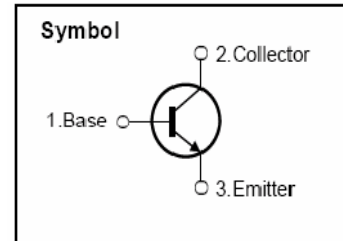


*High Voltage Fast-Switching NPN Power Transistor*

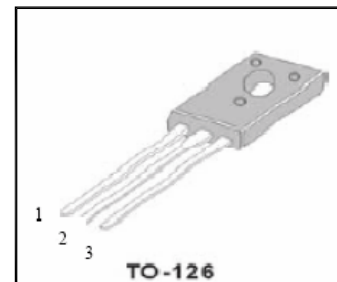
**Features**

- ◆ 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	$V_{BE} = 0$	<b>700</b>	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 $T_c^* = 25^{\circ}C$		25	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**

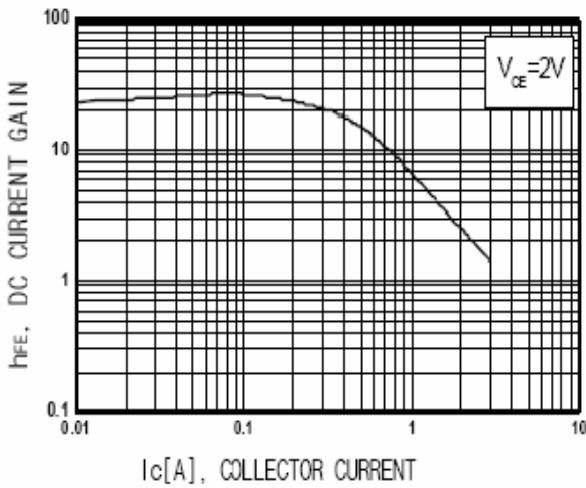
Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance Junction to Case	3.12	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	89	$^{\circ}C/W$

**Electrical Characteristics** ( $T_c=25^\circ\text{C}$  unless otherwise noted)

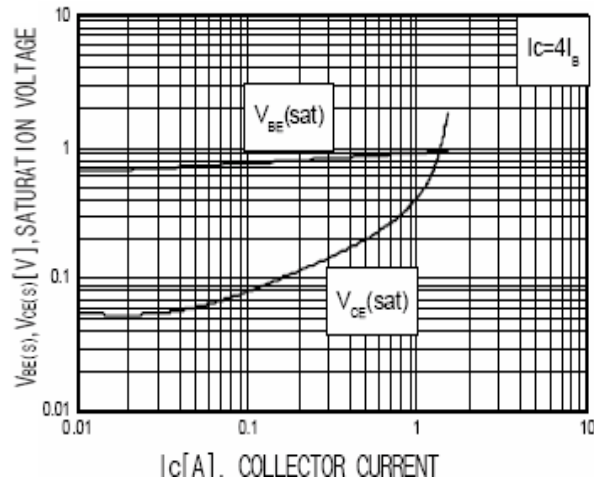
Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
$V_{CEO(sus)}$	Collector-Emitter Breakdown Voltage	$I_c=10\text{mA}, I_b=0$	400	-	-	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_c=0.5\text{A}, I_b=0.1\text{A}$ $I_c=1.0\text{A}, I_b=0.25\text{A}$ $I_c=1.5\text{A}, I_b=0.5\text{A}$	-	-	0.3 0.5 1.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_c=0.5\text{A}, I_b=0.1\text{A}$ $I_c=1.0\text{A}, I_b=0.25\text{A}$	-	-	1.0 1.2	V
$I_{CBO}$	Collector-Base Cutoff Current ( $V_{be}=-1.5\text{V}$ )	$V_{cb}=700\text{V}$ $V_{cb}=700\text{V}, T_c=100^\circ\text{C}$	-	-	1.0 5.0	mA
$h_{FE}$	DC Current Gain	$V_{ce}=2\text{V}, I_c=0.5\text{A}$ $V_{ce}=2\text{V}, I_c=1.0\text{A}$	10 5	- -	30 25	
$t_{on}$ $t_s$ $t_f$	<b>Resistive Load</b> Turn-on Time Storage Time Fall Time	$V_{CC}=125\text{V}, I_c=1\text{A}$ $I_{B1}=0.2\text{A}, I_{B2}=-0.5\text{A}$ $T_p=25\mu\text{s}$	-	0.2 1.5 0.15	1.0 3.0 0.4	$\mu\text{s}$
$t_s$ $t_f$	<b>Inductive Load</b> Storage Time Fall Time	$V_{CC}=15\text{V}, I_c=1\text{A}, I_{B1}=0.2\text{A},$ $I_{B2}=-0.5\text{A}$ $L=0.35\text{mH}, V_{clamp}=300\text{V}$	- -	1.2 0.12	4.0 0.3	$\mu\text{s}$
$t_s$ $t_f$	<b>Inductive Load</b> Storage Time Fall Time	$V_{CC}=15\text{V}, I_c=1\text{A}, I_{B1}=0.2\text{A},$ $I_{B2}=-0.5\text{A}$ $L=0.35\text{mH}, V_{clamp}=300\text{V}$ $T_c=100^\circ\text{C}$	- -	2.4 0.15	5.0 0.4	$\mu\text{s}$

