

## 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	$V_{BE}=0$	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 $T_c^*=25^{\circ}C$		18	W
	Total Dissipation at $T_a^*=25^{\circ}C$		1.14	
$T_J$	Operation Junction Temperature		-40~150	$^{\circ}C$
$T_{STG}$	Storage Temperature		-40~150	$^{\circ}C$

$T_c$  :Case temperature(good cooling)

$T_a$  :Ambient temperature(without heat sink)

### Thermal Characteristics

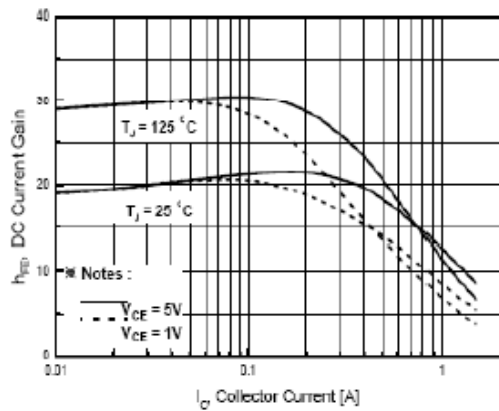
Symbol	Parameter	Value	Units
$R_{QJA}$	Thermal Resistance Junction to Ambient	13.6	$^{\circ}C/W$

**Electrical Characteristics**(Tc=25°C unless otherwise noted)

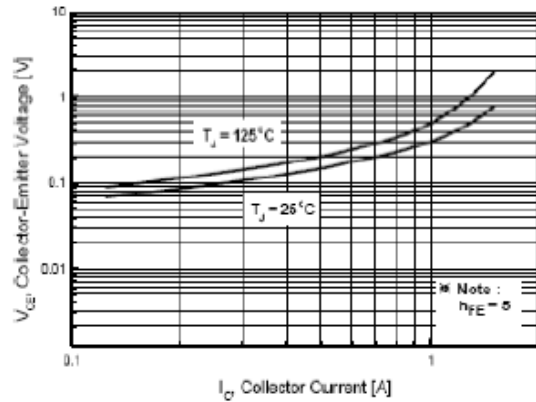
Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
V <sub>CEO(sus)</sub>	Collector–Emitter Breakdown Voltage	I <sub>c</sub> =10mA, I <sub>b</sub> =0	400	–	–	V
V <sub>CE(sat)</sub>	Collector–Emitter Saturation Voltage	I <sub>c</sub> =0.5A, I <sub>b</sub> =0.1A I <sub>c</sub> =1.0A, I <sub>b</sub> =0.25A I <sub>c</sub> =1.5A, I <sub>b</sub> =0.5A	–	–	0.5 1.0 3.0	V
V <sub>BE(sat)</sub>	Base –Emitter Saturation Voltage	I <sub>c</sub> =0.5A, I <sub>b</sub> =0.1A I <sub>c</sub> =1.0A, I <sub>b</sub> =0.25A	–	–	1.0 1.2	V
I <sub>CBO</sub>	Collector–Base Cutoff Current (V <sub>be</sub> =–1.5V)	V <sub>cb</sub> =700V V <sub>cb</sub> =700V, T <sub>c</sub> =100°C	–	–	1.0 5.0	mA
hFE	DC Current Gain	V <sub>ce</sub> =2V, I <sub>c</sub> =1A V <sub>ce</sub> =2V, I <sub>c</sub> =1.0A	8 3	– –	20	
ton	Resistive Load Turn–on Time	V <sub>CC</sub> =125V, I <sub>c</sub> =1A I <sub>B1</sub> =0.2A, I <sub>B2</sub> =–0.5A T <sub>p</sub> =25μs	–	0.25	1.0	μs
ts	Storage Time		–	1.32	3.0	
tf	Fall Time		–	0.23	0.4	
ts	Inductive Load Storage Time	V <sub>CC</sub> =15V, I <sub>c</sub> =1A I <sub>B1</sub> =0.2A, I <sub>B2</sub> =–0.5A L=0.35mH, V <sub>clamp</sub> = 300V	–	1.2	4.0	μs
ts	Storage Time		–	0.12	0.3	
tf	Fall Time		–	0.12	0.3	
ts	Inductive Load Storage Time	V <sub>CC</sub> =15V, I <sub>c</sub> =1A I <sub>B1</sub> =0.2A, I <sub>B2</sub> =–0.5A L=0.35mH, V <sub>clamp</sub> = 300V  T <sub>c</sub> =100°C	–	1.8	5.0	μs
ts	Storage Time		–	0.16	0.4	
tf	Fall Time		–	0.16	0.4	

