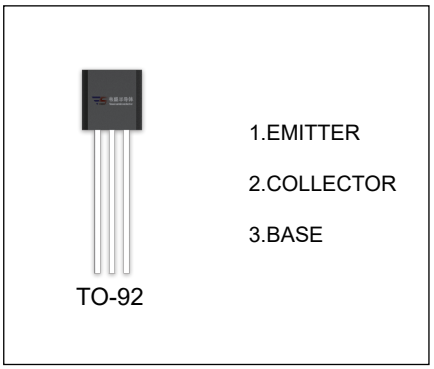
2SD1616A TRANSISTOR (NPN)



FEATURE

Power dissipation

ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
2SD1616A	TO-92	Bulk	1000pcs/Bag
2SD1616A-TA	TO-92	Tape	2000pcs/Box

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	120	V
V_{CEO}	Collector-Emitter Voltage	60	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	1	A
P_C	Collector Power Dissipation	0.75	W
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	167	℃ /W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55~ +150	℃

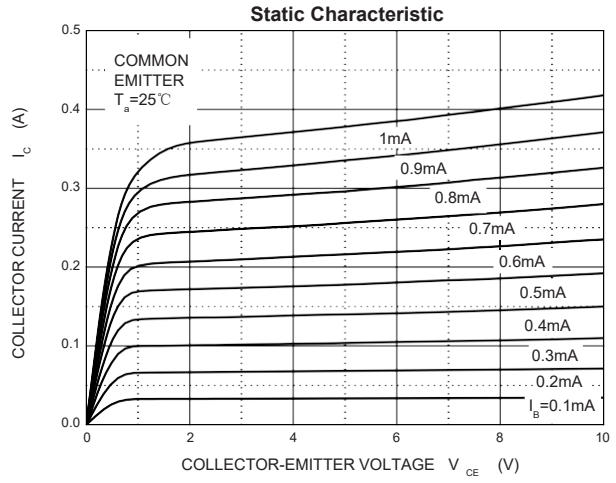
T_a=25℃ unless otherwise specified

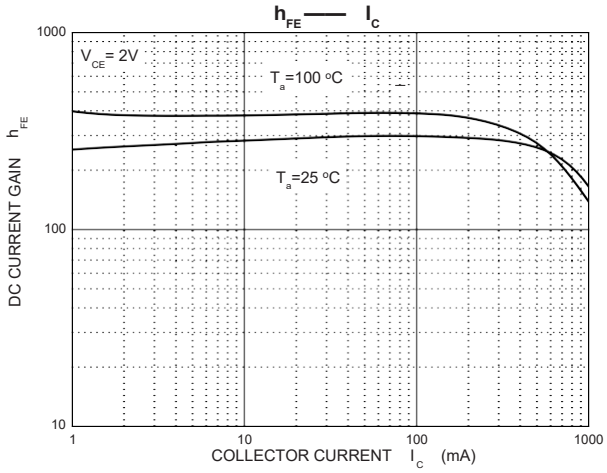
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C= 10μA , I_E=0	120			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C= 2mA , I_B=0	60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E= 10μA, I_C=0	6			V
Collector cut-off current	I_{CBO}	V_{CB}=60V, I_E=0			0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=6V, I_C=0			0.1	μA
DC current gain	h_{FE1}	V_{CE}=2 V, I_C= 100mA	135		600	
	h_{FE2}	V_{CE}=2 V, I_C= 1A	81			
Collector-emitter saturation voltage *	$V_{CE(sat)}$	I_C= 1A, I_B=50mA			0.3	V
Base-emitter saturation voltage *	$V_{BE(sat)}$	I_C= 1A, I_B=50mA			1.2	V
Base-emitter voltage *	V_{BE}	V_{CE}= 2V, I_C=50mA	0.6		0.7	V
Transition frequency	f_T	V_{CE}=2 V, I_C= 100mA	100			MHz
Output capacitance	C_{ob}	V_{CB}=10 V,I_E= 0, f=1MHz			19	pF
Turn on time	t_{on}	Vcc=10V, I_C=100mA, I_{B1}=-I_{B2}=10mA		0.07		μs
Storage time	t_S			0.95		μs
Fall time	t_F			0.07		μs

