

Silicon PNP Power Transistors

2SB1393 2SB1393A

DESCRIPTION

- With TO-220Fa package
- Satisfactory linearity of h_{FE}
- Low collector to emitter saturation voltage
- Complement to type 2SD1985/1985A

APPLICATIONS

- For power amplification

PINNING

PIN	DESCRIPTION
1	Base
2	Collector
3	Emitter

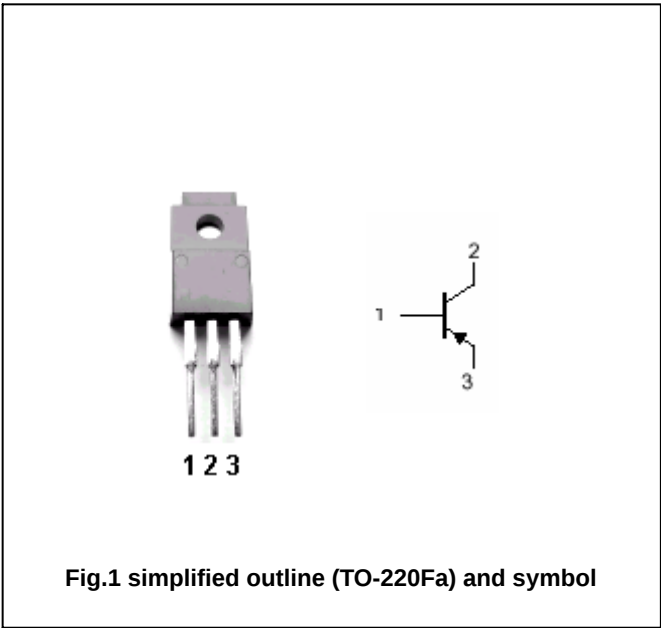


Fig.1 simplified outline (TO-220Fa) and symbol

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

SYMBOL	PARAMETER		CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	2SB1393	Open emitter	-60	V
		2SB1393A		-80	
V_{CEO}	Collector-emitter voltage	2SB1393	Open base	-60	V
		2SB1393A		-80	
V_{EBO}	Emitter-base voltage		Open collector	-5	V
I_C	Collector current (DC)			-3	A
I_{CM}	Collector current-Peak			-5	A
P_C	Collector power dissipation	$T_C=25$		25	W
		$T_a=25$		2	
T_j	Junction temperature			150	
T_{stg}	Storage temperature			-55~150	

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CHARACTERISTICS

Tj=25 unless otherwise specified

SYMBOL	PARAMETER		CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	2SB1393	$I_C=-30mA, I_B=0$	-60			V
		2SB1393A		-80			
V_{CEsat}	Collector-emitter saturation voltage		$I_C=-3A; I_B=-0.375A$			-1.2	V
V_{BE}	Base-emitter voltage		$V_{CE}=-4V; I_C=-3A$			-1.8	V
I_{CES}	Collector cut-off current	2SB1393	$V_{CE}=-60V; V_{BE}=0$			-200	μA
		2SB1393A	$V_{CE}=-80V; V_{BE}=0$				
I_{CEO}	Collector cut-off current	2SB1393	$V_{CE}=-30V; I_B=0$			-300	μA
		2SB1393A	$V_{CE}=-60V; I_B=0$				
I_{EBO}	Emitter cut-off current		$V_{EB}=-5V; I_C=0$			-1.0	mA
h_{FE-1}	DC current gain		$I_C=-1A; V_{CE}=-4V$	70		250	
h_{FE-2}	DC current gain		$I_C=-3A; V_{CE}=-4V$	10			
f_T	Transition frequency		$I_C=-0.1A; V_{CE}=-5V; f=1MHz$		20		MHz

Switching times

t_{on}	Turn-on time	$I_C=-1A; I_{B1}=-0.1A$ $I_{B2}=0.1A; V_{CC}=-50V$		0.5		μs
t_s	Storage time			1.2		μs
t_f	Fall time			0.3		μs

