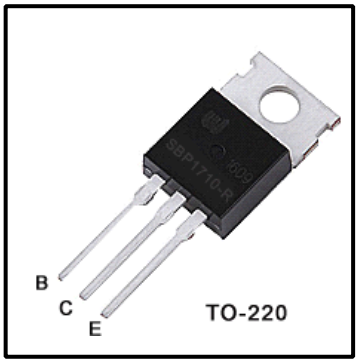
High Voltage Fast-Switching NPN Power Transistor

Features

- Very high switching speed
- High Voltage Capability
- 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

Symbol	Parameter	Test Conditions	Value	Units
V_{CBO}	Collect-Emitter Voltage	V_{BE}=0	900	V
V_{CEO}	Collector-Emitter Voltage	I_B=0	500	V
V_{EBO}	Emitter-Base Voltage	I_C=0	7	V
I_C	Collector Current		7	A
I_{CP}	Collector pulse Current (Note)		14	A
P_C	Total Dissipation at Tc=25℃		45	W
T_J	Operation Junction Temperature		150	℃
T_{STG}	Storage Temperature		-55~150	℃

Electrical Characteristics (T_c=25℃ unless otherwise noted)

Symbol	Parameter	Test conditions	Value			Units
			Min	Typ	Max	
I_{CBO}	Collector Cut-off Current	V_{CB}=500V, Ie=0A	-	-	10	μA
I_{EBO}	Emitter Cut-off Current	V_{EB}=5V, Ic=0A	-	-	10	μA
BV_{CBO}	Collector-Base Breakdown Voltage	Ic=1mA,Ie=0	900	-	-	V
BV_{CEO}	Collector-Emitter Breakdown Voltage	Ic=5mA,Ib=open	500	-	-	V
BV_{EBO}	Emitter-Base Breakdown Voltage	Ie=1mA,Ic=0	7	-	-	V
$V_{CE(sat)}$	Collector -Emitter Saturation Voltage	Ic=3A,Ib=0.6A	-	-	1	V
$V_{BE(sat)}$	Base -Emitter saturation Voltage	Ic=3A,Ib=0.6A	-	-	1.5	V
I_{EBO}	Emitter -Base Cutoff Current	Veb=5V,Ic=0	-	-	10	μA
hFE	DC Current Gain	Vce=5V,Ic=0.6A	20	-	50	
		Vce=5V,Ic=3A	8	-	-	
f_T	Gain-Bandwidth Product	Vce=10V,Ic=0.6A	-	-	18	MHz
Cob	Output Capacitance	VCB=10V, f=1MHz	-	-	80	pF
t_{on}	Turn on Time	V_{CC}=5V,I_C=0.5A	-	-	0.6	*μs*
t_s	Storage Time	V_{CC}=5V,I_C=0.5A	3	-	8	*μs*
t_f	Fall Time	V_{CC}=5V,I_C=0.5A	-	-	0.4	*μs*

Note:

Pulse Test: Pulse width≤300*μs*,Duty cycle 10%

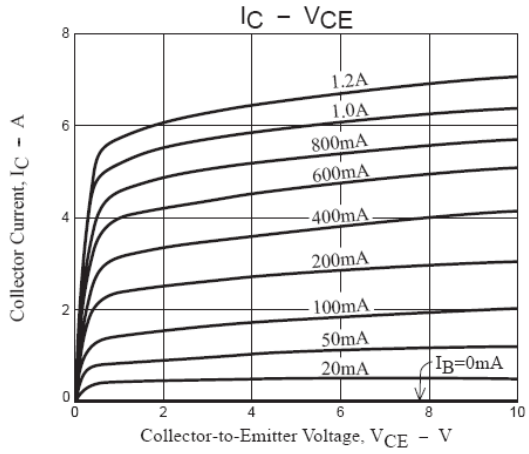


Fig. 1 Collector Current VS Collector-Emitter Voltage

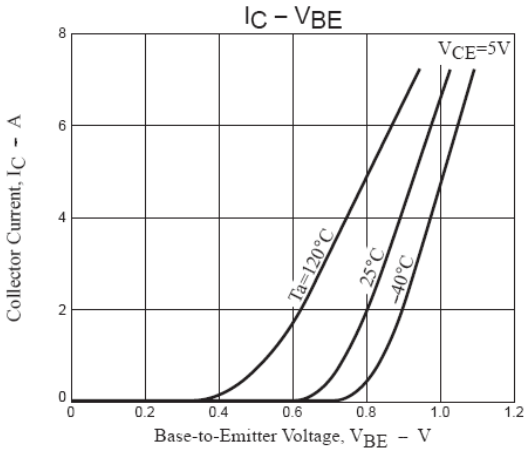


Fig. 2 Collector Current VS Emitter-Base Voltage

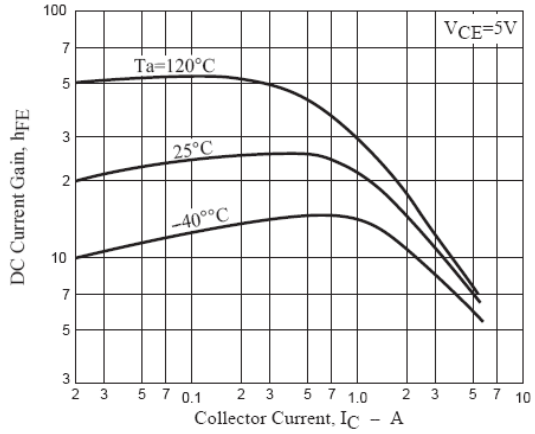


Fig. 3 DC Current Gain

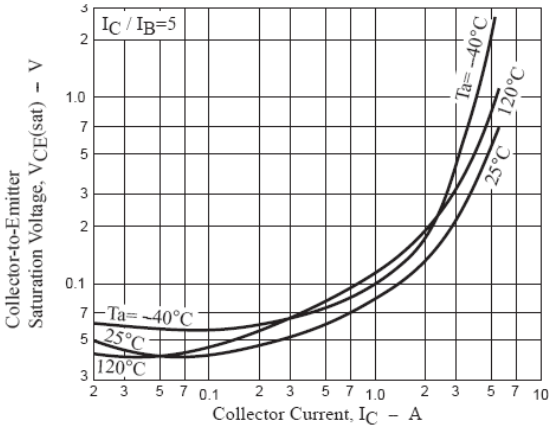


