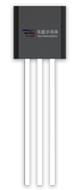
2SD1835 TRANSISTOR (NPN)



1.EMITTER

2.COLLECTOR

3.BASE

FEATURES

- Large Current Capacity.
- Low Collector-to-emitter Saturation Voltage.
- Fast Switching Time.

APPLICATIONS

- Voltage Regulators, Relay Drivers, Lamp Drivers, Electrical Equipment.

ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
2SD1835	TO-92	Bulk	1000pcs/Bag
2SD1835-TA	TO-92	Tape	2000pcs/Box

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

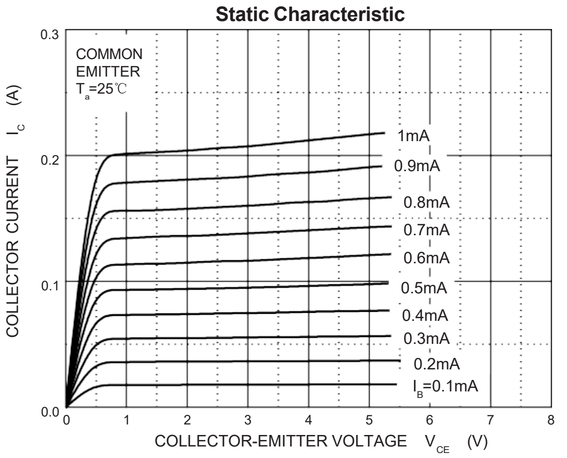
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	50	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	2	A
P_C	Collector Power Dissipation	750	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	166	℃/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	℃

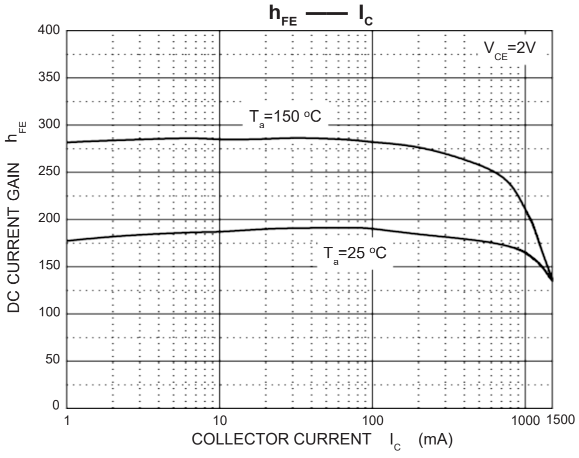
T_a=25℃ unless otherwise specified

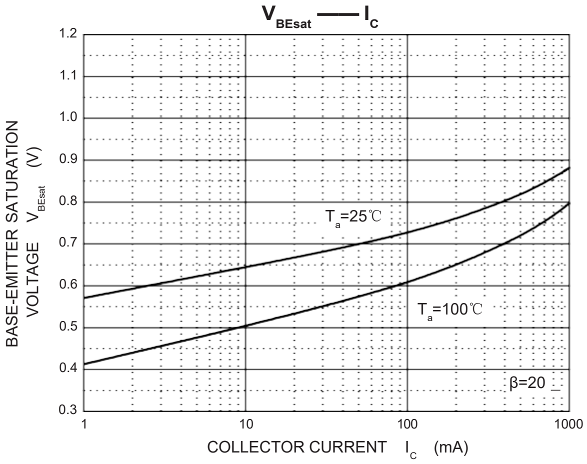
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C= 0.01mA,I_E=0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA,I_B=0	50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=0.01mA,I_C=0	6			V
Collector cut-off current	I_{CBO}	V_{CB}=50V,I_E=0			0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=4V,I_C=0			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=1.5A	40			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=1A,I_B=50mA			0.4	V
Base-emitter saturation voltage	$V_{BE\ (sat)}$	I_C=1A,I_B=50mA			1.2	V
Collector output capacitance	C_{ob}	V_{CB}=10V,I_E=0, f=1MHz		12		pF
Transition frequency	f_T	V_{CE}=10V,I_C=50mA		150		MHz

