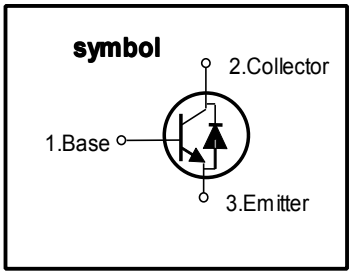
SBP13003D

High Voltage Fast -Switching NPN Power Transistor

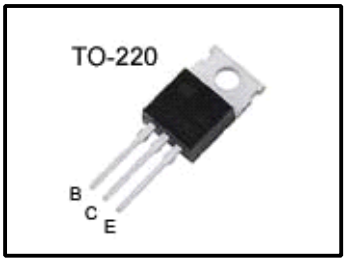
Features

- Very High Switching Speed
- High Voltage Capability
- Wide Reverse Bias SOA
- Built-in free wheeling diode



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

Symbol	Parameter	Test conditions	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		1.5	A
I_{CP}	Collector pulse Current		3.0	A
I_B	Base Current		0.75	A
I_{BM}	Base peak Current	t_P=5ms	1.5	A
P_C	Total Dissipation at Tc*=25℃		40	W
	Total Dissipation at Ta*=25℃		1.2	
T_J	Operation Junction Temperature		-40~150	℃
T_{STG}	Storage Temperature		-40~150	℃

Tc :Case temperature (good cooling)

Ta :Ambient temperature (without heat sink)

Thermal characteristics

Symbol	Parameter	Value	Units
$R_{\Theta JC}$	Thermal Resistance Junction to Case	3.12	℃/W
$R_{\Theta JA}$	Thermal Resistance Junction to Ambient	8.9	℃/W

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Electrical Characteristics(Tc=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
I_{EBO}	Emitter Cut-off Current	V_{BE}=9V	–	–	20	μA
$V_{CEO(SUS)}$	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	V
$V_{BE(sat)}$	Base -Emitter Saturation Voltage	I_C=1.0A,I_B=0.2A I_C=2.0A,I_B=0.5A	–	–	1.2 1.6	V
hFE	DC Current Gain	I_C=500A,V_{CE}=5V I_C=1mA,V_{CE}=5V	10 9	–	40 –	
ts tf	Storage Time Fall Time	I_C=0.5A,V_{CC}=5V (UI9600A)	–	–	4 0.8	μs
f_T	Current Gain Bandwidth Product	I_C=0.5A,V_{CE}=10V	4	–	–	MHz
V_F	Diode Forward Voltage	I_F=2A	–	–	2	V
C_{OB}	Output Capacitance	I_C=0.5A,V_{CB}=10V	–	21		pF

Note:

Pulse Test :Pulse width 300, Duty cycle 2%

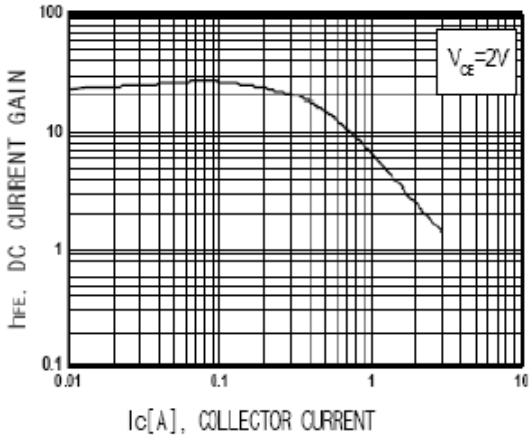


Fig.1 DC Current Gain

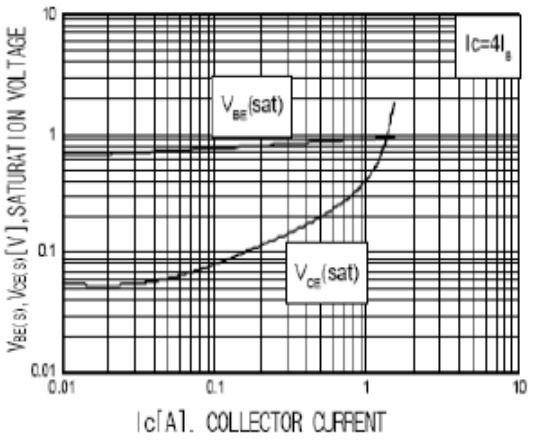


Fig.2 Saturation Voltage

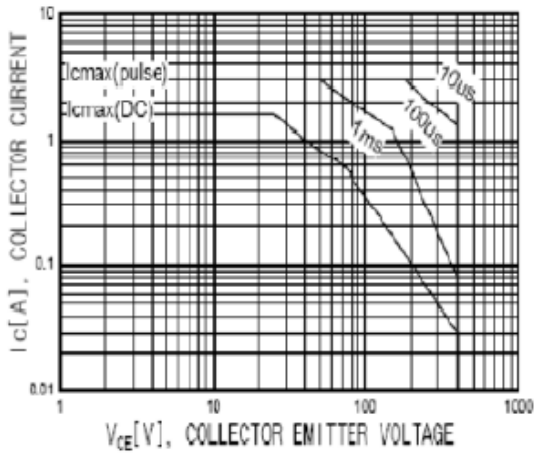


Fig.3 Safe Operation

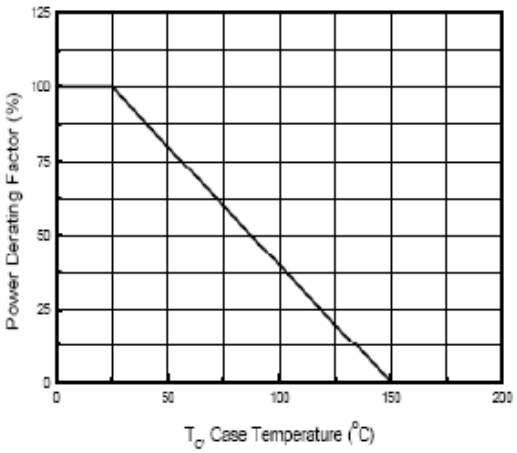
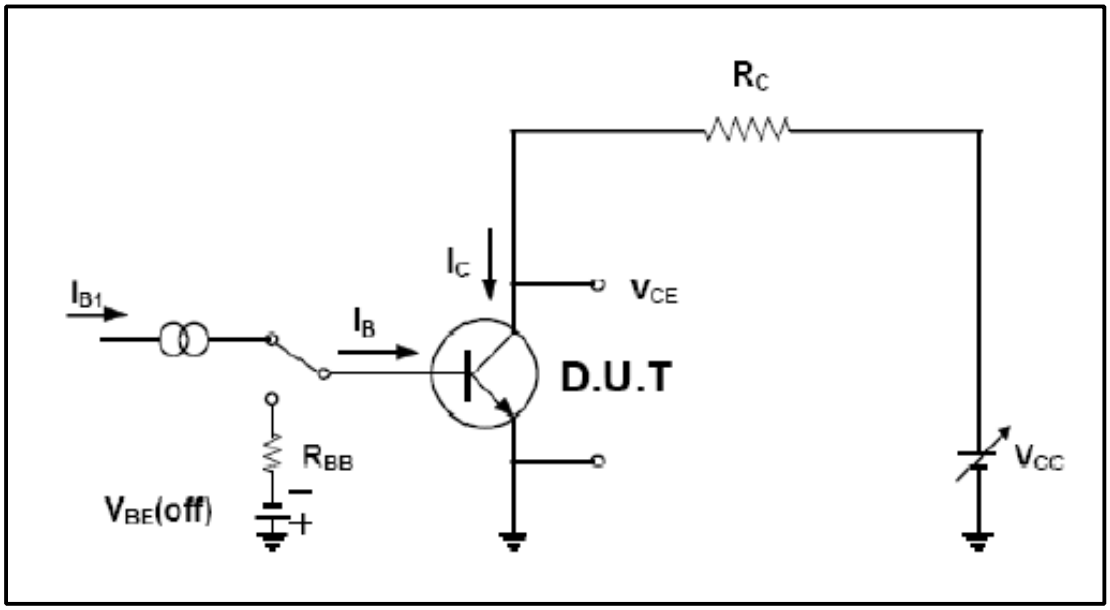
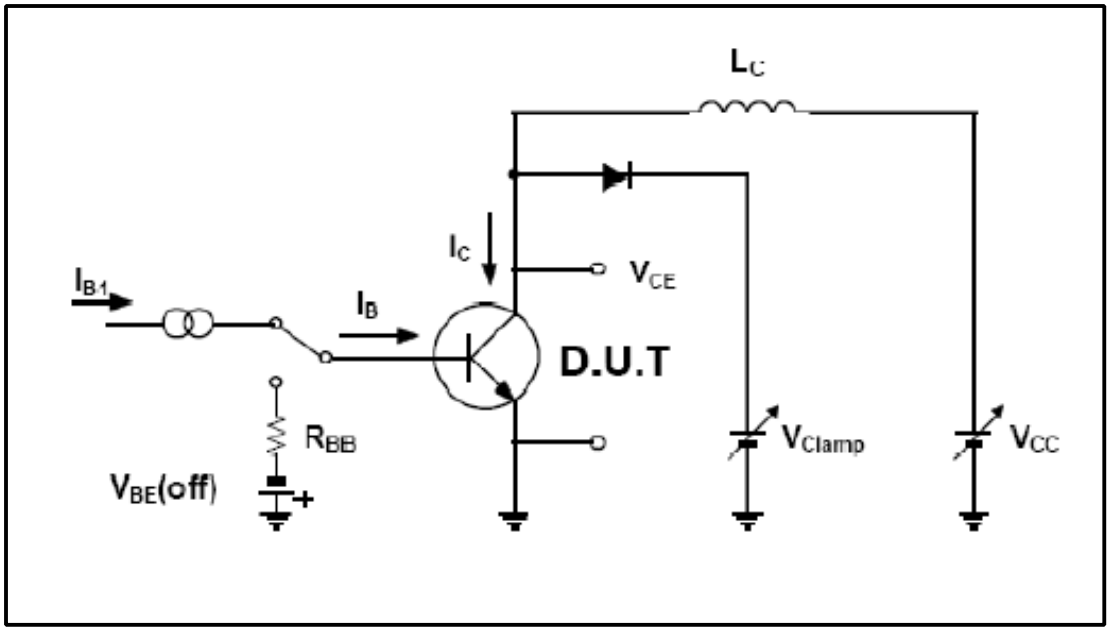


Fig.4 Power Derating



Resistive Load Switching Test Circuit



Inductive Load Switching & RBSOA Test Circuit

TO-220 Package Dimension

Unit:mm