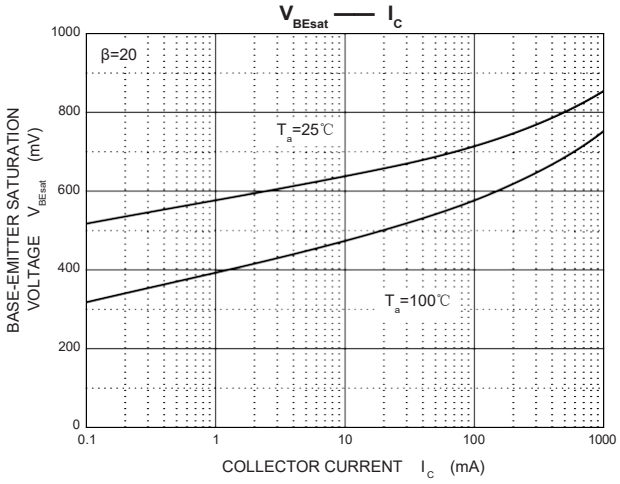
*pulse test: PW≤350μS, δ≤2%.

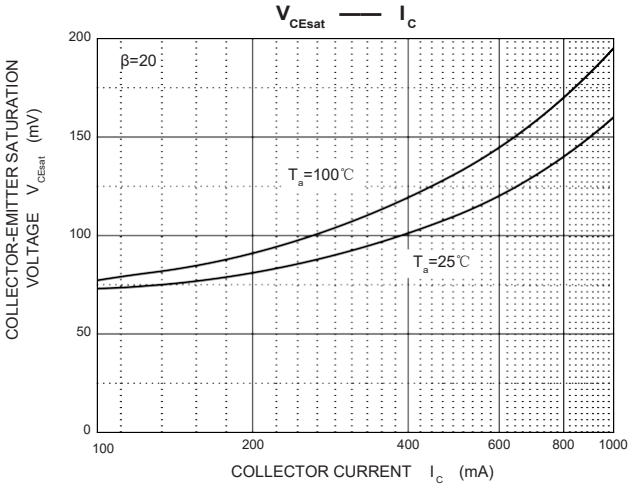
CLASSIFICA TION OF h_{FE1}

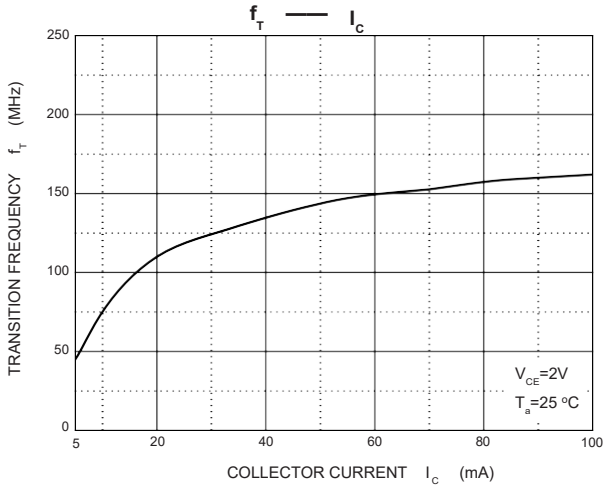
Rank L		K	U
Range	135-270	200-400	300-600

