2SD1899 TRANSISTOR (NPN)

1.BASE
2.COLLECTOR
3.EMITTER

TO-252

FEATURES

- Low $V_{CE(sat)}$
- High Transition Frequency

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	60	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current	3	A
P_C	Collector Power Dissipation	1	W
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	125	℃/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	℃

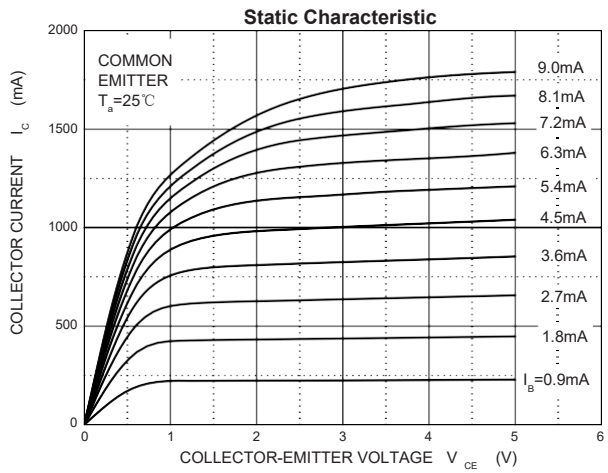
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

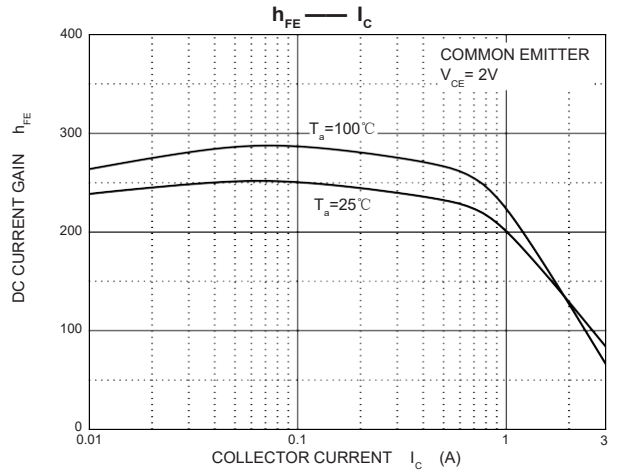
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100μA,I_E=0	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=1mA,I_B=0	60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=100μA,I_C=0	7			V
Collector cut-off current	I_{CBO}	V_{CB}=60V,I_E=0			10	μA
Emitter cut-off current	I_{EBO}	V_{EB}=7V,I_C=0			10	μA
DC current gain	$h_{FE(1)}$*	V_{CE}=2V, I_C=0.2A	60			
	$h_{FE(2)}$*	V_{CE}=2V, I_C=0.6A	100		400	
	$h_{FE(3)}$*	V_{CE}=2V, I_C=2A	50			
Collector-emitter saturation voltage	$V_{CE(sat)}$*	I_C=1.5A,I_B=0.15A			0.25	V
Base-emitter saturation voltage	$V_{BE(sat)}$*	I_C=1.5A,I_B=0.15A			1.2	V
Collector output capacitance	C_{ob}	V_{CB}=10V,I_E=0, f=1MHz		30		pF
Transition frequency	f_T	V_{CE}=5V,I_C=1.5A		120		MHz

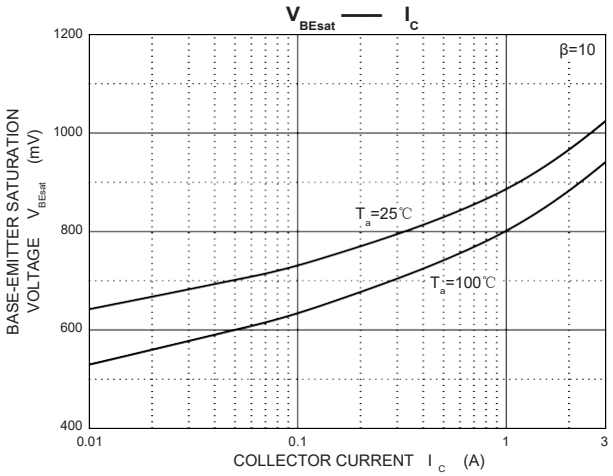
*Pulse test: pulse width ≤350μs, duty cycle≤ 2.0%.

