2SD2142 TRANSISTOR (NPN)

1.BASE
2.COLLECTOR
3.EMITTER

SOT-23-3

FEATURES

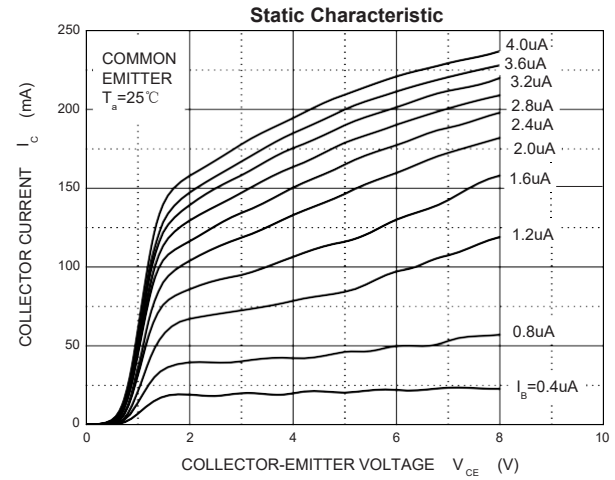
- Darlington Connection for a High h_{FE}
- High Input Impedance

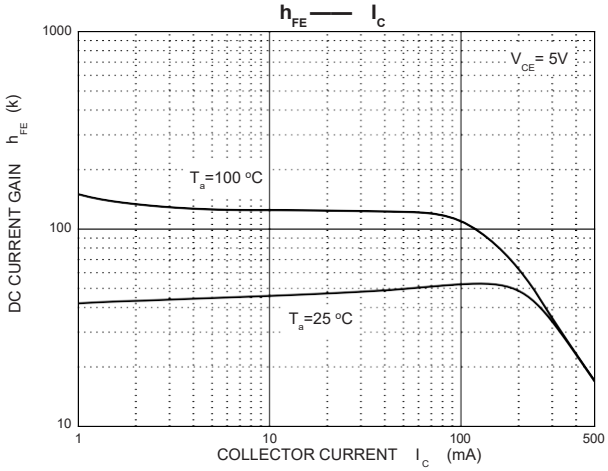
MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

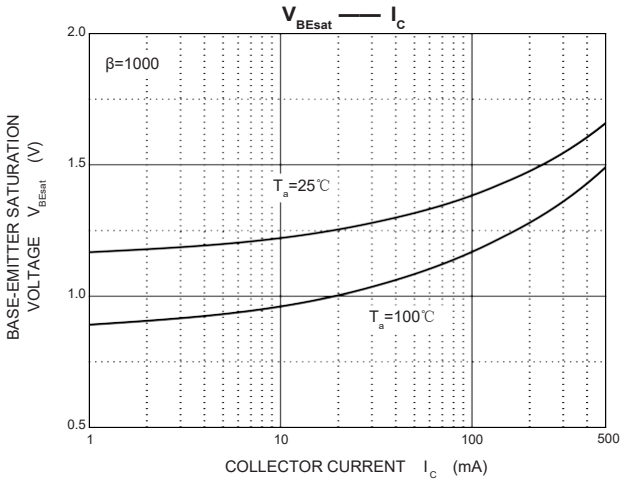
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	32	V
V_{EBO}	Emitter-Base Voltage	12	V
I_C	Collector Current	300	mA
P_C	Collector Power Dissipation	200	mW
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	625	℃/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55～+150	℃

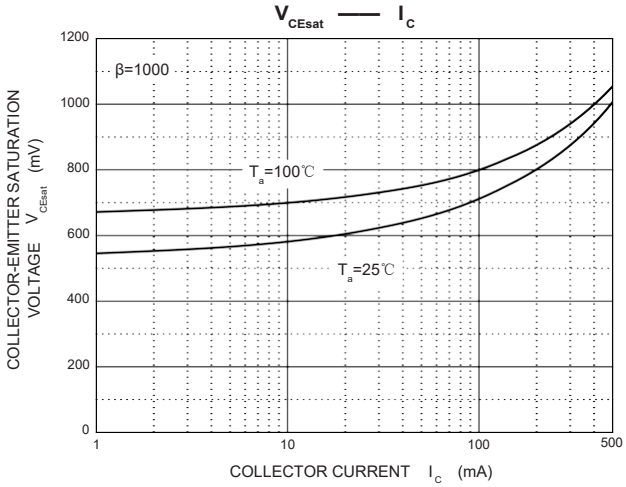
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

