

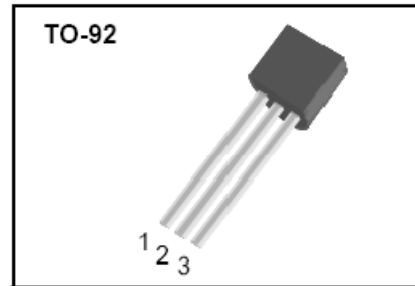
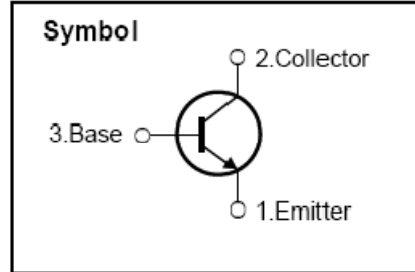
*High Voltage Fast-Switching NPN Power Transistor*

**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
$V_{CES}$	Collector-Emitter Voltage	$V_{BE} = 0$	600	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		1.25	A
$I_{CP}$	Collector pulse Current		2.5	A
$I_B$	Base Current		-	A
$I_{BM}$	Base Peak Current	$t_p = 5ms$	-	A
$P_C$	Total Dissipation at $T_c = 25^{\circ}C$		12	W
	Total Dissipation at $T_a = 25^{\circ}C$		0.8	
$T_J$	Operation Junction Temperature		- 40 ~ 150	$^{\circ}C$
$T_{STG}$	Storage Temperature		- 40 ~ 150	$^{\circ}C$

Tc: Case temperature (good cooling)

Ta: Ambient temperature (without heat sink)

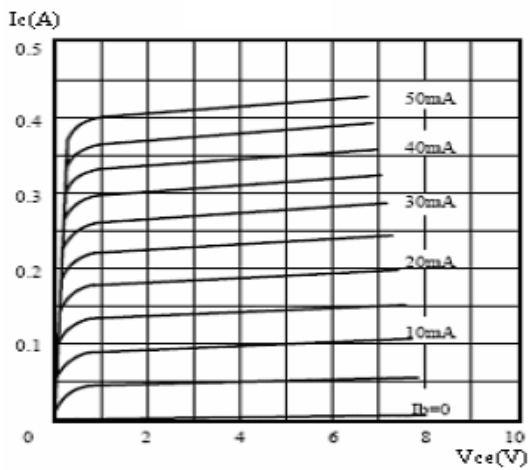
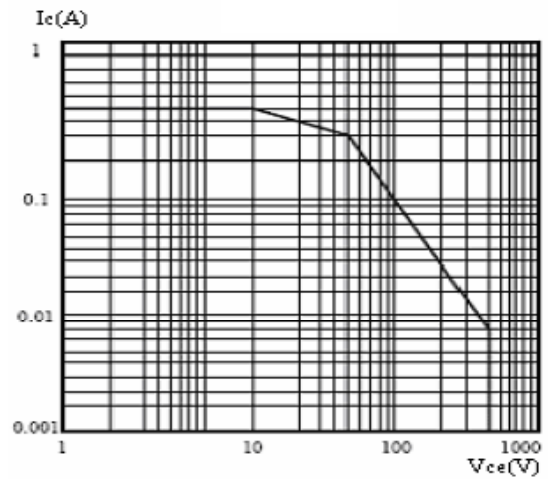
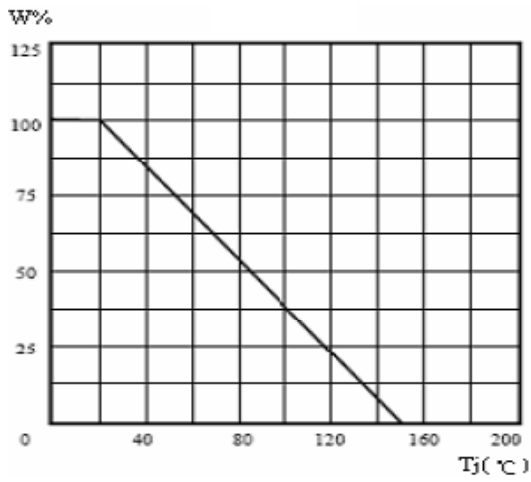
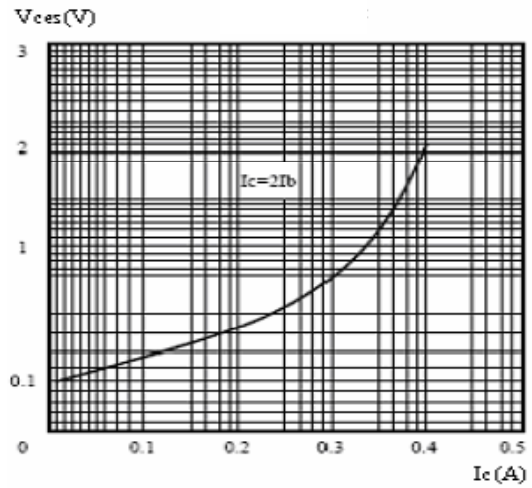
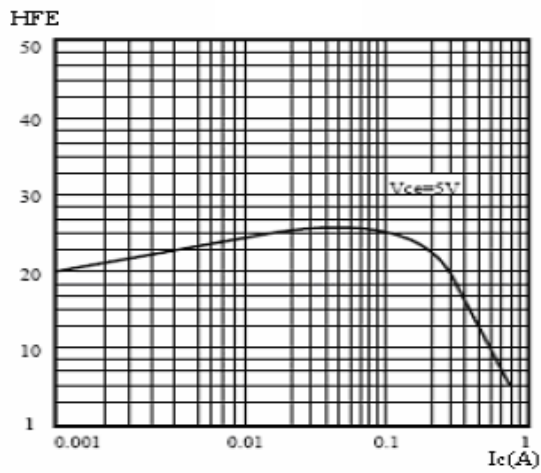
# SBN13002

