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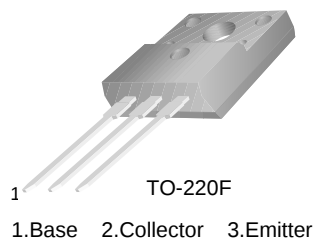
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# FJPF3305

## High Voltage Switch Mode Application

- High Speed Switching
- Suitable for Electronic Ballast and Switching Regulator



### Absolute Maximum Ratings \* $T_a = 25^{\circ}\text{C}$ 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)                               | 4         | A                  |
| $I_{CP}$  | Collector Current (Pulse)                            | 8         | A                  |
| $I_B$     | Base Current                                         | 2         | A                  |
| $P_C$     | Collector Dissipation ( $T_a = 25^{\circ}\text{C}$ ) | 30        | W                  |
| $T_J$     | Junction Temperature                                 | 150       | $^{\circ}\text{C}$ |
| $T_{STG}$ | Storage Temperature                                  | -65 ~ 150 | $^{\circ}\text{C}$ |

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

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

| Symbol                 | Parameter                            | Conditions                                                                                                         | Min.    | Typ. | Max               | Units         |
|------------------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------|------|-------------------|---------------|
| $BV_{CBO}$             | Collector-Base Breakdown Voltage     | $I_C = 500\mu\text{A}, I_E = 0$                                                                                    | 700     |      |                   | V             |
| $BV_{CEO}$             | Collector-Emitter Breakdown Voltage  | $I_C = 5\text{mA}, I_B = 0$                                                                                        | 400     |      |                   | V             |
| $BV_{EBO}$             | Emitter-Base Breakdown Voltage       | $I_E = 500\mu\text{A}, I_C = 0$                                                                                    | 9       |      |                   | V             |
| $I_{CBO}$              | Collector Cut-off Current            | $V_{CB} = 700\text{V}, I_E = 0$                                                                                    |         |      | 1                 | $\mu\text{A}$ |
| $I_{EBO}$              | Emitter Cut-off Current              | $V_{EB} = 9\text{V}, I_C = 0$                                                                                      |         |      | 1                 | $\mu\text{A}$ |
| $h_{FE1}$<br>$h_{FE2}$ | DC Current Gain *                    | $V_{CE} = 5\text{V}, I_C = 1\text{A}$<br>$V_{CE} = 5\text{V}, I_C = 2\text{A}$                                     | 19<br>8 |      | 35<br>40          |               |
| $V_{CE(sat)}$          | Collector-Emitter Saturation Voltage | $I_C = 1\text{A}, I_B = 0.2\text{A}$<br>$I_C = 2\text{A}, I_B = 0.5\text{A}$<br>$I_C = 4\text{A}, I_B = 1\text{A}$ |         |      | 0.5<br>0.6<br>1.0 | V<br>V<br>V   |
| $V_{BE(sat)}$          | Base-Emitter Saturation Voltage      | $I_C = 1\text{A}, I_B = 0.2\text{A}$<br>$I_C = 2\text{A}, I_B = 0.5\text{A}$                                       |         |      | 1.2<br>1.6        | V<br>V        |
| $f_T$                  | Current Gain Bandwidth Product       | $V_{CE} = 5\text{V}, I_C = 1\text{A}$                                                                              | 4       |      |                   | MHz           |
| $C_{ob}$               | Output Capacitance                   | $V_{CB} = 10\text{V}, f = 1\text{MHz}$                                                                             |         | 65   |                   | pF            |
| $t_{ON}$               | Turn On Time                         | $V_{CC} = 125\text{V}$<br>$I_C = 2\text{A} = 5I_{B1} = -5I_{B2}$<br>$R_L = 62.5\Omega$                             |         |      | 0.8               | $\mu\text{s}$ |
| $t_{STG}$              | Storage Time                         |                                                                                                                    |         |      | 4.0               | $\mu\text{s}$ |
| $t_F$                  | Fall Time                            |                                                                                                                    |         |      | 0.9               | $\mu\text{s}$ |

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

| Classification | H1      | H2      |
|----------------|---------|---------|
| $h_{FE2}$      | 19 ~ 28 | 26 ~ 35 |