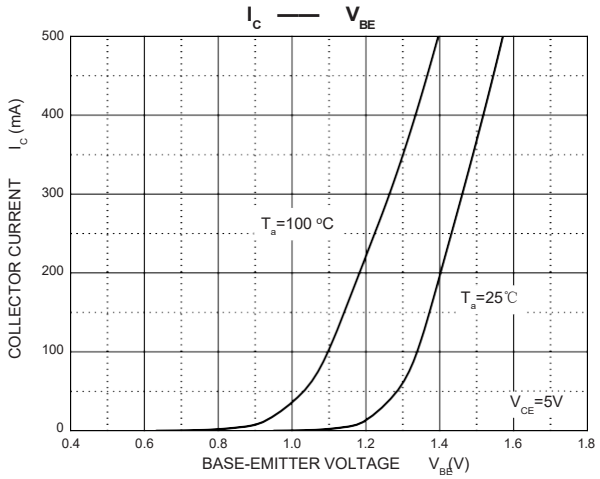
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100μA, I_E=0	40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=10mA, I_B=0	32			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=100μA, I_C=0	12			V
Collector cut-off current	I_{CBO}	V_{CB}=30V, I_E=0			0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=12V, I_C=0			0.1	μA
DC current gain	h_{FE}	V_{CE}=3V, I_C=100mA	5000			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=200mA, I_B=0.2mA			1.4	V
Transition frequency	f_T	V_{CE}=5V,I_C=10mA, f=100MHz		200		MHz
Collector output capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		2.5		pF

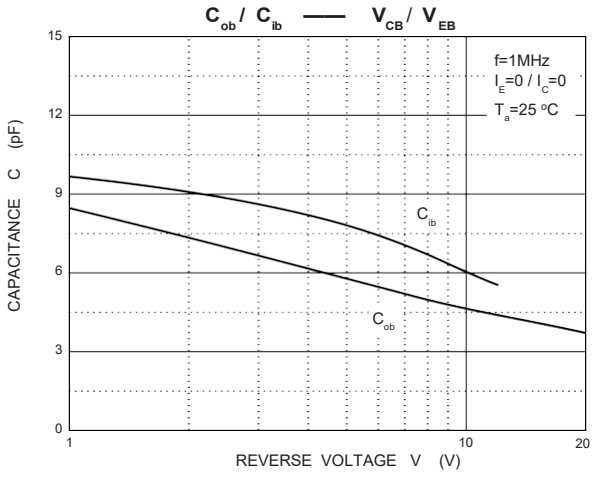

Static Characteristic
COMMON
EMITTER
Ta=25℃
4.0uA
3.6uA
3.2uA
2.8uA
2.4uA
2.0uA
1.6uA
1.2uA
0.8uA
IB=0.4uA
COLLECTOR CURRENT IC (mA)
COLLECTOR-EMITTER VOLTAGE VCE (V)

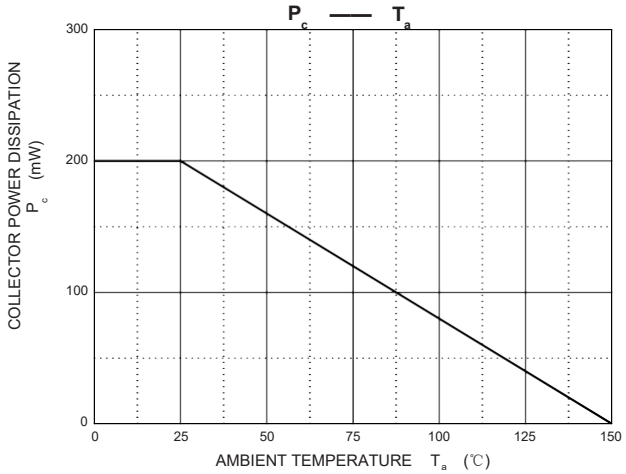

hFE —— IC
VCE= 5V
Ta=100 °C
Ta=25 °C
DC CURRENT GAIN hFE (k)
COLLECTOR CURRENT IC (mA)


VBEsat —— IC
β=1000
Ta=25℃
Ta=100℃
BASE-EMITTER SATURATION VOLTAGE VBEsat (V)
COLLECTOR CURRENT IC (mA)


VCEsat —— IC
β=1000
Ta=100℃
Ta=25℃
COLLECTOR-EMITTER SATURATION VOLTAGE VCEsat (mV)
COLLECTOR CURRENT IC (mA)


IC —— VBE
Ta=100 °C
Ta=25℃
VCE=5V
COLLECTOR CURRENT IC (mA)
BASE-EMITTER VOLTAGE VBE(V)


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


Pc —— Ta
COLLECTOR POWER DISSIPATION Pc (mW)
AMBIENT TEMPERATURE Ta (℃)