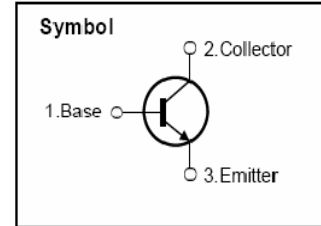


High Voltage Fast-Switching NPN Power Transistor

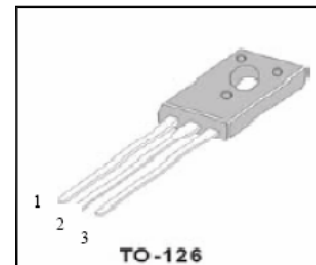
Features

- ◆ 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°C		25	W
	Total Dissipation at T _a * = 25°C		1.14	
T _J	Operation Junction Temperature		- 40 ~ 150	°C
T _{STG}	Storage Temperature		- 40 ~ 150	°C

T_c: Case temperature (good cooling)

T_a: Ambient temperature (without heat sink)

Thermal Characteristics

Symbol	Parameter	Value	Units
R _{θJc}	Thermal Resistance Junction to Case	3.12	°C/W
R _{θJA}	Thermal Resistance Junction to Ambient	89	°C/W

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

Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
$V_{CE(sus)}$	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}	Resistive Load Turn-on 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	1.0	μs
t_s	Storage Time		-	1.5	3.0	
t_f	Fall Time		0.15	0.4		
t_s	Inductive Load Storage 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	4.0	μs
t_f	Fall Time		-	0.12	0.3	
t_s	Inductive Load Storage 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	5.0	μs
t_f	Fall Time		-	0.15	0.4	

Note:

Pulse Test : Pulse width 300, Duty cycle 2%

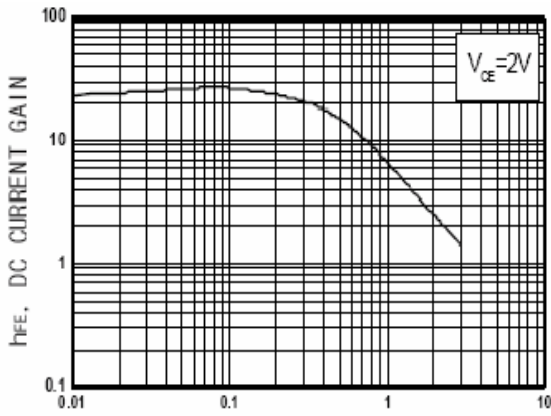


Fig. 1 DC Current Gain

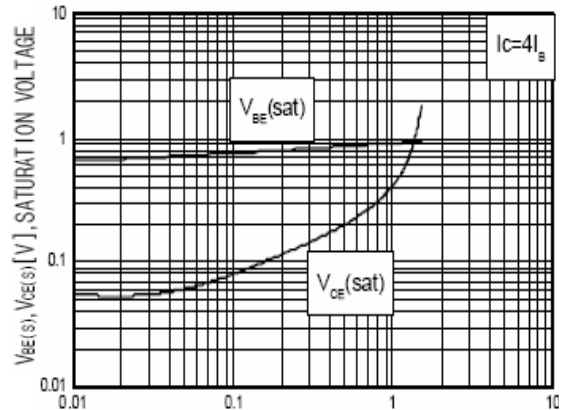


Fig. 2 Saturation Voltage

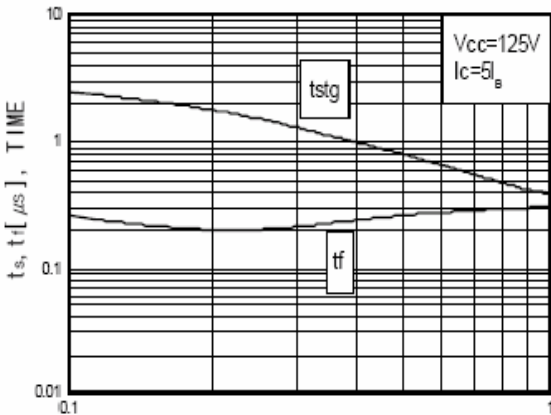


Fig. 3 Switching Time

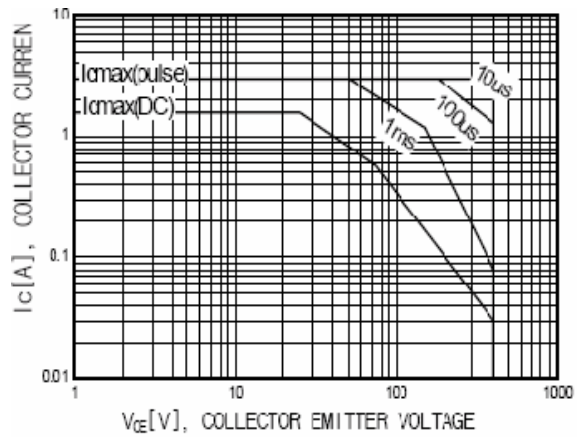


Fig. 4 Safe Operation Area

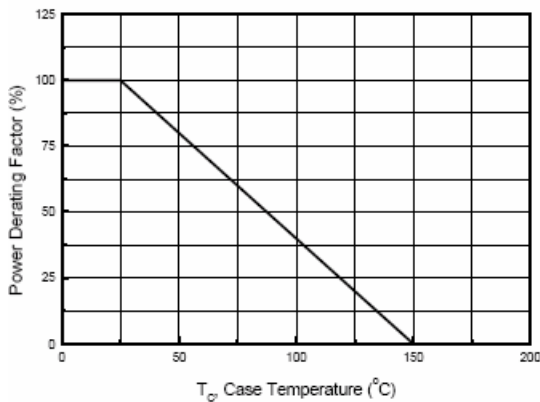
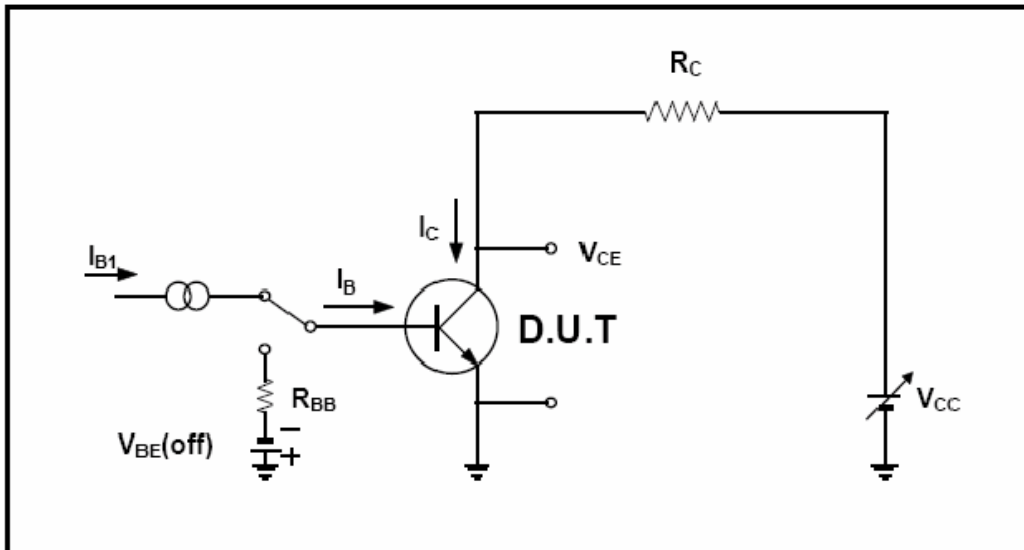
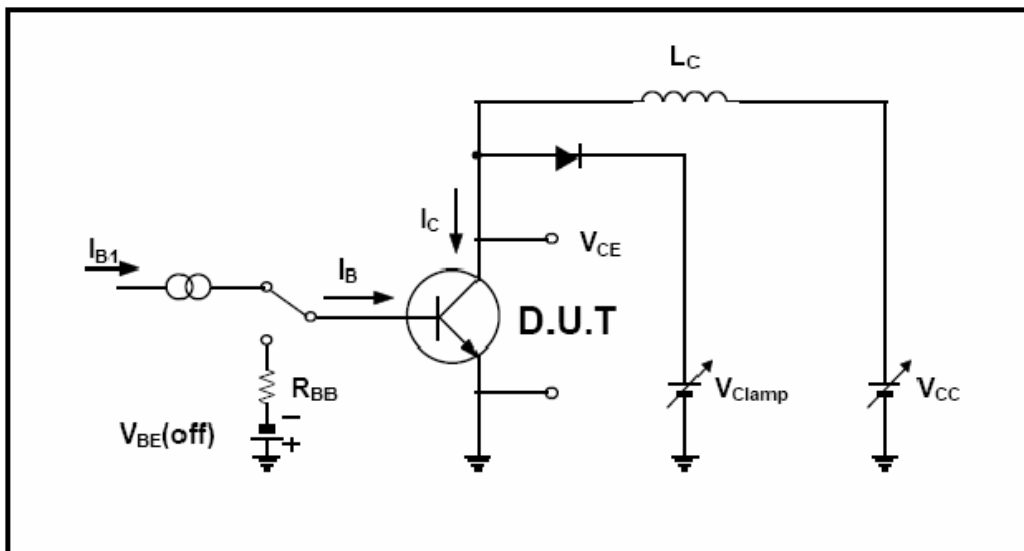


Fig. 5 Power Derating

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	
ϕ		3.2			0.126	

