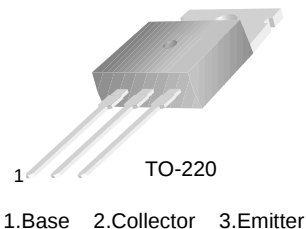


# FJP5027

FJP5027

## High Voltage and High Reliability

- High Speed Switching
- Wide SOA



## 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 ( $T_C=25^\circ\text{C}$ ) | 50         | 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>$L = 2\text{mH}$ , 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                         | $V_{CC} = 400\text{V}$<br>$I_C = 5I_{B1} = -2.5I_{B2} = 2\text{A}$<br>$R_L = 200\Omega$ |         |      | 0.5  | $\mu\text{s}$ |
| $t_{STG}$              | Storage Time                         |                                                                                         |         |      | 3    | $\mu\text{s}$ |
| $t_F$                  | Fall Time                            |                                                                                         |         |      | 0.3  | $\mu\text{s}$ |

## $h_{FE}$ Classification

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

## Typical Characteristics

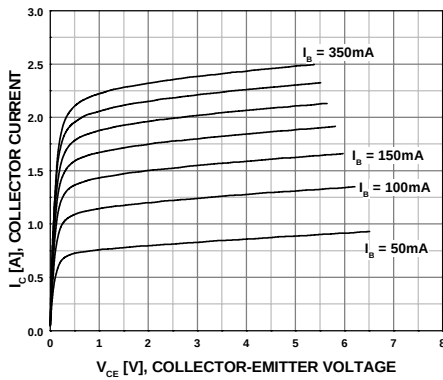


Figure 1. Static Characteristic

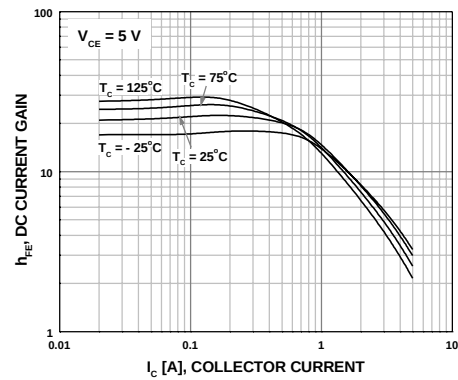


Figure 2. DC current Gain

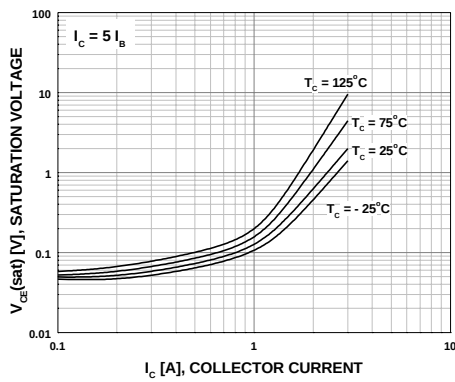


