

Silicon NPN Power Transistors

2SC4138

DESCRIPTION

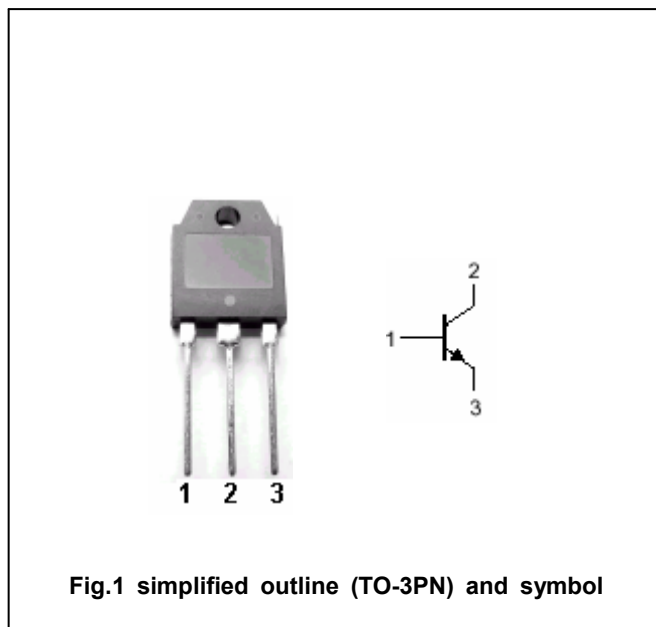
- With TO-3PN package
- High voltage
- High speed switching

APPLICATIONS

- For switching regulator and general purpose applications

PINNING

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

Absolute maximum ratings($T_a = \square$)

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	Open emitter	500	V
V_{CEO}	Collector-emitter voltage	Open base	400	V
V_{EBO}	Emitter-base voltage	Open collector	10	V
I_C	Collector current		10	A
I_{CP}	Collector current-pulse		20	A
I_B	Base current		4	A
P_C	Collector power dissipation	$T_C = 25\square$	80	W
T_j	Junction temperature		150	$\square$
T_{stg}	Storage temperature		-55~150	$\square$

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CHARACTERISTICS

Tj=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C=25mA$; $I_B=0$	400			V
V_{CEsat}	Collector-emitter saturation voltage	$I_C=6A$; $I_B=1.2A$			0.5	V
V_{BEsat}	Base-emitter saturation voltage	$I_C=6A$; $I_B=1.2A$			1.3	V
I_{CBO}	Collector cut-off current	$V_{CB}=500V$; $I_E=0$			100	μA
I_{EBO}	Emitter cut-off current	$V_{EB}=10V$; $I_C=0$			100	μA
h_{FE}	DC current gain	$I_C=6A$; $V_{CE}=4V$	10		30	
f_T	Transition frequency	$I_C=0.7A$; $V_{CE}=12V$		10		MHz
C_{OB}	Collector output capacitance	$f=1MHz$; $V_{CB}=10V$		85		pF

Switching times

t_{on}	Turn-on time	$I_C=6A$; $I_{B1}=0.6A$; $I_{B2}=-1.2A$; $R_L=33.3\Omega$ $V_{CC}=200V$			1.0	μs
t_{stg}	Storage time				3.0	μs
t_f	Fall time				0.5	μs

