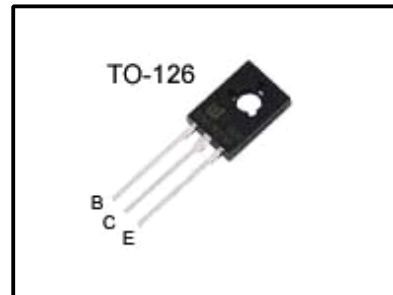


## *High Voltage Fast -Switching NPN Power Transistor*

### 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 $T_c=25^\circ C$		30	W
$T_J$	Operation Junction Temperature		-40~150	$^\circ C$
$T_{STG}$	Storage Temperature		-40~150	$^\circ C$

### Thermal Characteristics

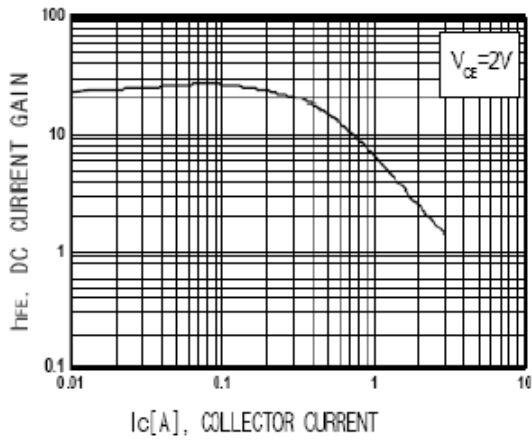
Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance Junction to Case	4.16	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	89	$^\circ C/W$

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

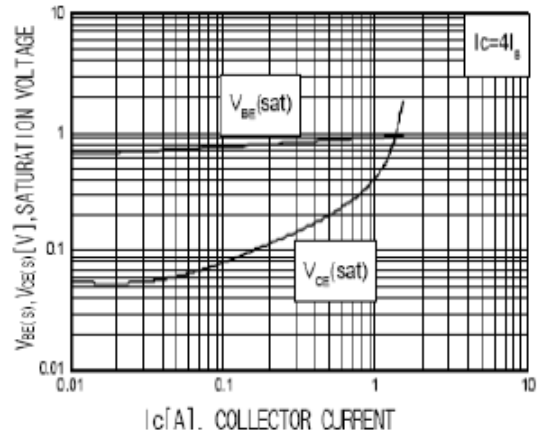
Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
V <sub>CEO(sus)</sub>	Collector–Emitter Breakdown Voltage	I <sub>c</sub> =10mA, I <sub>b</sub> =0	400	–	–	V
V <sub>CE(sat)</sub>	Collector –Emitter Saturation Voltage	I <sub>c</sub> =0.5A, I <sub>b</sub> =0.1A I <sub>c</sub> =1.0A, I <sub>b</sub> =0.25A I <sub>c</sub> =1.5A, I <sub>b</sub> =0.5A	–	–	0.3 0.5 1.0	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> =0.5A V <sub>ce</sub> =2V, I <sub>c</sub> =1.0A	10 5	– –	30 25	
ton	<b>Resistive Load</b> Turn –on Time	V <sub>CC</sub> =125V, I <sub>c</sub> =1A	–	0.2	1.0	μs
ts	Storage Time	I <sub>B1</sub> =0.2A, I <sub>B2</sub> = –0.5A T <sub>P</sub> =25μs	–	1.5	3.0	
tf	Fall Time		–	0.15	0.4	
ts	<b>Inductive Load</b> 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
tf	Fall Time		–	0.12	0.3	
ts	<b>Inductive Load</b> 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	–	2.4	5.0	μs
tf	Fall Time	T <sub>c</sub> =100°C	–	0.15	0.4	

Note :

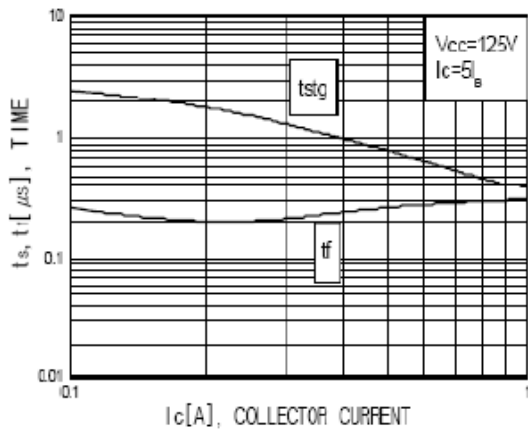
Pulse Test : Pulse width 300,Duty cycle 2%



