

Silicon NPN Power Transistors

2SD1238L

DESCRIPTION

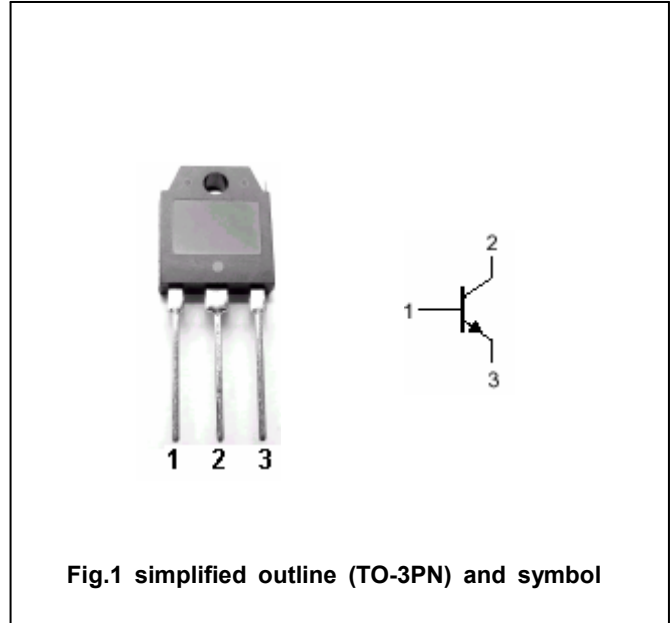
- With TO-3PN package
- Low collector saturation voltage
- Wide area of safe operation
- Complement to type 2SB922L

APPLICATIONS

- Suitable for relay drivers, high-speed inverters, converters, and other large-current 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	90	V
V_{CEO}	Collector-emitter voltage	Open base	80	V
V_{EBO}	Emitter-base voltage	Open collector	6	V
I_C	Collector current (DC)		12	A
I_{CM}	Collector current-peak		20	A
P_C	Collector power dissipation	$T_C=25^\circ\text{C}$	80	W
T_j	Junction temperature		150	°C
T_{stg}	Storage temperature		-55~150	°C

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CHARACTERISTICS

T_j=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V _{(BR)CEO}	Collector-emitter breakdown voltage	I _C =1mA; R _{BE} =∞	80			V
V _{(BR)CBO}	Collector-base breakdown voltage	I _C =1mA; I _E =0	90			V
V _{(BR)EBO}	Emitter-base breakdown voltage	I _E =1mA; I _C =0	6			V
V _{CEsat}	Collector-emitter saturation voltage	I _C =6A; I _B =0.6A			0.4	V
I _{CBO}	Collector cut-off current	V _{CB} =80V; I _E =0			0.1	mA
I _{EBO}	Emitter cut-off current	V _{EB} =4V; I _C =0			0.1	mA
h _{FE-1}	DC current gain	I _C =1A; V _{CE} =2V	70		280	
h _{FE-2}	DC current gain	I _C =6A; V _{CE} =2V	30			
f _T	Transition frequency	I _C =1A; V _{CE} =5V		20		MHz

Switching times

t _{on}	Turn-on time	I _C =5A; I _{B1} =-I _{B2} =-0.5A V _{CC} =50V; R _L =10Ω		0.2		μs
t _s	Storage time			1.7		μs
t _f	Fall time			0.2		μs

