sub>on</sub>	Turn-on time	I <sub>C</sub> =7A ; R <sub>L</sub> =10Ω I <sub>B1</sub> =- I <sub>B2</sub> =7mA V <sub>CC</sub> =70V		0.5		μs
t <sub>s</sub>	Storage time			10.0		μs
t <sub>f</sub>	Fall time			1.1		μs

◆ h<sub>FE</sub> Classifications

O	P	Y
5000-12000	6500-20000	15000-30000

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PACKAGE OUTLINE

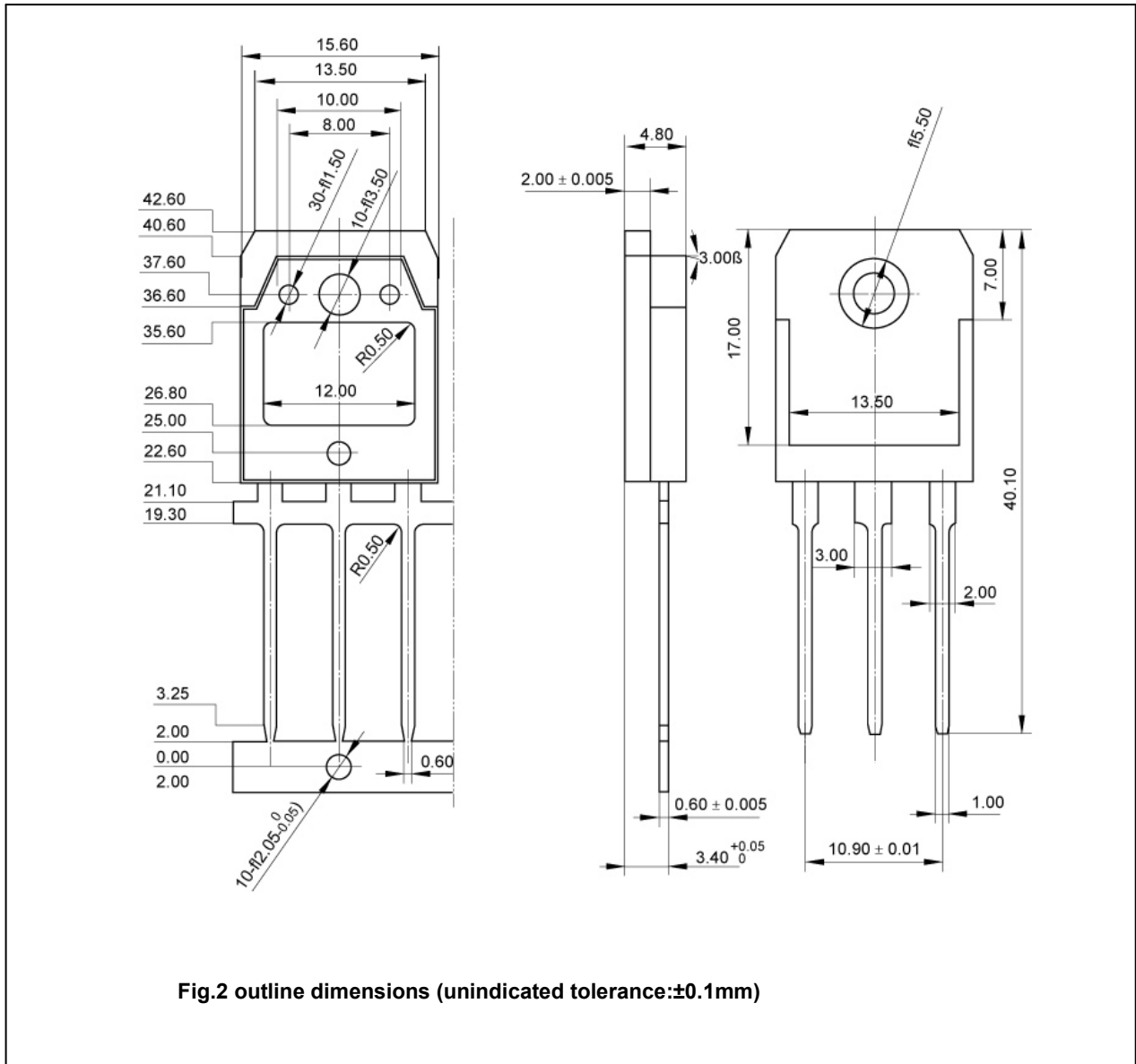


Fig.2 outline dimensions (unindicated tolerance:±0.1mm)