## Electrical Characteristics (T<sub>c</sub>=25°C unless otherwise noted)

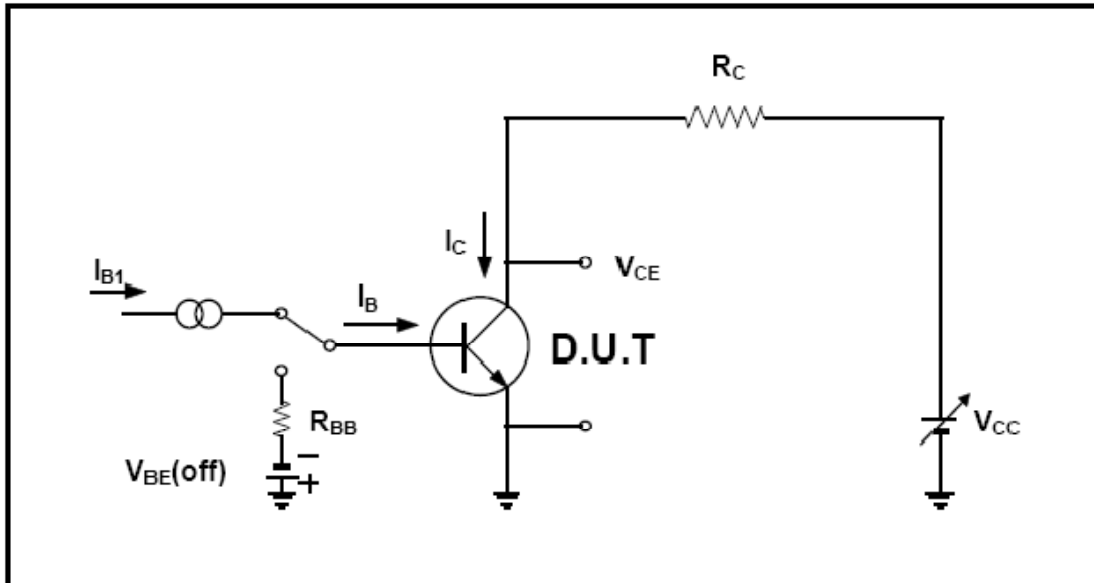
Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
BV <sub>CBO</sub>	Collector-Base Breakdown Voltage	I <sub>c</sub> =0.5mA, I <sub>e</sub> =0	600			V
BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>c</sub> =10mA, I <sub>b</sub> =0	400	-	-	V
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>c</sub> =200mA, I <sub>b</sub> =100mA	-	-	1.6	V
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage	I <sub>c</sub> =200mA, I <sub>b</sub> =100mA	-	-	1.2	V
I <sub>CBO</sub>	Collector-Base Cutoff Current	V <sub>cb</sub> =550V, I <sub>e</sub> =0mA	-	-	10	μA
I <sub>CEO</sub>	Collector-Emitter Cutoff Current	V <sub>ce</sub> =400V, I <sub>b</sub> =0mA	-	-	20	μA
I <sub>EBO</sub>	Emitter- Base Cutoff Current	V <sub>eb</sub> =9V, I <sub>c</sub> =0mA	-	-	20	μA
h <sub>FE</sub>	DC Current Gain	V <sub>ce</sub> =20V, I <sub>c</sub> =20mA V <sub>ce</sub> =5V, I <sub>c</sub> =1mA	10 9		40	
ts	Storage Time	V <sub>CC</sub> =250V	2	-	-	μs
tf	Fall Time	I <sub>C</sub> =5 I <sub>B</sub> I <sub>B1</sub> =- I <sub>B2</sub> =0.04A	-	-	0.8	

