2SD1802 TRANSISTOR (NPN)

1.BASE
2.COLLECTOR
3.EMITTER

TO-251

FEATURES

- Adoption of FBET,MBIT Processes
- Large Current Capacity and Wide ASO
- Low Collector-to-Emitter Saturation Voltage
- Fast Switching Speed

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

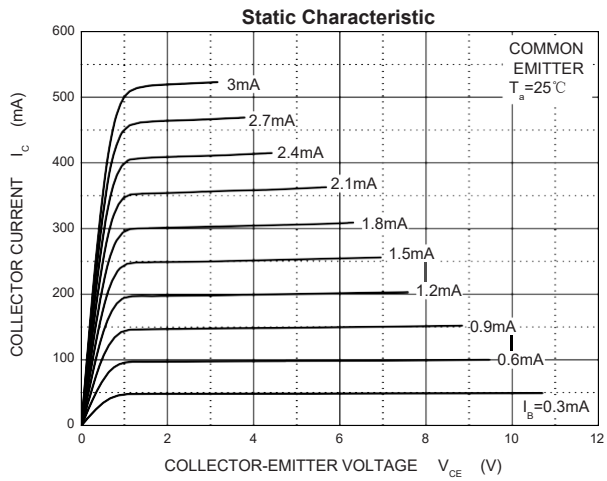
Symbol	Parameter	Value	Unit
V_{CBO}	Collector Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	50	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current –Continuous	3	A
P_C	Collector Power Dissipation	1	W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55-150	℃

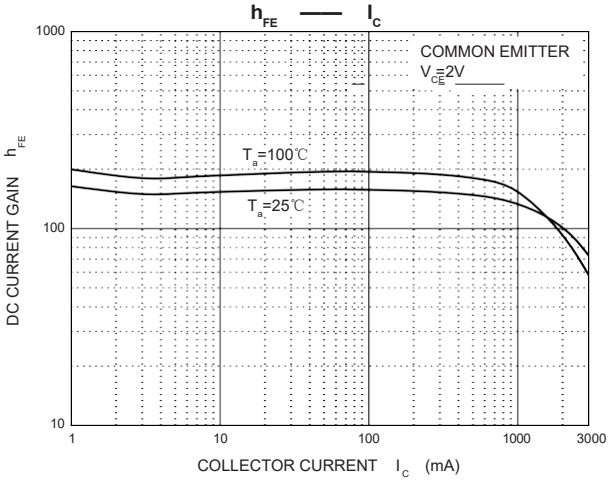
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

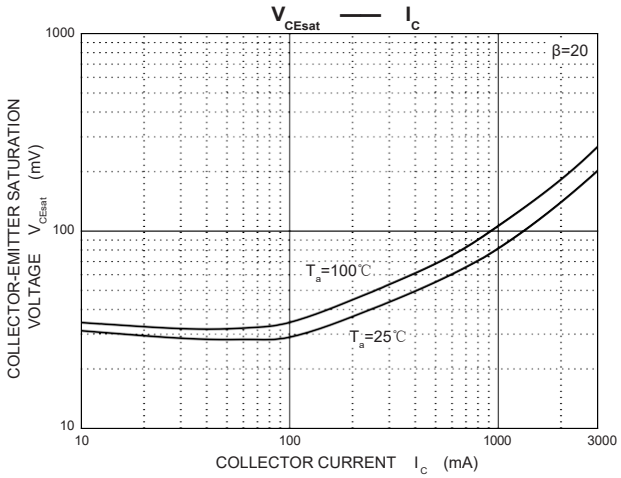
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C =10μA, I_E=0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C =1mA, I_B=0	50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=10μA, I_C =0	6			V
Collector cut-off current	I_{CBO}	V_{CB}=40V, I_E=0			1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=4V, I_C=0			1	μA
DC current gain	$h_{FE(1)}$	V_{CE}=2V, I_C=100mA	100		560	
	$h_{FE(2)}$	V_{CE}=2V, I_C=3A	35			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=2A, I_B=100mA			0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=2A, I_B=100mA			1.2	V
Transition frequency	f_T	V_{CE}=10V, I_C=50mA		150		MHz
Collector output capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		25		pF

