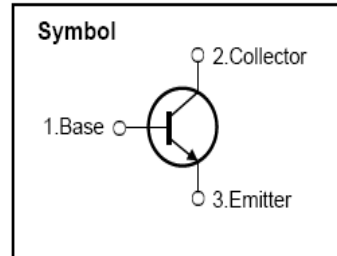


*High Voltage Fast-Switching NPN Power Transistor*

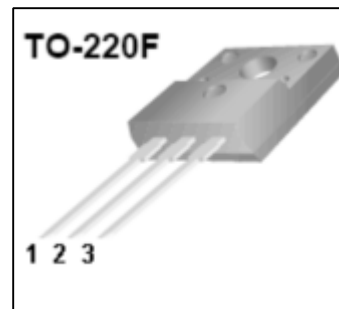
**Features**

- ◆ 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		12*	A
$I_{CP}$	Collector pulse Current		25	A
$I_B$	Base Current		6.0	A
$I_{BM}$	Base Peak Current	$t_p = 5ms$	12	A
$P_C$	Total Dissipation at $T_c = 25^\circ C$		50	W
	Total Dissipation at $T_a = 25^\circ C$		2.2	
$T_J$	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**

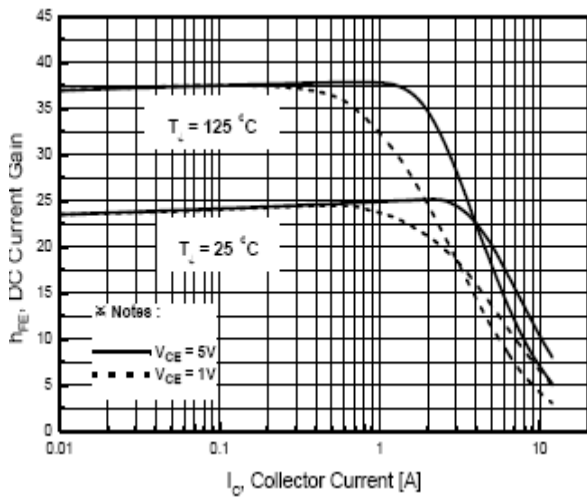
Symbol	Parameter	Value	Units
$R_{\theta Jc}$	Thermal Resistance Junction to Case	2.50	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62.5	$^\circ C/W$

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

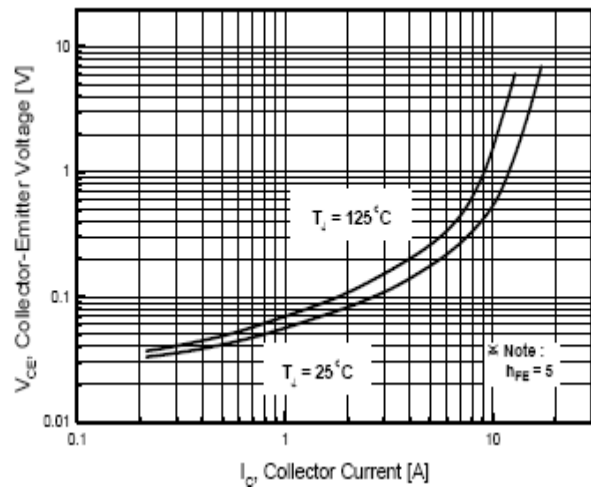
Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
$V_{CEO(sus)}$	Collector-Emitter Breakdown Voltage	$I_c=10\text{mA}, I_b=0$	400	-	-	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_c=5.0\text{A}, I_b=1.0\text{A}$ $I_c=8.0\text{A}, I_b=1.6\text{A}$ $I_c=12\text{A}, I_b=3.0\text{A}$	-	-	1.0 1.5 3.0	V
		$I_c=8.0\text{A}, I_b=1.6\text{A}$ $T_c=100^\circ\text{C}$	-	-	2.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_c=5.0\text{A}, I_b=1.0\text{A}$ $I_c=8.0\text{A}, I_b=1.6\text{A}$	-	-	1.2 1.6	V
		$I_c=8.0\text{A}, I_b=1.6\text{A}$ $T_c=100^\circ\text{C}$	-	-	1.5	V
$I_{EBO}$	Emitter-Base Cutoff Current	$V_{eb}=9\text{V}, I_c=0\text{V}$	-	-	10	$\mu\text{A}$
$h_{FE}$	DC Current Gain	$V_{ce}=5\text{V}, I_c=5.0\text{A}$ $V_{ce}=5\text{V}, I_c=8.0\text{A}$	10 6	- -	40 30	
$t_s$	Storage Time	$V_{CC}=5.0\text{V}, I_c=0.5\text{A}$ (UI9600)	4	-	10	$\mu\text{s}$
$t_f$	Fall Time					
$f_T$	Current Gain Band with Prouct	$V_{ce}=10\text{V}, I_c=0.5\text{A}$	4			MHz

