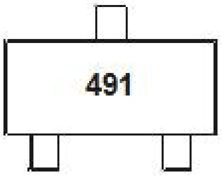
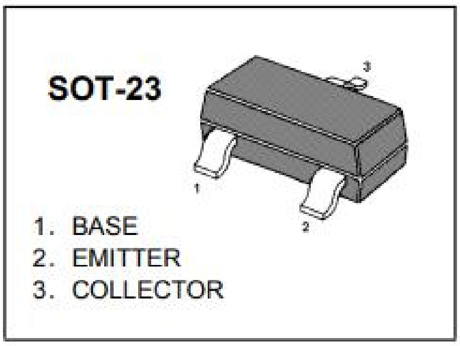
NPN Silicon Epitaxial Planar Transistor

Marking Information;





Absolute Maximum Ratings (T_a = 25℃)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current	I_{CM}	2	A
Base Current	I_B	200	mA

Thermal Characteristics(T_a = 25℃)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	500	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	250	°C/W
Thermal Resistance, Junction to Lead (Note 6)	$R_{\theta JL}$	197	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

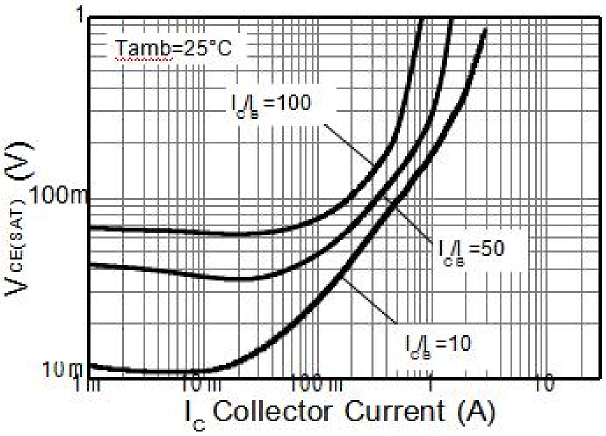
ESD Ratings

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

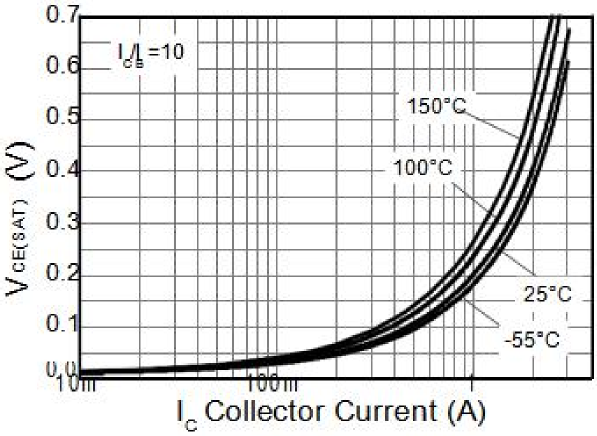
Characteristics at T_a= 25℃

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	80	—	—	V	I_C = 100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	60	—	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	8.1	—	V	I_E = 100μA
Collector Cutoff Current	I_{CBO}	—	<1	100	nA	V_{CB} = 60V
Emitter Cutoff Current	I_{EBO}	—	<1	100	nA	V_{EB} = 5.6V
Collector Emitter Cutoff Current	I_{CES}	—	<1	100	nA	V_{CE} = 60V, V_{CES} = 60V
Static Forward Current Transfer Ratio (Note 8)	h_{FE}	100	140	—	—	I_C = 1mA, V_{CE} = 5V
		100	150	300		I_C = 500mA, V_{CE} = 5V
		80	120	—		I_C = 1A, V_{CE} = 5V
		30	40	—		I_C = 2A, V_{CE} = 5V
Collector-Emitter Saturation Voltage (Note 8)	$V_{CE(sat)}$	—	100	150	mV	I_C = 500mA, I_B = 50mA
		—	160	250		I_C = 1A, I_B = 100mA
Base-Emitter Turn-On Voltage(Note 8)	$V_{BE(on)}$	—	830	1000	mV	I_C = 1A, V_{CE} = 5V
Base-Emitter Saturation Voltage(Note 8)	$V_{BE(sat)}$	—	965	1100	mV	I_C = 1A, I_B = 100mA
Output Capacitance	C_{obo}	—	—	10	pF	V_{CB} = 10V, f = 1MHz
Transition Frequency	f_T	150	—	—	MHz	V_{CE} = 10V, I_C = 50mA, f = 100MHz

