

Silicon NPN Power Transistors

2SC3988

DESCRIPTION

- With TO-3PN package
- High breakdown voltage high reliability.
- Wide area of safe operation
- Fast switching speed

APPLICATIONS

- 500V/25A switching regulator applications

PINNING

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

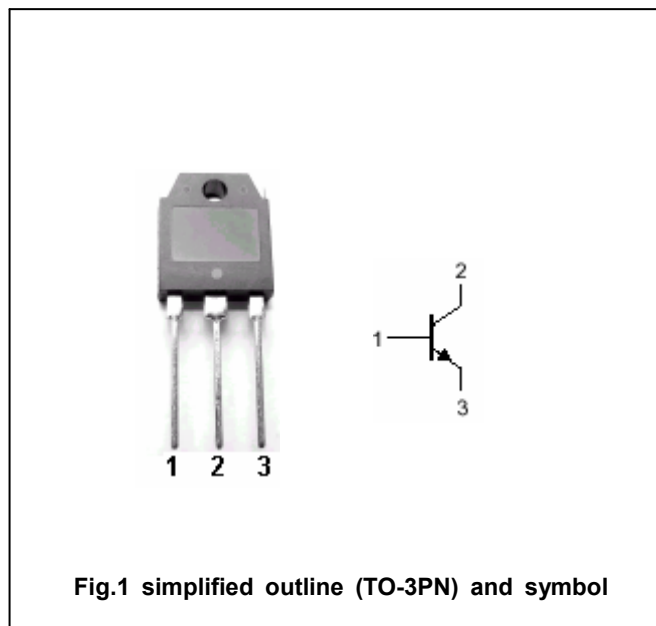


Fig.1 simplified outline (TO-3PN) and symbol

Absolute maximum ratings($T_a = \square$)

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	Open emitter	800	V
V_{CEO}	Collector-emitter voltage	Open base	500	V
V_{EBO}	Emitter-base voltage	Open collector	7	V
I_C	Collector current		25	A
I_{CP}	Collector current-peak		40	A
I_B	Base current		8	A
P_C	Collector power dissipation	$T_C = 25 \square$	150	W
T_j	Junction temperature		150	\square
T_{stg}	Storage temperature		-55~150	\square

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CHARACTERISTICS

T_j=25 °C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V _{(BR)CBO}	Collector-base breakdown voltage	I _C =1mA ; I _E =0	800			V
V _{(BR)CEO}	Collector-emitter breakdown voltage	I _C =5mA ; R _{BE} =∞	500			V
V _{(BR)EBO}	Emitter-base breakdown voltage	I _C =1mA ; I _C =0	7			V
V _{CEX(SUS)}	Collector-emitter sustaining voltage	I _C =10A; I _{B1} =-I _{B2} =2A; L=200μH	500			V
V _{CEsat}	Collector-emitter saturation voltage	I _C =12A; I _B =2.4A			1.0	V
V _{BEsat}	Base-emitter saturation voltage	I _C =12A; I _B =2.4A			1.5	V
I _{CBO}	Collector cut-off current	V _{CB} =500V; I _E =0			10	μA
I _{EBO}	Emitter cut-off current	V _{EB} =5V; I _C =0			10	μA
h _{FE-1}	DC current gain	I _C =2.4A ; V _{CE} =5V	15		50	
h _{FE-2}	DC current gain	I _C =12A ; V _{CE} =5V	8			
C _{ob}	Output capacitance	I _E =0 ; V _{CB} =10V; f=1MHz		260		pF
f _T	Transition frequency	I _C =2.4A ; V _{CE} =10V		18		MHz

Switching times

t _{on}	Turn-on time	5I _{B1} =-2.5I _{B2} = I _C =14A V _{CC} ≈200V; R _L =14.3Ω			0.5	μs
t _{stg}	Storage time				3.0	μs
t _f	Fall time				0.3	μs