◆ h_{FE-1} Classifications

Q	P
70-150	120-250

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PACKAGE OUTLINE

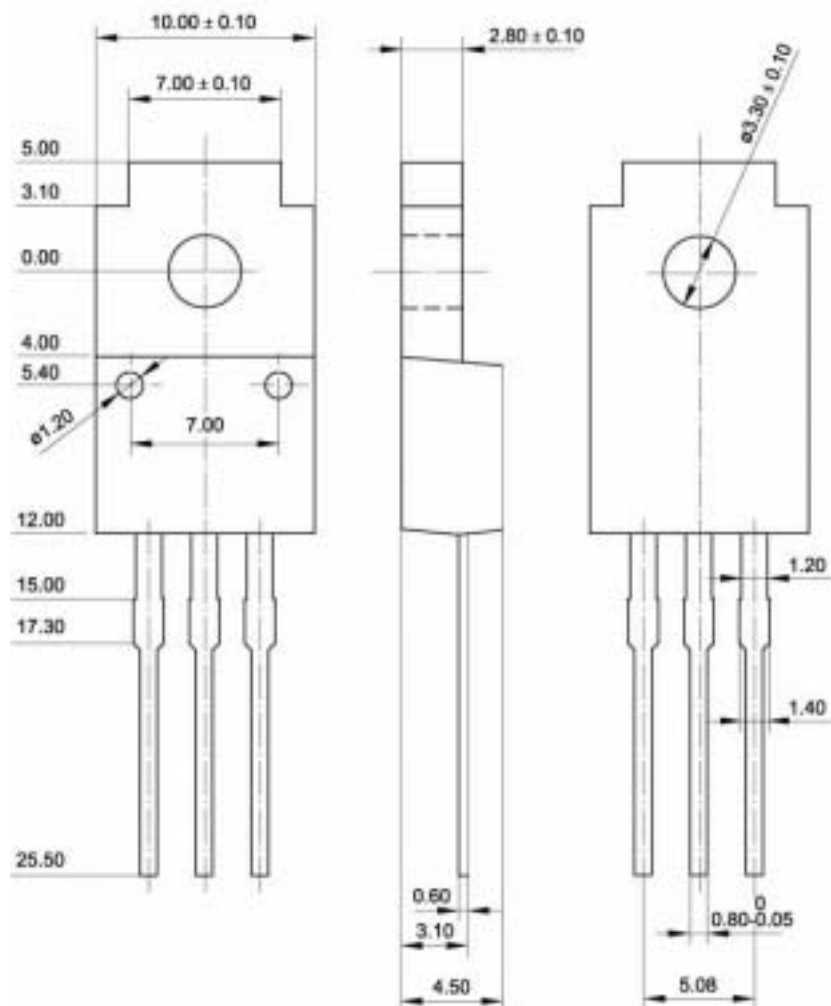


Fig.2 Outline dimensions (unindicated tolerance: ± 0.15 mm)

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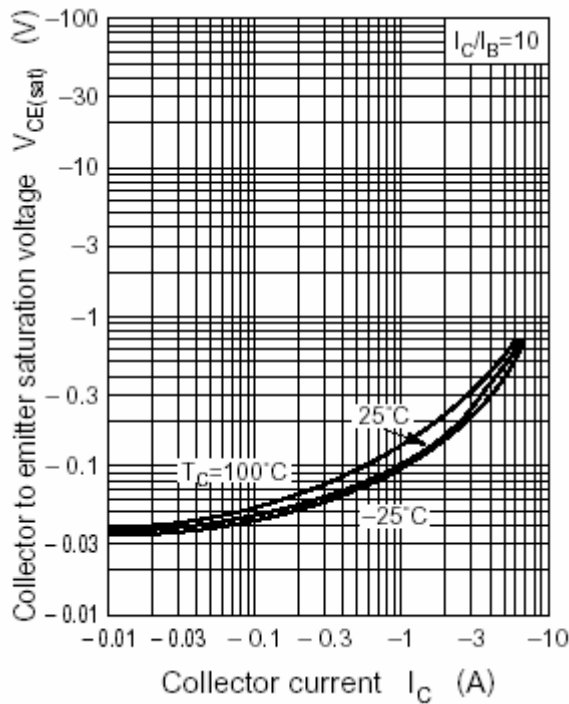


