

## Silicon NPN Power Transistors

2SD2196

## DESCRIPTION

- With TO-3PML package
- High DC current gain
- DARLINGTON

## PINNING

PIN	DESCRIPTION
1	Base
2	Collector
3	Emitter

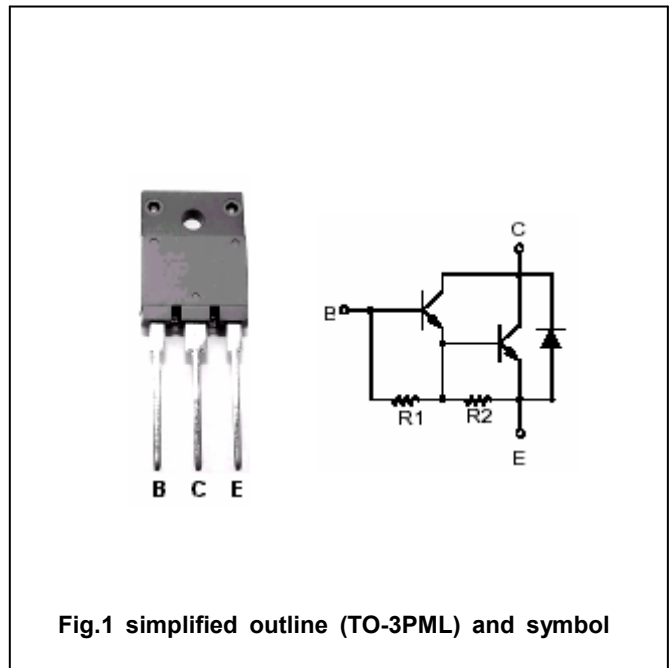


Fig.1 simplified outline (TO-3PML) and symbol

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

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	Open emitter	200	V
$V_{CEO}$	Collector-emitter voltage	Open base	200	V
$V_{EBO}$	Emitter-base voltage	Open collector	7	V
$I_C$	Collector current		15	A
$I_{CM}$	Collector current-peak		22	A
$I_B$	Base current		1	A
$I_{BM}$	Base current-peak		2	A
$P_T$	Total power dissipation	$T_C=25^\circ\text{C}$	65	W
$T_j$	Junction temperature		150	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-55~150	$^\circ\text{C}$

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j\text{-case}}$	Thermal resistance junction case	1.92	$^\circ\text{C}/\text{W}$

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## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>CEO(SUS)</sub>	Collector-emitter sustaining voltage	I <sub>C</sub> =50mA; I <sub>B</sub> =0	200			V
V <sub>CEsat</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =10A; I <sub>B</sub> =30mA			1.5	V
V <sub>BEsat</sub>	Base-emitter saturation voltage	I <sub>C</sub> =10A; I <sub>B</sub> =30mA			2.0	V
I <sub>CBO</sub>	Collector cut-off current	V <sub>CB</sub> =200V; I <sub>E</sub> =0			0.1	mA
I <sub>CEO</sub>	Collector cut-off current	V <sub>CE</sub> =200V; I <sub>B</sub> =0			0.1	mA
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =7V; I <sub>C</sub> =0			5	mA
h <sub>FE</sub>	DC current gain	I <sub>C</sub> =10A; V <sub>CE</sub> =3V	1500		30000	
f <sub>T</sub>	Transition frequency	I <sub>C</sub> =1.5A; V <sub>CE</sub> =10V		20		MHz

## Switching times

t <sub>on</sub>	Turn-on time	I <sub>C</sub> =10A; R <sub>L</sub> =3Ω I <sub>B1</sub> =I <sub>B2</sub> =30mA; V <sub>BB2</sub> =4V			2	μs
t <sub>s</sub>	Storage time				12	μs
t <sub>f</sub>	Fall time				5	μs