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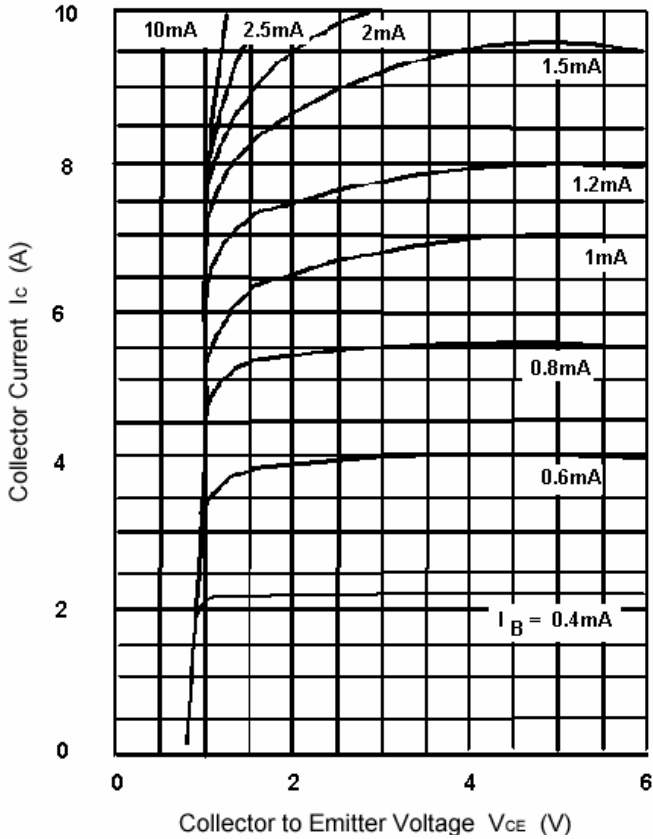


Fig.3  $I_C$ - $V_{CE}$  Characteristics (Typical)

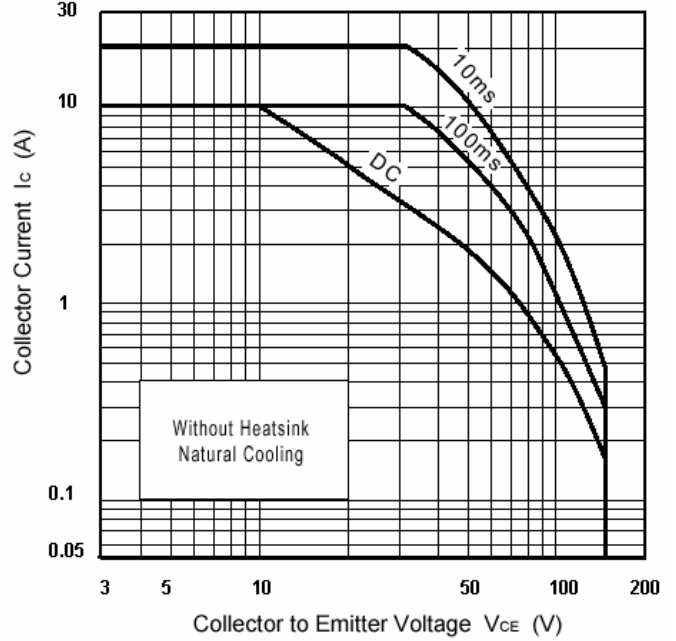


Fig.4 Safe Operating Area (Single Pulse)

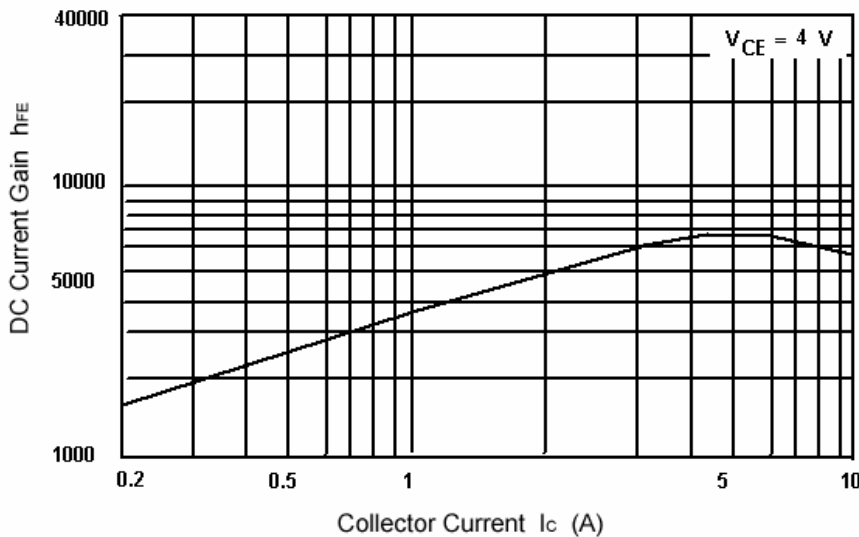


Fig.5  $h_{FE}$ - $I_C$  Characteristics (Typical)