

Inchange Semiconductor

Product Specification

Silicon NPN Power Transistors

2SC3680

DESCRIPTION

- With TO-3PN package
- High voltage switching transistor

APPLICATIONS

- Switching regulator and general purpose applications

PINNING

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

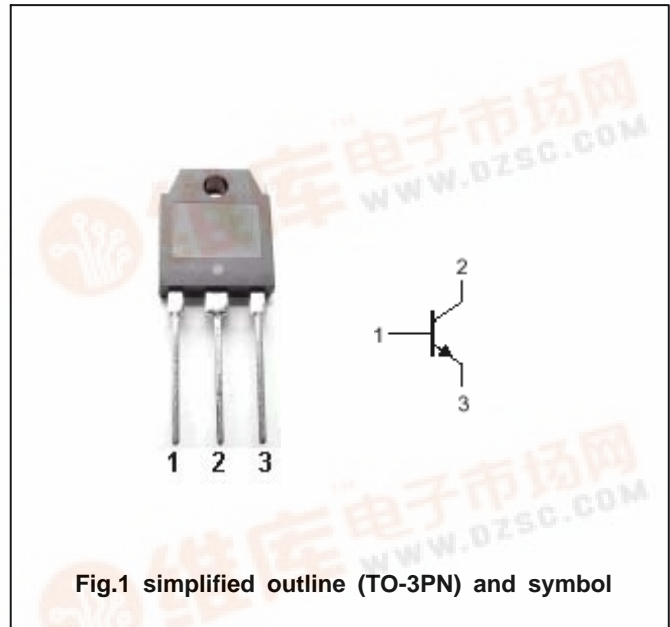


Fig.1 simplified outline (TO-3PN) and symbol

Absolute maximum ratings(Ta= )

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V <sub>CBO</sub>	Collector-base voltage	Open emitter	900	V
V <sub>CEO</sub>	Collector-emitter voltage	Open base	800	V
V <sub>EBO</sub>	Emitter-base voltage	Open collector	7	V
I <sub>C</sub>	Collector current		7	A
I <sub>CM</sub>	Collector current-peak		14	A
I <sub>B</sub>	Base current		3.5	A
P <sub>C</sub>	Collector power dissipation	T <sub>C</sub> =25	120	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 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	800			V
V <sub>CEsat</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =3A , I <sub>B</sub> =0.6A			0.5	V
V <sub>BEsat</sub>	Base-emitter saturation voltage	I <sub>C</sub> =3A ; I <sub>B</sub> =0.6A			1.2	V
I <sub>CBO</sub>	Collector cut-off current	V <sub>CB</sub> =800V; I <sub>E</sub> =0			100	μ A
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> =7V; I <sub>C</sub> =0			100	μ A
h <sub>FE</sub>	DC current gain	I <sub>C</sub> =3A ; V <sub>CE</sub> =4V	10		30	
C <sub>ob</sub>	Output capacitance	I <sub>E</sub> =0 ; V <sub>CB</sub> =10V; f=1MHz		105		pF
f <sub>T</sub>	Transition frequency	I <sub>C</sub> =2A ; V <sub>CE</sub> =12V		6		MHz
Switching times						
t <sub>on</sub>	Turn-on time	I <sub>C</sub> =3A; I <sub>B1</sub> =0.45A; I <sub>B2</sub> =-1.5A; R <sub>L</sub> =83 V <sub>CC</sub> =250V			1.0	μ s
t <sub>stg</sub>	Storage time				5.0	μ s
t <sub>f</sub>	Fall time				1.0	μ s

