

**Silicon NPN Power Transistors**

**2SD2241**

**DESCRIPTION**

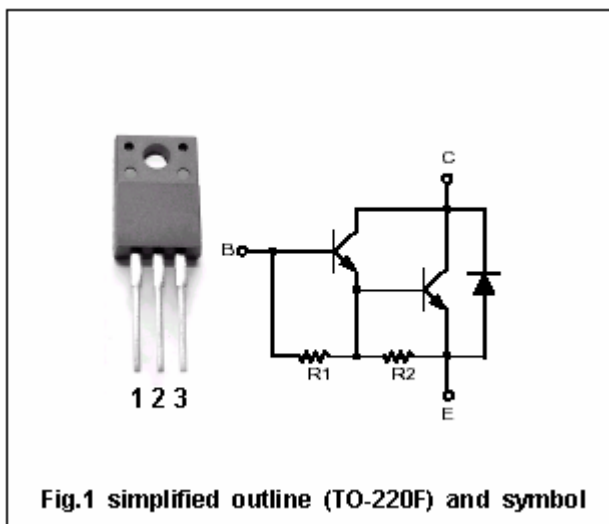
- With TO-220F package
- High DC current gain :  $h_{FE}=2000$  (Min)
- Low saturation voltage
- Complement to type 2SB1481
- DARLINGTON

**APPLICATIONS**

- With switching applications

**PINNING**

PIN	DESCRIPTION
1	Base
2	Collector
3	Emitter



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

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	Open emitter	100	V
$V_{CEO}$	Collector-emitter voltage	Open base	100	V
$V_{EBO}$	Emitter-base voltage	Open collector	5	V
$I_C$	Collector current		$\pm 4$	A
$I_{CM}$	Collector current-peak		$\pm 6$	A
$I_B$	Base current		0.3	A
$P_C$	Collector dissipation	$T_a=25^\circ\text{C}$	2.0	W
		$T_C=25^\circ\text{C}$	25	
$T_j$	Junction temperature		150	°C
$T_{stg}$	Storage temperature		-55~150	°C

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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> =10mA ; I <sub>B</sub> =0	100			V
V <sub>CEsat</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =3A ; I <sub>B</sub> =6mA			1.5	V
V <sub>BEsat</sub>	Base-emitter saturation voltage	I <sub>C</sub> =3A ; I <sub>B</sub> =6mA			2.0	V
I <sub>CBO</sub>	Collector cut-off current	V <sub>CB</sub> =100V ; I <sub>E</sub> =0			20	μA
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =5V ; I <sub>C</sub> =0			2.5	mA
h <sub>FE-1</sub>	DC current gain	I <sub>C</sub> =1.5A ; V <sub>CE</sub> =2V	2000			
h <sub>FE-2</sub>	DC current gain	I <sub>C</sub> =3A ; V <sub>CE</sub> =2V	1000			
V <sub>ECF</sub>	Diode forward voltage	I <sub>E</sub> =1A ; I <sub>B</sub> =0			2.0	V

## Switching times

t <sub>on</sub>	Turn-on time	I <sub>B1</sub> =-I <sub>B2</sub> =6mA V <sub>CC</sub> ≈30V , R <sub>L</sub> =10Ω Duty cycle≤1%		0.2		μs
t <sub>s</sub>	Storage time			1.5		μs
t <sub>f</sub>	Fall time			0.6		μs

