2SD965 TRANSISTOR (NPN)

1.BASE
2.COLLECTOR
3.EMITTER

SOT-89

FEATURES

- Low Collector-Emitter Saturation Voltage
- Large Collector Power Dissipation and Current
- Mini Power Type Package

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

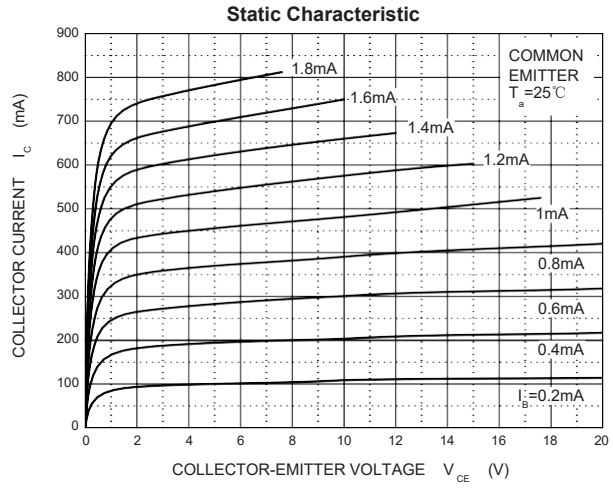
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	20	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current	5	A
P_C	Collector Power Dissipation	750	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	167	℃/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	℃

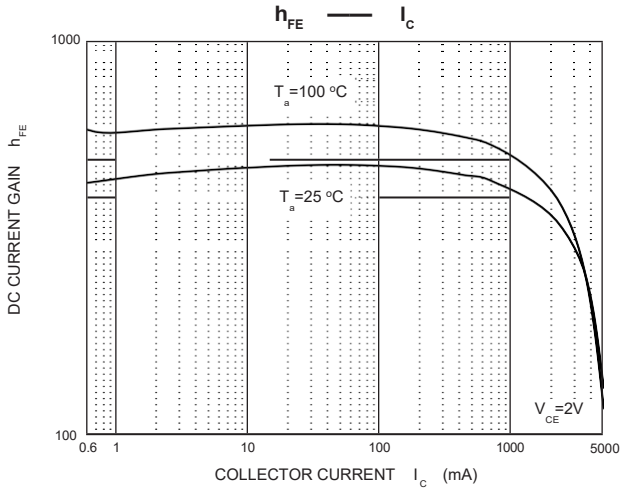
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

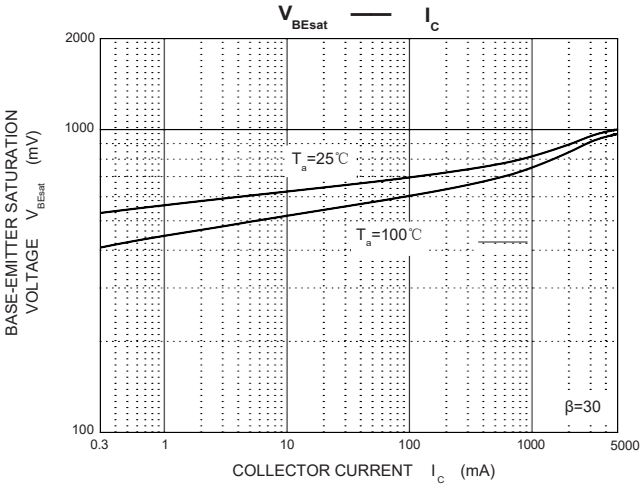
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100μA,I_E=0	40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA,I_B=0	20			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=10μA,I_C=0	7			V
Collector cut-off current	I_{CBO}	V_{CB}=10V,I_E=0			0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=7V,I_C=0			0.1	μA
DC current gain	$h_{FE(1)}$	V_{CE}=2V, I_C=1mA		200		
	$h_{FE(2)}$	V_{CE}=2V, I_C=500mA	230		800	
	$h_{FE(3)}$	V_{CE}=2V, I_C=2A	150			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=3A,I_B=0.1A			1	V
Transition frequency	f_T	VCE=6V,IC=50mA, f=200MHz		150		MHz
Collector output capacitance	C_{ob}	V_{CB}=20V, I_E=0, f=1MHz			50	pF

