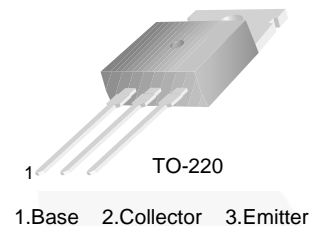


FJP13009

High-Voltage Fast-Switching NPN Power Transistor

Features

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



Ordering Information

Part Number ⁽¹⁾	Marking	Package	Packing Method
FJP13009TU	J13009	TO-220 3L	Rail
FJP13009H2TU	J13009-2	TO-220 3L	Rail

Note:

- The Affix "-H2" means the hFE classification.
The Suffix "-TU" means the tube packing method.

Absolute Maximum Ratings⁽²⁾

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_C = 25^\circ\text{C}$ 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)	12	A
I_{CP}	Collector Current (Pulse)	24	A
I_B	Base Current	6	A
P_D	Total Device Dissipation ($T_C = 25^\circ\text{C}$)	100	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-65 to +150	$^\circ\text{C}$

Note:

- These ratings are based on a maximum junction temperature of 150°C .
These are steady state limits. The factory should be consulted on application involving pulsed or low duty cycle operations.

Electrical Characteristics

Values are at $T_C = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = 10\text{ mA}, I_B = 0$	400			V
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 9\text{ V}, I_C = 0$			1	mA
h_{FE}	DC Current Gain ⁽³⁾	$V_{CE} = 5\text{ V}, I_C = 5\text{ A} (h_{FE1})$	8		40	
		$V_{CE} = 5\text{ V}, I_C = 8\text{ A}$	6		30	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ⁽³⁾	$I_C = 5\text{ A}, I_B = 1\text{ A}$			1.0	V
		$I_C = 8\text{ A}, I_B = 1.6\text{ A}$			1.5	
		$I_C = 12\text{ A}, I_B = 3\text{ A}$			3.0	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ⁽³⁾	$I_C = 5\text{ A}, I_B = 1\text{ A}$			1.2	V
		$I_C = 8\text{ A}, I_B = 1.6\text{ A}$			1.6	
C_{ob}	Output Capacitance	$V_{CB} = 10\text{ V}, f = 0.1\text{ MHz}$		180		pF
f_T	Current Gain Bandwidth Product	$V_{CE} = 10\text{ V}, I_C = 0.5\text{ A}$	4			MHz
t_{ON}	Turn-On Time	$V_{CC} = 125\text{ V}, I_C = 8\text{ A},$ $I_{B1} = -I_{B2} = 1.6\text{ A},$ $R_L = 15.6\ \Omega$			1.1	μs
t_{STG}	Storage Time				3.0	
t_F	Fall Time				0.7	

Note:

