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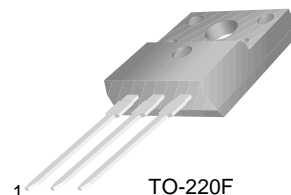
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# FJPF5027

## High Voltage and High Reliability

- High Speed Switching
- Wide SOA



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

## NPN Silicon Transistor

### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter  | Value      | Units            |
|-----------|--|------------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                           | 1100       | V                |
| $V_{CEO}$ | Collector-Emitter Voltage                        | 800        | V                |
| $V_{EBO}$ | Emitter-Base Voltage                             | 7          | V                |
| $I_C$     | Collector Current (DC)                           | 3          | A                |
| $I_{CP}$  | Collector Current (Pulse)                        | 10         | A                |
| $I_B$     | Base Current                                     | 1.5        | A                |
| $P_C$     | Collector Dissipation ( $T_C=25^\circ\text{C}$ ) | 40         | W                |
| $T_J$     | Junction Temperature                             | 150        | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                              | - 55 ~ 150 | $^\circ\text{C}$ |

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

| Symbol                 | Parameter                            | Test Condition  | Min.    | Typ. | Max. | Units         |
|------------------------|--------------------------------------|---|---------|------|------|---------------|
| $BV_{CBO}$             | Collector-Base Breakdown Voltage     | $I_C = 1\text{mA}, I_E = 0$   | 1100    |      |      | V             |
| $BV_{CEO}$             | Collector-Emitter Breakdown Voltage  | $I_C = 5\text{mA}, I_B = 0$   | 800     |      |      | V             |
| $BV_{EBO}$             | Emitter-Base Breakdown Voltage       | $I_E = 1\text{mA}, I_C = 0$   | 7       |      |      | V             |
| $V_{CEX(sus)}$         | Collector-Emitter Sustaining Voltage | $I_C = 1.5\text{A}, I_{B1} = -I_{B2} = 0.3\text{A}$<br>$L = 2\text{mH}, \text{Clamped}$ | 800     |      |      | V             |
| $I_{CBO}$              | Collector Cut-off Current            | $V_{CB} = 800\text{V}, I_E = 0$   |         |      | 10   | $\mu\text{A}$ |
| $I_{EBO}$              | Emitter Cut-off Current              | $V_{EB} = 5\text{V}, I_C = 0$   |         |      | 10   | $\mu\text{A}$ |
| $h_{FE1}$<br>$h_{FE2}$ | DC Current Gain                      | $V_{CE} = 5\text{V}, I_C = 0.2\text{A}$<br>$V_{CE} = 5\text{V}, I_C = 1\text{A}$        | 10<br>8 |      | 40   |               |
| $V_{CE(sat)}$          | Collector-Emitter Saturation Voltage | $I_C = 1.5\text{A}, I_B = 0.3\text{A}$  |         |      | 2    | V             |
| $V_{BE(sat)}$          | Base-Emitter Saturation Voltage      | $I_C = 1.5\text{A}, I_B = 0.3\text{A}$  |         |      | 1.5  | V             |
| $C_{ob}$               | Output Capacitance                   | $V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$   |         | 60   |      | pF            |
| $f_T$                  | Current Gain Bandwidth Product       | $V_{CE} = 10\text{V}, I_C = 0.2\text{A}$  |         | 15   |      | MHz           |
| $t_{ON}$               | Turn On Time                         | $V_{CC} = 400\text{V}$  |         |      | 0.5  | $\mu\text{s}$ |
| $t_{STG}$              | Storage Time                         | $I_C = 5\text{I}_{B1} = -2.5\text{I}_{B2} = 2\text{A}$                                  |         |      | 3    | $\mu\text{s}$ |
| $t_F$                  | Fall Time                            | $R_L = 200\Omega$   |         |      | 0.3  | $\mu\text{s}$ |

## $h_{FE}$ Classification

| Classification | N       | R       | O       |
|----------------|---------|---------|---------|
| $h_{FE1}$      | 10 ~ 20 | 15 ~ 30 | 20 ~ 40 |

