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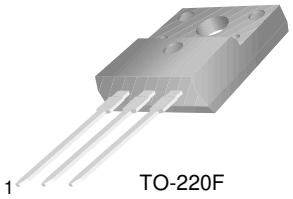
Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

# 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°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°C) | 40 | W |
| $T_J$ | Junction Temperature | 150 | °C |
| $T_{STG}$ | Storage Temperature | - 55 ~ 150 | °C |

### Electrical Characteristics $T_C$=25°C unless otherwise noted

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

### $h_{FE}$ Classification

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

# Typical Characteristics

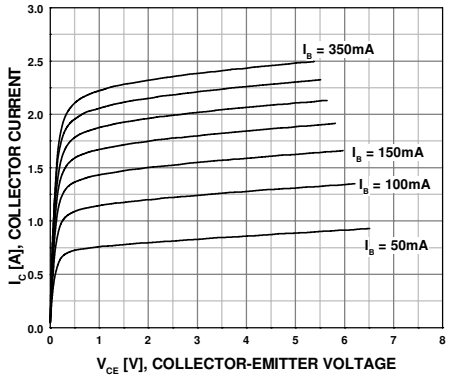



**Figure 1. Static Characteristic**

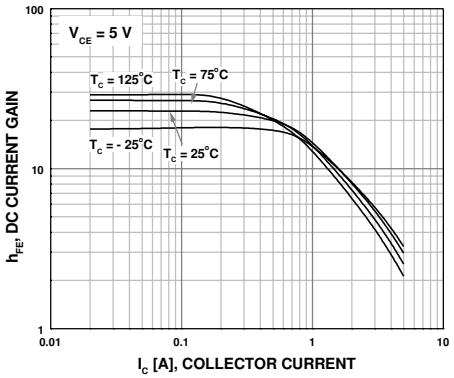



**Figure 2. DC current Gain**

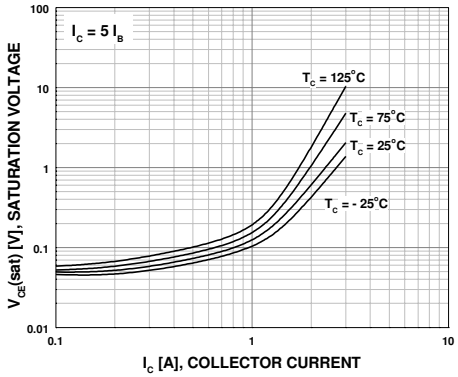



