

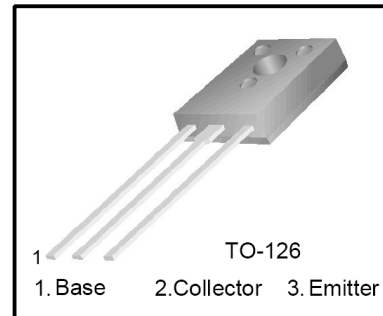
## *High Voltage Fast-Switching NPN Power Transistor*

### Features

- ◆ Very High Switching Speed
- ◆ High Voltage Capability
- ◆ Wide Reverse Bias SOA
- ◆ Built-in freewheeling diode

### 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	$V_{BE} = 0$	350	V
$V_{CEO}$	Collector-Emitter Voltage	$I_B = 0$	200	V
$V_{EBO}$	Emitter-Base Voltage	$I_C = 0$	7.0	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 $T_c = 25^\circ C$		40	W
$T_J$	Operation Junction Temperature		150	$^\circ C$
$T_{STG}$	Storage Temperature		- 40 ~ 150	$^\circ C$

### Thermal Characteristics

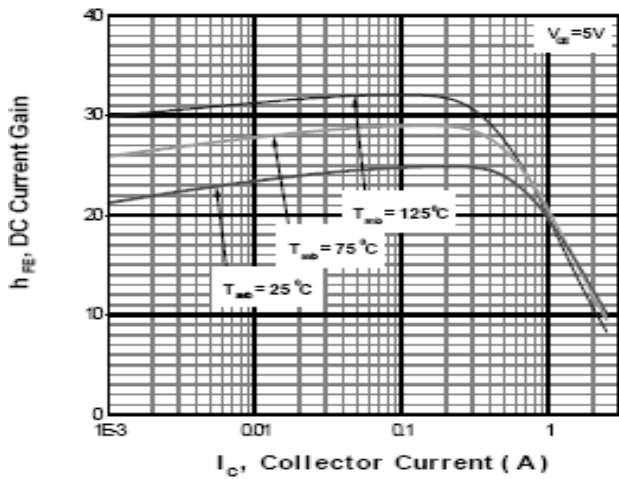
Symbol	Parameter	Value	Units
$R_{\theta Jc}$	Thermal Resistance Junction to Case	3.12	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	89	$^\circ C/W$

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

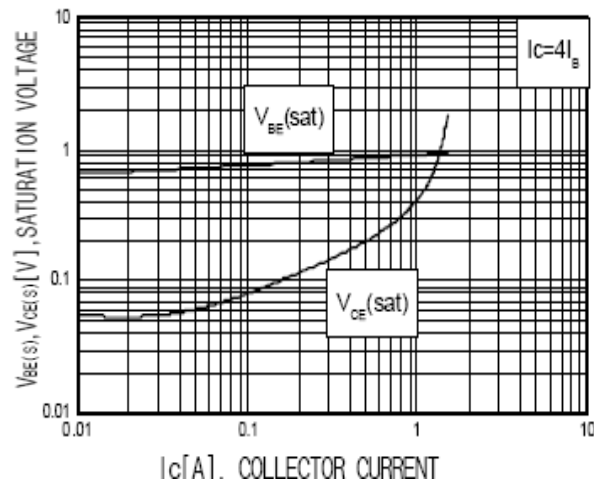
Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_c=1\text{mA}, I_e=0$	350			V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_c=5\text{mA}, I_b=0$	200	-	-	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_c=500\text{mA}, I_b=100\text{mA}$	-	-	0.8	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_c=200\text{mA}, I_b=100\text{mA}$	-	-	1.0	V
$I_{CBO}$	Collector-Base Cutoff Current	$V_{cb}=350\text{V}, I_e=0\text{mA}$	-	-	100	$\mu\text{A}$
$I_{CEO}$	Collector-Emitter Cutoff Current	$V_{ce}=200\text{V}, I_b=0\text{mA}$	-	-	50	$\mu\text{A}$
$I_{EBO}$	Emitter- Base Cutoff Current	$V_{eb}=7\text{V}, I_c=0\text{mA}$	-	-	20	$\mu\text{A}$
$h_{FE}$	DC Current Gain	$V_{ce}=20\text{V}, I_c=20\text{mA}$ $V_{ce}=5\text{V}, I_c=1.5\text{A}$	8 5	- -	40 -	
$t_s$	Storage Time	$V_{CC}=250\text{V}$	-	-	3	$\mu\text{s}$
$t_f$	Fall Time	$I_C=5 I_B$ $I_{B1}=- I_{B2}=0.04\text{A}$	-	-	0.8	

