

TO-92 Plastic-Encapsulate Transistors

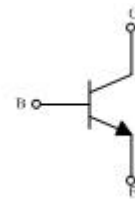
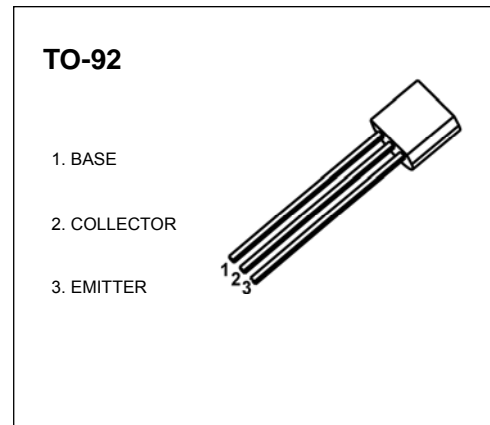
3DD13001 TRANSISTOR (NPN)

FEATURES

- Power switching applications

MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{CB0}	Collector-Base Voltage	700	V
V _{CEO}	Collector-Emitter Voltage	450	V
V _{EBO}	Emitter-Base Voltage	8	V
I _C	Collector Current -Continuous	0.2	A
P _C	Collector Power Dissipation	0.625	W
T _j	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55~150	°C



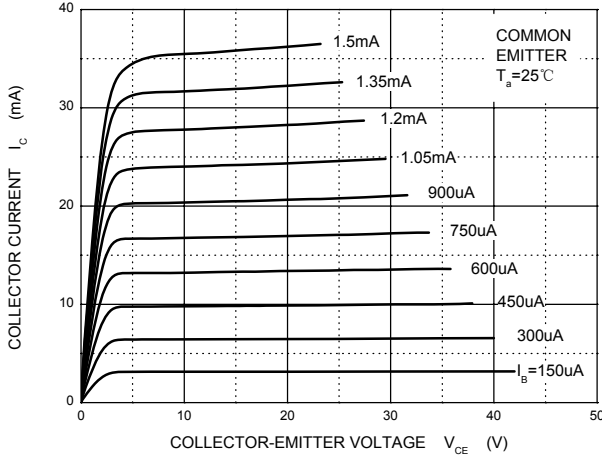
ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C =1mA, I _E =0	700			V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C =1mA, I _B =0	450			V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E =0.1mA, I _C =0	8			V
Collector cut-off current	I _{CBO}	V _{CB} =600V, I _E =0			100	μA
Collector cut-off current	I _{CEO}	V _{CE} =400V, I _B =0			100	μA
Emitter cut-off current	I _{EBO}	V _{EB} =7V, I _C =0			100	μA
DC current gain	h _{FE(1)}	V _{CE} =20V, I _C =20mA	14		29	
	h _{FE(2)}	V _{CE} =10V, I _C =0.25mA	5			
	h _{FE(3)}	V _{CE} =5V, I _C =0.5A	1			
Collector-emitter saturation voltage	V _{CE(sat)}	I _C =50mA, I _B =10mA			0.4	V
Base-emitter saturation voltage	V _{BE(sat)}	I _C =50mA, I _B =10mA			1.1	V
Transition frequency	f _T	V _{CE} =20V, I _C =20mA, f=1MHz	8			MHz
Rail time	t _r	I _C =0.1A			0.9	μs
Storage time	t _s		1.7		2.9	μs