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PACKAGE OUTLINE

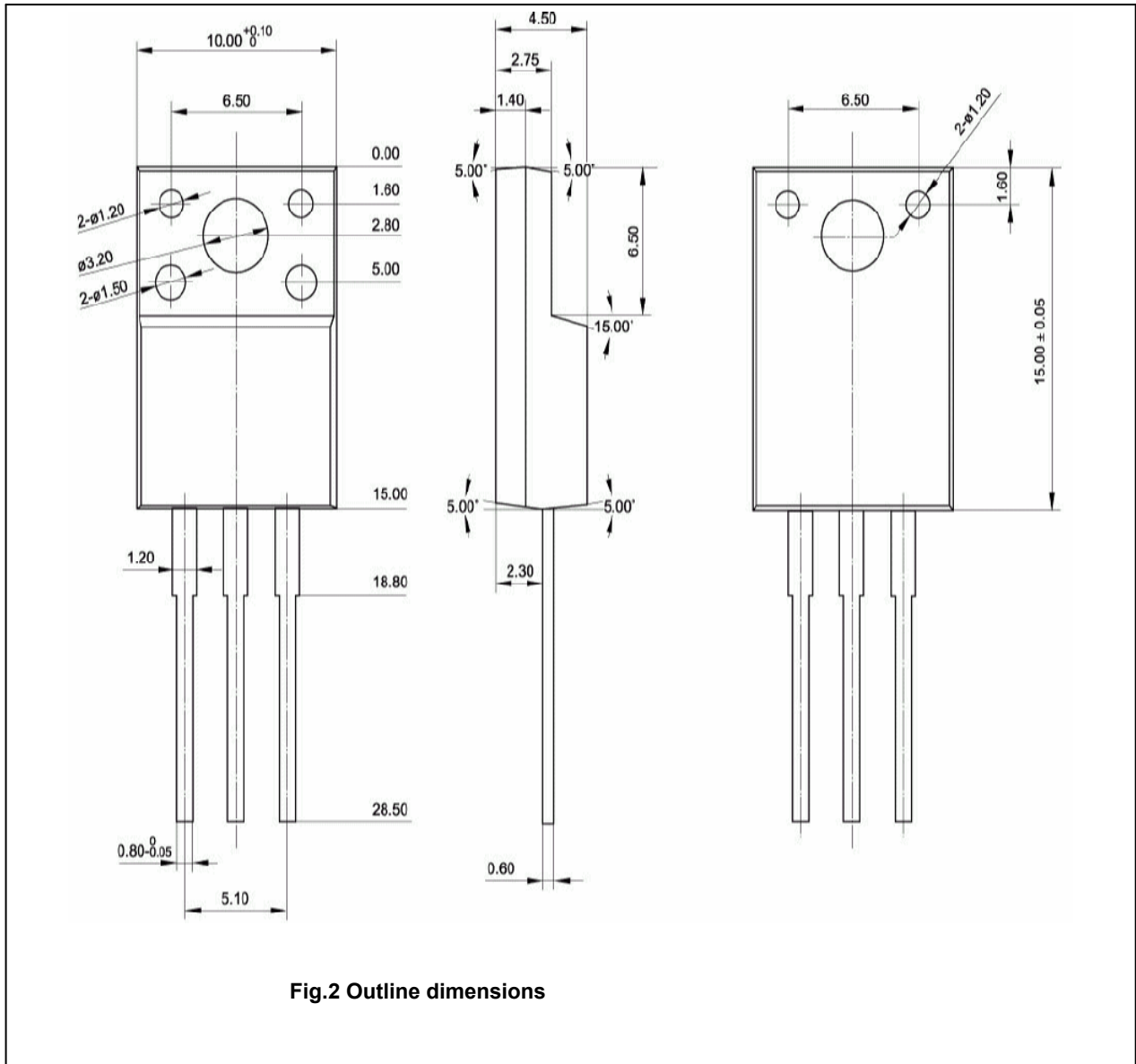


Fig.2 Outline dimensions

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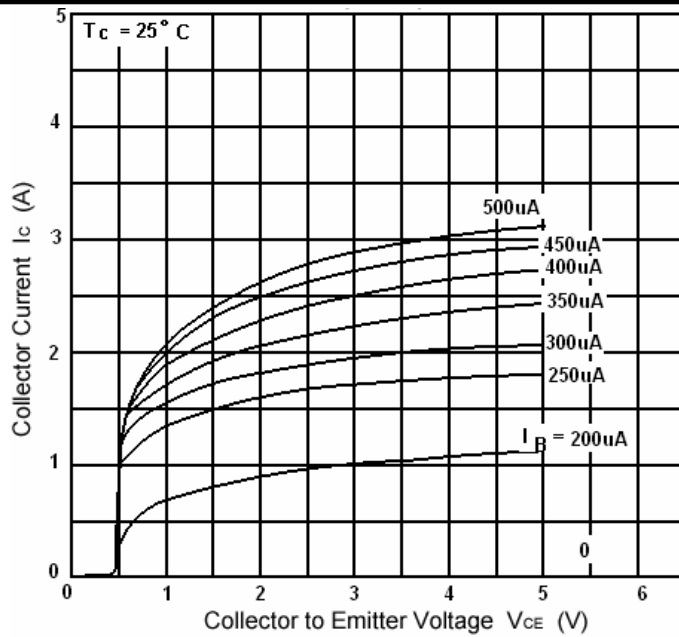