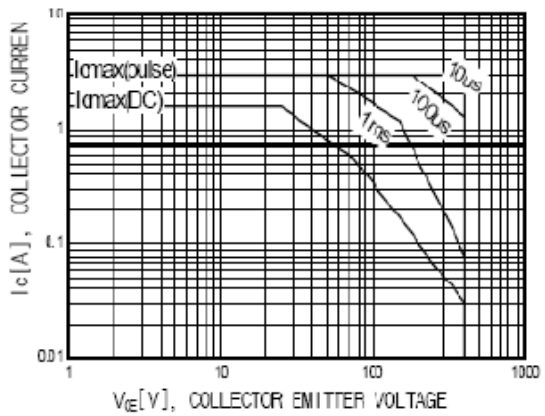
**Fig.1 DC Current Gain**



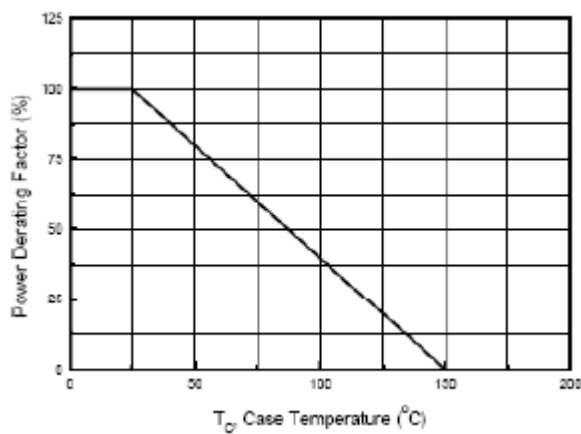
**Fig.2 Saturation Voltage**



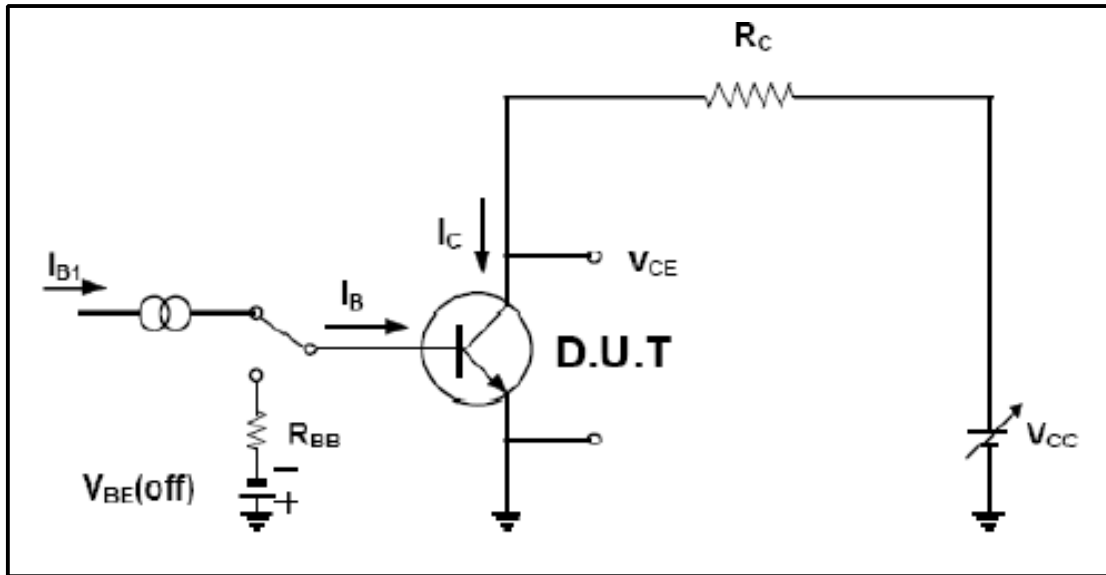
**Fig.3 Switching Time**



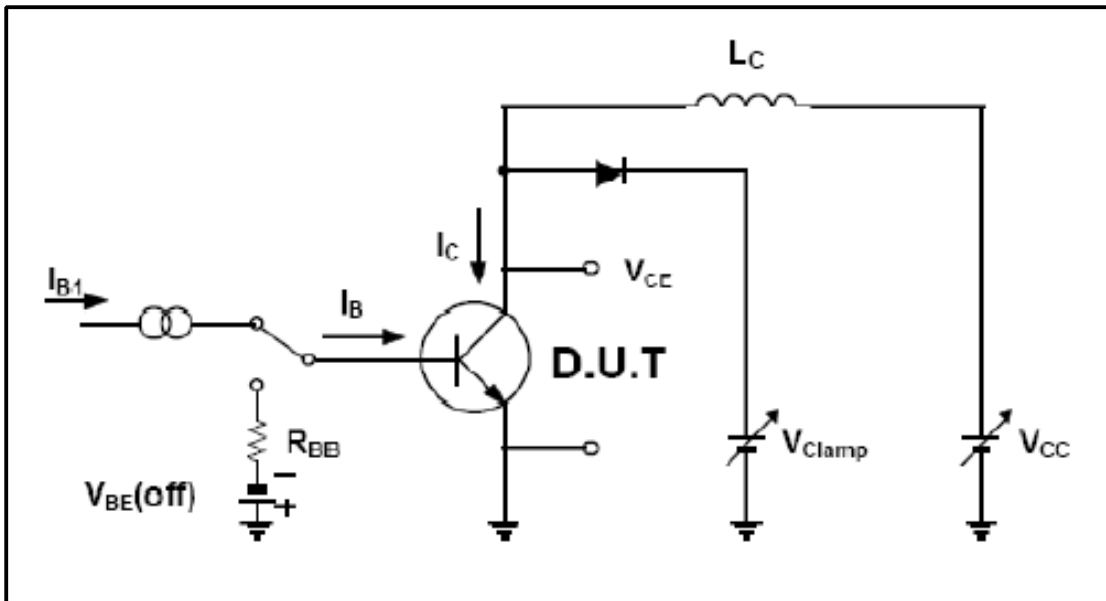
**Fig.4 Safe Operation Area**



**Fig.5 Power Derating**



**Resistive Load Switching test Circuit**



**Inductive Load Switching & RBSOA Test circuit**

**TO-126 Package Dimension**

Dim	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	7.5		7.9	0.295		0.311
B	10.8		11.2	0.425		0.441
C	14.2		14.7	0.559		0.579
D	2.7		2.9	0.106		0.114
E		3.8			0.150	
F		2.5			0.098	
G	1.2		1.5	0.047		0.059
H		2.3			0.091	
I		4.6			0.181	
J	0.48		0.62	0.019		0.024
K	0.7		0.86	0.028		0.034
L		1.4			0.055	
$\phi$		3.2			0.126	