## Typical Performance Characteristics

Figure 1. Static Characteristic

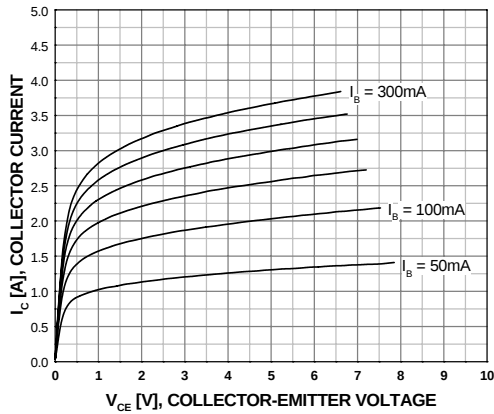


Figure 2. DC Current Gain (R-Grade)

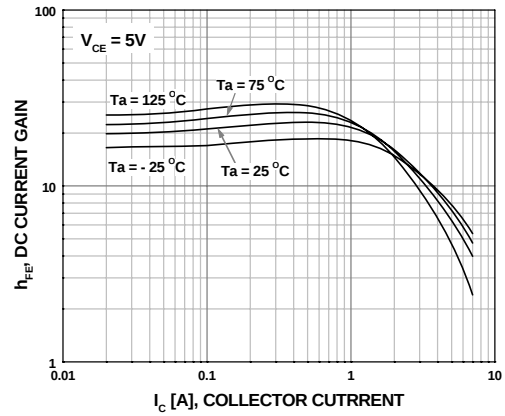


Figure 3. DC Current Gain (O-Grade)

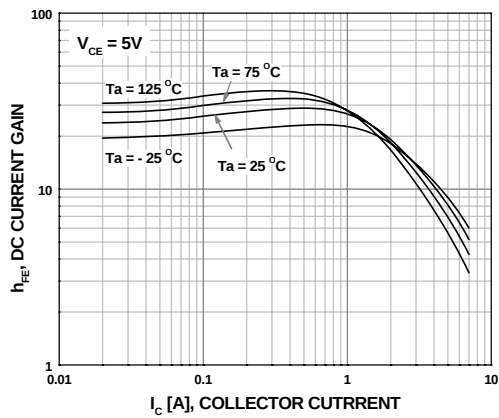


Figure 4. Saturation Voltage (R-Grade)

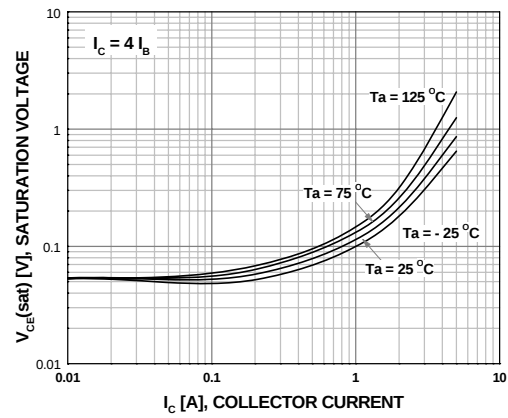


Figure 5. Saturatin Voltage (O-Grade)

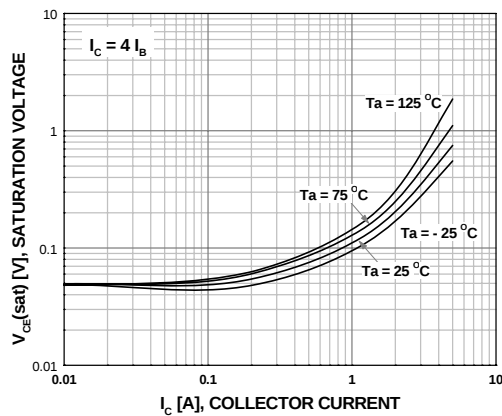
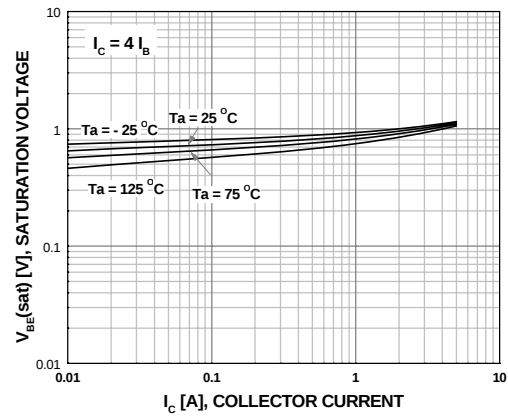


