



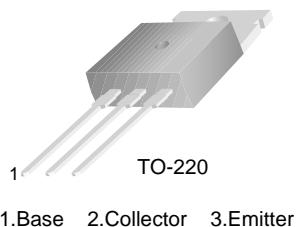
July 2008

## FJP13007

# High Voltage Fast-Switching NPN Power Transistor

### High Voltage High Speed Power Switch Application

- High Voltage Capability
- High Switching Speed
- Suitable for Electronic Ballast and Switching Mode Power Supply



### Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	700	V
$V_{CEO}$	Collector-Emitter Voltage	400	V
$V_{EBO}$	Emitter-Base Voltage	9	V
$I_C$	Collector Current (DC)	8	A
$I_{CP}$	Collector Current (Pulse)	16	A
$I_B$	Base Current	4	A
$P_C$	Collector Dissipation ( $T_C = 25^\circ\text{C}$ )	80	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-65 ~ 150	$^\circ\text{C}$

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

<b>Symbol</b>	<b>Parameter</b>	<b>Conditions</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max</b>	<b>Units</b>
BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0	400			V
I <sub>EBO</sub>	Emitter Cut-off Current	V <sub>EB</sub> = 9V, I <sub>C</sub> = 0			1	mA
$h_{FE1}$ $h_{FE2}$	DC Current Gain *	V <sub>CE</sub> = 5V, I <sub>C</sub> = 2A V <sub>CE</sub> = 5V, I <sub>C</sub> = 5A	8 5		60 30	
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 2A, I <sub>B</sub> = 0.4A I <sub>C</sub> = 5A, I <sub>B</sub> = 1A I <sub>C</sub> = 8A, I <sub>B</sub> = 2A			1.0 2.0 3.0	V V V
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 2A, I <sub>B</sub> = 0.4A I <sub>C</sub> = 5A, I <sub>B</sub> = 1A			1.2 1.6	V V
f <sub>T</sub>	Current Gain Bandwidth Product	V <sub>CE</sub> = 10V, I <sub>C</sub> = 0.5A	4			MHz
C <sub>ob</sub>	Output Capacitance	V <sub>CB</sub> = 10V, f = 0.1MHz		110		pF
t <sub>ON</sub>	Turn On Time	V <sub>CC</sub> = 125V, I <sub>C</sub> = 5A I <sub>B1</sub> = -I <sub>B2</sub> = 1A R <sub>L</sub> = 25Ω			1.6	μs
t <sub>STG</sub>	Storage Time				3.0	μs
t <sub>F</sub>	Fall Time				0.7	μs

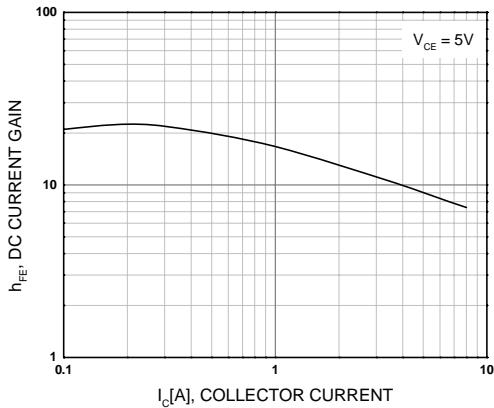
\* Pulse Test: PW ≤ 300μs, Duty Cycle ≤ 2%

**h<sub>FE</sub> Classification**

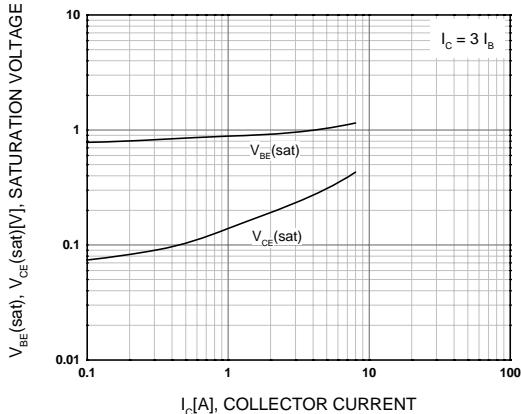
<b>Classification</b>	<b>H1</b>	<b>H2</b>
$h_{FE1}$	15 ~ 28	26 ~ 39

