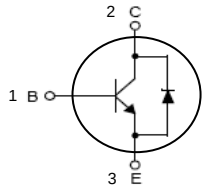
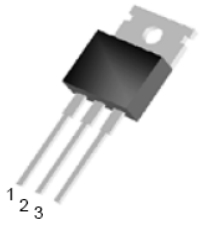
High Voltage Fast Switching NPN Power Transistor

Symbol



TO-220



Features

- Very High Switching Speed
- Minimum lot to lot h_{FE} Variation
- Wide Reverse Bias SOA

General Description

This Device is designed for high voltage, High speed switching characteristics required such as lighting system, switching mode power supply.

Absolute Maximum Ratings (T_J = 25℃ **unless otherwise specified)**

Symbol	Parameter	Condition	Value	Units
V_{CES}	Collector-Emitter Voltage	V_{BE} = 0	700	V
V_{CEO}	Collector-Emitter Voltage	I_B = 0	400	V
V_{EBO}	Emitter-Base Voltage	I_C = 0	9.0	V
I_C	Collector Current		4.0	A
I_{CP}	Collector pulse Current		8.0	A
I_B	Base Current		2.0	A
I_{BM}	Base Peak Current	t_P = 5ms	4.0	A
P_C	Total Dissipation at TC = 25℃		75	W
T_J	Operation Junction Temperature		- 40 ~ 150	℃
T_{STG}	Storage Temperture		- 40 ~ 150	℃

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
$R_{\Theta JC}$	Thermal Resistance Junction to Case	1.67	℃/W
$R_{\Theta JA}$	Thermal Resistance Junction to Ambient	62.5	℃/W

SBP5305D-O

Electrical Characteristics (TC = 25℃ Unless otherwise noted)

Symbol	Items	Conditions	Ratings			Unit
			Min	Typ.	Max	
I_{CEV}	Colletor Cut-off Current (V_{BE} = -1.5V)	V_{CE} = 700V V_{CE} = 700V TC = 100℃			1.0 5.0	mA
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	I_B = 0, I_C = 10mA	400			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 1.0A, I_B = 0.2A I_C = 2.0A, I_B = 0.5A I_C = 4.0A, I_B = 1.0A			0.5 0.6 1.0	mA
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 1.0A, I_B = 0.2A I_C = 2.0A, I_B = 0.5A			1.2 1.6	mA
h_{FE}	DC Current Gain	I_C = 1.0A, V_{CE} = 5V I_C = 2.0A, V_{CE} = 5V	10 10		40 30	V
t_s t_f	Storage Time Fall Time	I_C = 2.0A, V_{CC} = 125V I_{B1} = 0.4A, I_{B2} = -0.4A T_P = 25us			4.0 0.9	μs

Fig. 1 DC Current Gain

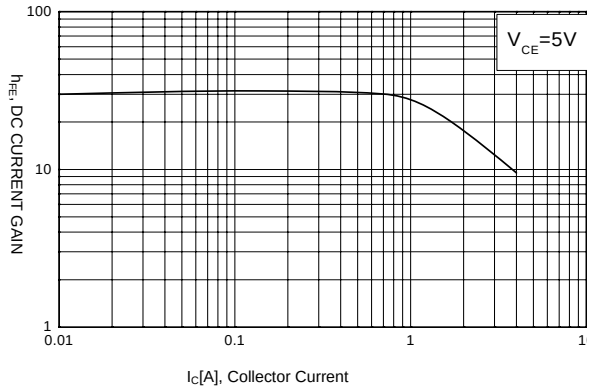


Fig. 2 Saturation Voltage

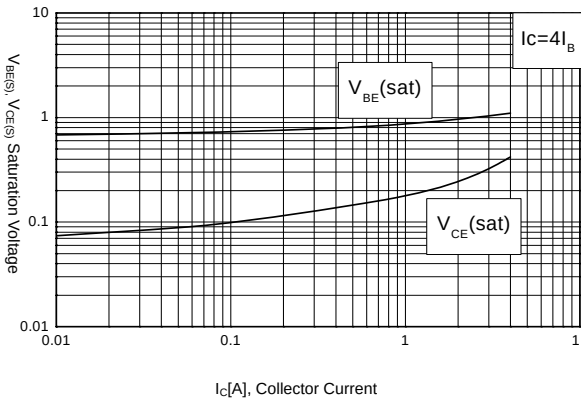


Fig. 3 Power Derating

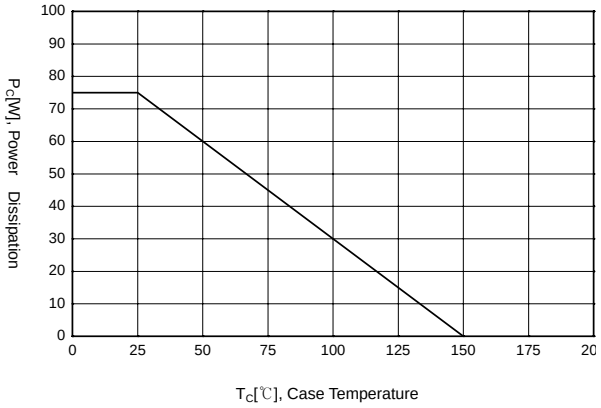


Fig. 4 Safe Operation Area

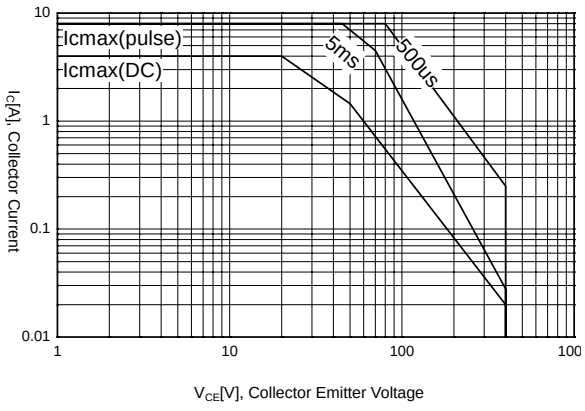
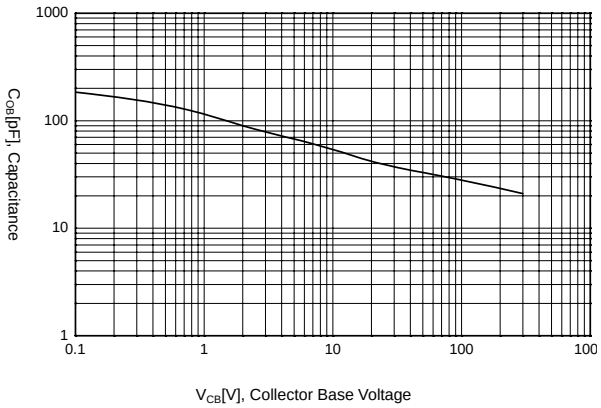


Fig. 5 Collect output capacitance



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TO-220 Package Dimension

Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.7		10.1	0.382		0.398
B	6.3		6.7	0.248		0.264
C	9.0		9.47	0.354		0.373
D	12.8		13.3	0.504		0.524
E	1.2		1.4	0.047		0.055
F		1.7			0.067	
G		2.5			0.098	
H	3.0		3.4	0.118		0.134
I	1.25		1.4	0.049		0.055
J	2.4		2.7	0.094		0.106
K	5.0		5.15	0.197		0.203
L	2.2		2.6	0.087		0.102
M	1.25		1.55	0.049		0.061
N	0.45		0.6	0.018		0.024
O	0.6		1.0	0.024		0.039
ϕ		3.6			0.142