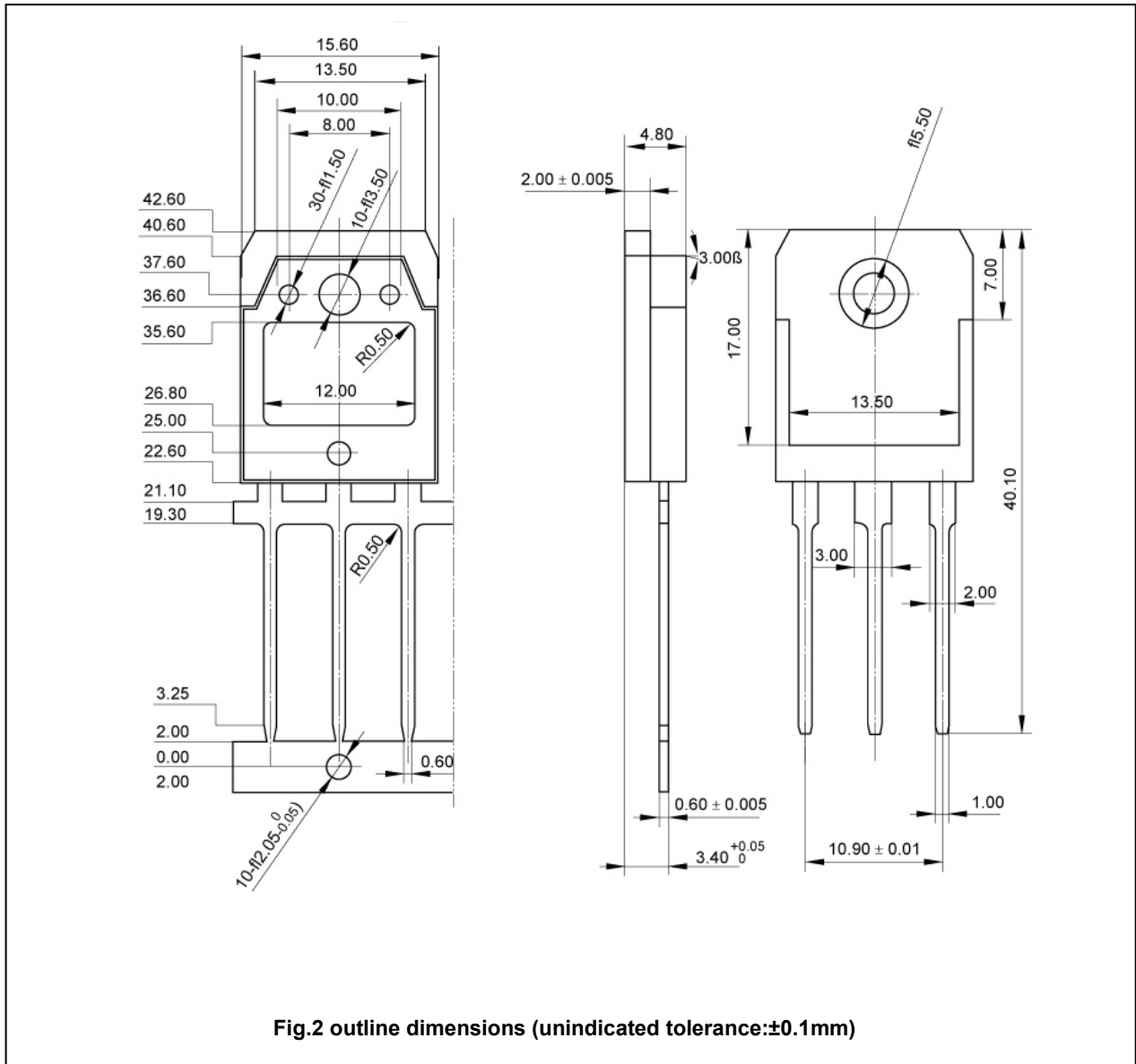
◆ h_{FE-1} Classifications

L	M	N
15-30	20-40	30-50

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PACKAGE OUTLINE



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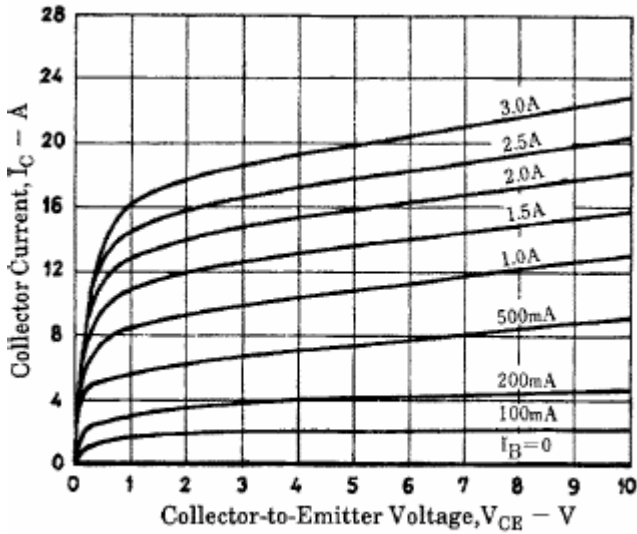


