

Silicon NPN Power Transistors

2SC3970 2SC3970A

DESCRIPTION

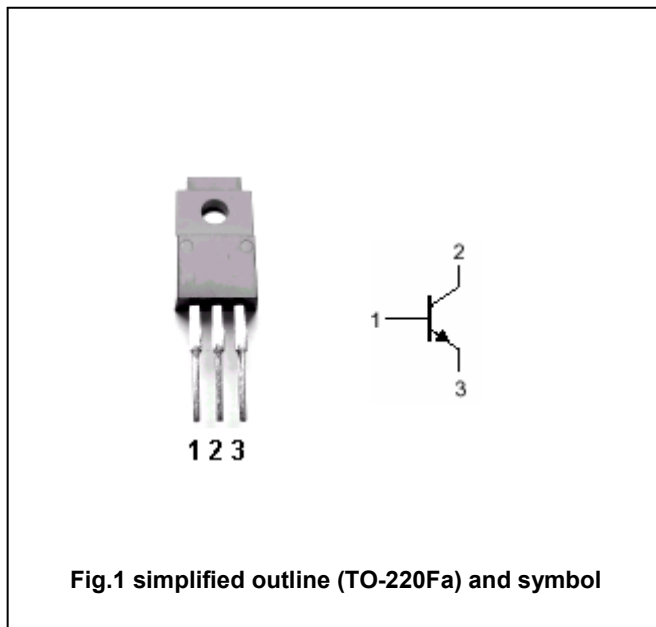
- With TO-220Fa package
- High speed switching
- High V_{CBO}
- Wide area of safe operation

APPLICATIONS

- For high breakdown voltate ,high-speed switching applications

PINNING

PIN	DESCRIPTION
1	Base
2	Collector
3	Emitter



Absolute maximum ratings ($T_a=25^\circ\text{C}$)

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	2SC3970	800	V
		2SC3970A	900	
V_{CEO}	Collector-emitter voltage	Open base	500	V
V_{EBO}	Emitter-base voltage	Open collector	8	V
I_C	Collector current (DC)		1.5	A
I_{CM}	Collector current-Peak		3.0	A
I_B	Base current		0.5	A
P_C	Collector power dissipation	$T_c=25^\circ\text{C}$	25	W
		$T_a=25^\circ\text{C}$	2	
T_j	Junction temperature		150	$^\circ\text{C}$
T_{stg}	Storage temperature		-55~150	$^\circ\text{C}$

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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 =10mA, I _B =0	500			V
V _{CEsat}	Collector-emitter saturation voltage	I _C =0.6A; I _B =0.17A			1.0	V
V _{BEsat}	Base-emitter saturation voltage	I _C =0.6A; I _B =0.17A			1.5	V
I _{CBO}	Collector cut-off current	2SC3970			0.1	mA
		2SC3970A				
I _{EBO}	Emitter cut-off current	V _{EB} =5V; I _C =0			0.1	mA
h _{FE-1}	DC current gain	I _C =0.1A; V _{CE} =5V	15			
h _{FE-2}	DC current gain	I _C =0.6A; V _{CE} =5V	8			
f _T	Transition frequency	I _C =0.1A; V _{CE} =10V; f=1MHz		20		MHz

Switching times

t _{on}	Turn-on time	I _C =0.6A; I _{B1} =0.17A I _{B2} =-0.34A; V _{CC} =200V			1.0	μs
t _s	Storage time				3.0	μs
t _f	Fall time				0.3	μs

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PACKAGE OUTLINE

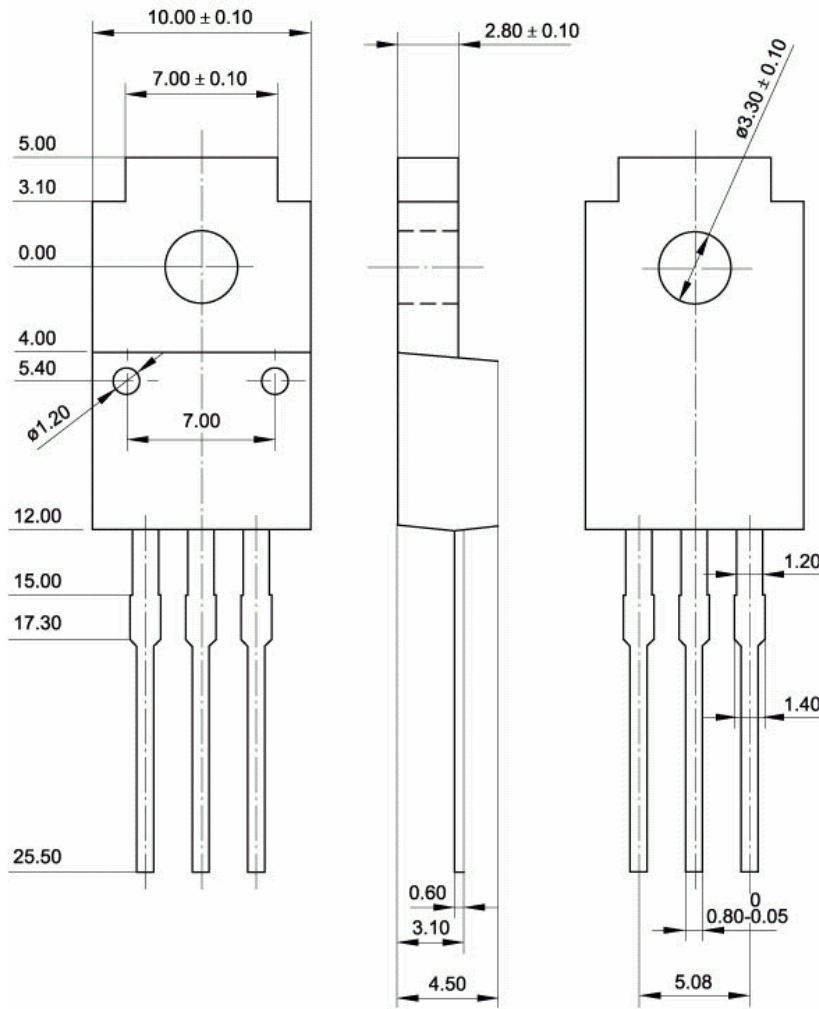


Fig.2 Outline dimensions (unindicated tolerance: ± 0.15 mm)