Fig.3 Static Characteristic

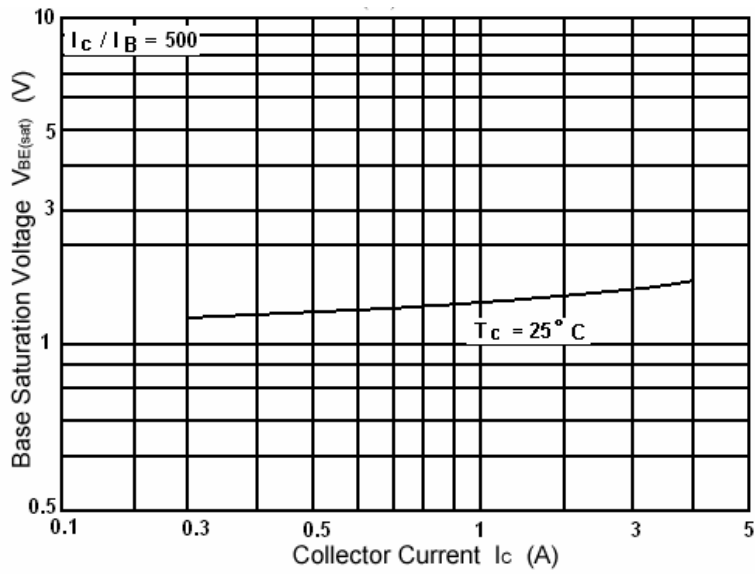


Fig.4 Base-Emitter Saturation Voltage

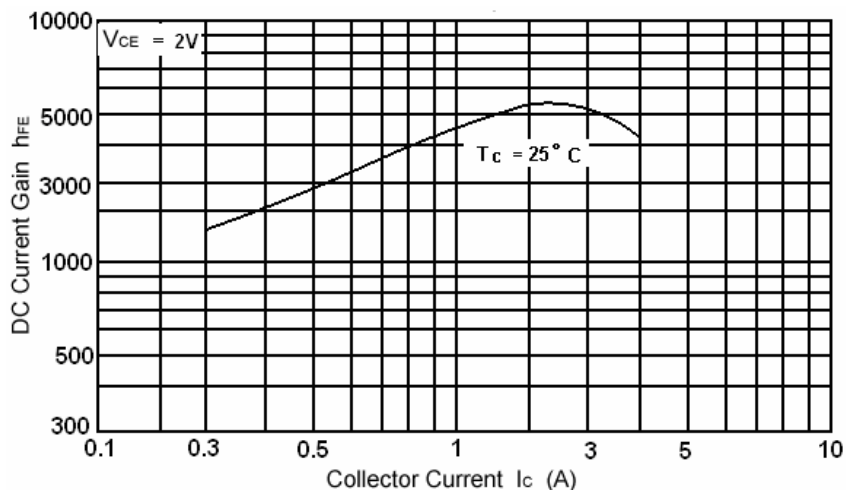


Fig.5 DC current Gain

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