

# High Voltage Fast-Switching NPN Power Transistor

## FJPF13007

- High Voltage Capability
- High Switching Speed
- Suitable for Electronic Ballast and Switching Mode Power Supply
- This is a Pb-Free Device

### MAXIMUM RATINGS (T<sub>C</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V <sub>CBO</sub>	Collector-Base Voltage	700	V
V <sub>CEO</sub>	Collector-Emitter Voltage	400	V
V <sub>EBO</sub>	Emitter-Base Voltage	9	V
I <sub>C</sub>	Collector Current (DC)	8	A
I <sub>CP</sub>	Collector Current (Pulse)	16	A
I <sub>B</sub>	Base Current	4	A
P <sub>C</sub>	Collector Dissipation (T <sub>C</sub> = 25°C)	40	W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>STG</sub>	Storage Temperature	-65~150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### h<sub>FE</sub> CLASSIFICATION

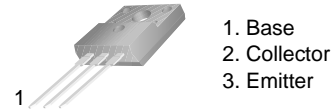
Classification	H1	H2
h <sub>FE1</sub>	15~28	26~39

### ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

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

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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



TO-220 Fullpack, 3-Lead  
CASE 221AT

### MARKING DIAGRAM

J13007 –x AYWWZZ
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J13007– = Specific Device Code  
x = h<sub>FE</sub> Grade  
A = Site Code  
Y = Year  
WW = Work Week  
ZZ = Assembly Lot Code

