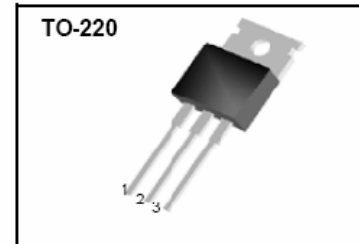
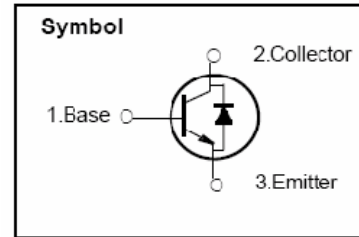


High Voltage Fast-Switching NPN Power Transistor**Features**

- ◆ Very High Switching Speed
- ◆ Minimum Lot-to-Lot h_{FE} Variation
- ◆ 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	$V_{BE} = 0$	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		4.0	A
I_{CP}	Collector pulse Current		8.0	A
I_B	Base Current		2.0	A
I_{BM}	Base Peak Current	$t_P = 5ms$	4.0	A
P_C	Total Dissipation at $T_c = 25^\circ C$		75	W
	Total Dissipation at $T_a = 25^\circ C$		1.8	
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	1.67	$^\circ C/W$
$R_{\theta JA}$	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	
I_{CEV}	Collector Cut-off Current ($V_{BE} = -1.5\text{V}$)	$V_{CE} = 700\text{V}$ $V_{CE} = 700\text{V}, T_C = 100^{\circ}\text{C}$	-	-	1.0 5.0	mA
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	$I_B = 0, I_C = 10\text{mA}$	400	-	-	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 1.0\text{A}, I_B = 0.2\text{A}$ $I_C = 2.0\text{A}, I_B = 0.5\text{A}$ $I_C = 4.0\text{A}, I_B = 1.0\text{A}$	-	-	0.5 0.6 1.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 1.0\text{A}, I_B = 0.2\text{A}$ $I_C = 2.0\text{A}, I_B = 0.5\text{A}$	-	-	1.2 1.6	V
h_{FE}	DC Current Gain	$I_C = 1.0\text{A}, V_{CE} = 5\text{V}$ $I_C = 2.0\text{A}, V_{CE} = 5\text{V}$	10 10		40 30	
t_s t_f	Storage Time Fall Time	$I_C = 2.0\text{A}, V_{CC} = 125\text{V}$ $I_{B1} = 0.4\text{A}, I_{B2} = -0.4\text{A}$ $T_P = 25\mu\text{s}$	-	-	3.6 1.6	μs
f_T	Current Gain Bandwidth Product	$I_C=0.5\text{A}, V_{CE}=10\text{V}$	4	-	-	MHz
V_F	Diode Forward Voltage	$I_F=2\text{A}$	-	-	2.5	V
C_{OB}	Output Capacitance	$I_C=0.5\text{A}, V_{CE}=10\text{V}$	-	6.5		pF

Note:

Pulse Test : Pulse width 300, Duty cycle 2%

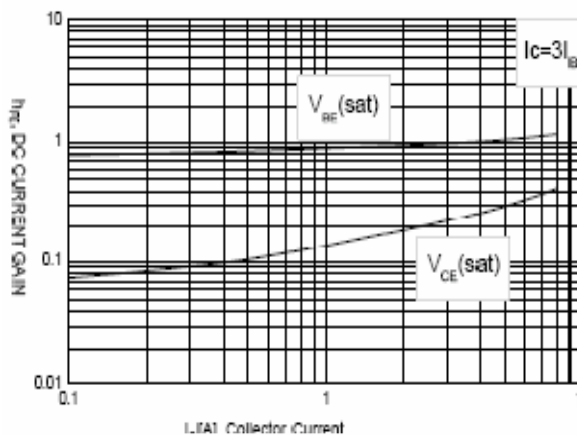


Fig. 1 DC Current Gain

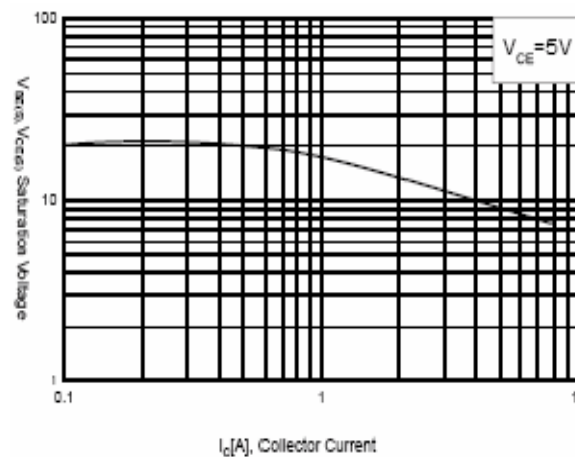


Fig. 2 Saturation Voltage

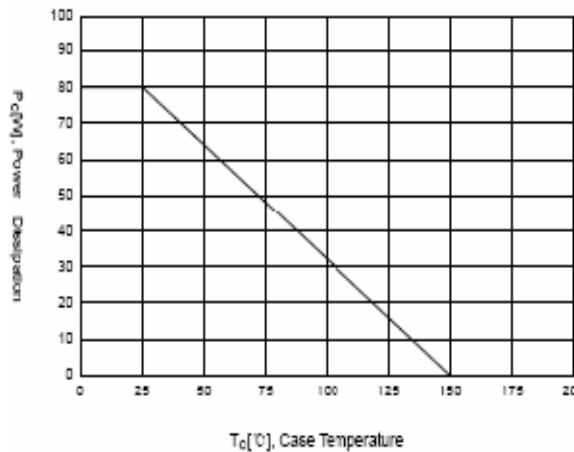


Fig. 3 Power Derating

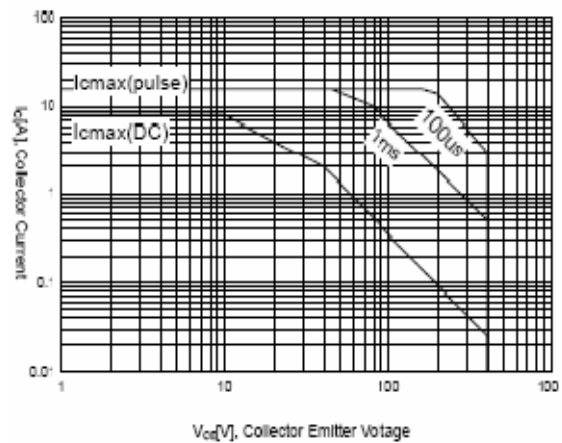


Fig. 4 Safe Operation Area

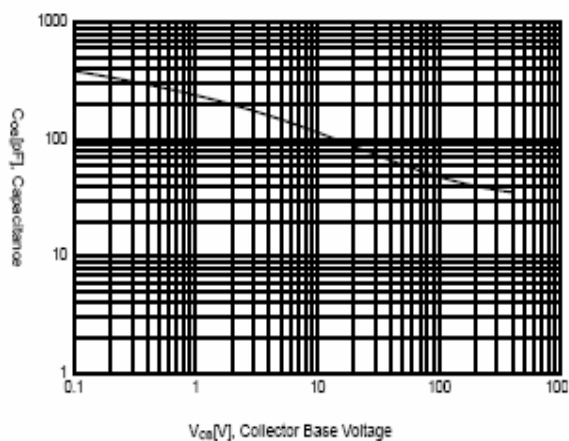


Fig. 5 Collect output capacitance

TO-220 Package Dimension