Fig.3 Static Characteristic

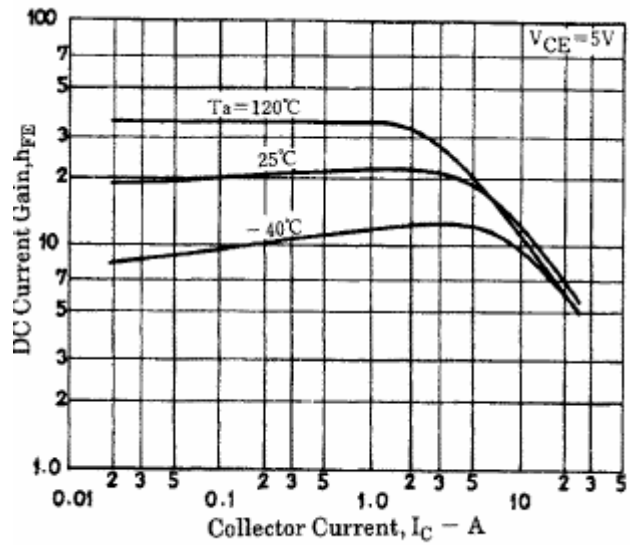


Fig.4 DC current Gain

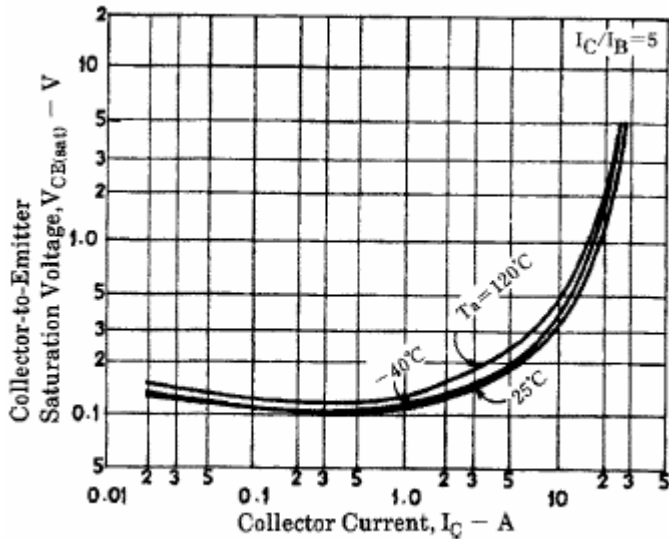


Fig.5 Collector-Emmitter Saturation Voltage

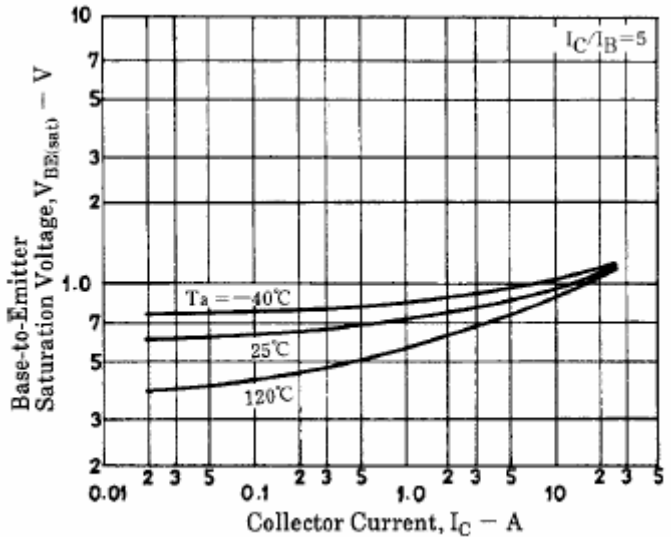


Fig.6 Base-Emmitter Saturation Voltage

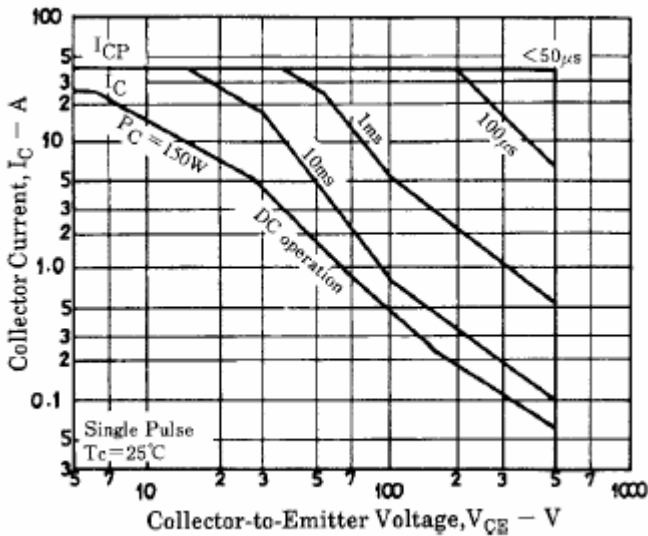


Fig.7 Safe Operating Area