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PACKAGE OUTLINE

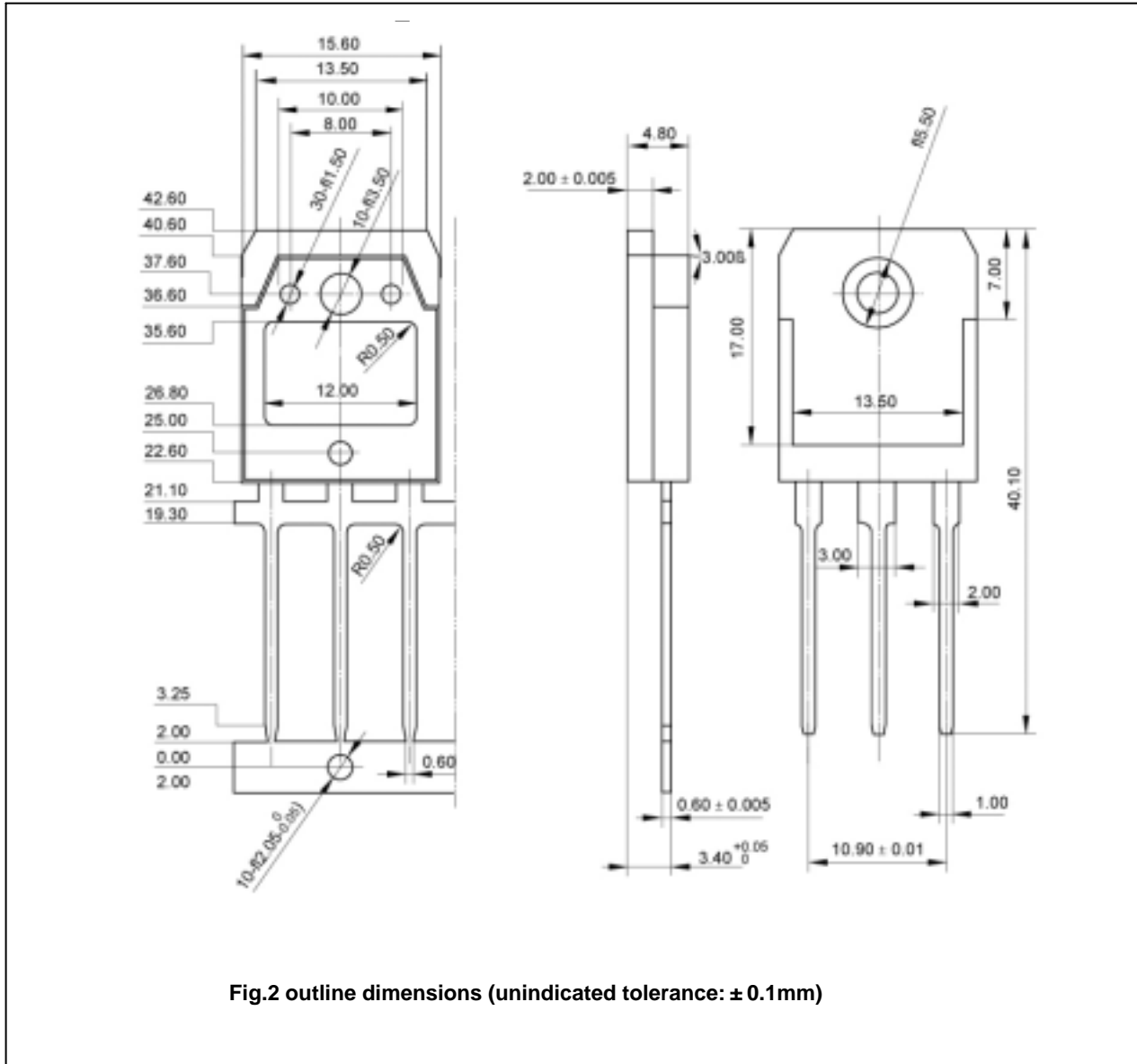


Fig.2 outline dimensions (unindicated tolerance: ± 0.1mm)

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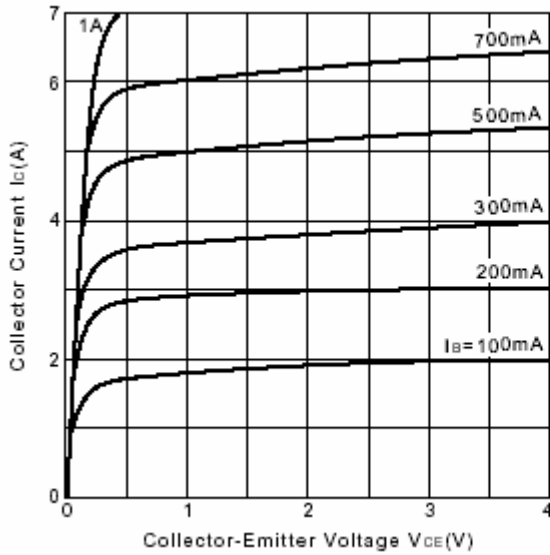