## Typical Characteristics

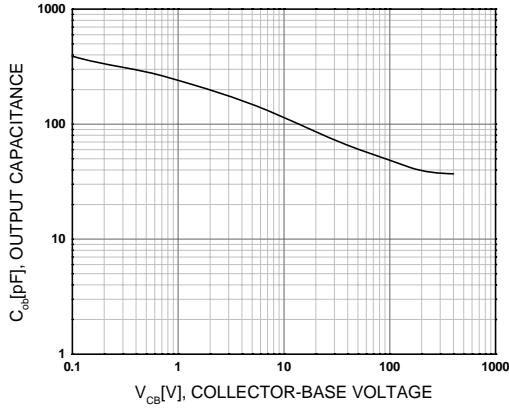
**Figure 1. DC Current Gain**



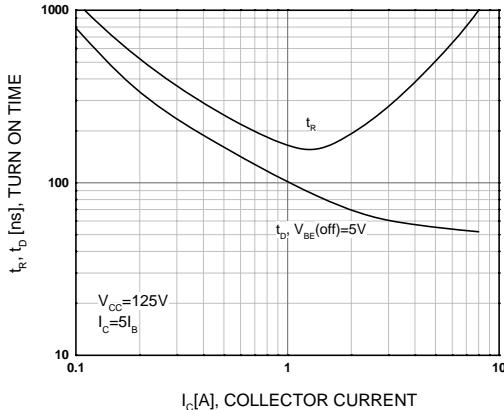
**Figure 2. Saturation Voltage**



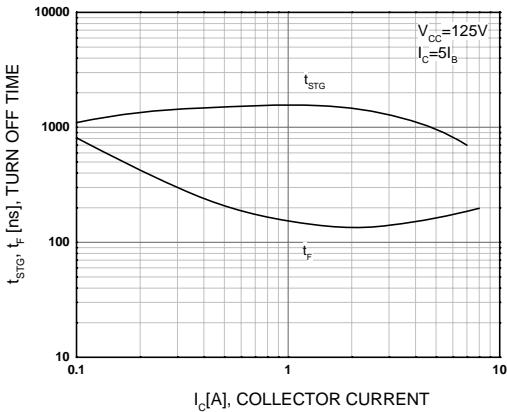
**Figure 3. Collector Output Capacitance**