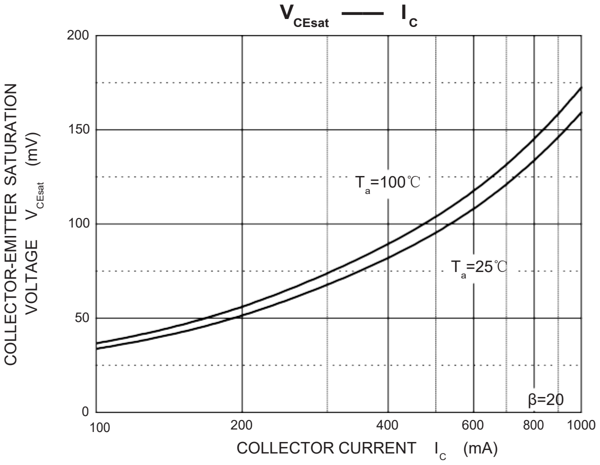
CLASSIFICATION OF $h_{FE(1)}$

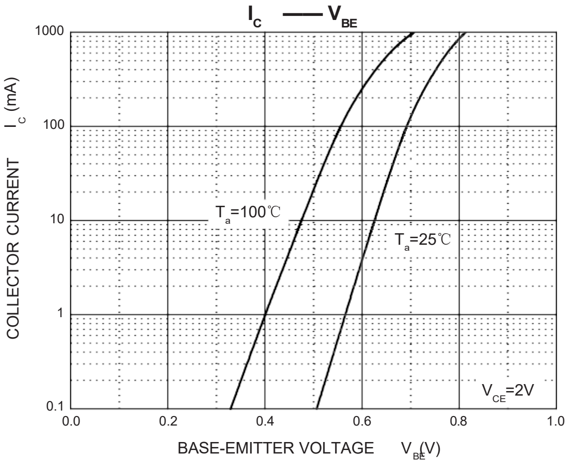
RANK	R	S	T	U
RANGE	100-200	140-280	200-400	280-560

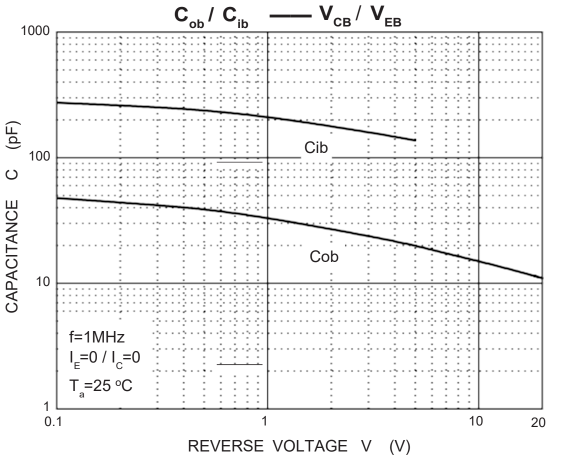

Static Characteristic
COMMON
EMITTER
T_a=25℃
1mA
0.9mA
0.8mA
0.7mA
0.6mA
0.5mA
0.4mA
0.3mA
0.2mA
I_B=0.1mA
0.3
0.2
0.1
0.0
0
1
2
3
4
5
6
7
8
COLLECTOR CURRENT I_C (A)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

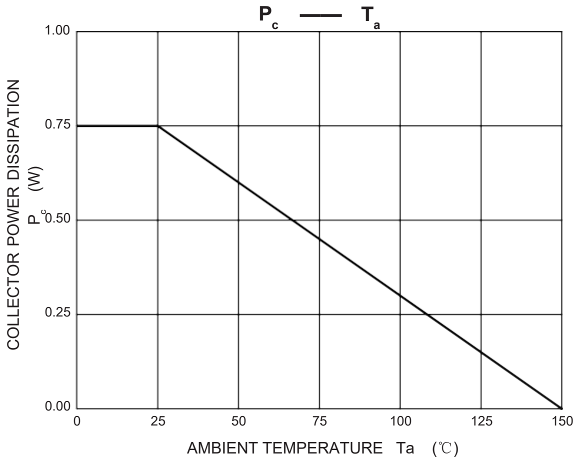

h_{FE} — I_C
V_{CE}=2V
T_a=150 °C
T_a=25 °C
400
350
300
250
200
150
100
50
0
1
10
100
1000
1500
DC CURRENT GAIN h_{FE}
COLLECTOR CURRENT I_C (mA)


V_{BEsat} — I_C
T_a=25℃
T_a=100℃
β=20
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
1
10
100
1000
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (V)
COLLECTOR CURRENT I_C (mA)


V_{CEsat} — I_C
T_a=100℃
T_a=25℃
β=20
200
150
100
50
0
100
200
400
600
800
1000
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
COLLECTOR CURRENT I_C (mA)


I_C — V_{BE}
T_a=100℃
T_a=25℃
V_{CE}=2V
1000
100
10
1
0.1
0.0
0.2
0.4
0.6
0.8
1.0
COLLECTOR CURRENT I_C (mA)
BASE-EMITTER VOLTAGE V_{BE}(V)


C_{ob} / C_{ib} — V_{CB} / V_{EB}
Cib
Cob
f=1MHz
I_E=0 / I_C=0
T_a=25 °C
1000
100
10
1
0.1
1
10
20
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)


P_c — T_a
1.00
0.75
0.50
0.25
0.00
0
25
50
75
100
125
150
COLLECTOR POWER DISSIPATION P_c (W)
AMBIENT TEMPERATURE Ta (℃)