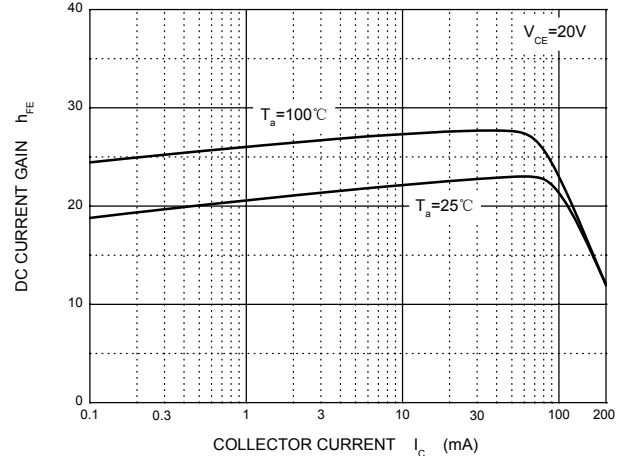
CLASSIFICATION OF h_{FE(1)}

Range	14-17	17-20	20-23	23-26	26-29
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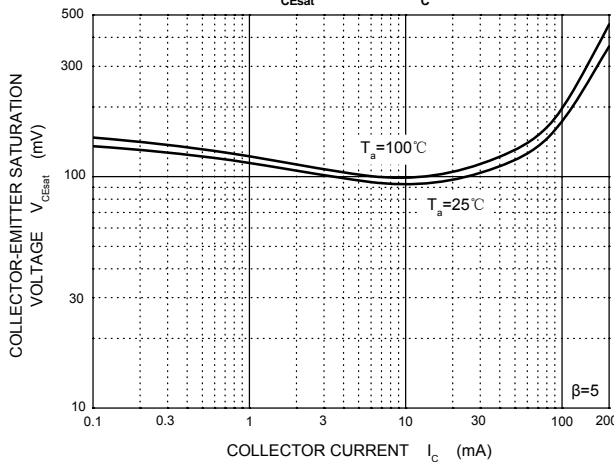
Static Characteristic



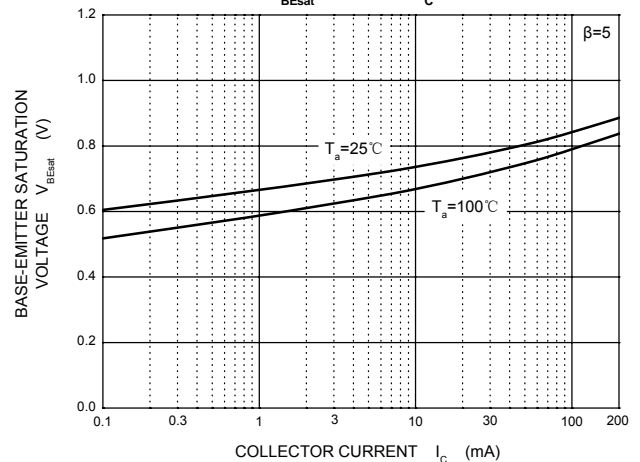
$h_{FE} - I_c$



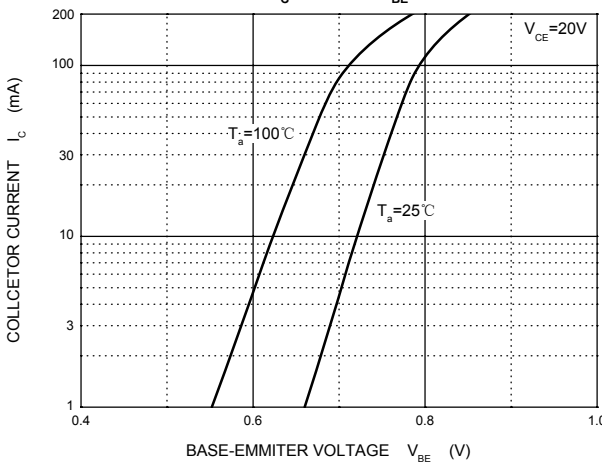
$V_{CEsat} - I_c$



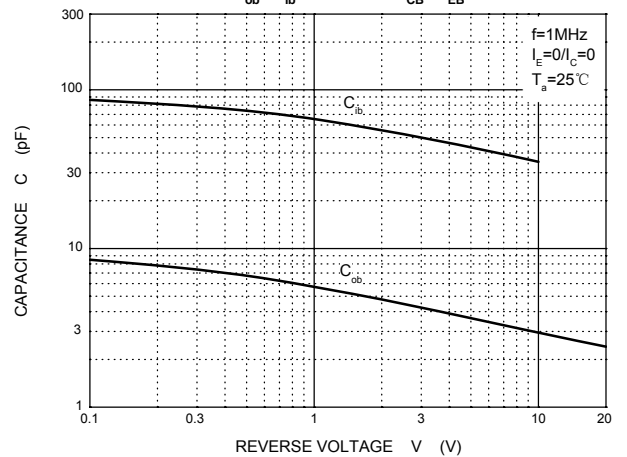
$V_{BEsat} - I_c$



$I_c - V_{BE}$



$C_{ob}/C_{ib} - V_{CB}/V_{EB}$



$P_c - T_a$