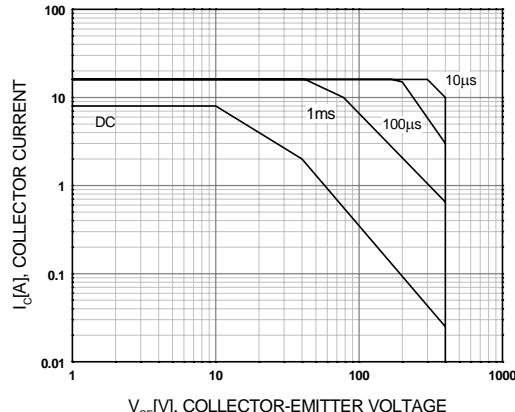
**Figure 4. Turn On Time**



**Figure 5. Turn Off Time**

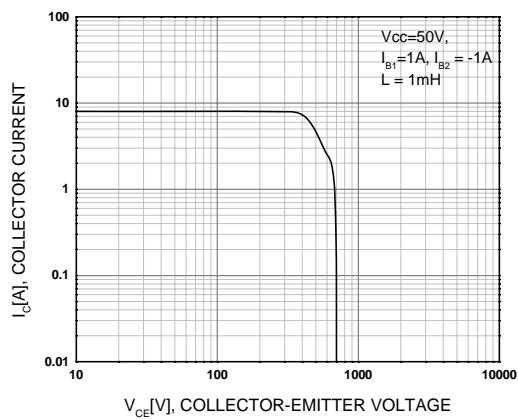


**Figure 6. Forward Biased Safe Operating Area**

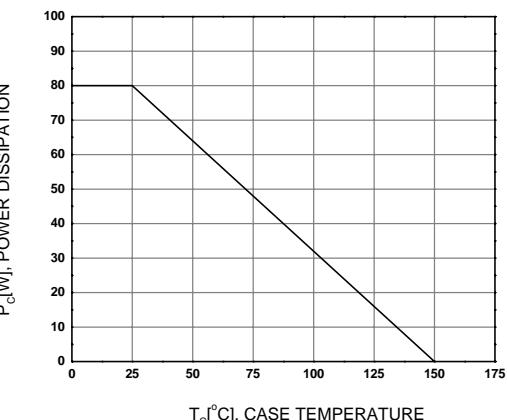


## Typical Characteristics (Continued)

**Figure 7. Reverse Biased Safe Operating Area**

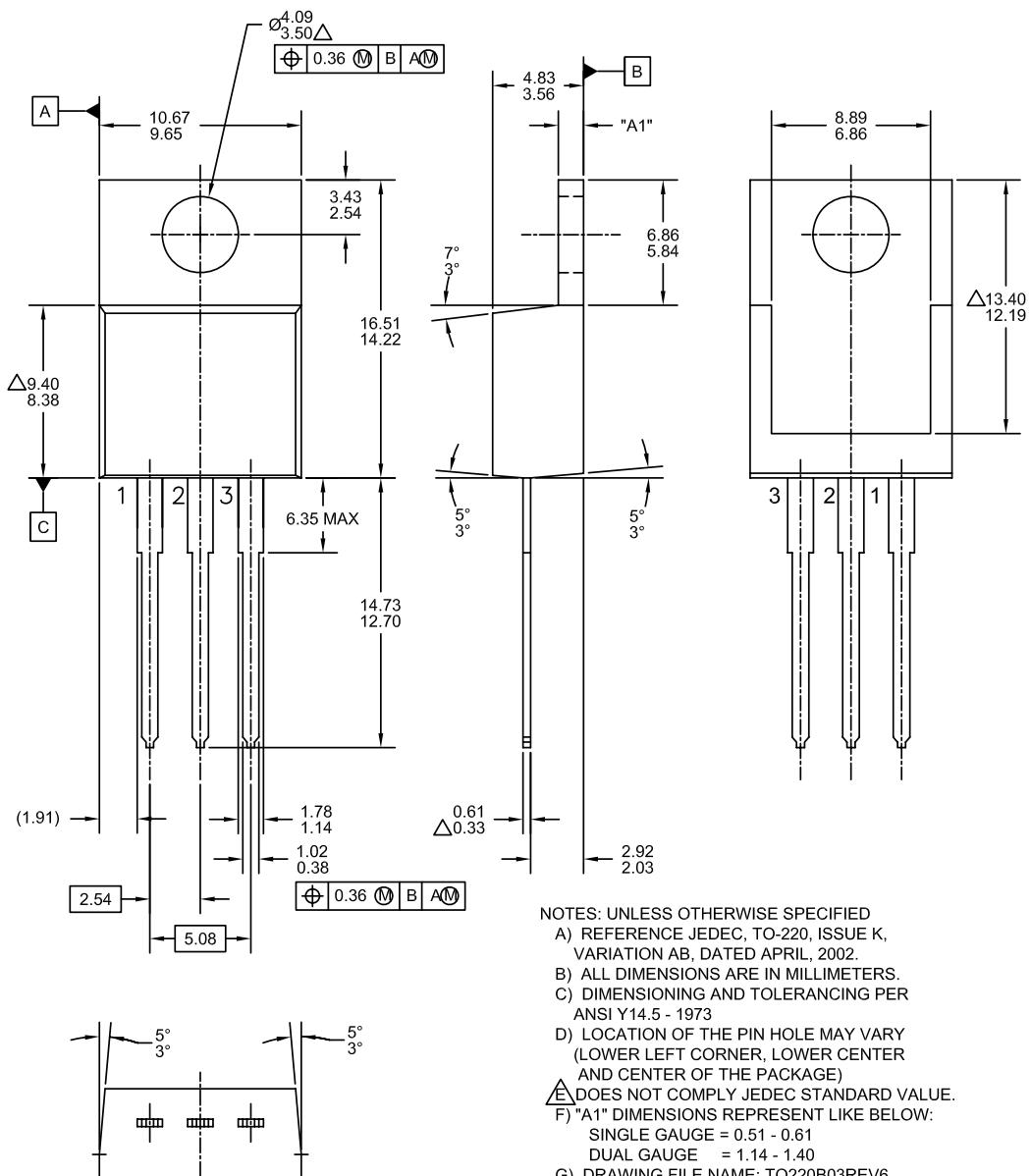


**Figure 8. Power Derating**



## Mechanical Dimensions

TO220





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**Офис по работе с юридическими лицами:**

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

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