3. Pulse test: pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.

h_{FE} Classification

Classification	H1	H2
h_{FE1}	8 ~ 17	15 ~ 28

Typical Performance Characteristics

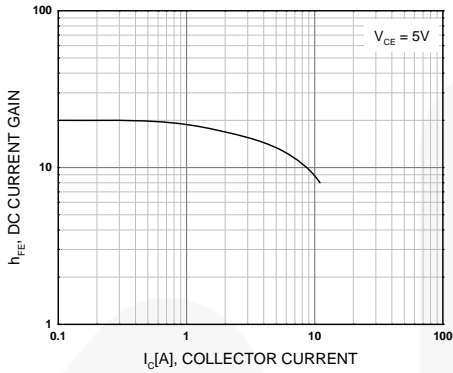


Figure 1. DC Current Gain

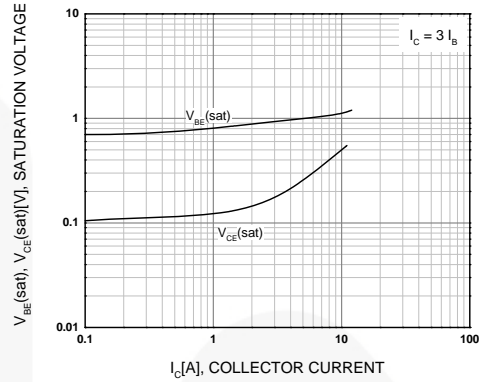


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

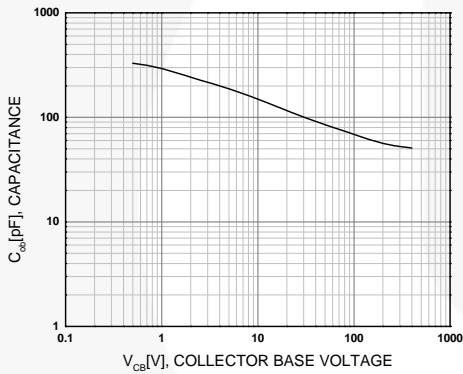


Figure 3. Collector Output Capacitance

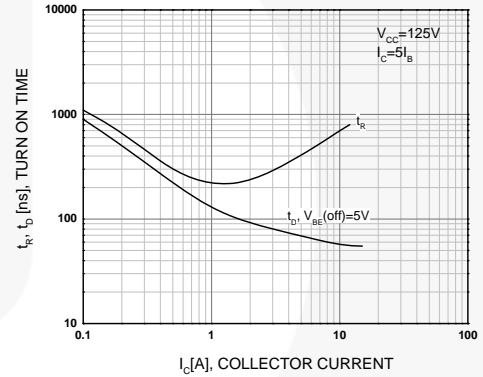


Figure 4. Turn-On Time

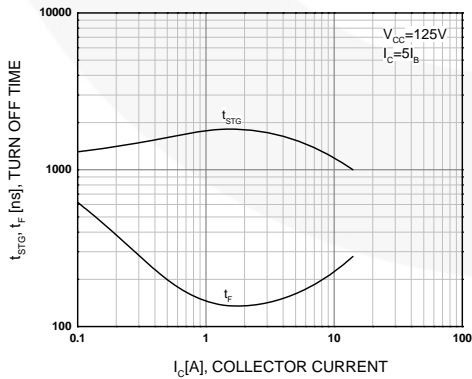


Figure 5. Turn-Off Time

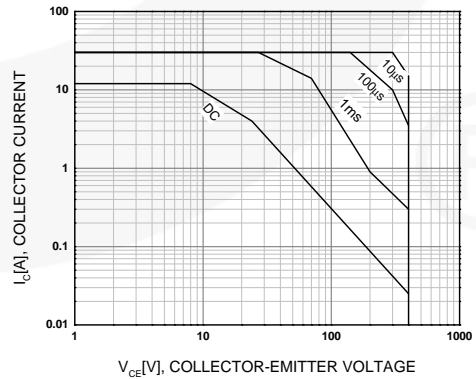


Figure 6. Forward Bias Safe Operating Area

Typical Performance Characteristics (continued)

