

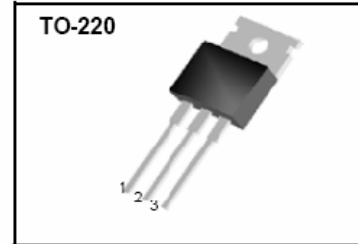
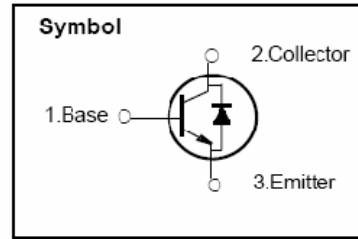
*High Voltage Fast-Switching NPN Power Transistor*

**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	$V_{BE} = 0$	<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		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**

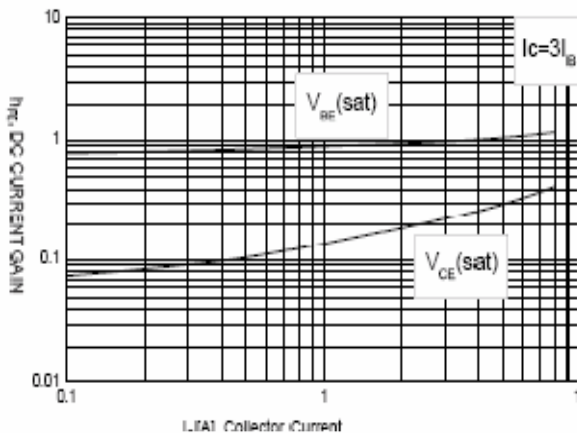
Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance Junction to Case	1.67	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62.5	$^\circ C/W$

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

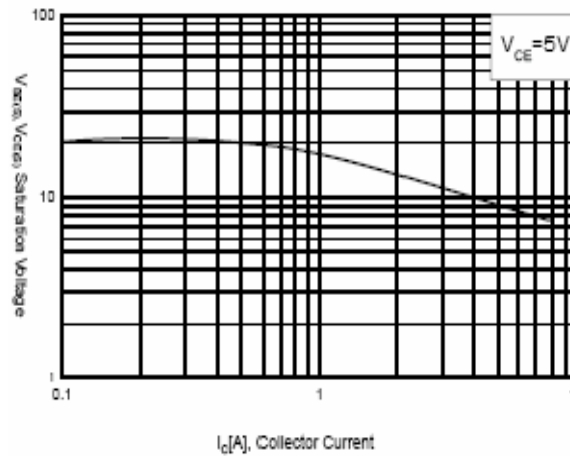
Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
$I_{CEV}$	Collector Cut-off Current ( $V_{BE} = -1.5\text{V}$ )	$V_{CE} = 700\text{V}$	-	-	1.0	mA
		$V_{CE} = 700\text{V}, T_C = 100^{\circ}\text{C}$	-	-	5.0	
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	$I_B = 0, I_C = 10\text{mA}$	400	-	-	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 1.0\text{A}, I_B = 0.2\text{A}$	-	-	0.5	V
		$I_C = 2.0\text{A}, I_B = 0.5\text{A}$	-	-	0.6	
		$I_C = 4.0\text{A}, I_B = 1.0\text{A}$	-	-	1.0	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 1.0\text{A}, I_B = 0.2\text{A}$	-	-	1.2	V
		$I_C = 2.0\text{A}, I_B = 0.5\text{A}$	-	-	1.6	
$h_{FE}$	DC Current Gain	$I_C = 1.0\text{A}, V_{CE} = 5\text{V}$	10		40	
		$I_C = 2.0\text{A}, V_{CE} = 5\text{V}$	10		30	
$t_s$	Storage Time	$I_C = 2.0\text{A}, V_{CC} = 125\text{V}$	-	-	3.6	$\mu\text{s}$
$t_f$	Fall Time	$I_{B1} = 0.4\text{A}, I_{B2} = -0.4\text{A}$ $T_P = 25\mu\text{s}$	-	-	1.6	
$f_T$	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:**

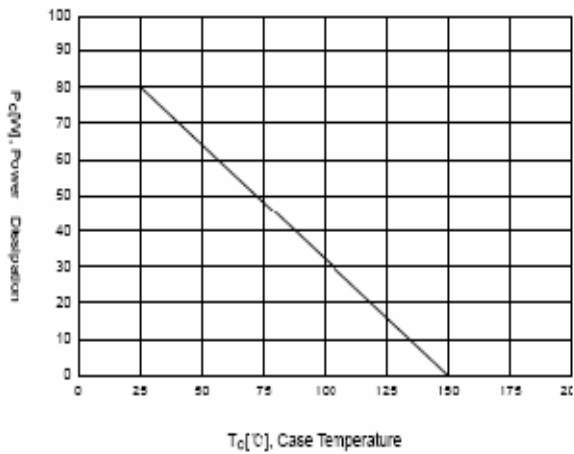
Pulse Test : Pulse width 300, Duty cycle 2%



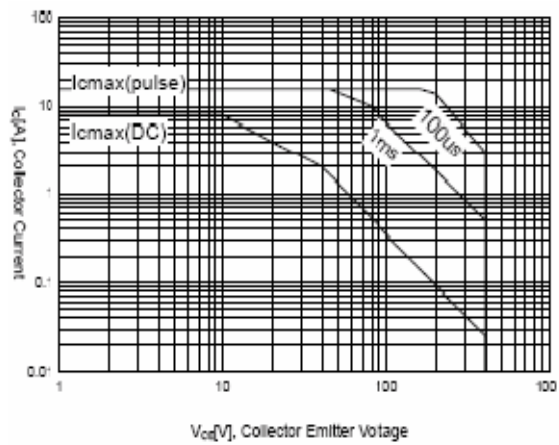
**Fig. 1 DC Current Gain**



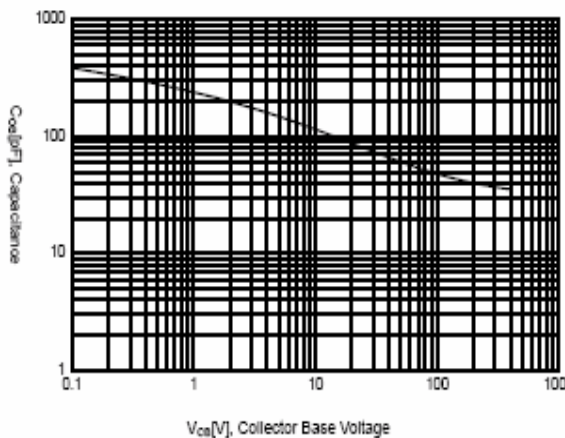
**Fig. 2 Saturation Voltage**



**Fig. 3 Power Derating**



**Fig. 4 Safe Operation Area**



**Fig. 5 Collect output capacitance**