Figure 6. Saturation Voltage (R-Grade)



## Typical Performance Characteristics (Continued)

Figure 7. Saturation Voltage (O-Grade)

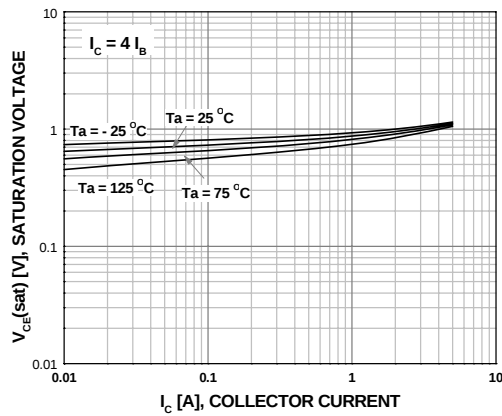


Figure 8. Switching Time

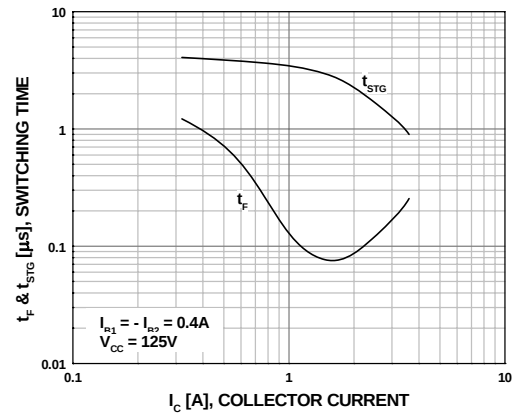


Figure 9. Reverse Biased Safe Operating Area