# Typical Characteristics

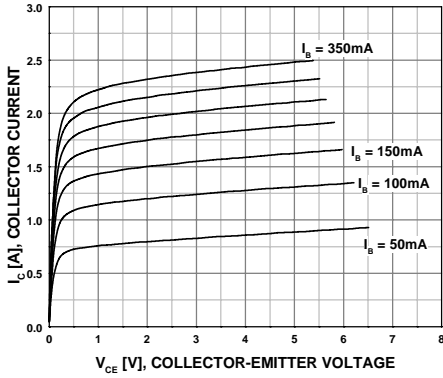


Figure 1. Static Characteristic

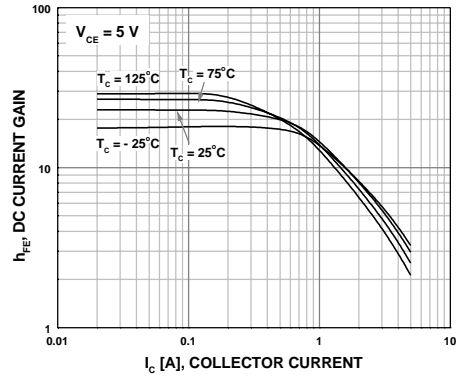


Figure 2. DC current Gain

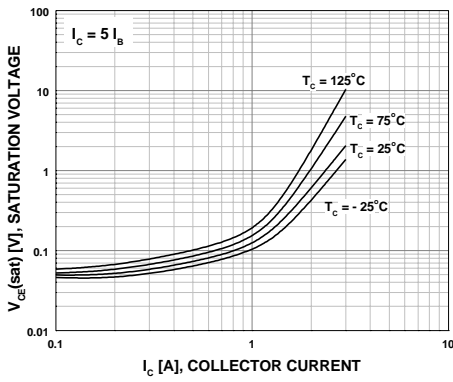


Figure 3. Saturation Voltage

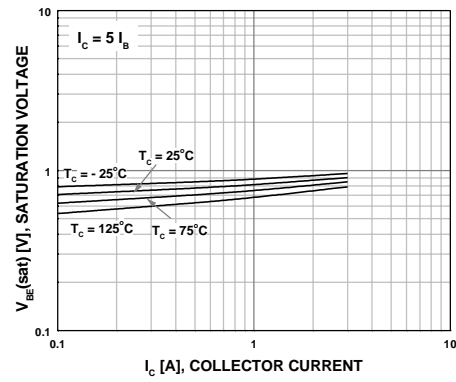


Figure 4. Saturation Voltage

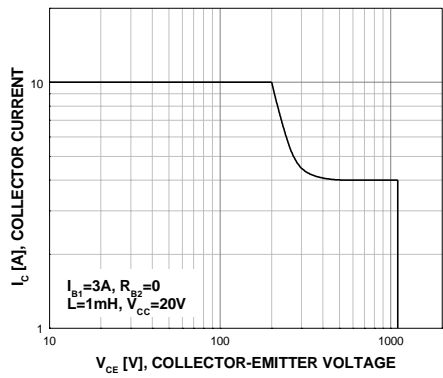


Figure 5. Reverse Bias Safe Operating Area

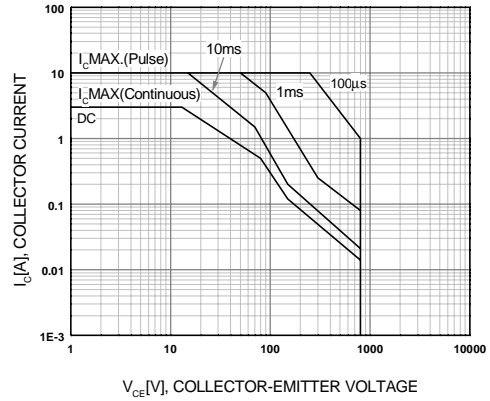


Figure 6. Forward Bias Safe Operating Area

Typical Characteristics (Continued)