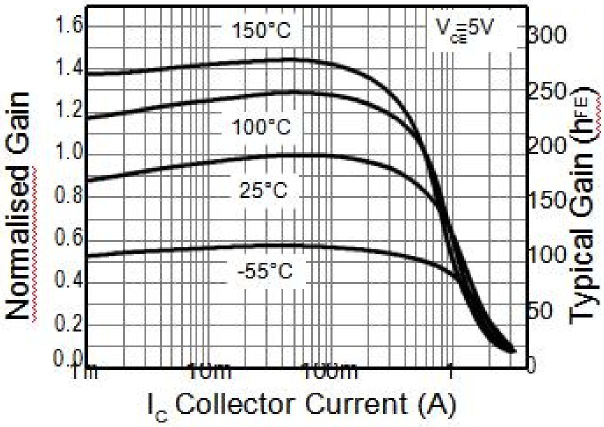
Typical Electrical Characteristics



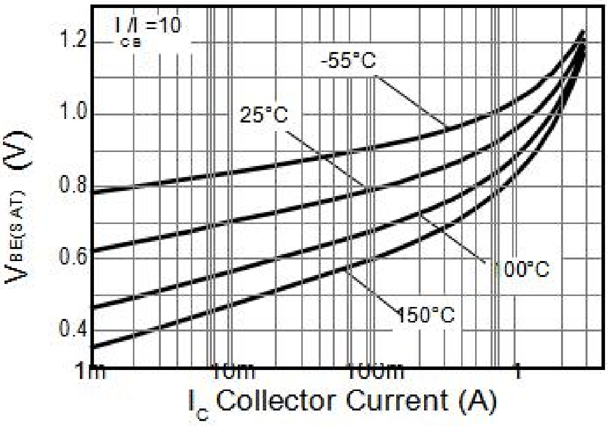
$V_{CE(SAT)}$ v I_C



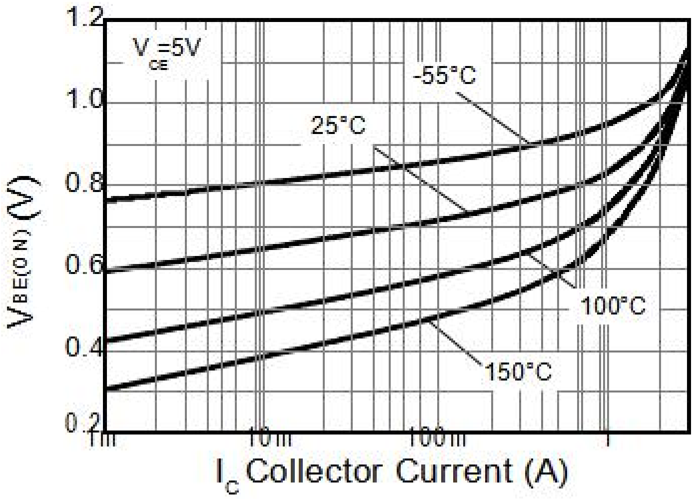
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C



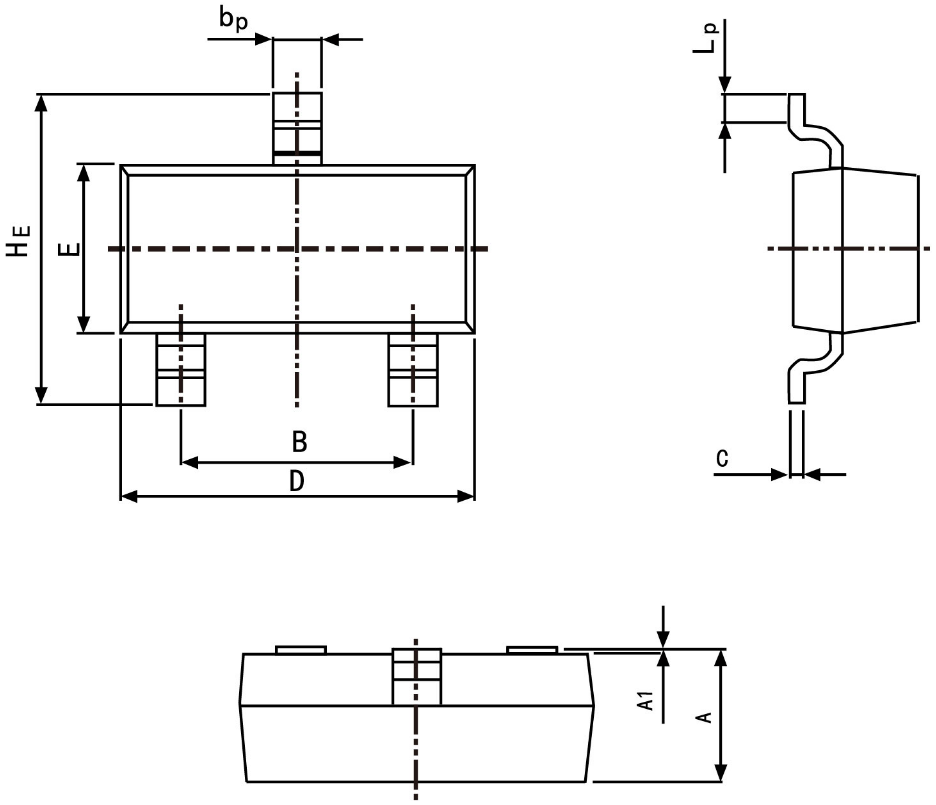
$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT-23**



Symbol	Dimension in Millimeters	
	Min	**Max**
A	0.95	1.40
B	1.78	2.04
bp	0.35	0.50
C	0.08	0.19
D	2.70	3.10
E	1.20	1.65
HE	2.20	3.00
A1	0.100	0.013
Lp	0.20	0.50