

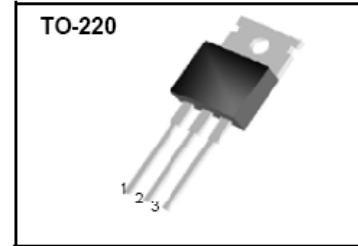
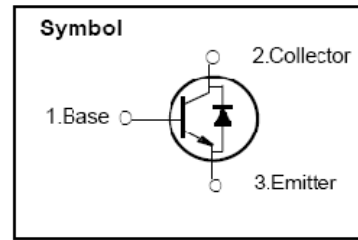
High Voltage Fast-Switching NPN Power Transistor

Features

- ◆ Very High Switching Speed
- ◆ Minimum Lot-to-Lot h_{FE} Variation
- ◆ Wide Reverse Bias SOA
- ◆ Built-in free wheeling 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		8.0	A
I_{CP}	Collector pulse Current		16	A
I_B	Base Current		4.0	A
I_{BM}	Base Peak Current	$t_P = 5ms$	8.0	A
P_C	Total Dissipation at $T_C = 25^\circ C$		80	W
T_J	Operation Junction Temperature		- 40 ~ 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	1.67	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62.5	$^\circ C/W$

SBP13007D

Electrical Characteristics (T_C=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
I _{CEV}	Collector Cut-off Current (V _{BE} = -1.5V)	V _{CE} = 700V	-	-	1.0	mA
		V _{CE} = 700V , T _C = 100°C	-	-	5.0	
V _{CEO(SUS)}	Collector-Emitter Sustaining Voltage	I _B = 0, I _C = 10mA	400	-	-	V
V _{CE(sat)}	Collector-Emitter Saturation Voltage	I _C = 2.0A, I _B = 0.4A	-	-	0.6	V
		I _C = 5.0A, I _B = 1.0A	-	-	1.5	
		I _C = 8.0A, I _B = 2.0A	-	-	3.0	
V _{BE(sat)}	Base-Emitter Saturation Voltage	I _C = 2.0A, I _B = 0.4A	-	-	1.2	V
		I _C = 5.0A, I _B = 1.0A	-	-	1.6	
h _{FE}	DC Current Gain	I _C = 2.0A, V _{CE} = 5V	10		40	
		I _C = 5.0A, V _{CE} = 5V	10		30	
ts	Storage Time	I _C = 5.0A, V _{CC} = 125V	-	-	3.6	μs
tf	Fall Time	I _{B1} = 1.0A, I _{B2} = -1.0A T _P = 25us	-	-	1.6	
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%

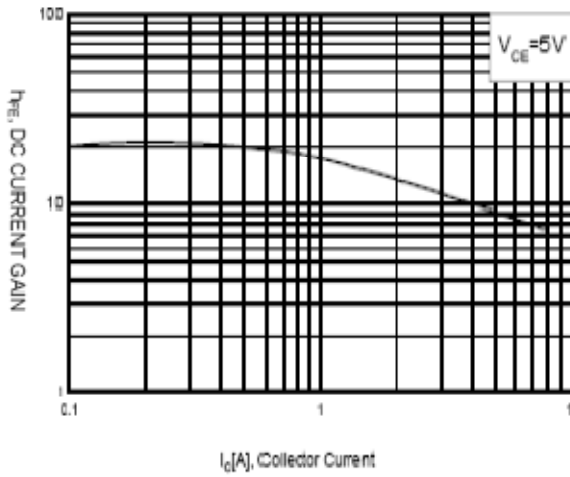


Fig. 1 DC Current Gain

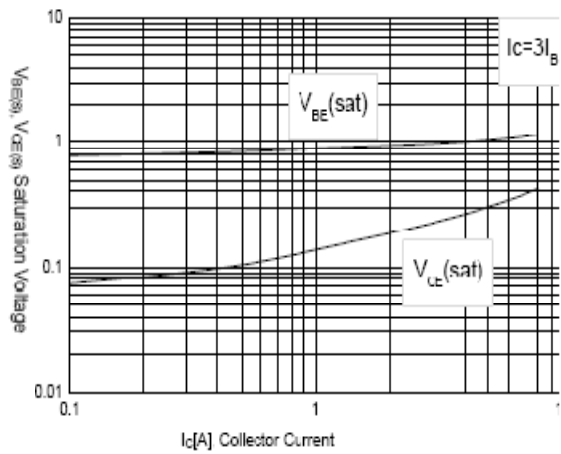


Fig. 2 Saturation Voltage

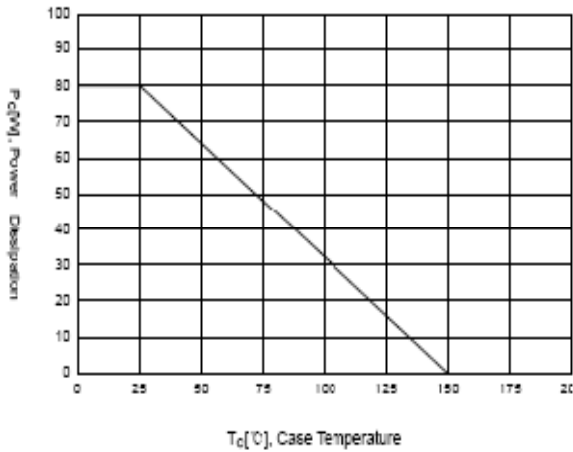


Fig. 3 Power Derating

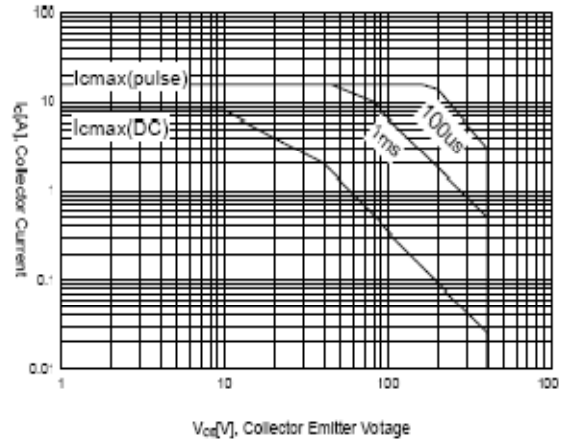


Fig. 4 Safe Operation Area

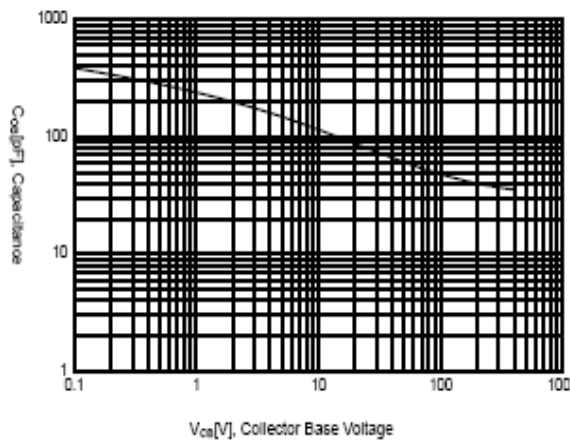


Fig. 5 Collect output capacitance

SBP13007D

TO-220 Package Dimension

Unit: mm