Note:

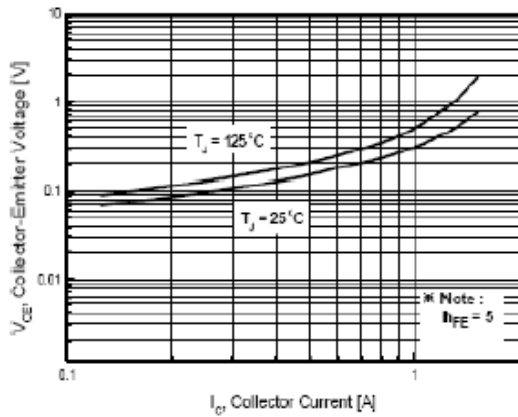
Pulse Test : Pulse width 300,Duty cycle 2%



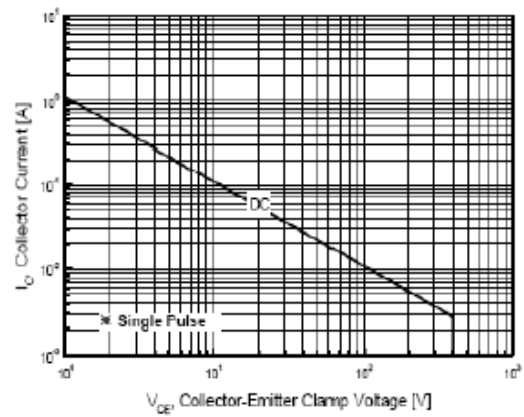
**Fig.1 DC Current Gain**



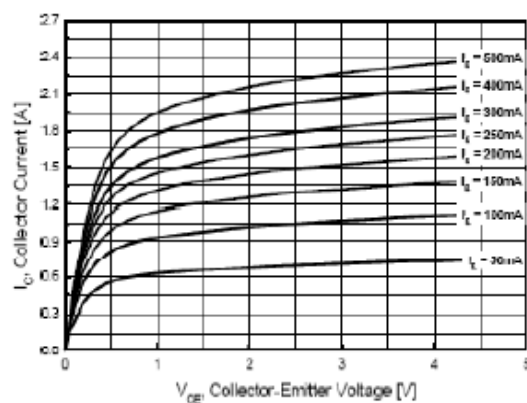
**Fig.2 Base -Emitter Saturation Voltage**



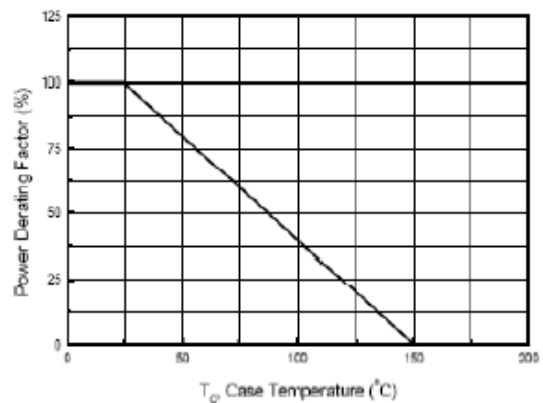
**Fig.3 Collector -Emitter saturation Voltage**