**Note:**

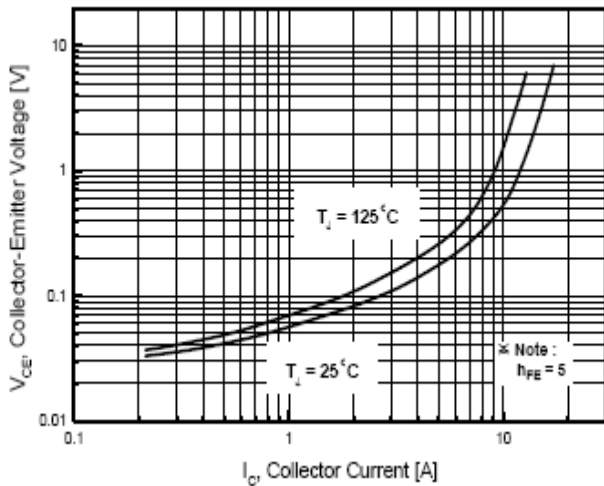
Pulse Test : Pulse width 300, Duty cycle 2%



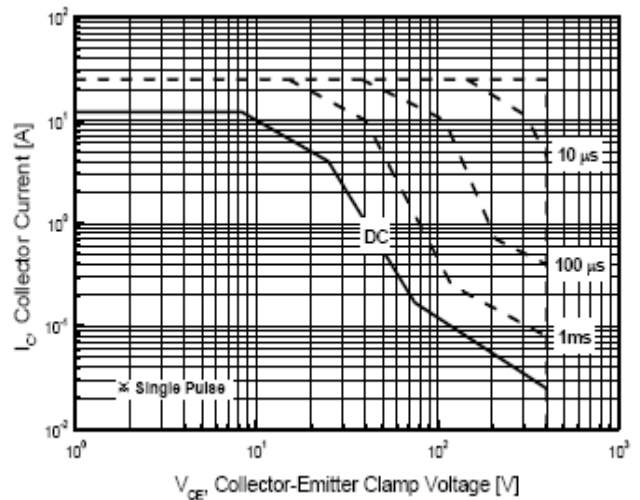
**Fig. 1 DC Current Gain**



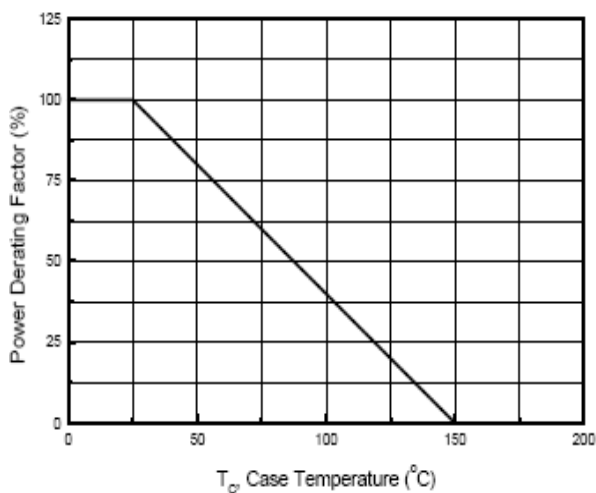
**Fig. 2 Collector-Emitter Saturation Voltage**



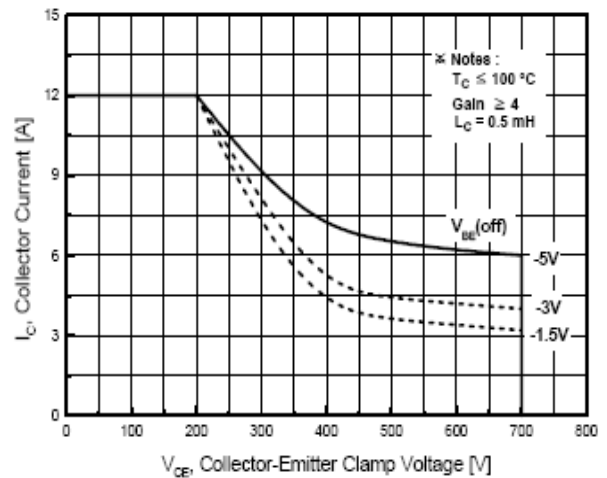
**Fig. 3 Base-Emitter Saturation Voltage**