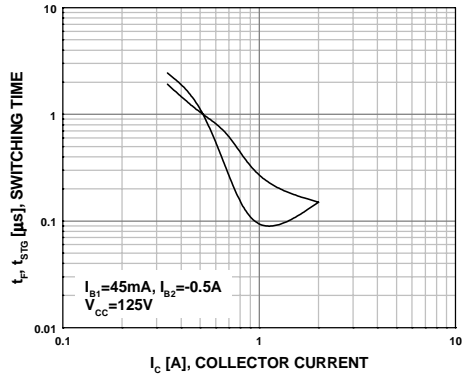


Figure 7. Resistive Load Switching Characteristics

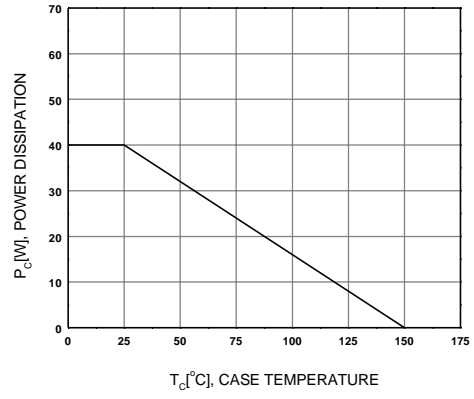
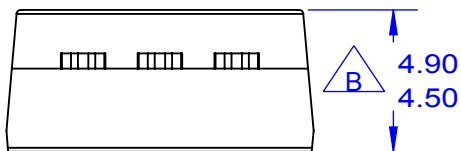
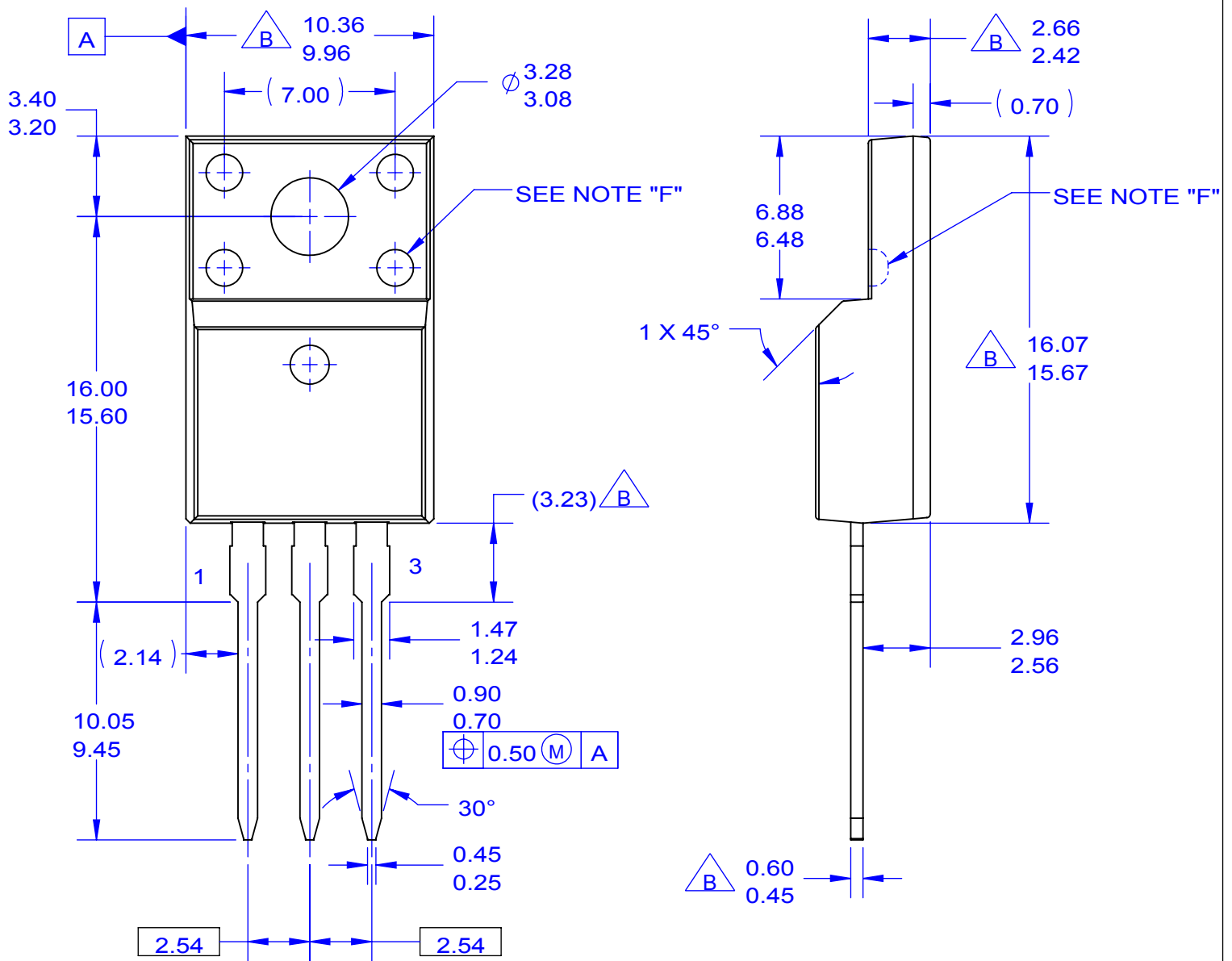


Figure 8. Power Derating



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- B. DOES NOT COMPLY EIAJ STD. VALUE.
- C. ALL DIMENSIONS ARE IN MILLIMETERS.
- D. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
- E. DIMENSION AND TOLERANCE AS PER ASME Y14.5-1994.
- F. OPTION 1 - WITH SUPPORT PIN HOLE.  
OPTION 2 - NO SUPPORT PIN HOLE.
- G. DRAWING FILE NAME: TO220M03REV5

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