◆ h_{FE-1} Classifications

Q	R	S
70-140	100-200	140-280

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PACKAGE OUTLINE

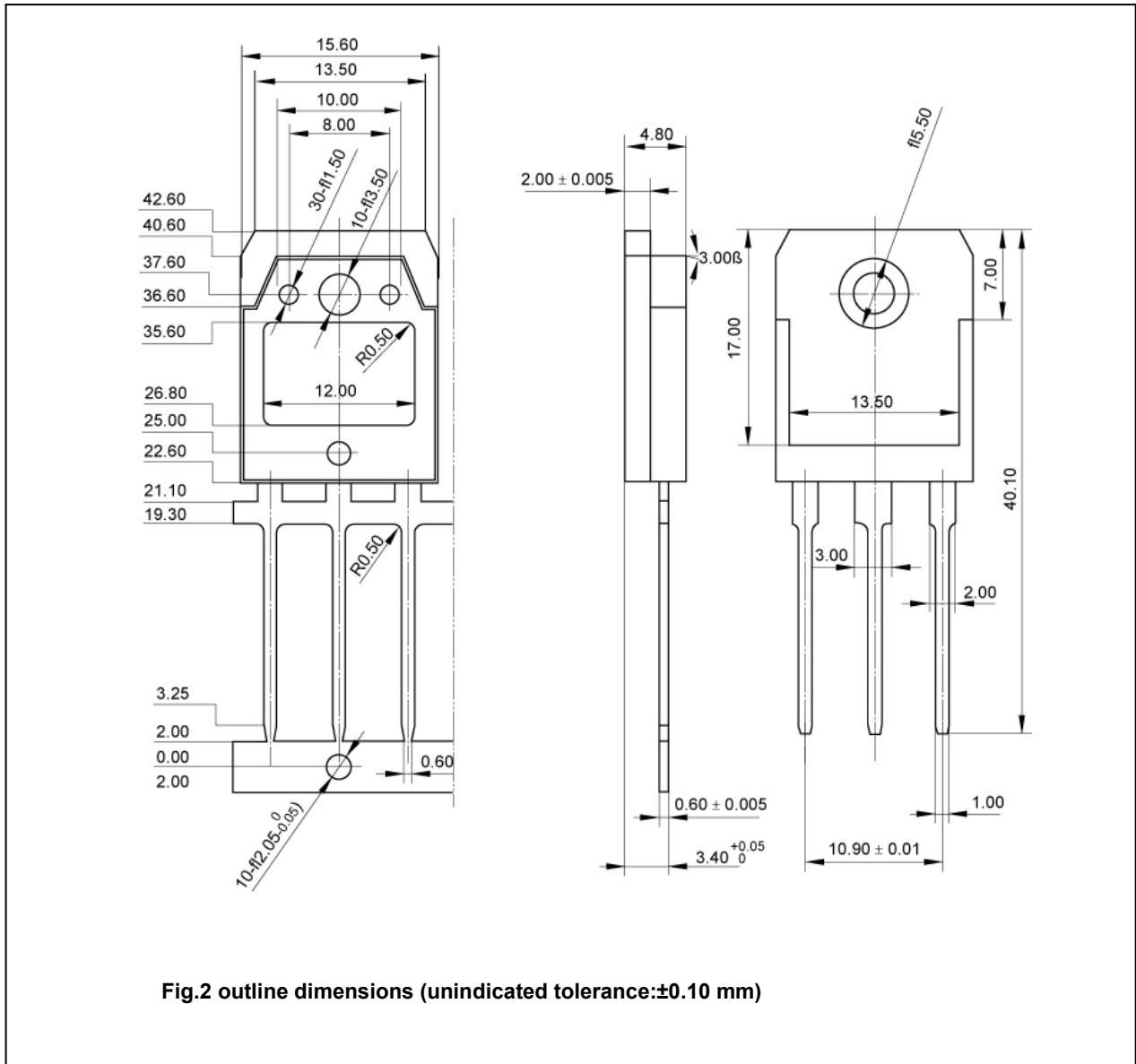


Fig.2 outline dimensions (unindicated tolerance:±0.10 mm)

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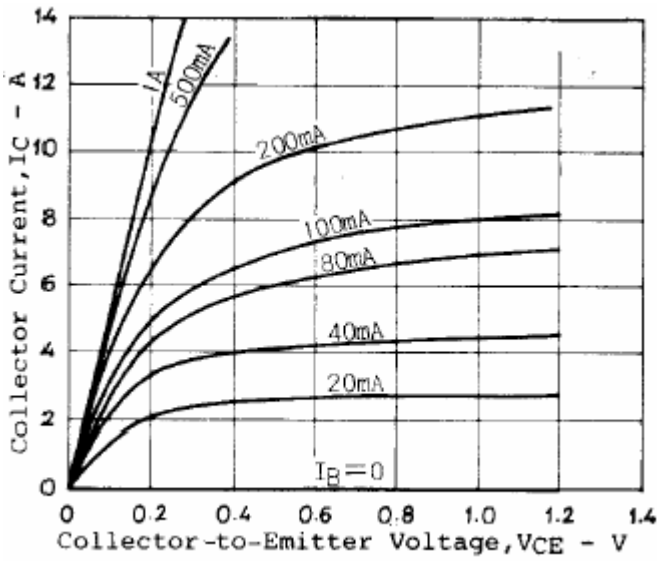