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

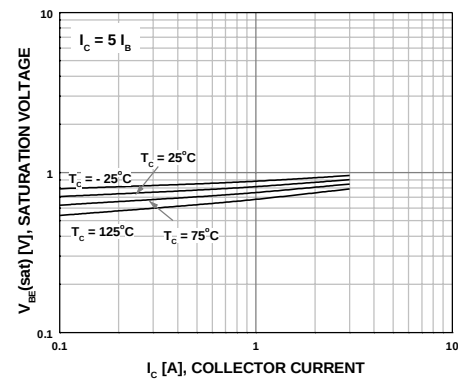


Figure 4. Base-Emitter On Voltage

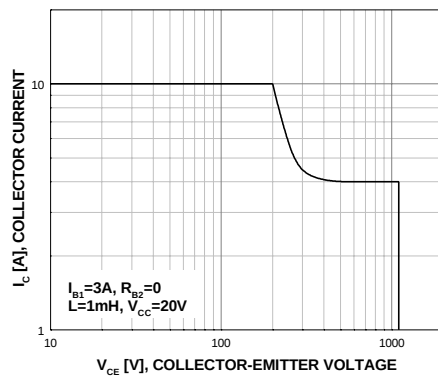


Figure 5. Switching Time

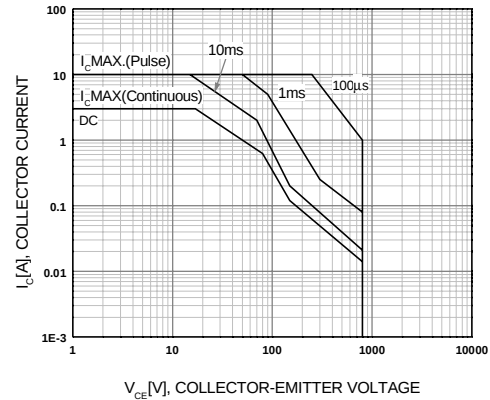


Figure 6. Safe Operating Area

## Typical Characteristics (Continued)

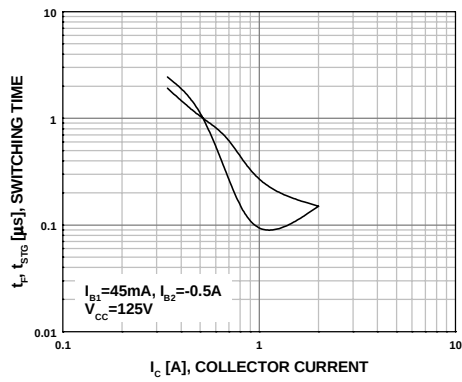


Figure 7. Resistive Load Switching Characteristics

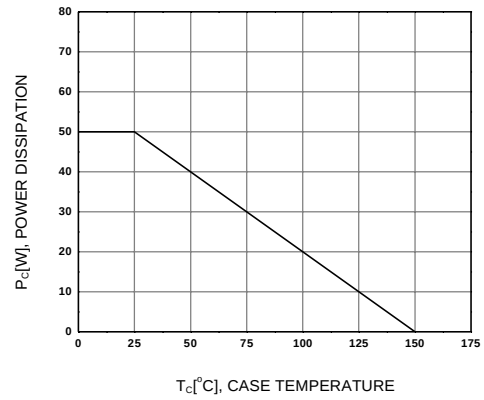
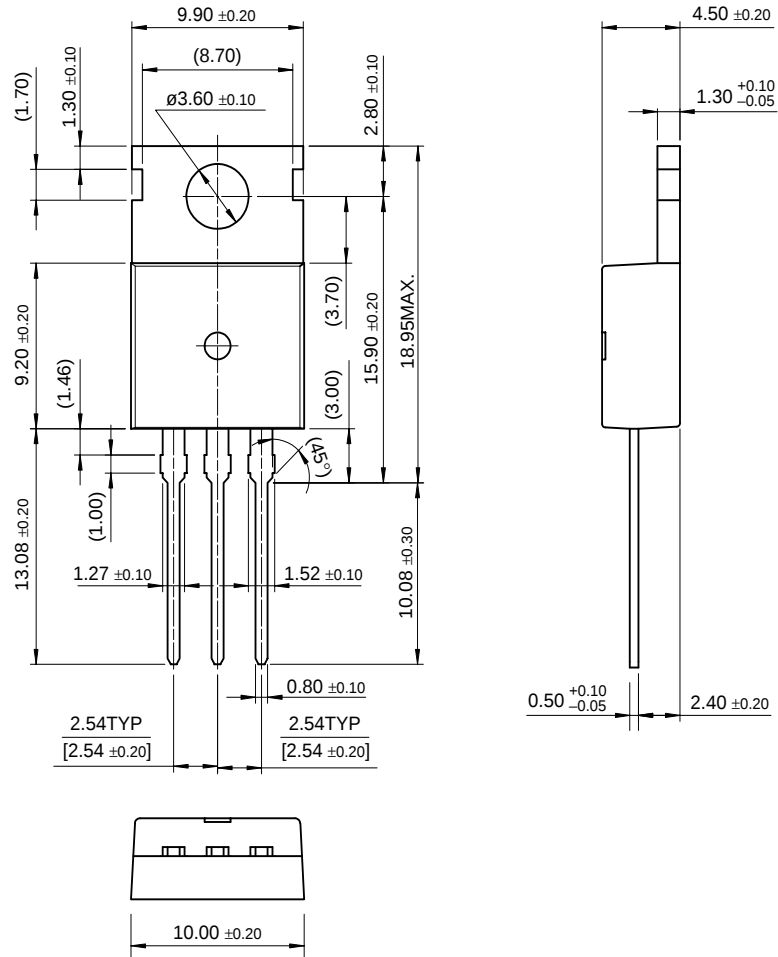


Figure 8. Power Derating

# Package Dimensions

## TO-220



Dimensions in Millimeters

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| ActiveArray <sup>™</sup>                         | FAST <sup>®</sup>               | MICROCOUPLER <sup>™</sup> | PowerTrench <sup>®</sup>        | SuperSOT <sup>™</sup> -6    |
| Bottomless <sup>™</sup>                          | FAST <sup>™</sup>               | MicroFET <sup>™</sup>     | QFET <sup>®</sup>               | SuperSOT <sup>™</sup> -8    |
| CoolFET <sup>™</sup>                             | FRFET <sup>™</sup>              | MicroPak <sup>™</sup>     | QS <sup>™</sup>                 | SyncFET <sup>™</sup>        |
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