### ORDERING INFORMATION

Device	Package	Shipping
FJPF13007H2TU	TO-220 Fullpack	1000 Units / Tube

## TYPICAL CHARACTERISTICS

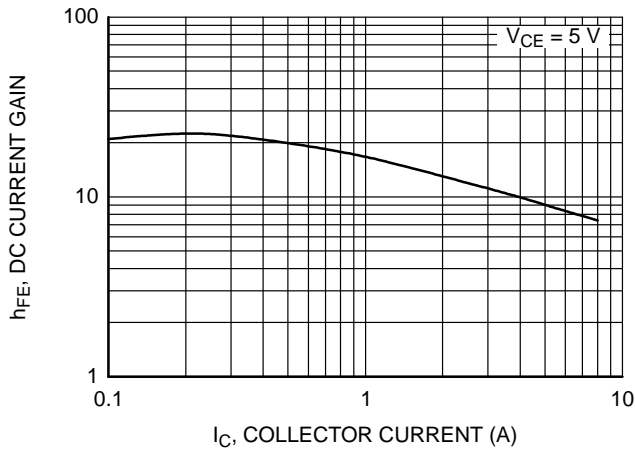


Figure 1. DC Current Gain

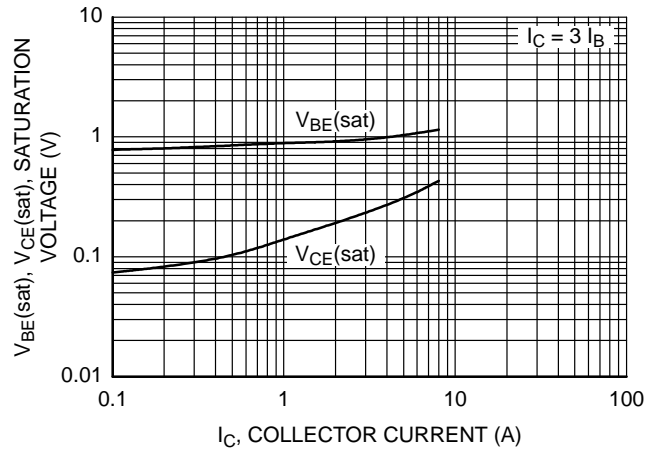


Figure 2. Saturation Voltage

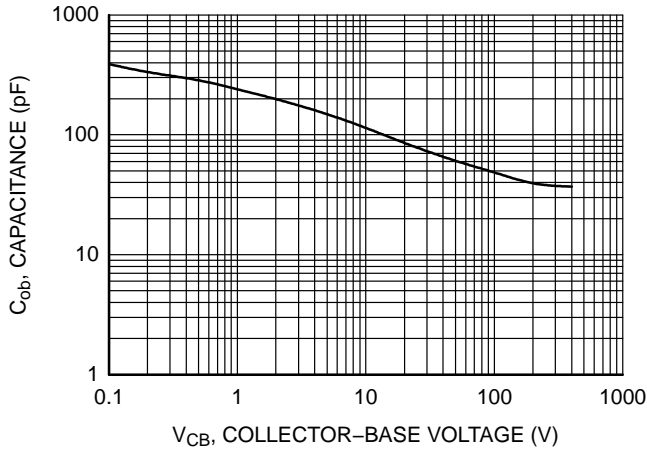


Figure 3. Collector Output Capacitance

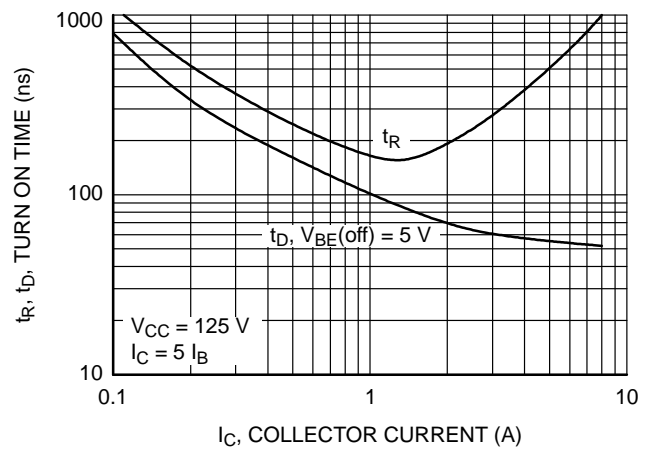


Figure 4. Turn On Time

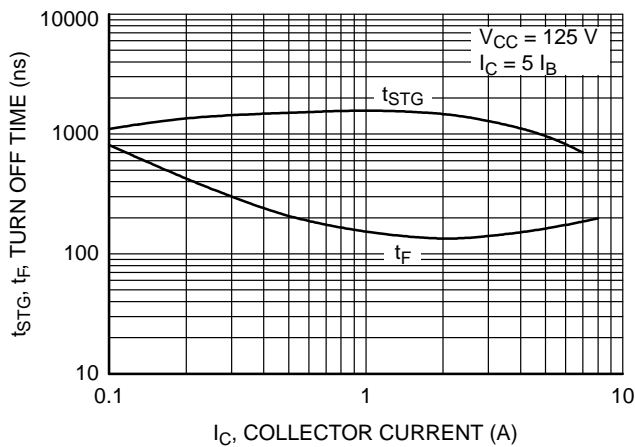


Figure 5. Turn Off Time

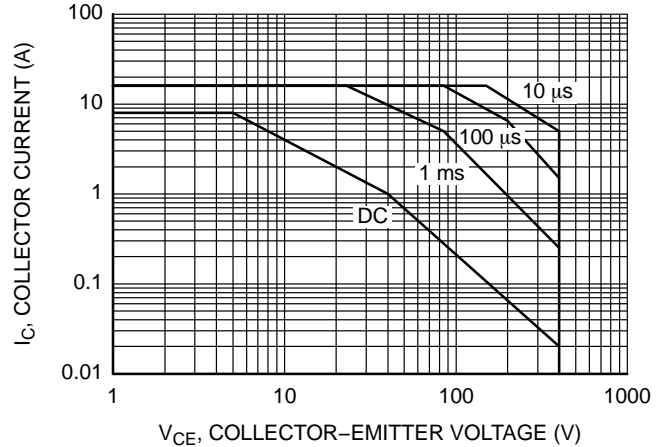


Figure 6. Forward Biased Safe Operating Area

TYPICAL CHARACTERISTICS (CONTINUED)