Fig.3 Static Characteristic

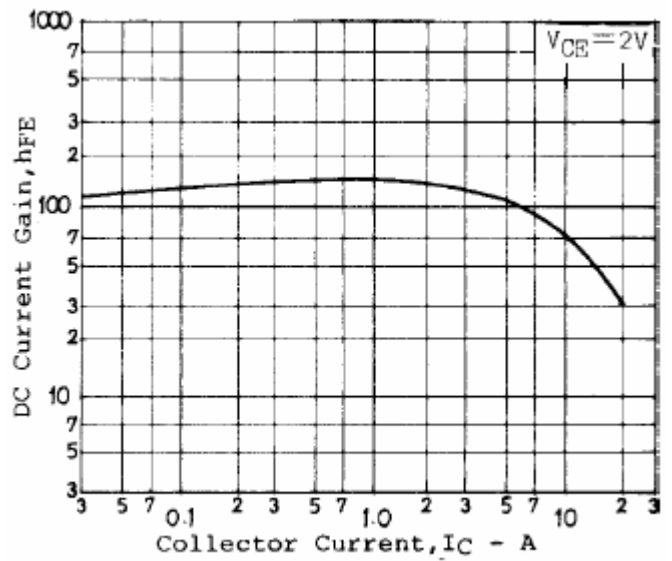


Fig.4 DC current Gain

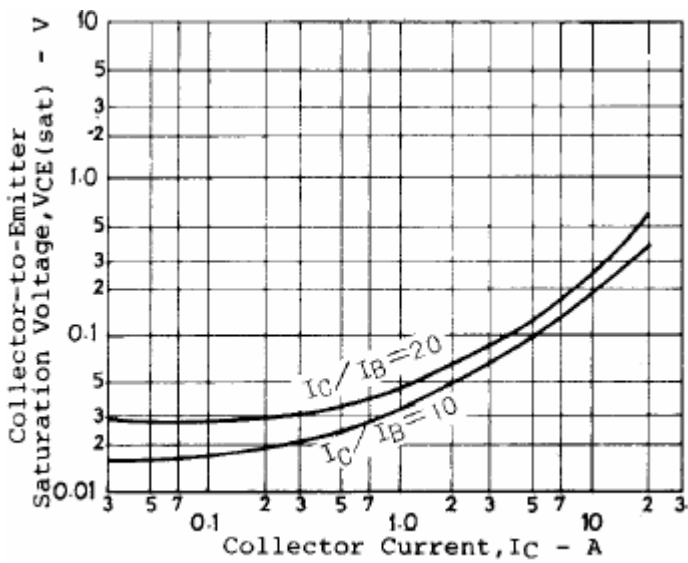


Fig.5 Collector-Emmitter Saturation Voltage

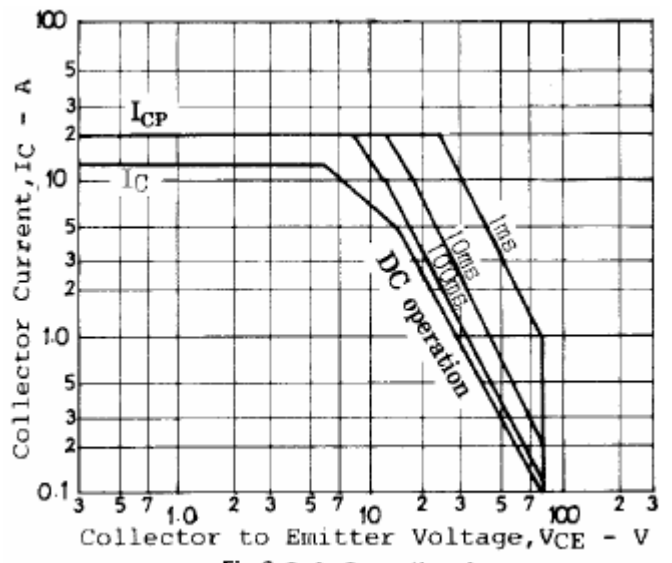


Fig.6 Safe Operating Area