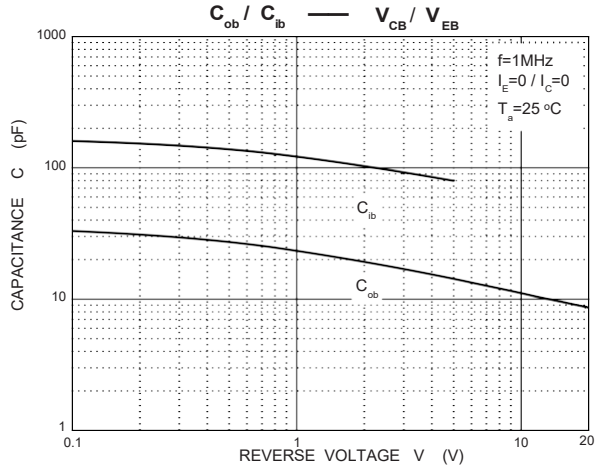

Static Characteristic
COMMON
EMITTER
Ta=25℃
1mA
0.9mA
0.8mA
0.7mA
0.6mA
0.5mA
0.4mA
0.3mA
0.2mA
IB=0.1mA
COLLECTOR CURRENT IC (A)
COLLECTOR-EMITTER VOLTAGE VCE (V)

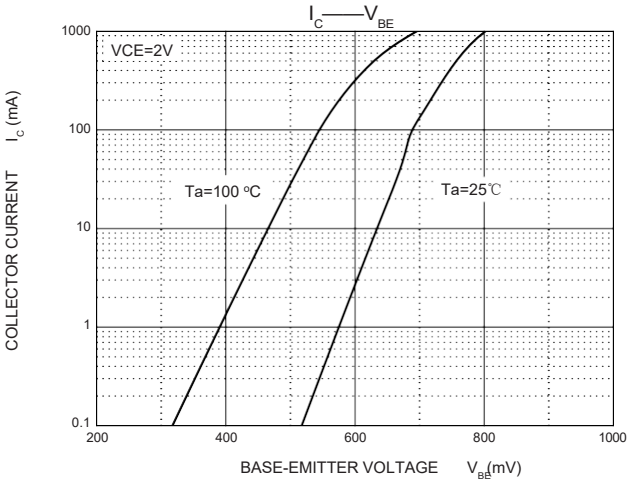

hFE — IC
VCE= 2V
Ta=100 ℃
Ta=25 ℃
DC CURRENT GAIN hFE
COLLECTOR CURRENT IC (mA)

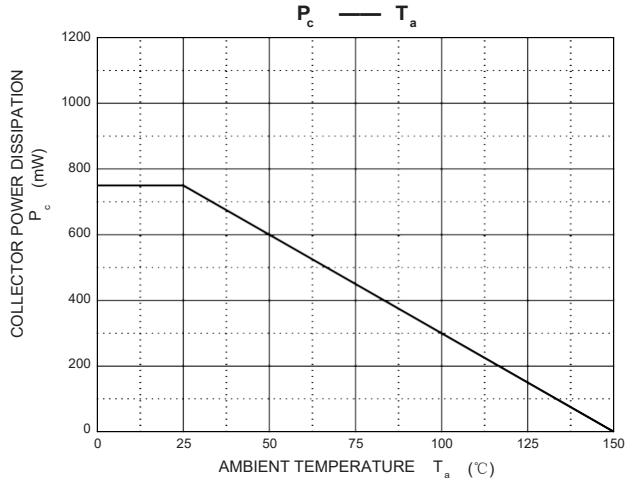

VBEsat — IC
β=20
Ta=25℃
Ta=100℃
BASE-EMITTER SATURATION VOLTAGE VBEsat (mV)
COLLECTOR CURRENT IC (mA)


VCEsat — IC
β=20
Ta=100℃
Ta=25℃
COLLECTOR-EMITTER SATURATION VOLTAGE VCEsat (mV)
COLLECTOR CURRENT IC (mA)


fT — IC
VCE=2V
Ta=25 ℃
TRANSITION FREQUENCY fT (MHz)
COLLECTOR CURRENT IC (mA)


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


IC——VBE
VCE=2V
Ta=100 ℃
Ta=25℃
COLLECTOR CURRENT IC (mA)
BASE-EMITTER VOLTAGE VBE(mV)


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