**Note:**

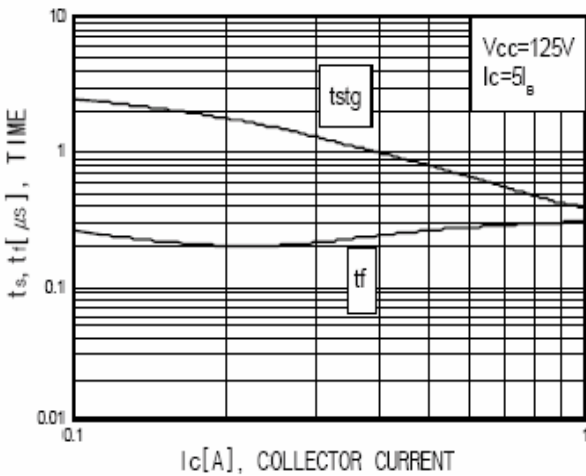
Pulse Test : Pulse width 300, Duty cycle 2%



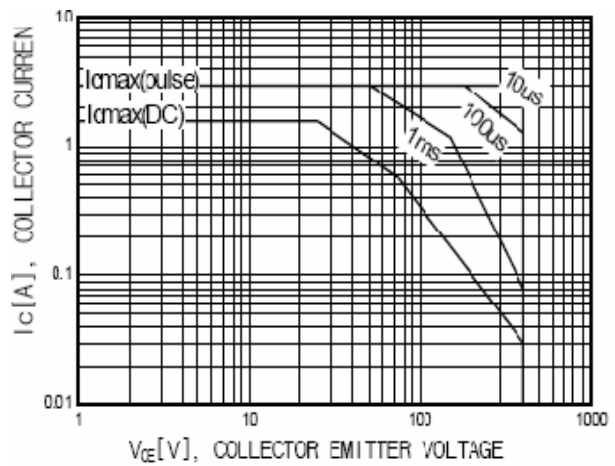
**Fig. 1 DC Current Gain**



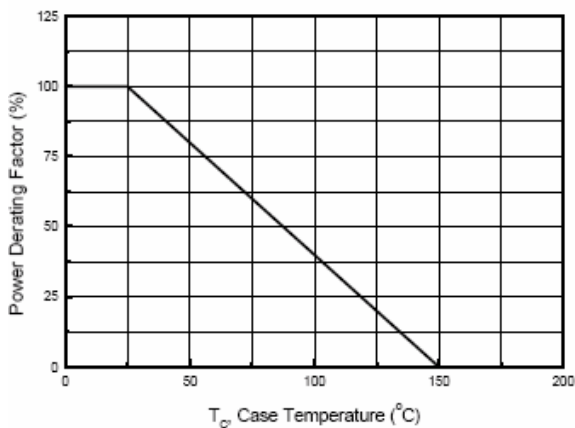