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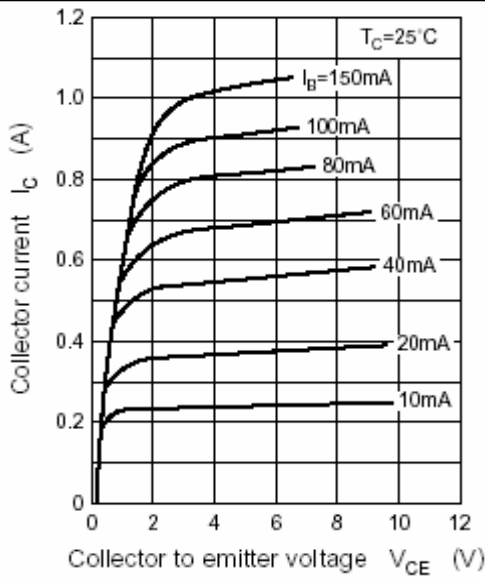


Fig.3 Static Characteristic

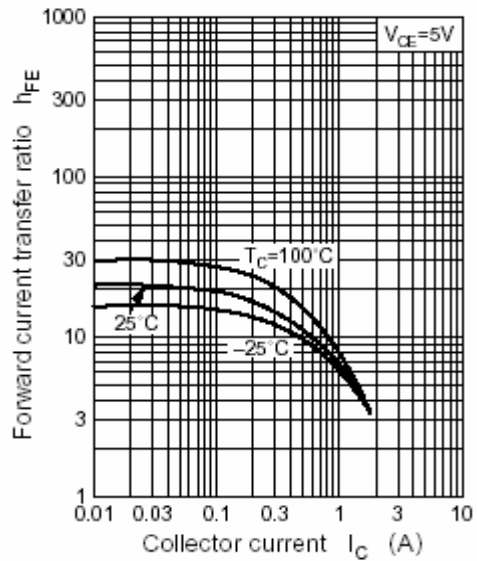


Fig.4 DC current Gain

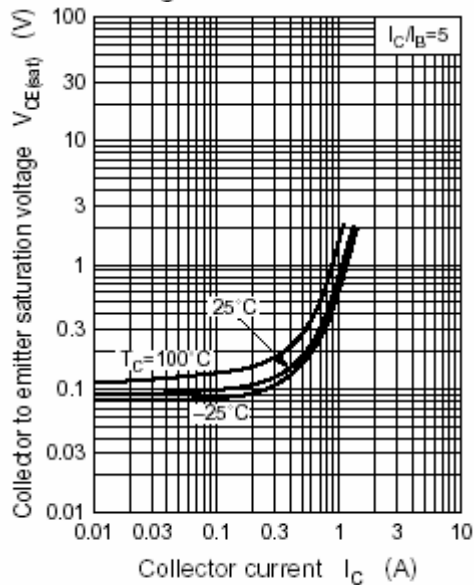


Fig.5 Collector-Emitter Saturation Voltage

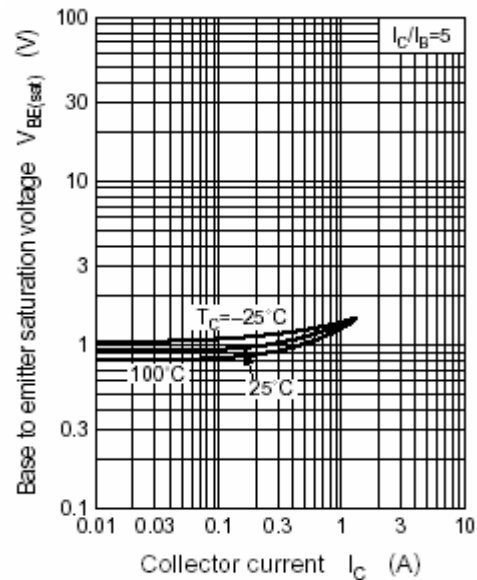


Fig.6 Base-Emitter Saturation Voltage

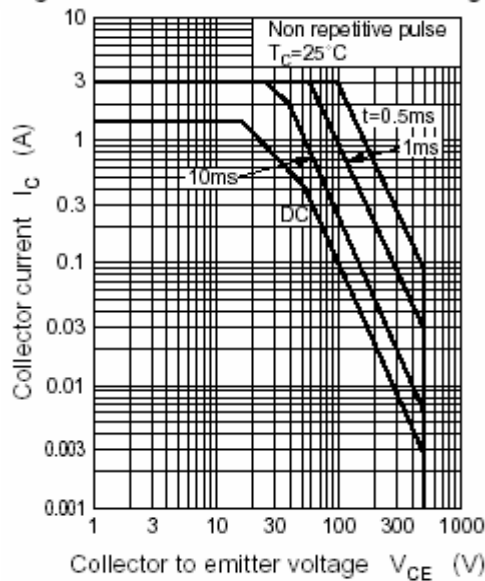


Fig.7 Safe Operating Area