**Figure 3. Saturation Voltage**

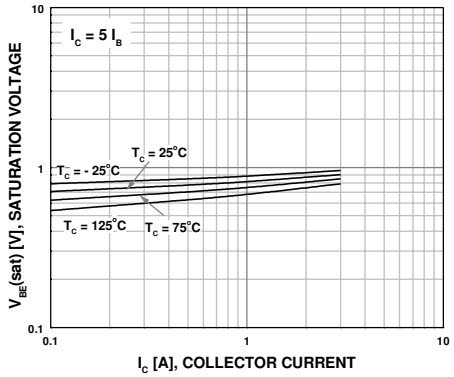



**Figure 4. Saturation Voltage**

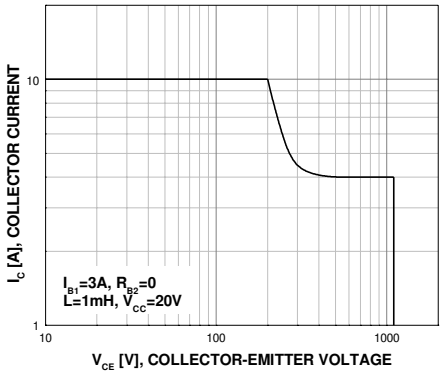



**Figure 5. Reverse Bias Safe Operating Area**

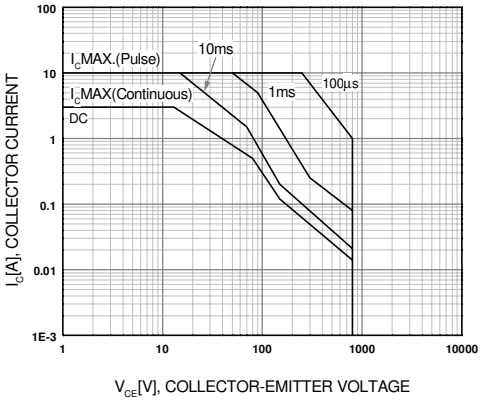



**Figure 6. Forward Bias Safe Operating Area**

## Typical Characteristics (Continued)

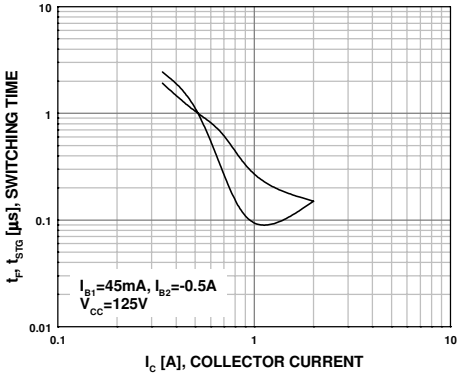



**Figure 7. Resistive Load Switching Characteristics**

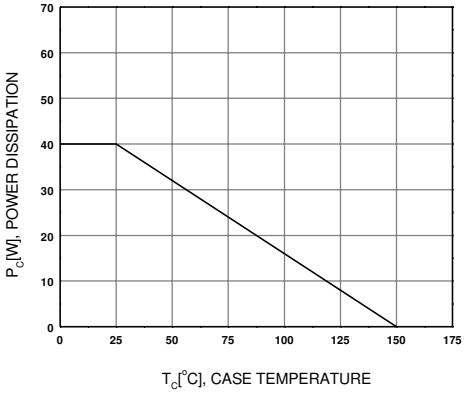
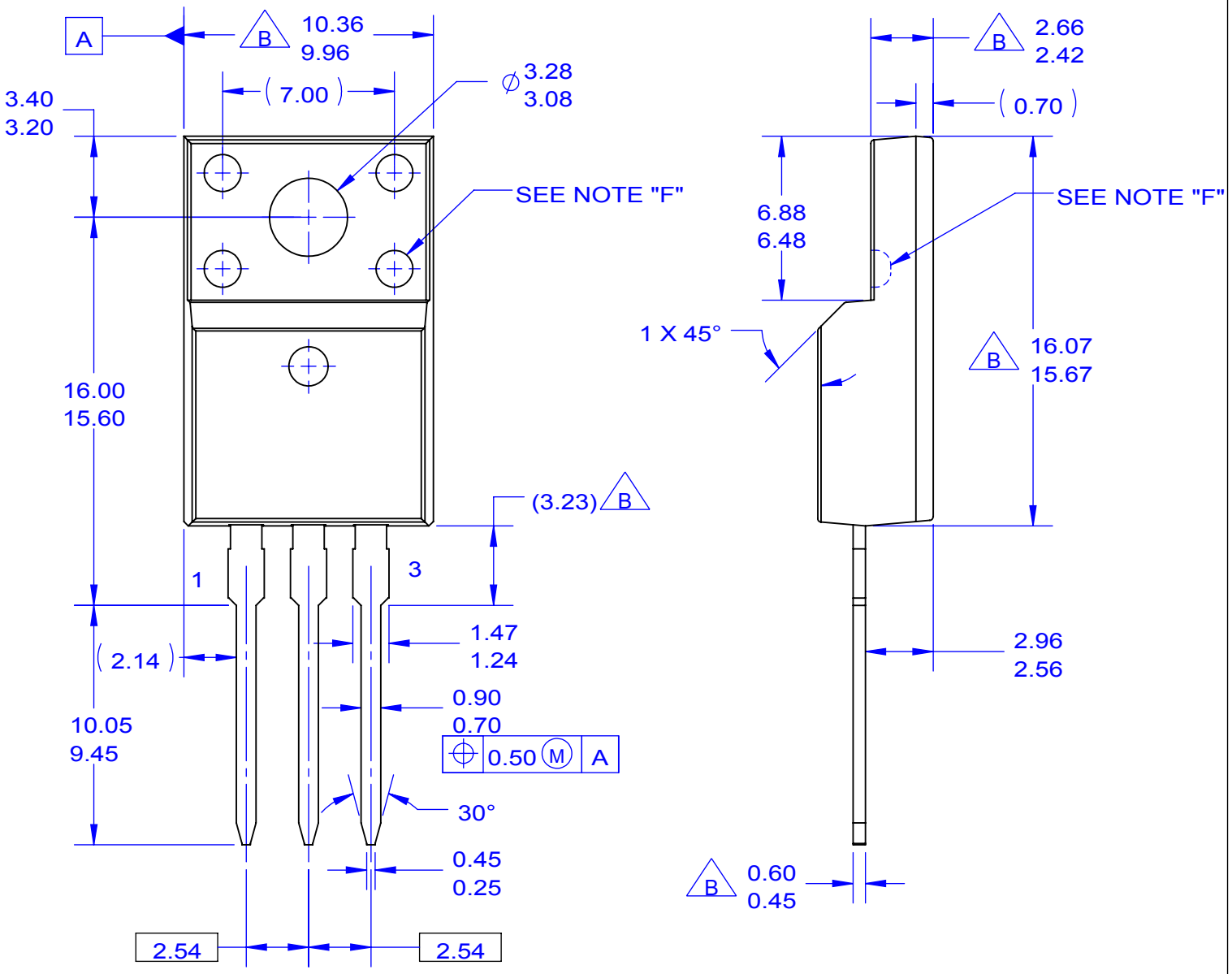
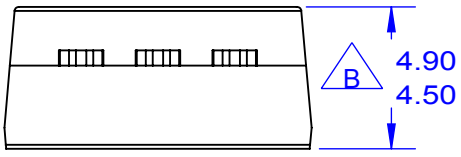



**Figure 8. Power Derating**

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NOTES:

A. EXCEPT WHERE NOTED CONFORMS TO EIAJ SC91A.
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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