**Fig. 4 Safe Operation Area**

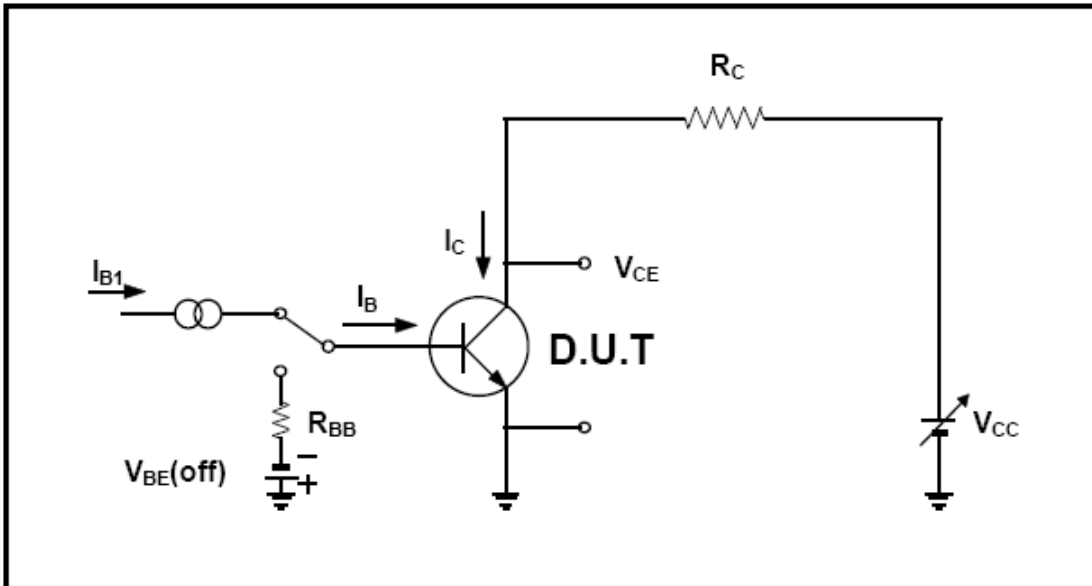


**Fig.5 Power Derating**

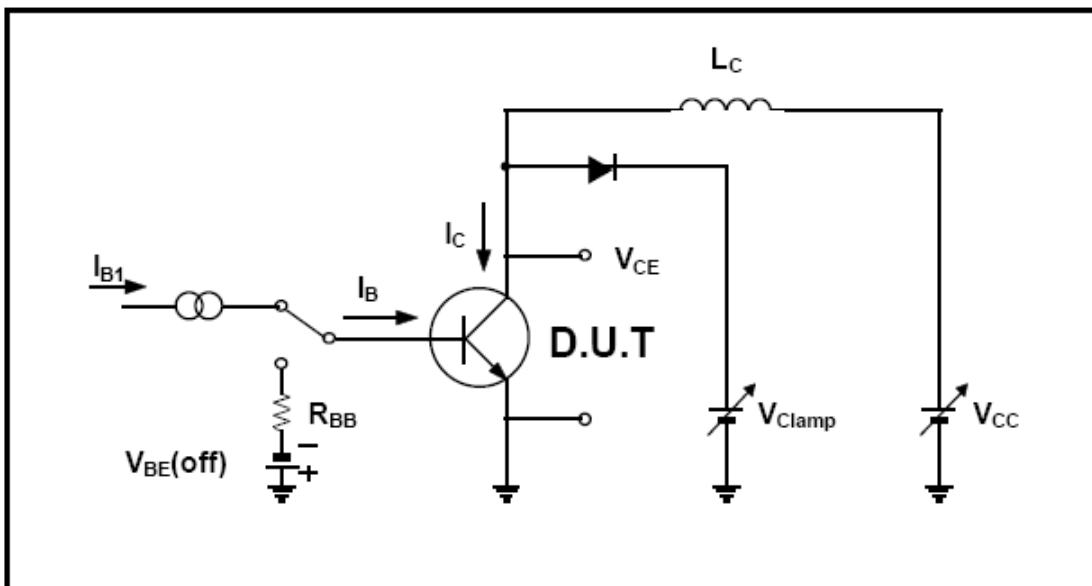


**Fig.6 Reverse Biased Safe Operation Area**

**Resistive Load Switching Test Circuit**



**Inductive Load Switching & RBSOA Test Circuit**



## TO-220F Package Dimension

Unit: mm