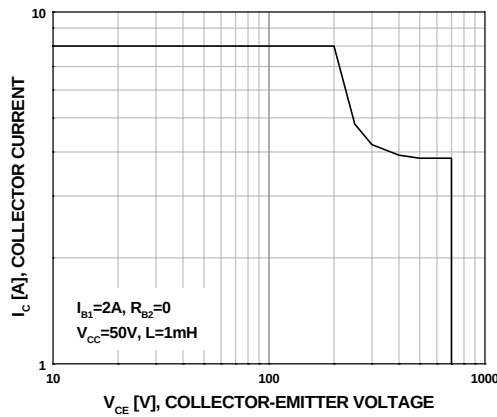


Figure 10. Forward Biased Safe Operating Area

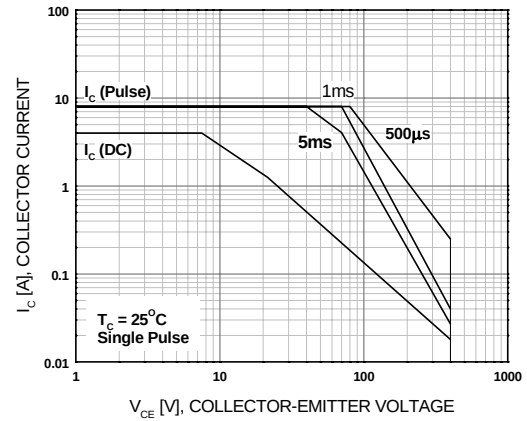
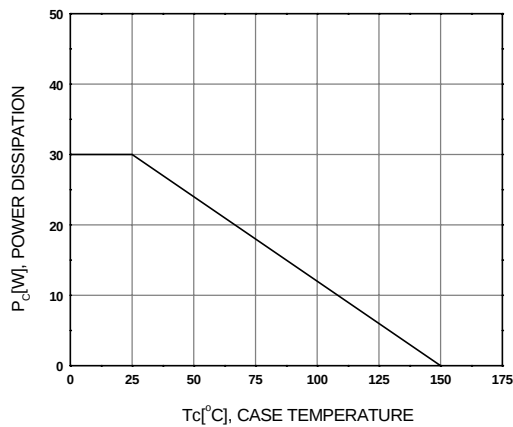
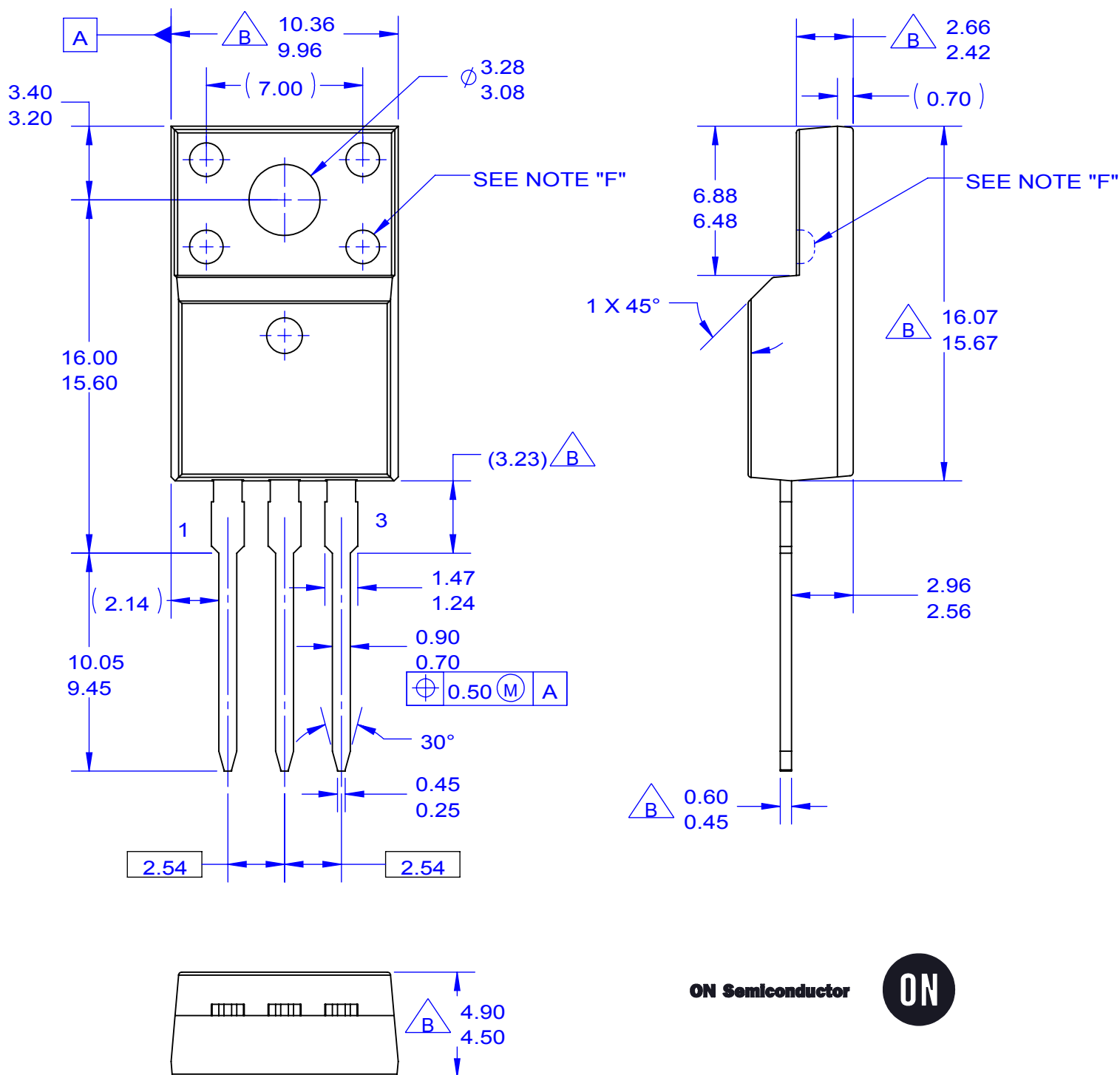


Figure 11. Power Derating





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