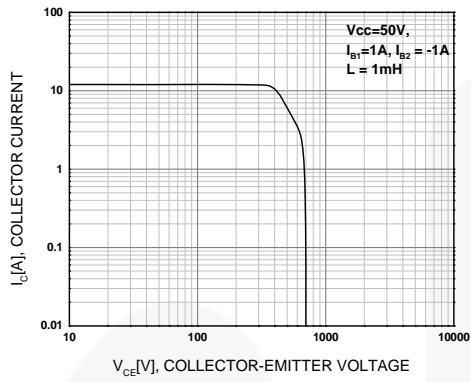


Figure 7. Reverse Bias Safe Operating Area

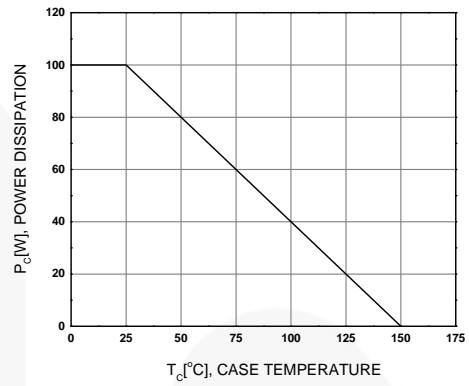


Figure 8. Power Derating

Physical Dimensions

TO-220 3L

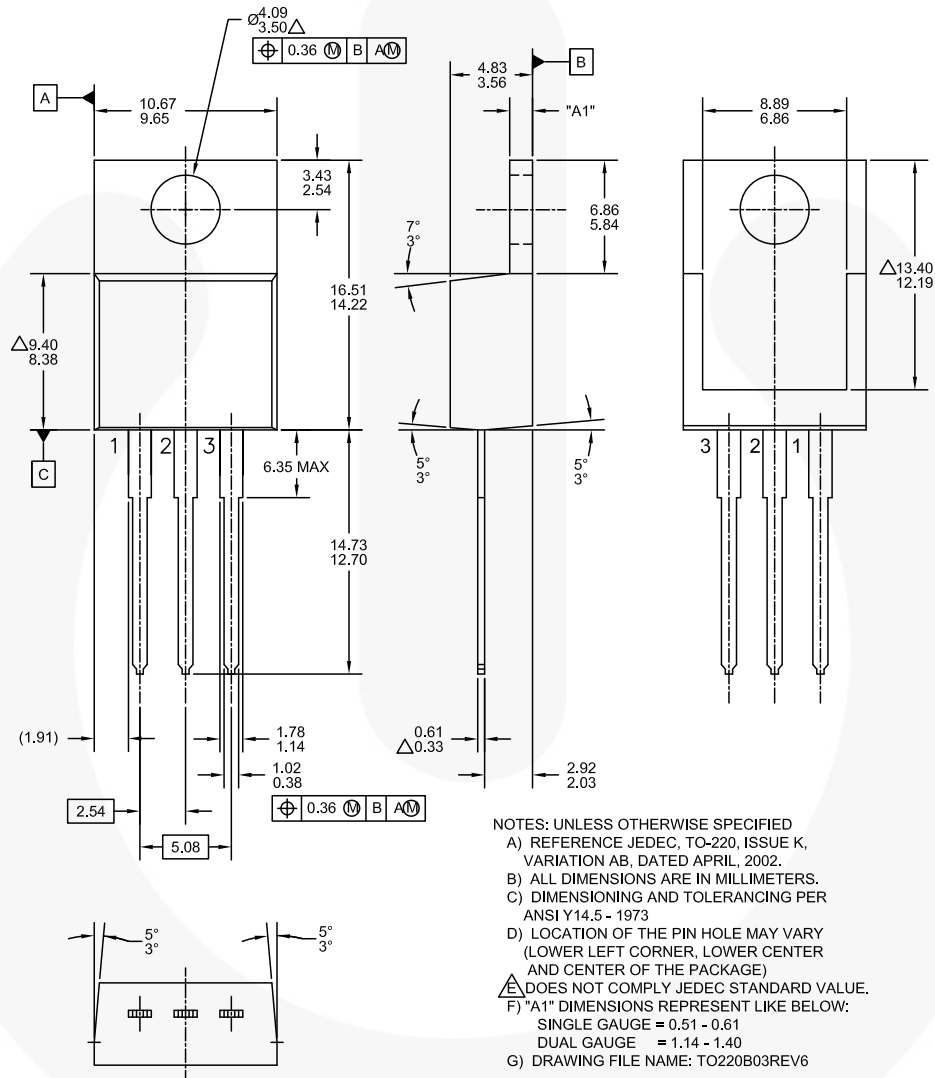


Figure 9. TO220, MOLDED, 3-LEAD, JEDEC VARIATION (ACTIVE)

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