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PACKAGE OUTLINE

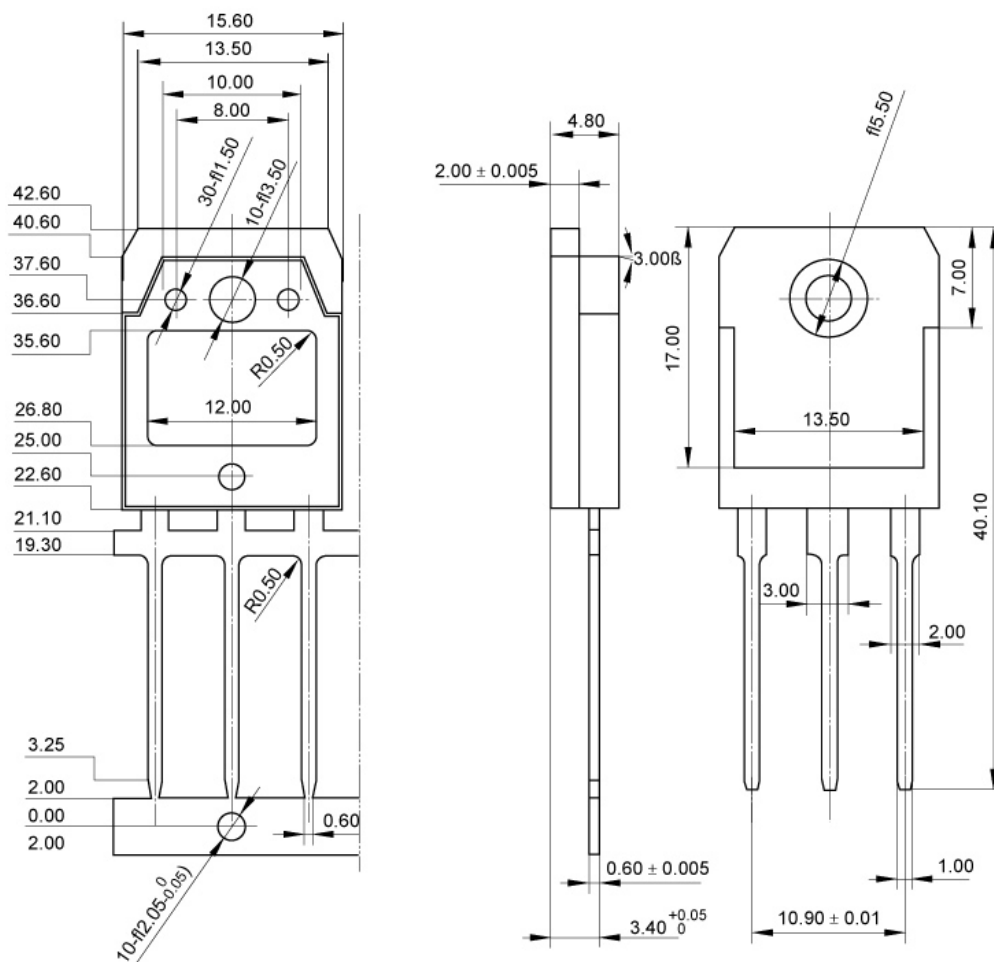


Fig.2 outline dimensions (unindicated tolerance:±0.1mm)

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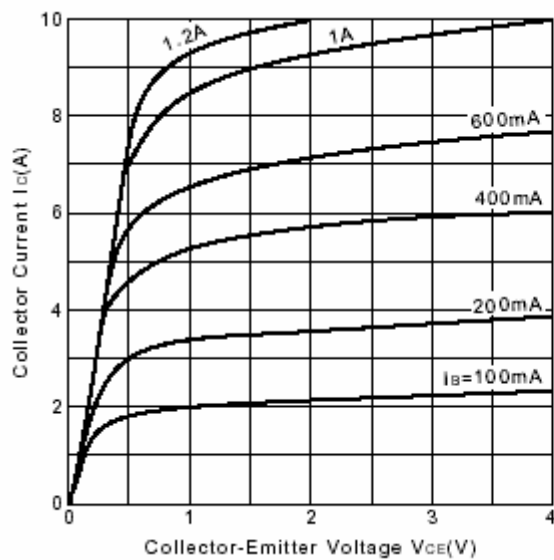


Fig.3 Static Characteristic

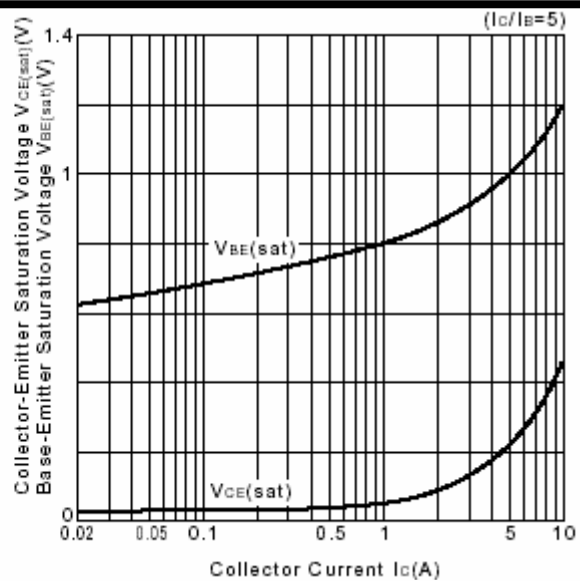
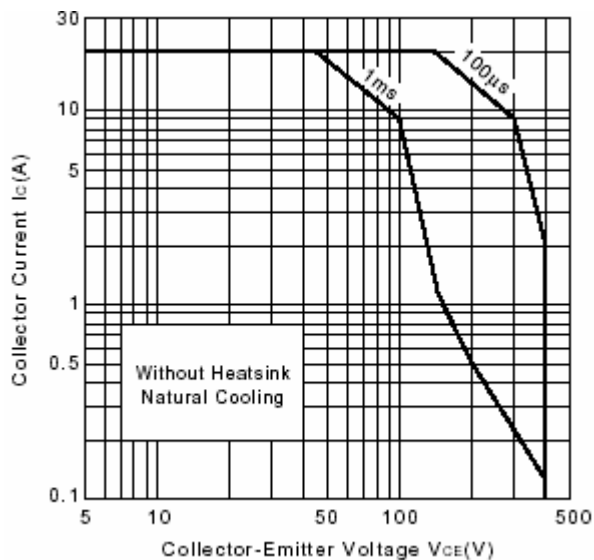
Fig.4 Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