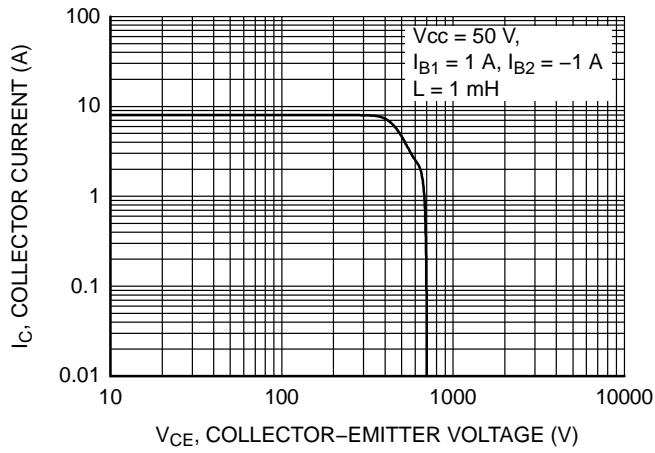


Figure 7. Reverse Biased Safe Operating Area

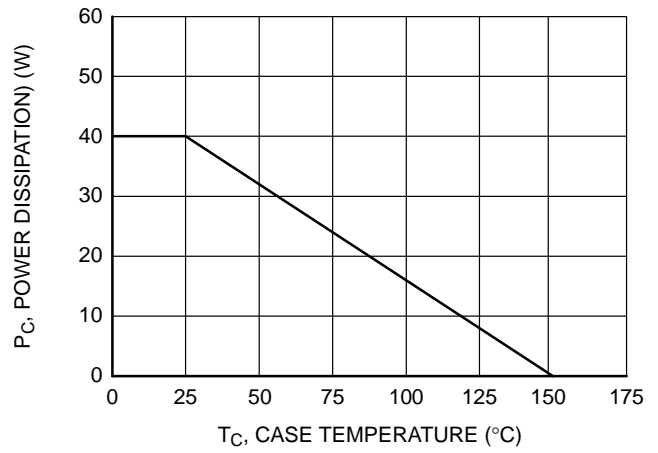
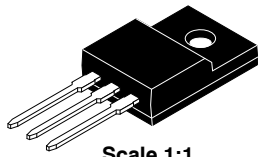


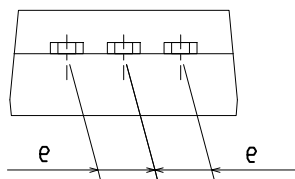
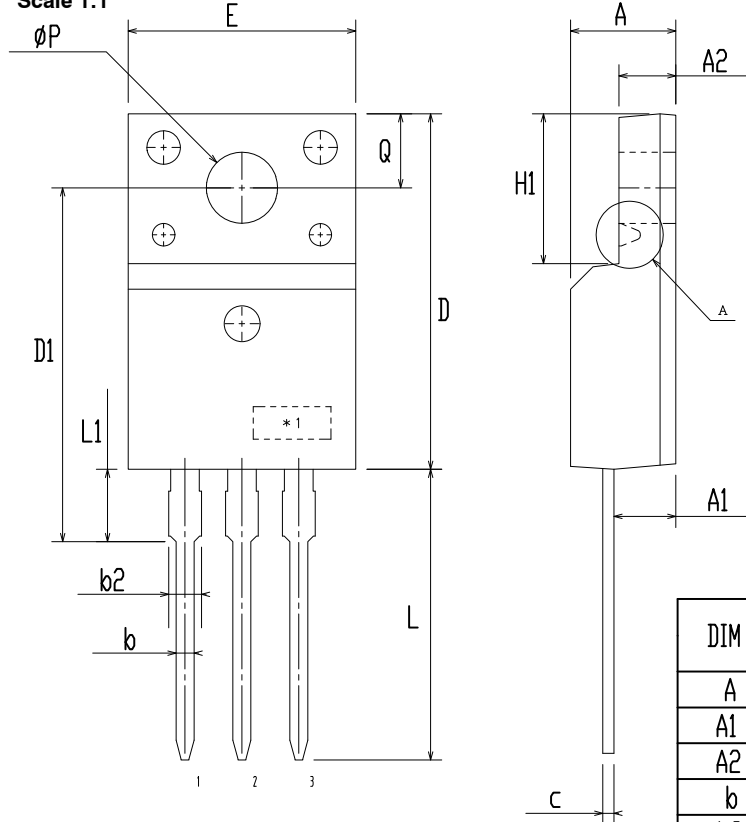
Figure 8. Power Derating

**TO-220 Fullpack, 3-Lead / TO-220F-3SG**  
**CASE 221AT**  
**ISSUE B**

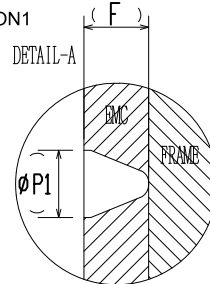
DATE 19 JAN 2021



Scale 1:1



OPTION1



DIM	MILLIMETERS		
	MIN	NOM	MAX
A	4.50	4.70	4.90
A1	2.56	2.76	2.96
A2	2.34	2.54	2.74
b	0.70	0.80	0.90
b2	~	~	1.47
c	0.45	0.50	0.60
D	15.67	15.87	16.07
D1	15.60	15.80	16.00
E	9.96	10.16	10.36
e	2.34	2.54	2.74
F	~	0.84	~
H1	6.48	6.68	6.88
L	12.78	12.98	13.18
L1	3.03	3.23	3.43
Ø P	2.98	3.18	3.38
Ø P1	~	1.00	~
Q	3.20	3.30	3.40

**NOTES:**

A. DIMENSION AND TOLERANCE AS ASME Y14.5-2009

B. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUCTIONS.

C. OPTION 1 - WITH SUPPORT PIN HOLE

OPTION 2 - NO SUPPORT PIN HOLE

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