Fig.3 Collector-Emitter Saturation Voltage

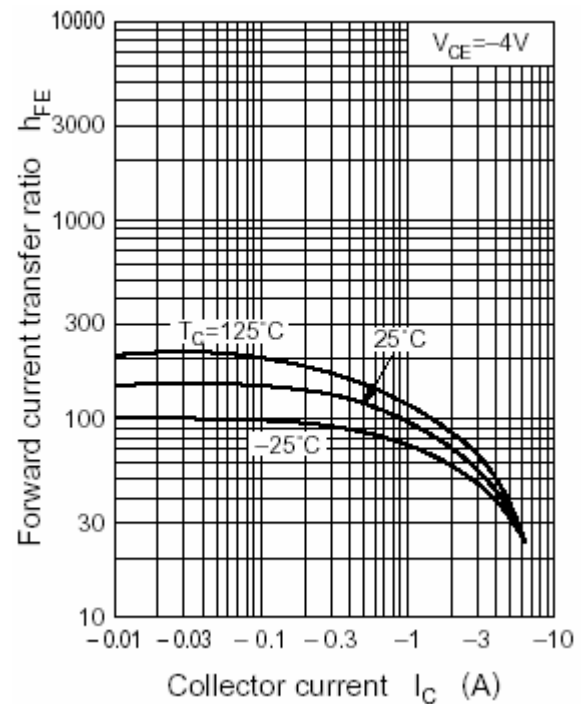


Fig.4 DC current Gain

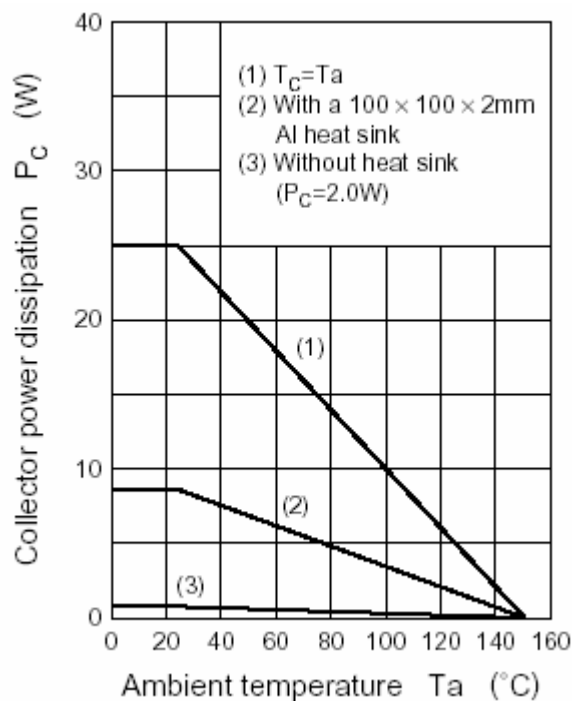
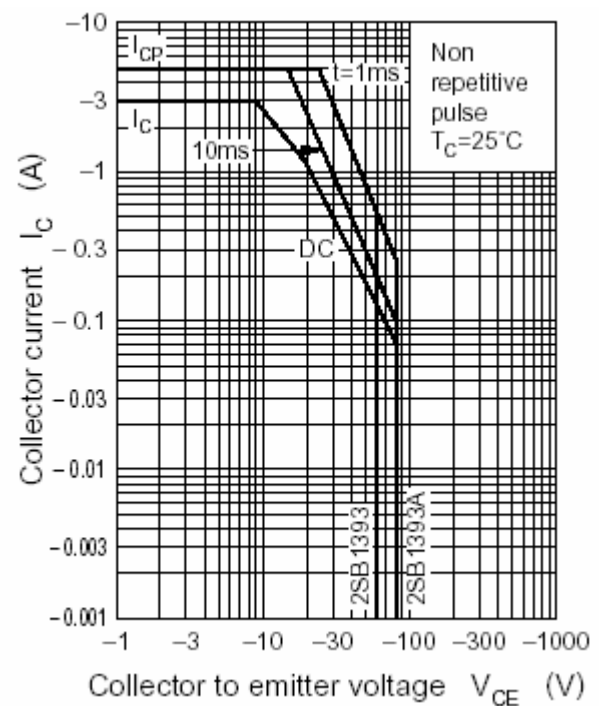
Fig.5 P_C - T_a Derating

Fig.6 Safe Operating Area