**Note:**

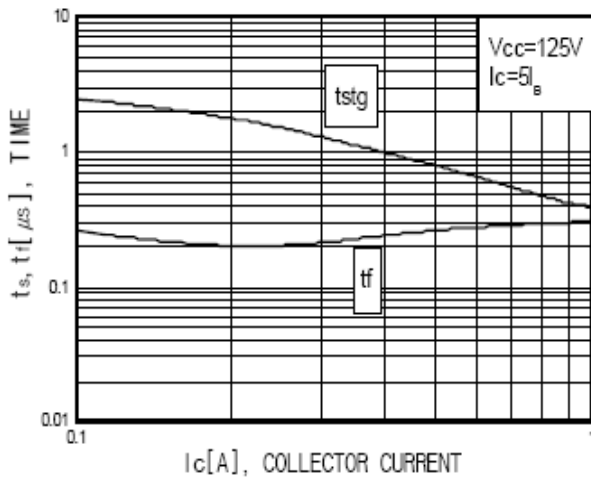
Pulse Test : Pulse width 300, Duty cycle 2%



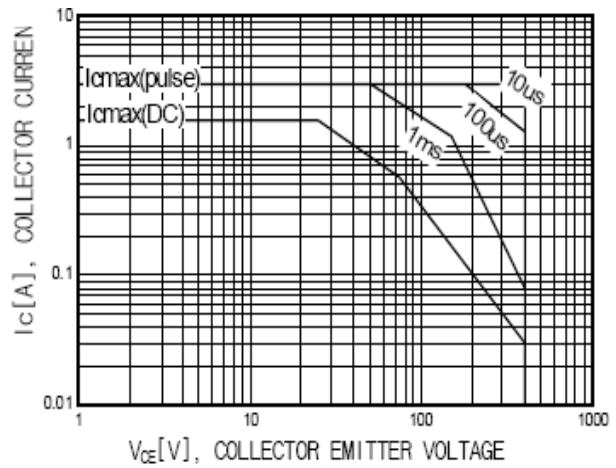
**Fig. 1 DC Current Gain**



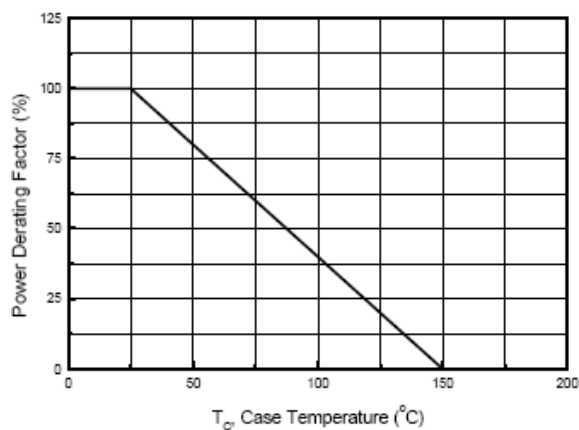
**Fig. 2 Saturation Voltage**



**Fig. 3 Switching Time**