Fig.3 Static Characteristic

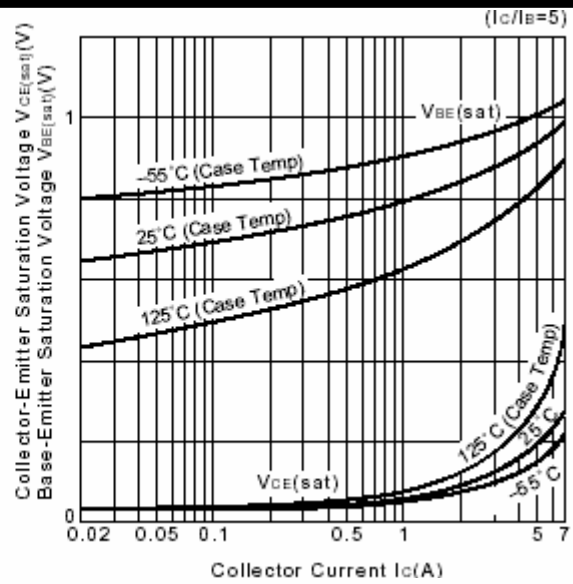


Fig.4 Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

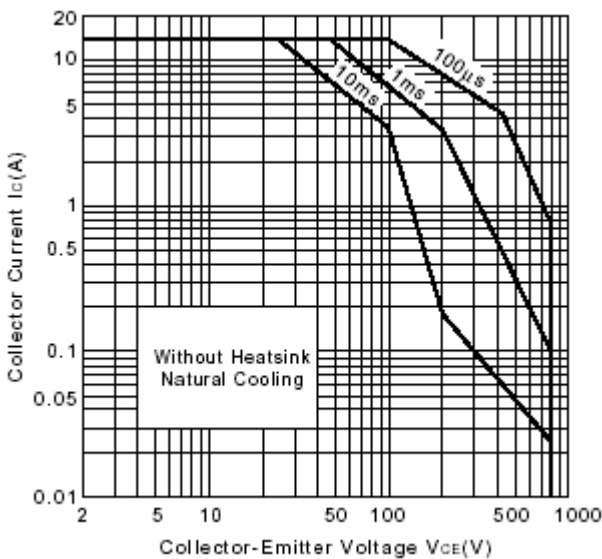


Fig.5 Safe Operating Area

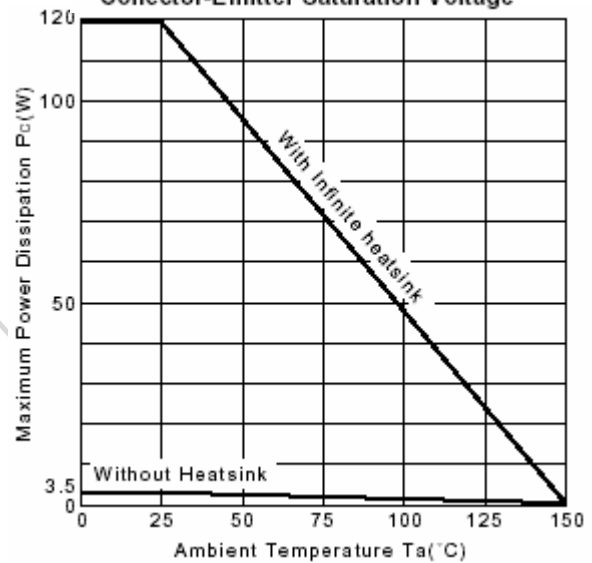


Fig.6 Power Derating

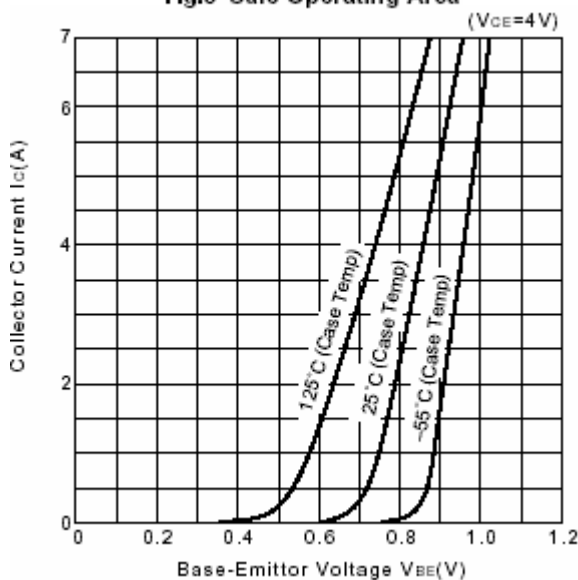


Fig.7  $I_c - V_{BE}$

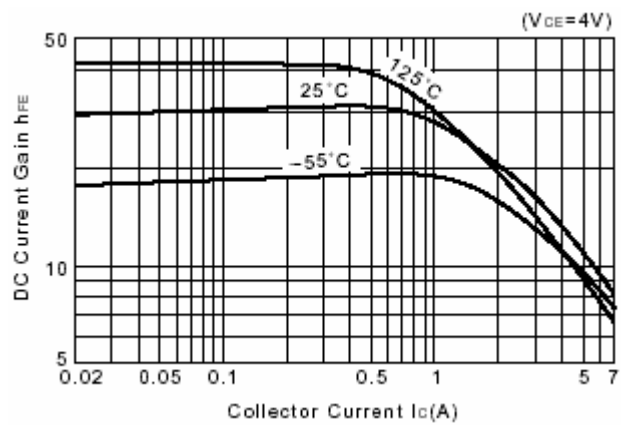


Fig.8 DC current Gain