Fig. 4 Collector-Emitter Saturation Voltage

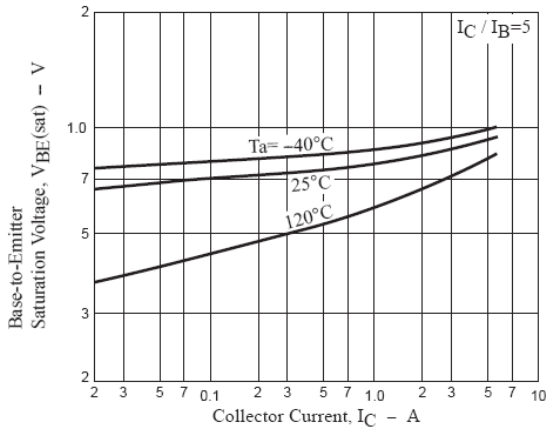


Fig. 5 Base-Emitter Saturation Voltage

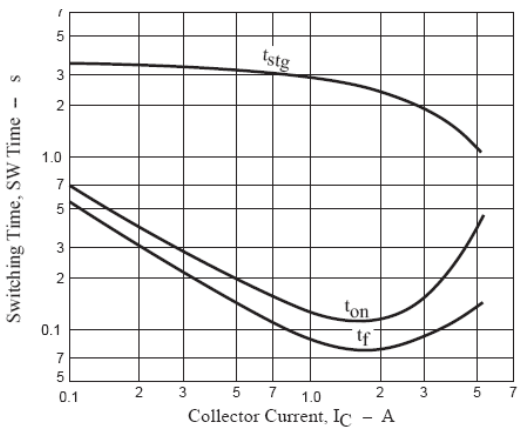


Fig.6 Switching Time

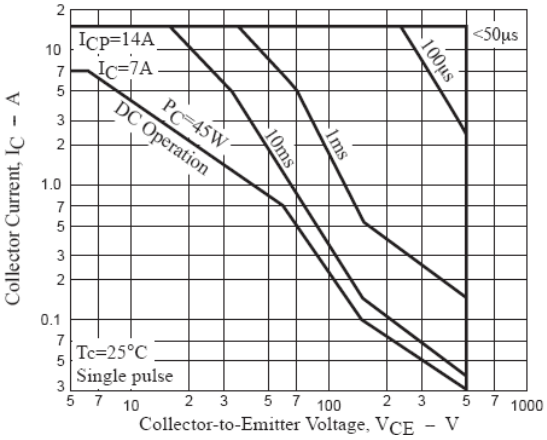


Fig.7 Safe Operation Area

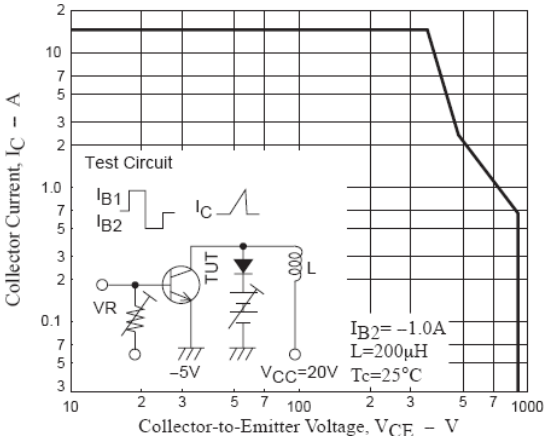


Fig.8 Reverse Biased Safe Operation Area