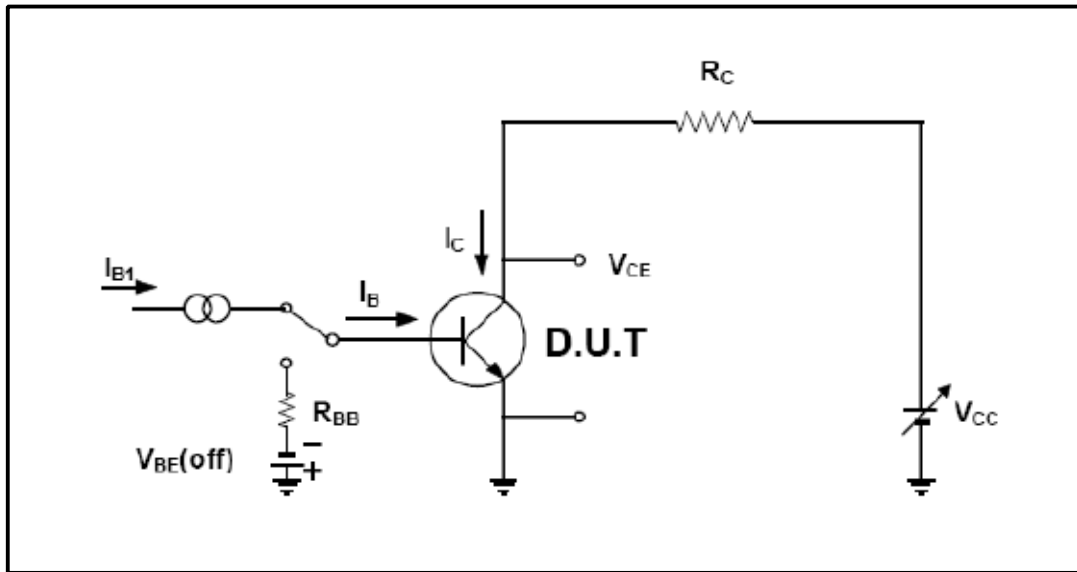
**Fig.4 Safe Operation Area**



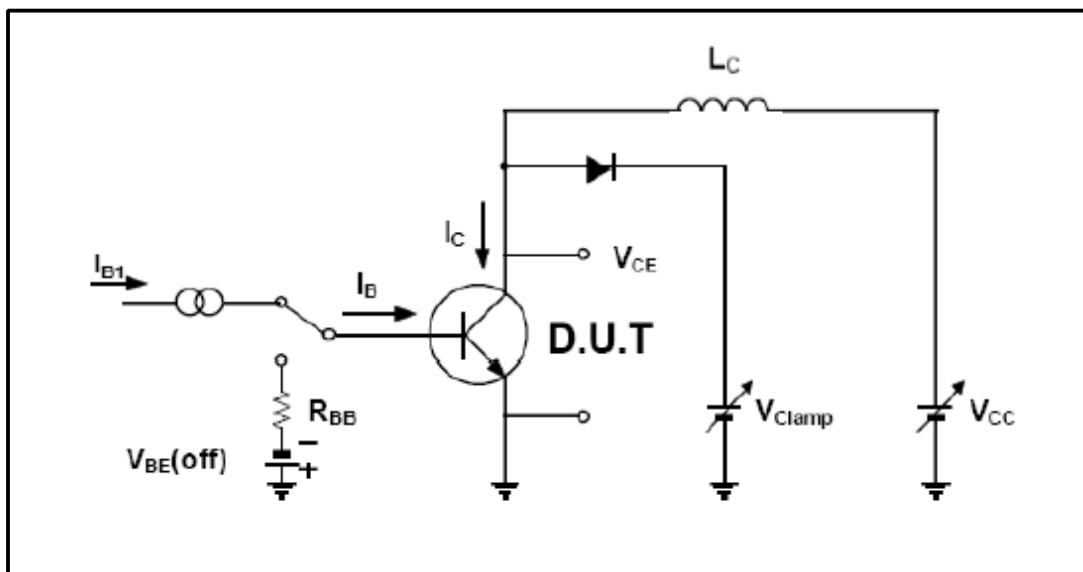
**Fig.5 Static Characteristics**



**Fig.6 Power Derating**



**Resistive Load Switching Test Circuit**



**Inductive Load Switching & RBSOA Test Circuit**

**To-92 Package Dimension**