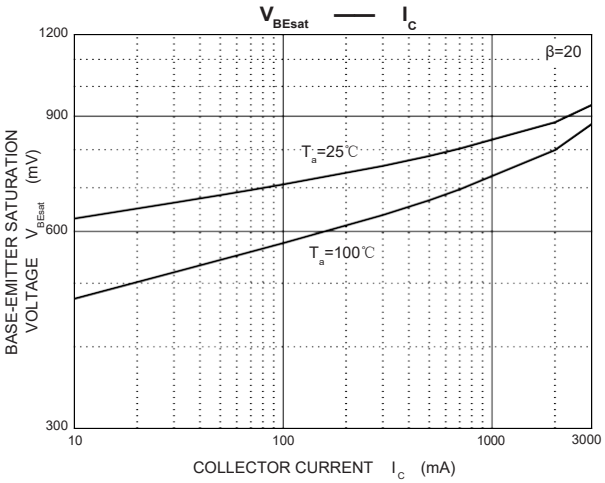
CLASSIFICATION OF $h_{FE(1)}$

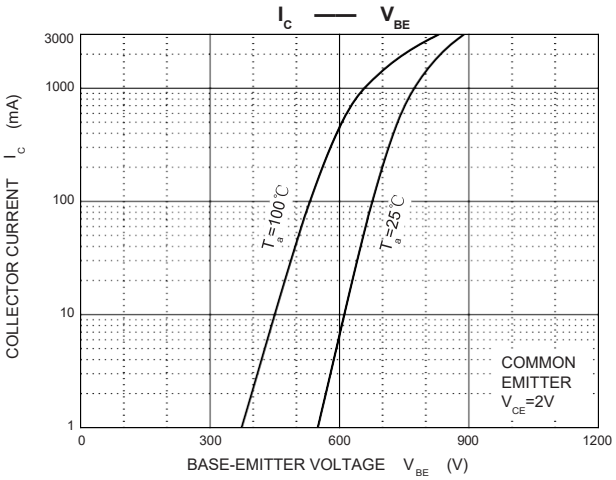
Rank	R	S	T	U
Range	100-200	140-280	200-400	280-560

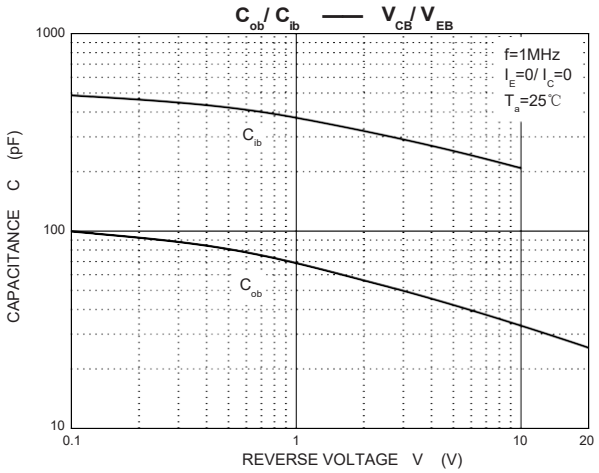

Static Characteristic
COMMON EMITTER
T_a=25℃
3mA
2.7mA
2.4mA
2.1mA
1.8mA
1.5mA
1.2mA
0.9mA
0.6mA
I_B=0.3mA
COLLECTOR CURRENT I_C (mA)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

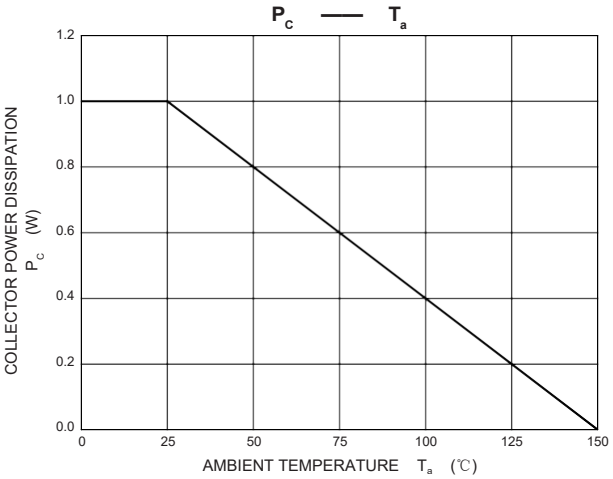

h_{FE} — I_C
COMMON EMITTER
V_{CE}=2V
T_a=100℃
T_a=25℃
DC CURRENT GAIN h_{FE}
COLLECTOR CURRENT I_C (mA)


V_{CEsat} — I_C
β=20
T_a=100℃
T_a=25℃
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
COLLECTOR CURRENT I_C (mA)


V_{BEsat} — I_C
β=20
T_a=25℃
T_a=100℃
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (mV)
COLLECTOR CURRENT I_C (mA)


I_C — V_{BE}
T_a=100℃
T_a=25℃
COMMON EMITTER
V_{CE}=2V
COLLECTOR CURRENT I_C (mA)
BASE-EMITTER VOLTAGE V_{BE} (V)


C_{ob} / C_{ib} — V_{CB} / V_{EB}
f=1MHz
I_E=0/ I_C=0
T_a=25℃
C_{ib}
C_{ob}
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)


P_C — T_a
COLLECTOR POWER DISSIPATION P_C (W)
AMBIENT TEMPERATURE T_a (℃)