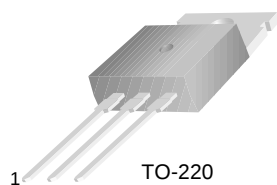


# FJP13007

## High Voltage Fast-Switching NPN Power Transistor

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



TO-220  
1.Base 2.Collector 3.Emitter

### Absolute Maximum Ratings T<sub>C</sub> = 25°C unless otherwise noted

| Symbol           | Parameter                                     | Value     | Units |
|------------------|-----------------------------------------------|-----------|-------|
| 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) | 80        | W     |
| T <sub>J</sub>   | Junction Temperature                          | 150       | °C    |
| T <sub>STG</sub> | Storage Temperature                           | -65 ~ 150 | °C    |

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

| Symbol                 | Parameter                            | Conditions                                                                                                       | Min.   | Typ. | Max               | Units         |
|------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------|--------|------|-------------------|---------------|
| $BV_{CEO}$             | Collector-Emitter Breakdown 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            |
| $h_{FE1}$<br>$h_{FE2}$ | DC Current Gain *                    | $V_{CE} = 5\text{V}, I_C = 2\text{A}$<br>$V_{CE} = 5\text{V}, I_C = 5\text{A}$                                   | 8<br>5 |      | 60<br>30          |               |
| $V_{CE(sat)}$          | Collector-Emitter Saturation Voltage | $I_C = 2\text{A}, I_B = 0.4\text{A}$<br>$I_C = 5\text{A}, I_B = 1\text{A}$<br>$I_C = 8\text{A}, I_B = 2\text{A}$ |        |      | 1.0<br>2.0<br>3.0 | V<br>V<br>V   |
| $V_{BE(sat)}$          | Base-Emitter Saturation Voltage      | $I_C = 2\text{A}, I_B = 0.4\text{A}$<br>$I_C = 5\text{A}, I_B = 1\text{A}$                                       |        |      | 1.2<br>1.6        | V<br>V        |
| $f_T$                  | Current Gain Bandwidth Product       | $V_{CE} = 10\text{V}, I_C = 0.5\text{A}$                                                                         | 4      |      |                   | MHz           |
| $C_{ob}$               | Output Capacitance                   | $V_{CB} = 10\text{V}, f = 0.1\text{MHz}$                                                                         |        | 110  |                   | pF            |
| $t_{ON}$               | Turn On Time                         | $V_{CC} = 125\text{V}, I_C = 5\text{A}$                                                                          |        |      | 1.6               | $\mu\text{s}$ |
| $t_{STG}$              | Storage Time                         | $I_{B1} = -I_{B2} = 1\text{A}$<br>$R_L = 25\Omega$                                                               |        |      | 3.0               | $\mu\text{s}$ |
| $t_F$                  | Fall Time                            |                                                                                                                  |        |      | 0.7               | $\mu\text{s}$ |

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

| Classification | H1      | H2      |
|----------------|---------|---------|
| $h_{FE1}$      | 15 ~ 28 | 26 ~ 39 |

