



**THE DATASHEET OF
FJP13007H1TU**





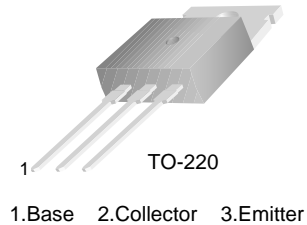
ON Semiconductor®

FJP13007

High Voltage Fast-Switching NPN Power Transistor

Features

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



Ordering Information

| Part Number | Top Mark | Package | Packing Method |
|-------------------|----------|--------------------------|----------------|
| FJP13007TU | J13007 | TO-220 3L (Dual Gauge) | Rail |
| FJP13007H1TU | J13007-1 | TO-220 3L (Single Gauge) | Rail |
| FJP13007H1TU-F080 | J13007-1 | TO-220 3L (Dual Gauge) | Rail |
| FJP13007H2TU | J13007-2 | TO-220 3L (Dual Gauge) | Rail |
| FJP13007H2TU-F080 | J13007-2 | TO-220 3L (Dual Gauge) | Rail |

Absolute Maximum Ratings

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 | Unit |
|-----------|--|------------|------------------|
| 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 (DC) | 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 Range | -65 to 150 | $^\circ\text{C}$ |

FJP13007 — High Voltage Fast-Switching NPN Power Transistor

Electrical Characteristics

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

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---------------|--------------------------------------|--|------|------|------|---------------|
| 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} | DC Current Gain ⁽¹⁾ | $V_{CE} = 5\text{ V}, I_C = 2\text{ A}$ | 8 | | 60 | |
| h_{FE2} | DC Current Gain ⁽¹⁾ | $V_{CE} = 5\text{ V}, I_C = 5\text{ A}$ | 5 | | 30 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 2\text{ A}, I_B = 0.4\text{ A}$ | | | 1.0 | V |
| | | $I_C = 5\text{ A}, I_B = 1\text{ A}$ | | | 2.0 | |
| | | $I_C = 8\text{ A}, I_B = 2\text{ A}$ | | | 3.0 | |
| $V_{BE(sat)}$ | Collector-Base Saturation Voltage | $I_C = 2\text{ A}, I_B = 0.4\text{ A}$ | | | 1.2 | V |
| | | $I_C = 5\text{ A}, I_B = 1\text{ A}$ | | | 1.6 | |
| 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 | $V_{CC} = 125\text{ V}, I_C = 5\text{ A},$ $I_{B1} = -I_{B2} = 1\text{ A},$ $R_L = 25\ \Omega$ | | | 1.6 | μs |
| t_{STG} | Storage Time | | | | 3.0 | μs |
| t_F | Fall Time | | | | 0.7 | μs |

Note:

1. Pulse test: $p_w \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.

h_{FE} Classification

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

Typical Performance Characteristics

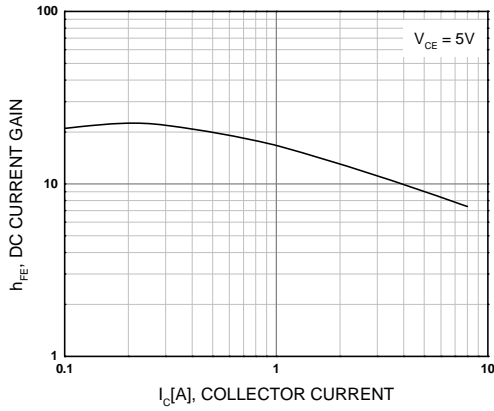


Figure 1. DC Current Gain

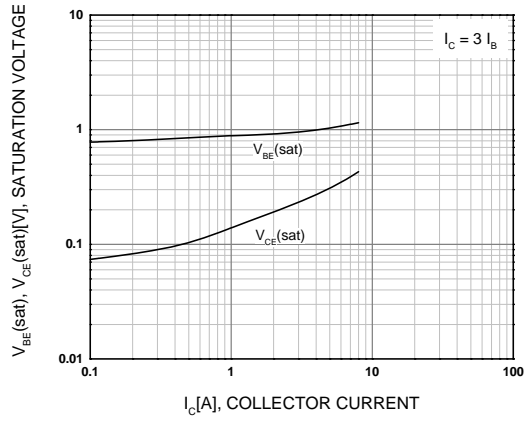


Figure 2. Saturation Voltage

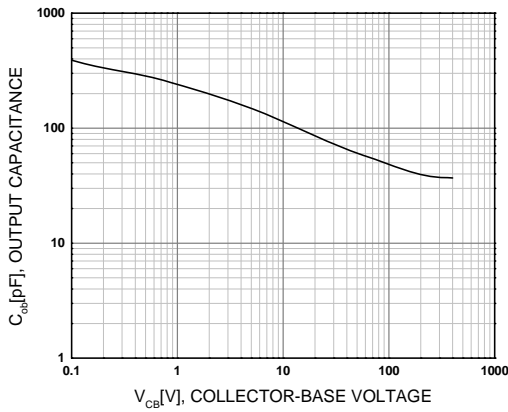


Figure 3. Collector Output Capacitance

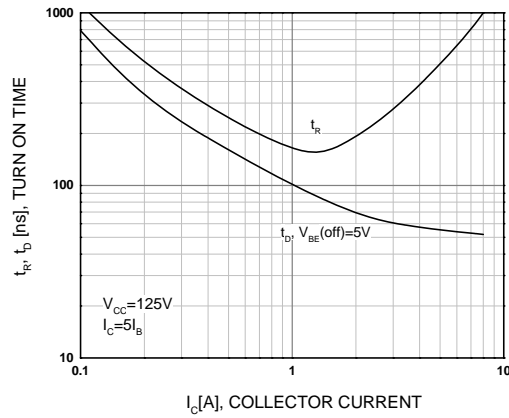


Figure 4. Turn-On Time

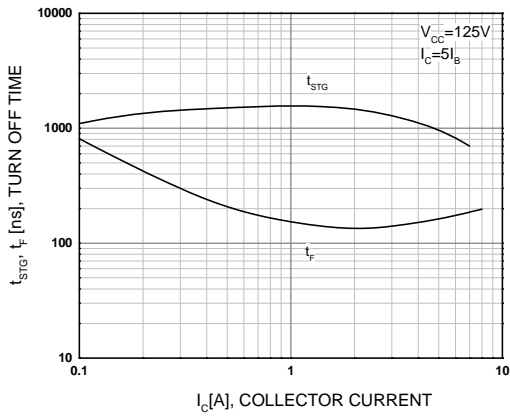


Figure 5. Turn-Off Time

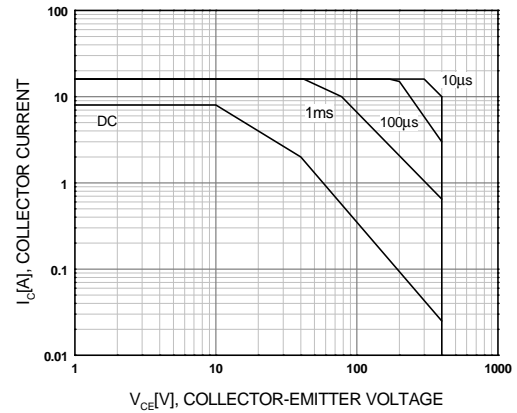


Figure 6. Forward Biased Safe Operating Area

Typical Performance Characteristics (Continued)

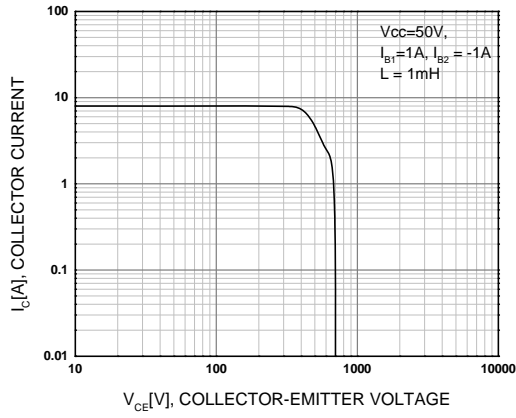


Figure 7. Reverse Biased Safe Operating Area

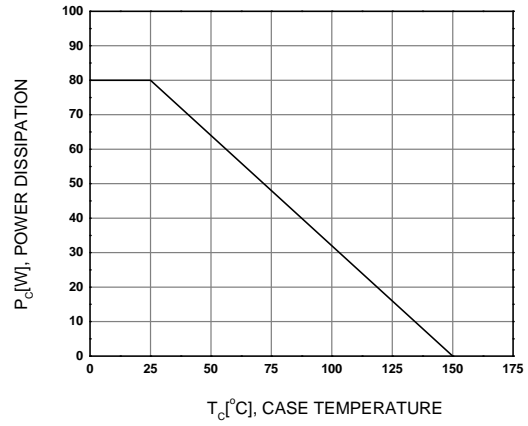


Figure 8. Power Derating

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