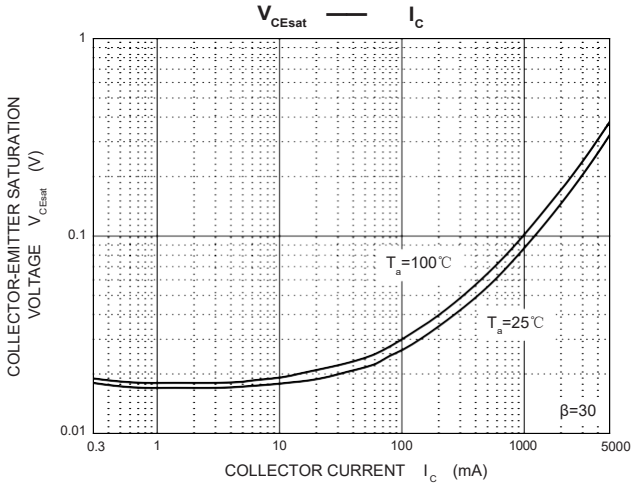
CLASSIFICATION OF $h_{FE(2)}$

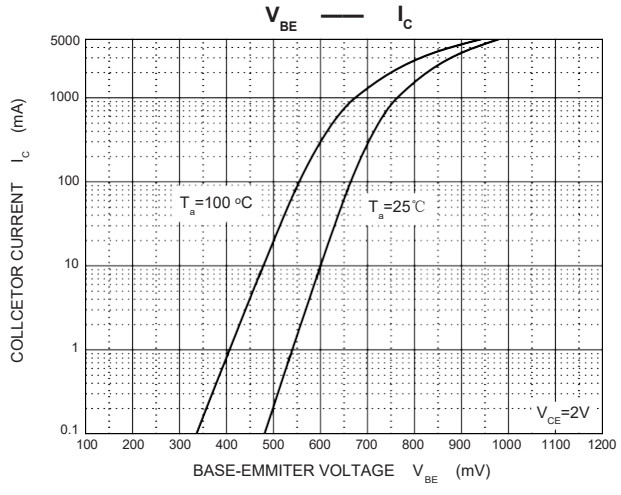
RANK	Q	R	S
RANGE	230 - 380	340 - 600	560 - 800

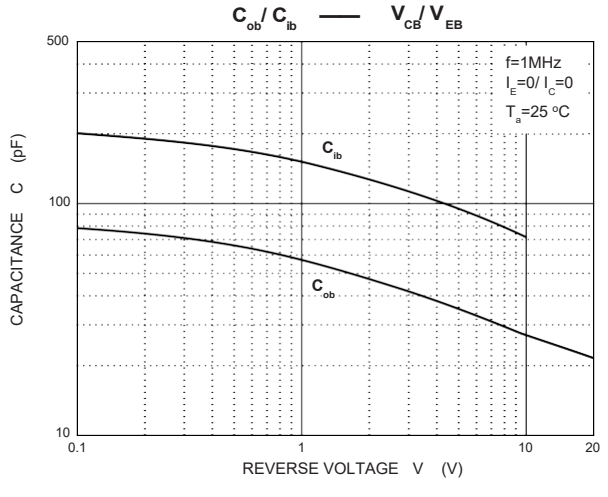

Static Characteristic
COMMON EMITTER
T a=25℃
1.8mA
1.6mA
1.4mA
1.2mA
1mA
0.8mA
0.6mA
0.4mA
I B=0.2mA
COLLECTOR CURRENT I C (mA)
COLLECTOR-EMITTER VOLTAGE V CE (V)

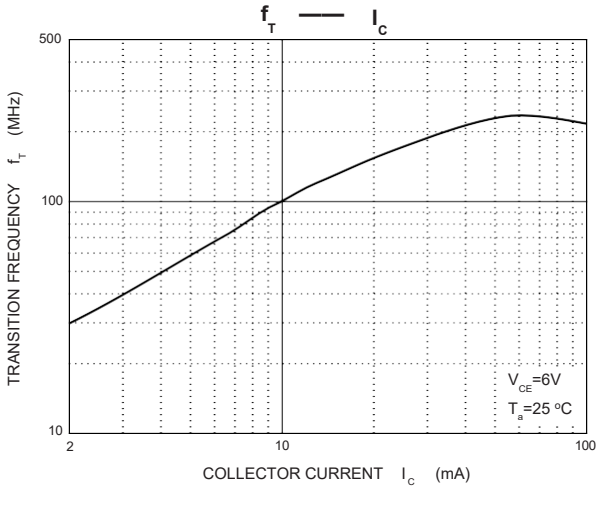

h FE — I C
T a=100 °C
T a=25 °C
V CE=2V
DC CURRENT GAIN h FE
COLLECTOR CURRENT I C (mA)

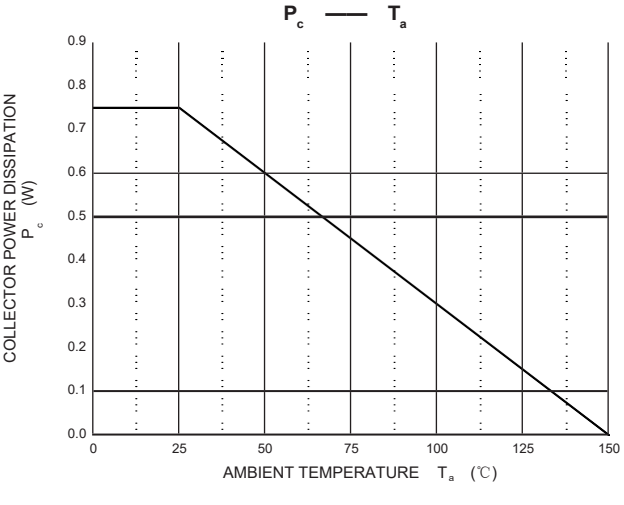

V BEsat — I C
T a=25℃
T a=100℃
β=30
BASE-EMITTER SATURATION VOLTAGE V BEsat (mV)
COLLECTOR CURRENT I C (mA)


V CEsat — I C
T a=100℃
T a=25℃
β=30
COLLECTOR-EMITTER SATURATION VOLTAGE V CEsat (V)
COLLECTOR CURRENT I C (mA)


V BE — I C
T a=100 °C
T a=25℃
V CE=2V
COLLCETOR CURRENT I C (mA)
BASE-EMMITER VOLTAGE V BE (mV)


C ob / C ib — V CB / V EB
f=1MHz
I E=0/ I C=0
T a=25 °C
C ib
C ob
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)


f T — I C
V CE=6V
T a=25 °C
TRANSITION FREQUENCY f T (MHz)
COLLECTOR CURRENT I C (mA)


P c — T a
COLLECTOR POWER DISSIPATION P c (W)
AMBIENT TEMPERATURE T a (℃)