**Fig. 2 Saturation Voltage**



**Fig. 3 Switching Time**

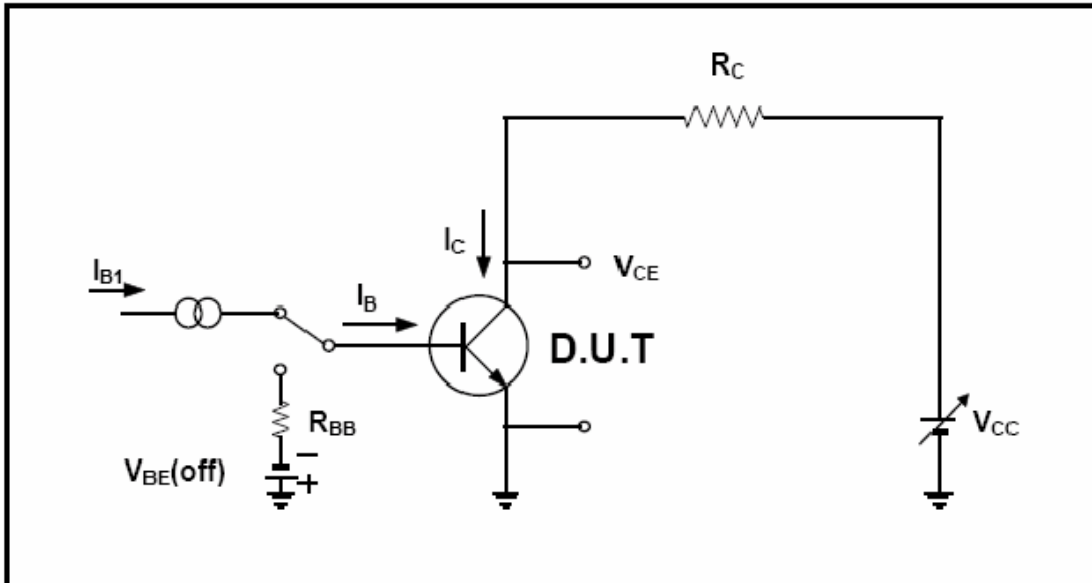


**Fig. 4 Safe Operation Area**

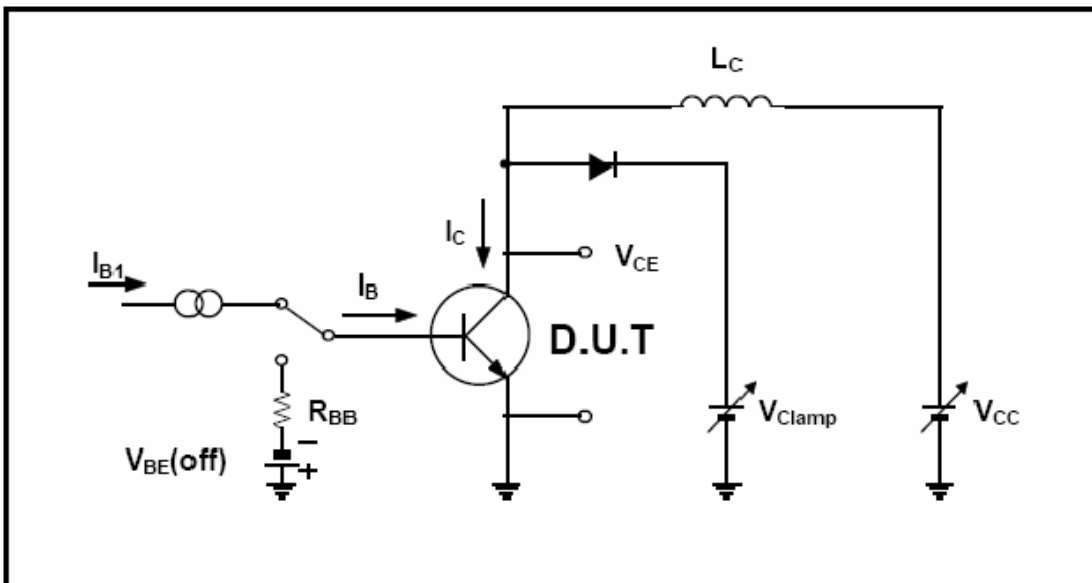


**Fig.5 Power Derating**

**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	