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PACKAGE OUTLINE

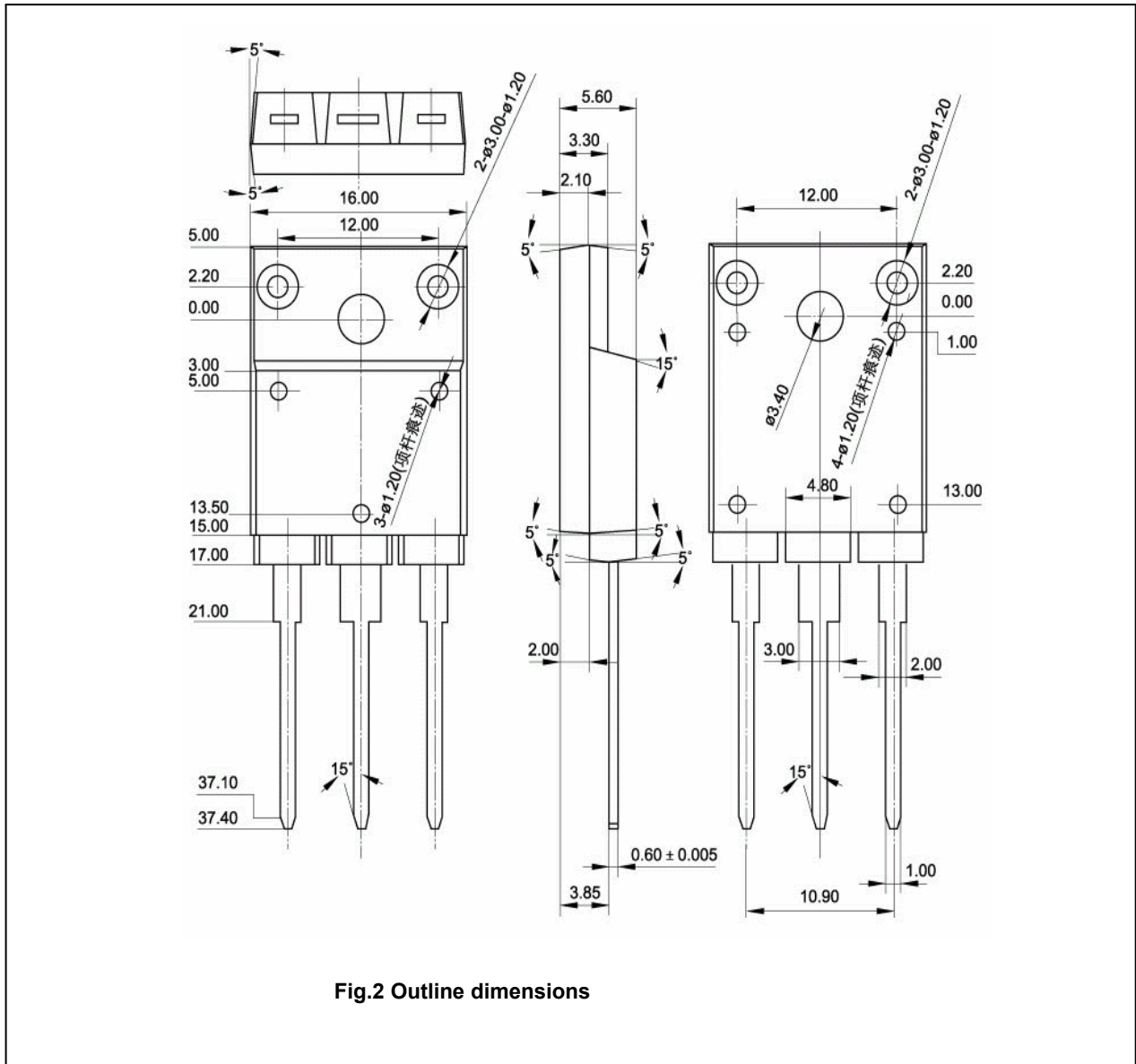


Fig.2 Outline dimensions