**Note:**

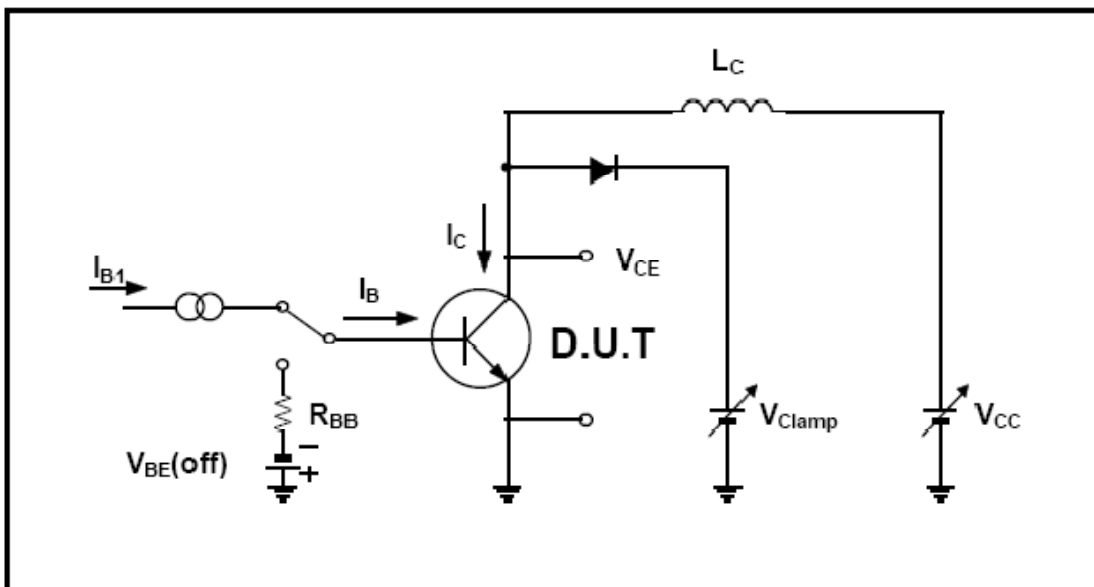
Pulse Test : Pulse width 300, Duty cycle 2%



**Resistive Load Switching Test Circuit**



**Inductive Load Switching & RBSOA Test Circuit**



**TO-92 Package Dimension**

Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		4.2			0.165	
B			3.7			0.146
C	4.43		4.83	0.174		0.190
D	14.07		14.87	0.554		0.585
E			0.4			0.016
F	4.43		4.83	0.174		0.190
G			0.45			0.017
H		1.27			0.050	
I		1.27			0.050	
J	0.33		0.48	0.013		0.019