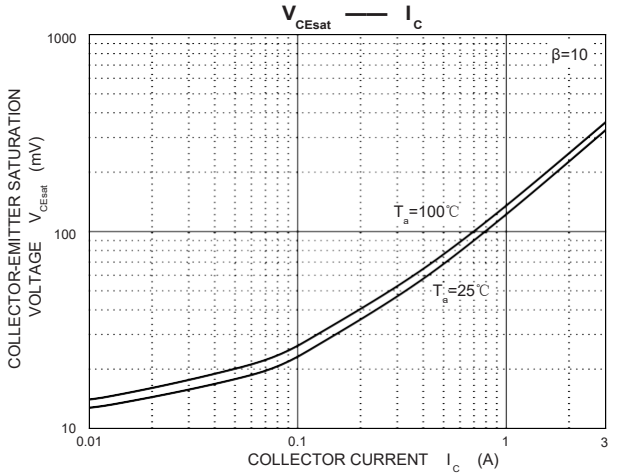
CLASSIFICATION OF $h_{FE(2)}$

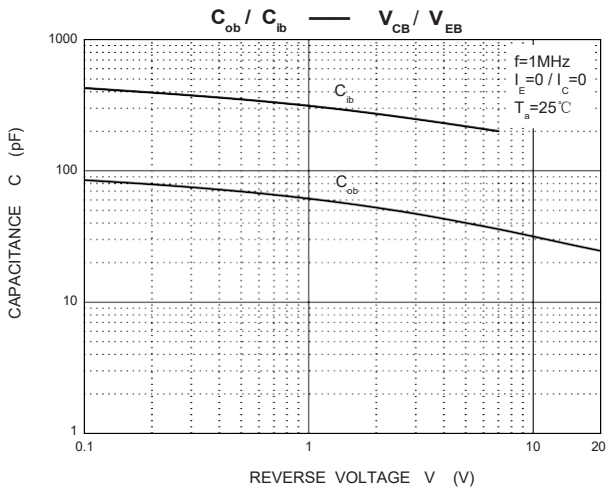
RANK	M	L	K
RANGE	100-200	160-320	200-400

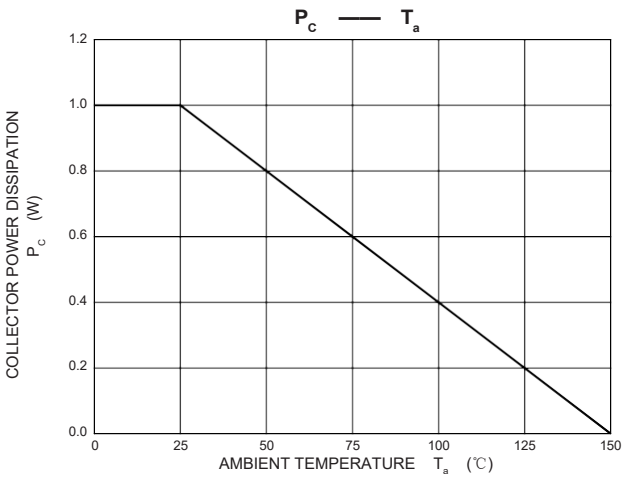

Static Characteristic
COMMON EMITTER
Ta=25℃
9.0mA
8.1mA
7.2mA
6.3mA
5.4mA
4.5mA
3.6mA
2.7mA
1.8mA
IB=0.9mA
COLLECTOR CURRENT IC (mA)
COLLECTOR-EMITTER VOLTAGE VCE (V)


hFE — IC
COMMON EMITTER
VCE= 2V
Ta=100℃
Ta=25℃
DC CURRENT GAIN hFE
COLLECTOR CURRENT IC (A)


VBEsat — IC
β=10
Ta=25℃
Ta=100℃
BASE-EMITTER SATURATION VOLTAGE VBEsat (mV)
COLLECTOR CURRENT IC (A)


VCEsat — IC
β=10
Ta=100℃
Ta=25℃
COLLECTOR-EMITTER SATURATION VOLTAGE VCEsat (mV)
COLLECTOR CURRENT IC (A)


Cob / Cib — VCB / VEB
f=1MHz
IE=0 / IC=0
Ta=25℃
Cib
Cob
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)


PC — Ta
COLLECTOR POWER DISSIPATION PC (W)
AMBIENT TEMPERATURE Ta (℃)