Fig.5 Safe Operating Area

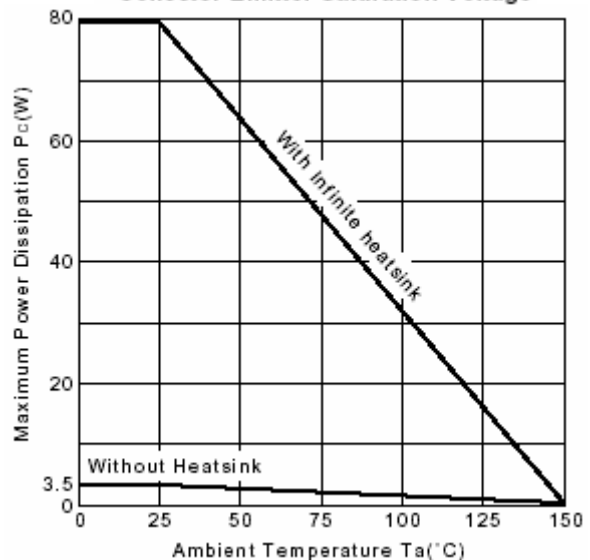
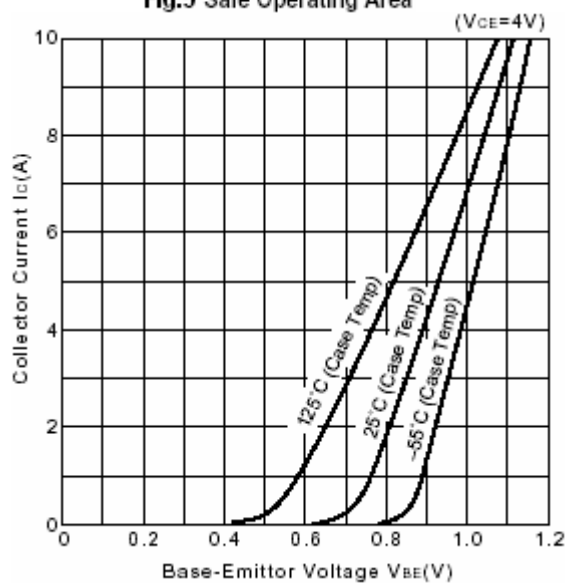
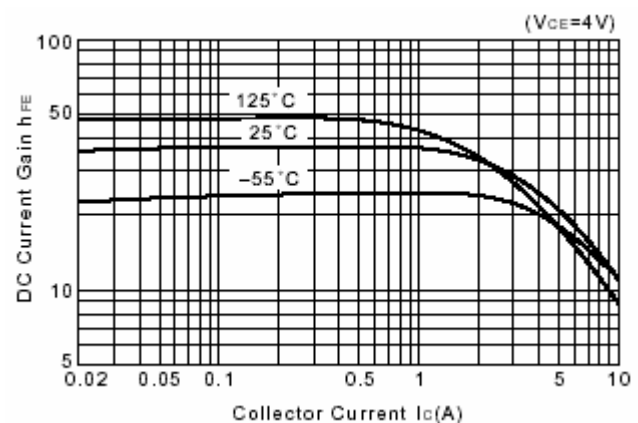
Fig.6 P_C - T_a DeratingFig.7 I_C - V_{BE} 

Fig.8 DC current Gain