

March 2007

FJP13009

High Voltage Fast-Switching NPN Power Transistor

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



1.Base 2.Collector 3.Emitter

Absolute Maximum Ratings* T_C = 25°C unless otherwise noted (notes_1)

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	Α
P _C	Collector Dissipation (T _C = 25°C)	100	W
T _J	Junction Temperature	150	°C
T _{STG}	Storage Temperature Range	-65 ~ 150	°C

^{*} These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Package Marking and Ordering Information

Device Item (notes_2)	Device Marking	Package	Packing Method	Qty(pcs)
FJP13009	J13009	TO-220	Bulk	1,200
FJP13009H2TU	J130092	TO-220	TUBE	1,000
FJP13009TU	J13009	TO-220	TUBE	1,000

¹⁾ These ratings are based on a maximum junction temperature of 150°C.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

¹⁾ The Affix "-H2" means the hFE classification.

²⁾ The Suffix "-TU" means the Tube packing method, which can be on fairchildsemi website at http://www.fairchildsemi.com/packaging.

Electrical Characteristics $T_C = 25$ °C unless otherwise noted

Symbol	Parameter	Conditions	Min.	Тур.	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} = 9V, I _C = 0			1	mA
h _{FE}	* DC Current Gain	$V_{CE} = 5V, I_{C} = 5A (h_{FE1})$ $V_{CE} = 5V, I_{C} = 8A$	8 6		40 30	
V _{CE} (sat)	* Collector-Emitter Saturation Voltage	$I_C = 5A$, $I_B = 1A$ $I_C = 8A$, $I_B = 1.6A$ $I_C = 12A$, $I_B = 3A$			1 1.5 3	V V V
V _{BE} (sat)	* Base-Emitter Saturation Voltage	$I_C = 5A, I_B = 1A$ $I_C = 8A, I_B = 1.6A$			1.2 1.6	V V
C _{ob}	Output Capacitance	V _{CB} = 10V, f = 0.1MHz		180		pF
f _T	Current Gain Bandwidth Product	$V_{CE} = 10V, I_{C} = 0.5A$	4			MHz
t _{ON}	Turn On Time	V _{CC} = 125V, I _C = 8A			1.1	μS
t _{STG}	Storage Time	$I_{B1} = -I_{B2} = 1.6A, R_L = 15,6\Omega$			3	μS
t _F	Fall Time				0.7	μS

^{*} Pulse Test: PW $\leq 300 \mu s, \, \text{Duty Cycle} \leq 2\%$

hFE Classification

Classification	H1	H2
h _{FE1}	8 ~ 17	15 ~ 28

Typical Performance Characteristics

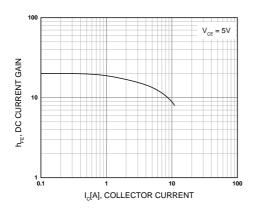


Figure 1. DC current Gain

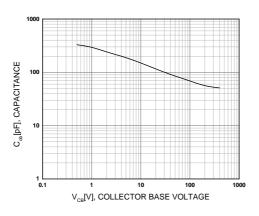


Figure 3. Collector Output Capacitance

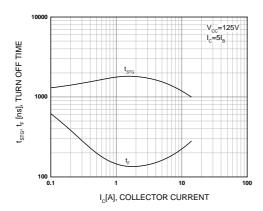


Figure 5. Turn Off Time

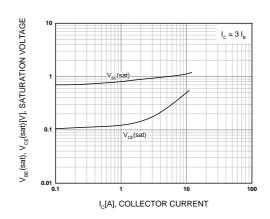


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

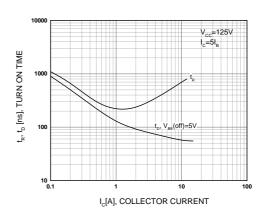


Figure 4. Turn On Time

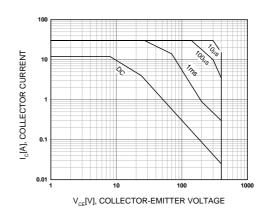


Figure 6. Forward Bias Safe Operating Area

Typical Performance Characteristics (Continued)

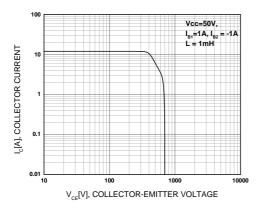


Figure 7. Reverse Bias Safe Operating Area

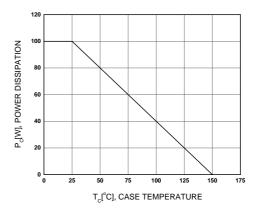
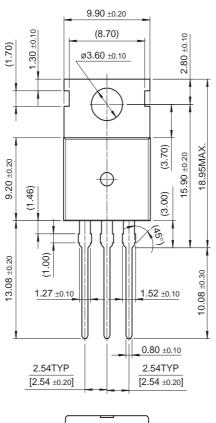
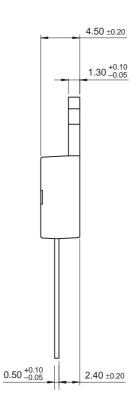


Figure 8. Power Derating

Mechanical Dimensions

TO-220





10.00 ±0.20

Dimensions in Millimeters





TinyLogic[®]

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TruTranslation™

TinyWire™

μSerDes™ UHC[®]

UniFET™

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PRODUCT STATUS DEFINITIONS

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