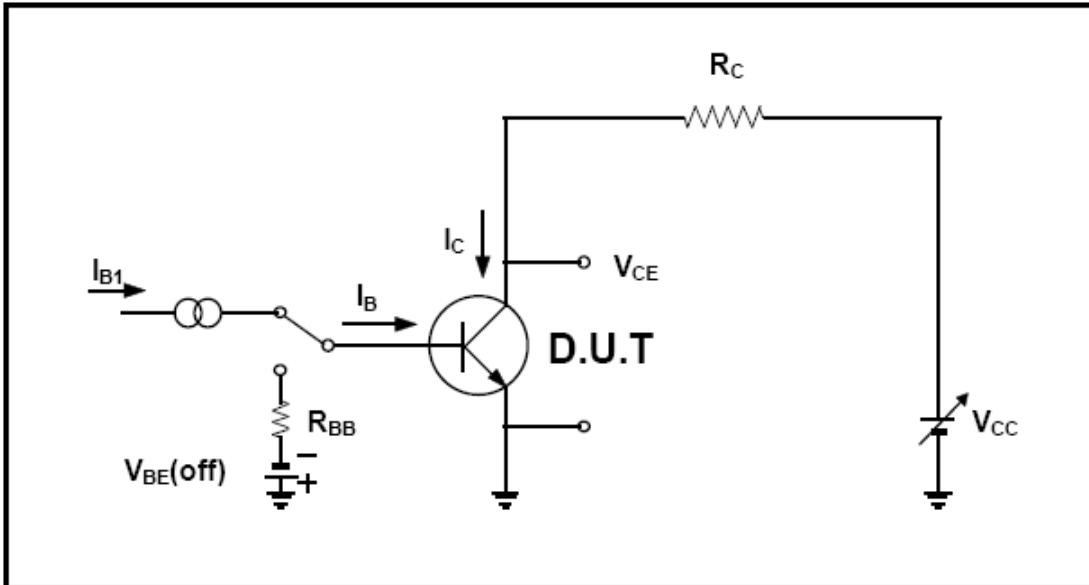


**Fig. 4 Safe Operation Area**

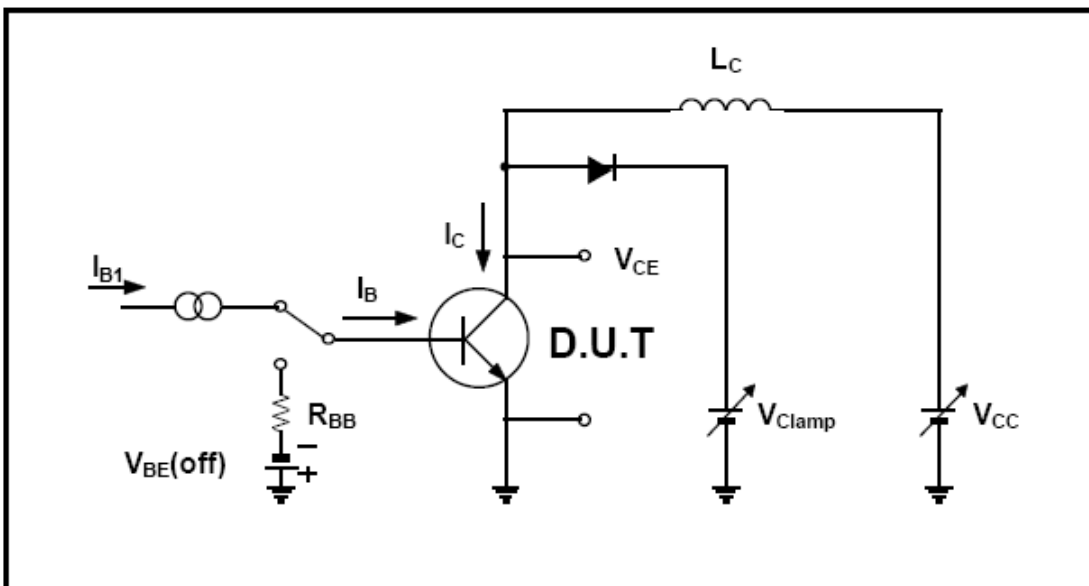


**Fig. 5 Power Derating**

### Resistive Load Switching Test Circuit



### Inductive Load Switching & RBSOA Test Circuit



## TO-126 Package Dimension