## Typical Performance Characteristics

Figure 1. DC Current Gain

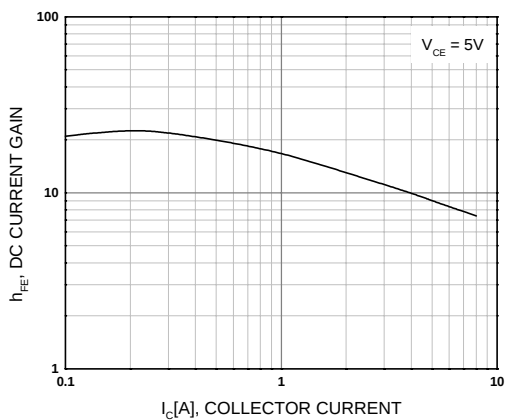


Figure 2. Saturation Voltage

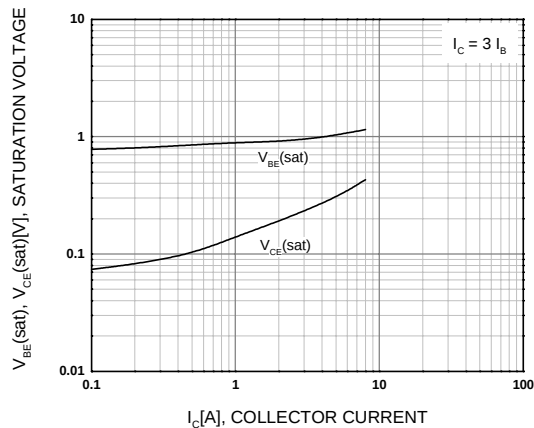


Figure 3. Collector Output Capacitance

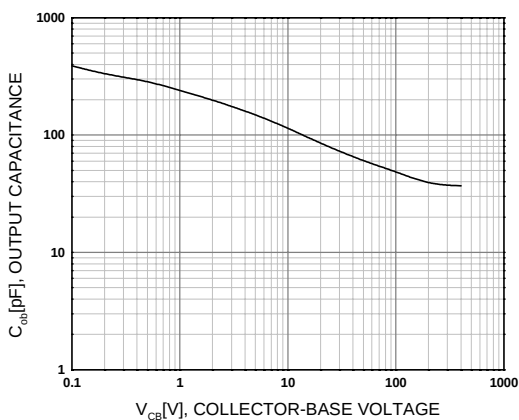


Figure 4. Turn On Time

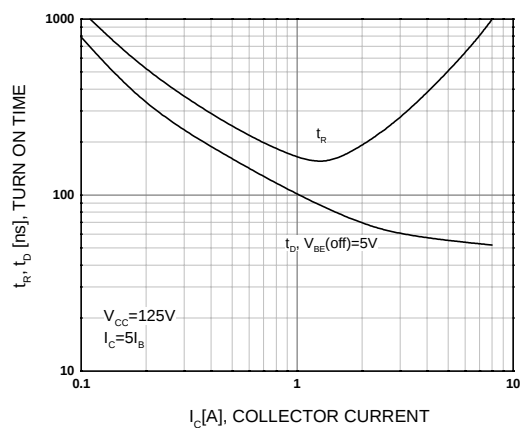


Figure 5. Turn Off Time

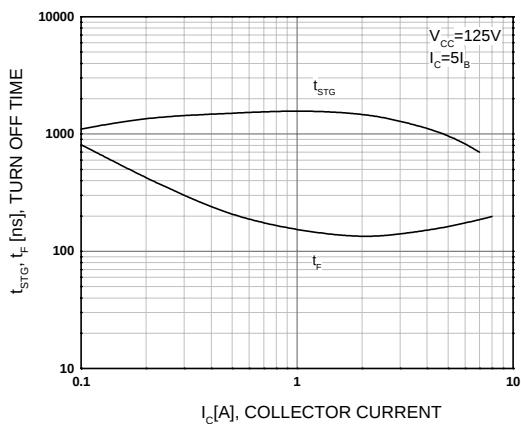
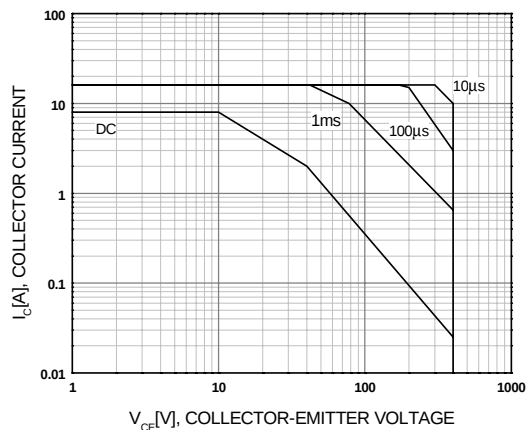


Figure 6. Forward Biased Safe Operating Area



## Typical Performance Characteristics (Continued)

Figure 7. Reverse Biased Safe Operating Area

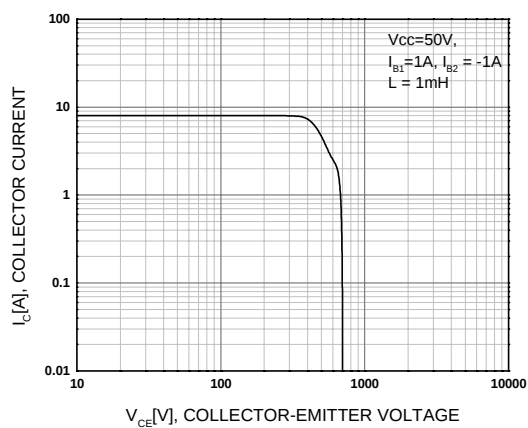
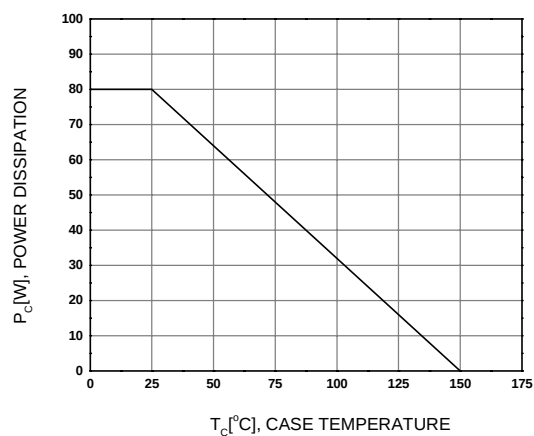


Figure 8. Power Derating





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