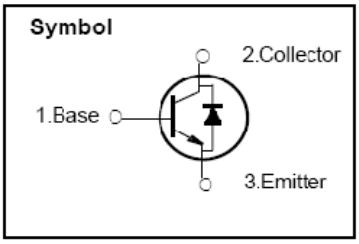
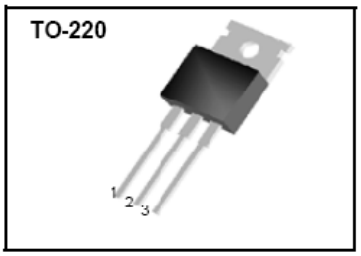
High Voltage Fast-Switching NPN Power Transistor





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 TC = 25℃		75	W
T_J	Operation Junction Temperature		- 40 ~ 150	℃
T_{STG}	Storage Temperature		- 40 ~ 150	℃

Thermal Characteristics

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

Electrical Characteristics (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
I_{CEV}	Colletor Cut-off Current (VBE = -1.5V)	V_{CE} = 700V V_{CE} = 700V ,T_C = 100℃	- -	- -	1.0 5.0	mA
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	IB = 0, IC = 10mA	400	-	-	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C =1.0A, I_B = 0.2A I_C = 2.0A, I_B = 0.5A I_C = 4.0A, I_B = 1.0A	-	-	0.5 0.6 1.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C =1.0A, I_B = 0.2A I_C = 2.0A, I_B = 0.5A	-	-	1.2 1.6	V
h_{FE}	DC Current Gain	I_C = 1.0A, VCE = 5V IC = 2.0A, VCE = 5V	10 10		40 30	
ts tf	Storage Time Fall Time	I_C = 2.0A, V_{CC} = 125V I_{B1} = 0.4A, I_{B2} = -0.4A T_P = 25us	-	-	3.6 1.6	μS
f_T	Current Gain Bandwidth Product	I_C=0.5A ,V_{CE}=10V	4	-	-	MHz
V_F	Diode Forward Voltage	I_F=2A	-	-	2.5	V
C_{OB}	Output Capacitance	I_C=0.5A ,V_{CE}=10V	-	6.5		pF

Note:

Pulse Test : Pulse width 300, Duty cycle 2%

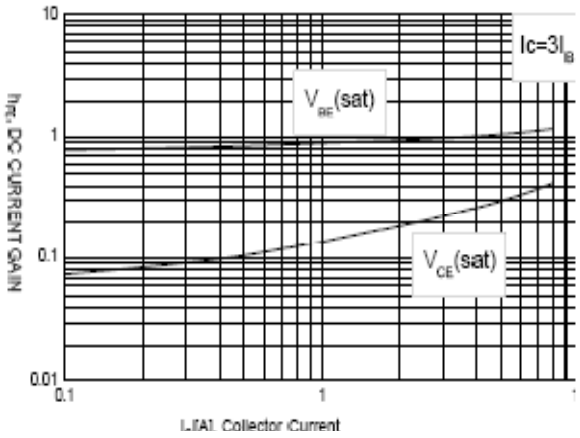


Fig. 1 DC Current Gain

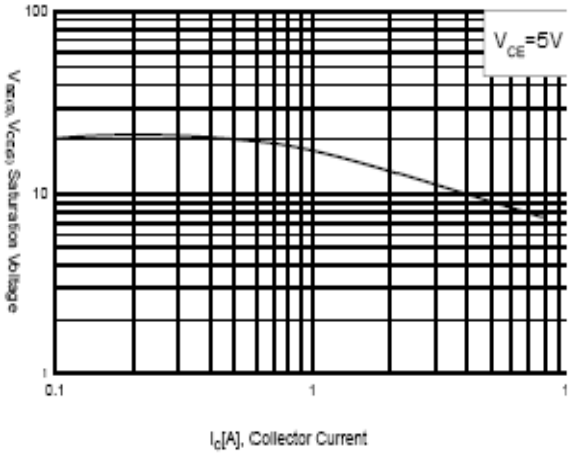


Fig. 2 Saturation Voltage

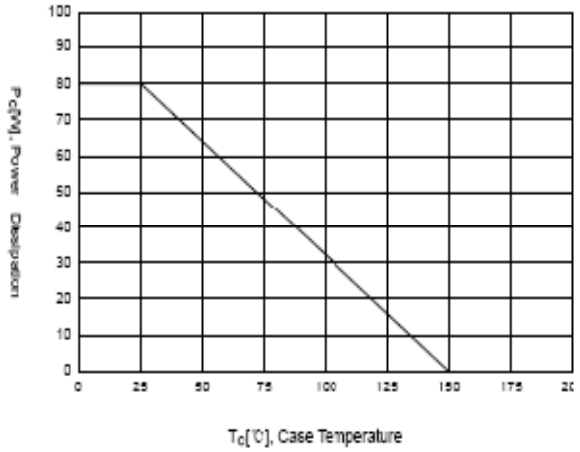


Fig. 3 Power Derating

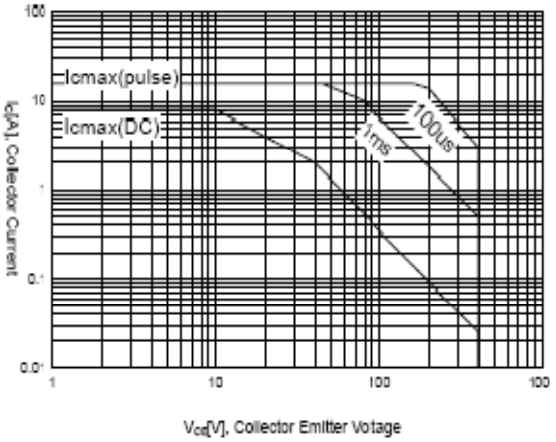


Fig. 4 Safe Operation Area

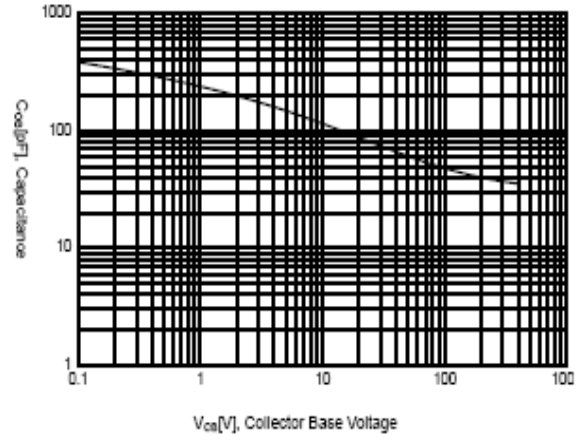


Fig. 5 Collect output capacitance

TO-220 Package Dimension

Unit: mm