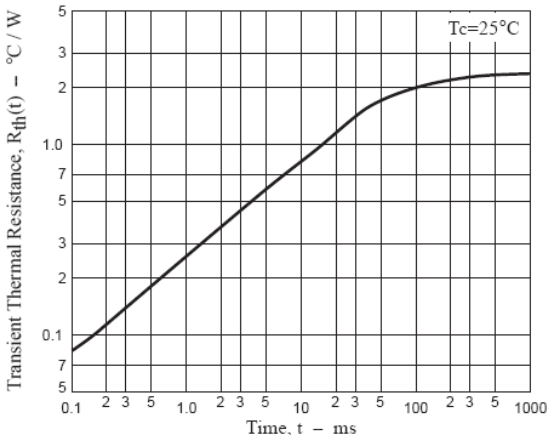


Fig.9 Thermal Resistance

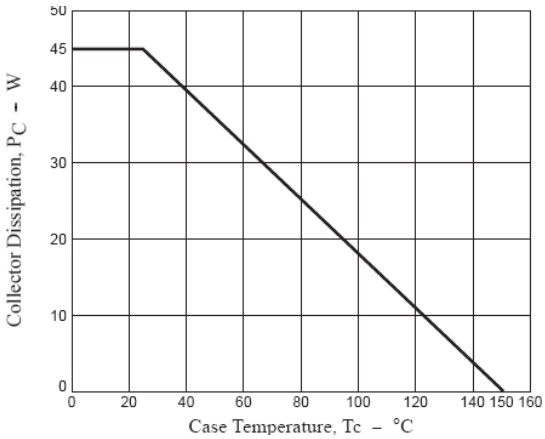


Fig.10 Power Derating

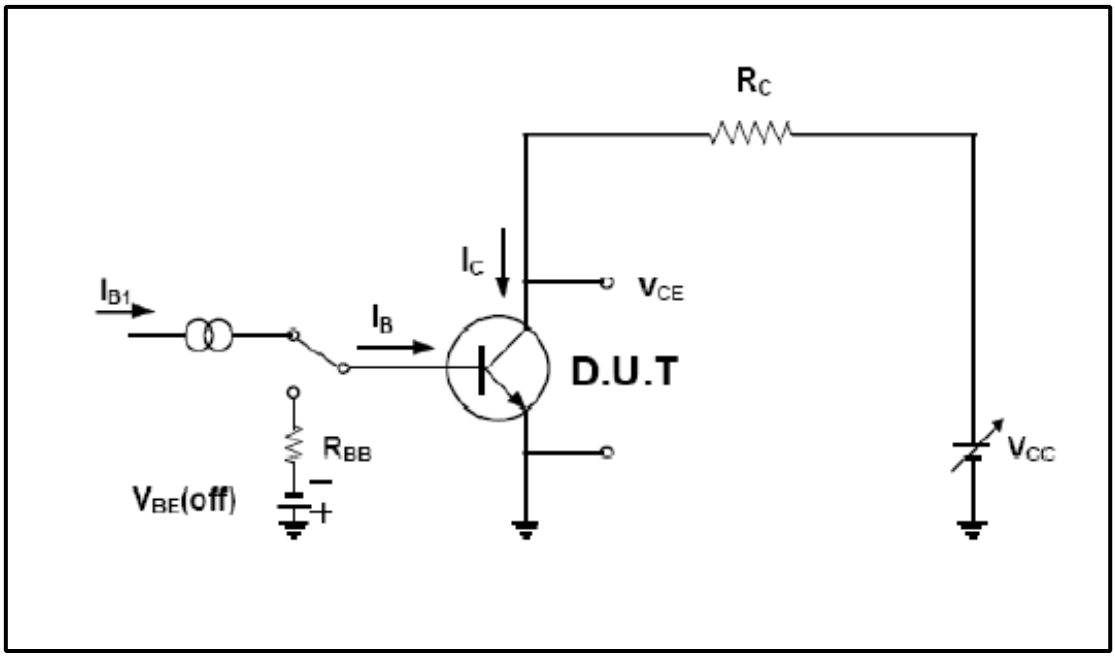


Fig.11 Inductive Load Switching & RBSOA Test Circuit

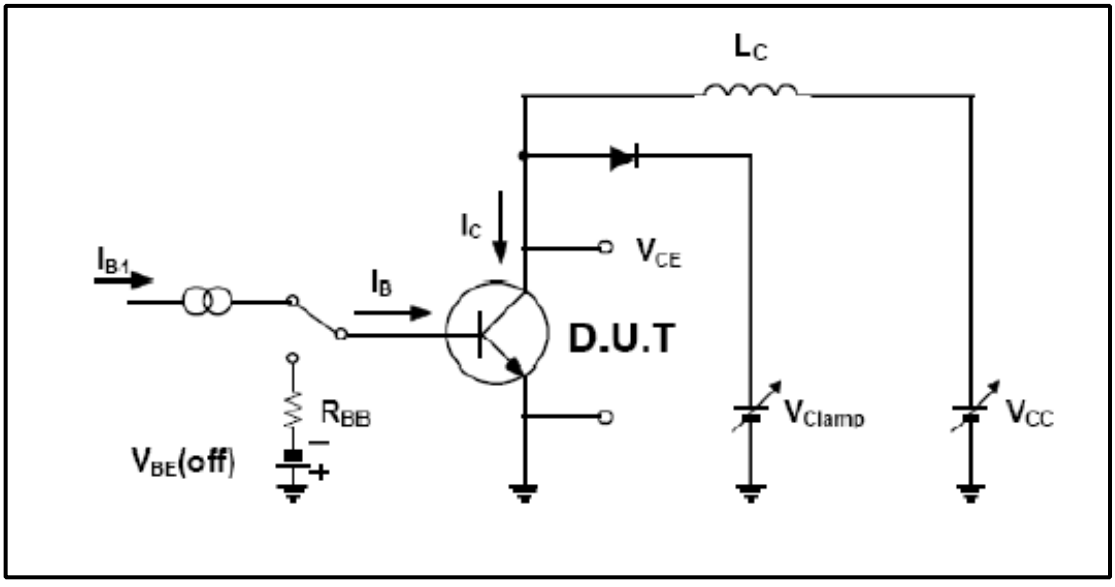


Fig.12 Inductive Load Switching &RBSOA Test Circuit

To-220 Package Dimension

Unit:mm