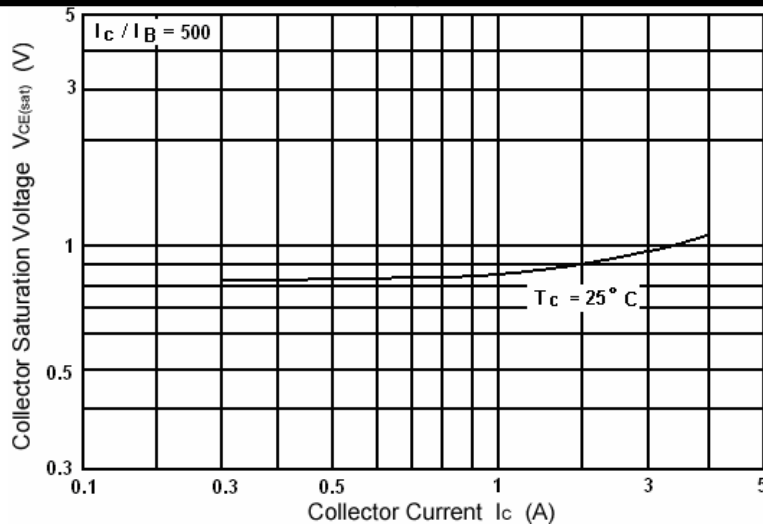


Fig.6 Collector-Emitter Saturation Voltage

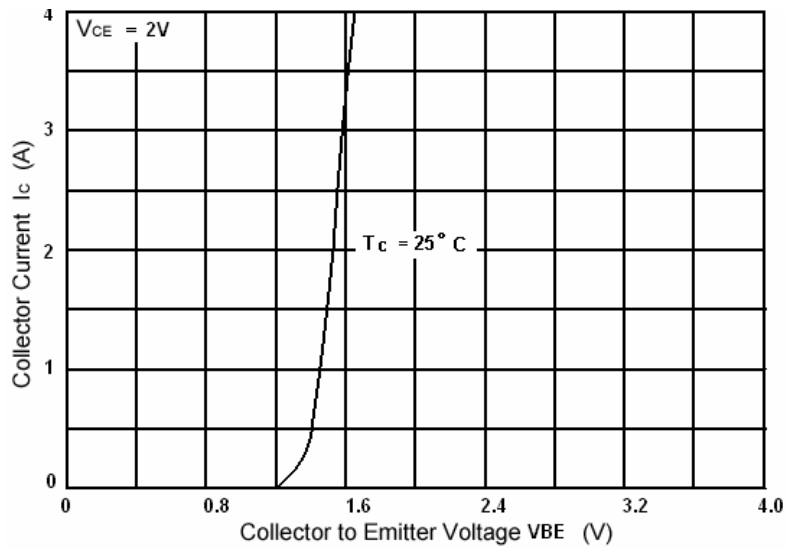


Fig.7  $I_c - V_{BE}$

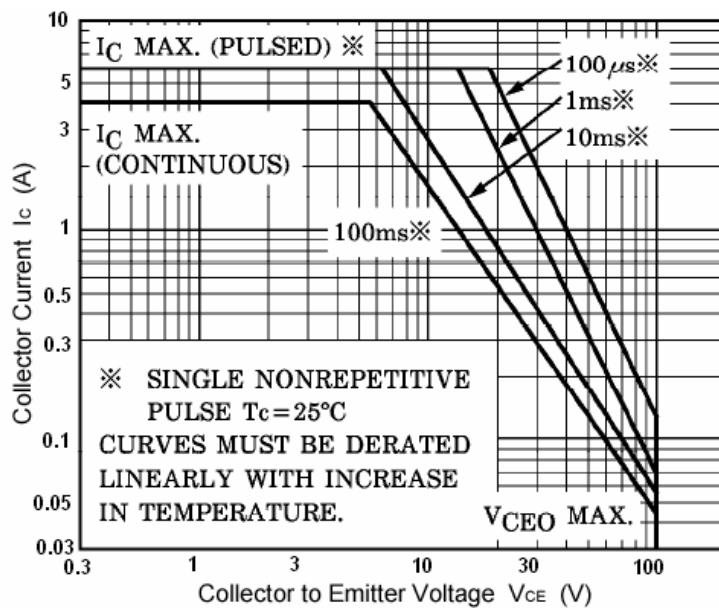


Fig.8 Safe Operating Area