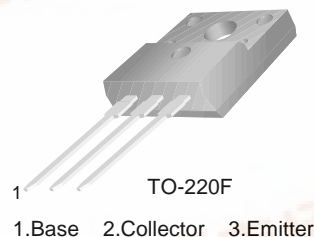




## KSC5367F

### High Voltage and High Reliability

- High speed Switching
- Wide Safe Operating Area
- High Collector-Base Voltage



### NPN Triple Diffused Planar Silicon Transistor

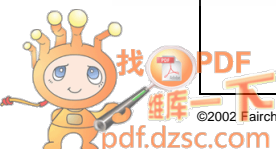
#### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter                                   | Value      | Units            |
|-----------|---|------------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                      | 1600       | V                |
| $V_{CEO}$ | Collector-Emitter Voltage                   | 800        | V                |
| $V_{EBO}$ | Emitter-Base Voltage                        | 12         | V                |
| $I_C$     | Collector Current (DC)                      | 3          | A                |
| $I_{CP}$  | *Collector Curren (Pulse)                   | 6          | A                |
| $I_B$     | Base Current (DC)                           | 2          | A                |
| $I_{BP}$  | *Base Current (Pulse)                       | 4          | A                |
| $P_C$     | Power Dissipation( $T_C=25^\circ\text{C}$ ) | 40         | W                |
| $T_J$     | Junction Temperature                        | 150        | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                         | - 65 ~ 150 | $^\circ\text{C}$ |

\* Pulse Test: Pulse Width=5ms, Duty Cycle≤10%

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

| Symbol          | Characteristics    |                     | Rating | Unit               |
|-----------------|--------------------|---------------------|--------|--------------------|
| $R_{\theta jc}$ | Thermal Resistance | Junction to Case    | 3.1    | $^\circ\text{C/W}$ |
| $R_{\theta ja}$ |                    | Junction to Ambient | 62.5   |                    |



**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     | $I_C = 0.5\text{mA}, I_E = 0$  | 1600    | -      | -       | V             |
| $BV_{CEO}$             | Collector-Emitter Breakdown Voltage  | $I_C = 5\text{mA}, I_B = 0$  | 800     | -      | -       | V             |
| $BV_{EBO}$             | Emitter-Base Breakdown Voltage       | $I_C = 0.5\text{mA}, I_E = 0$  | 12      | -      | -       | V             |
| $I_{CBO}$              | Collector Cut-off Current            | $V_{CB} = 1,600\text{V}, I_E = 0$  | -       | -      | 20      | $\mu\text{A}$ |
| $I_{EBO}$              | Emitter Cut-off Current              | $V_{EB} = 12\text{V}, I_C = 0$   | -       | -      | 20      | $\mu\text{A}$ |
| $h_{FE1}$<br>$h_{FE2}$ | DC Current Gain                      | $V_{CE} = 3\text{V}, I_C = 0.4\text{A}$<br>$V_{CE} = 10\text{V}, I_C = 5\text{mA}$                               | 12<br>8 | -<br>- | 35<br>- |               |
| $V_{CE(sat)}$          | Collector-Emitter Saturation Voltage | $I_C = 250\text{mA}, I_B = 25\text{mA}$  | -       | -      | 2.5     | V             |
|                        |                                      | $I_C = 500\text{mA}, I_B = 50\text{mA}$  | -       | -      | 4.0     | V             |
|                        |                                      | $I_C = 1\text{A}, I_B = 0.2\text{A}$   | -       | -      | 2.5     | V             |
| $V_{BE(sat)}$          | Base-Emitter Saturation Voltage      | $I_C = 500\text{mA}, I_B = 50\text{mA}$  | -       | -      | 1.5     | V             |
| $C_{ob}$               | Output Capacitance                   | $V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$  | -       | 40     | -       | pF            |
| $t_{ON}$               | Turn On Time                         | $V_{CC} = 125\text{V}, I_C = 0.5\text{A}$<br>$I_{B1} = 42\text{mA}, I_{B2} = -333\text{mA}$<br>$R_L = 250\Omega$ | -       | -      | 0.5     | $\mu\text{s}$ |
| $t_{STG}$              | Storage Time                         |  | -       | -      | 2.2     | $\mu\text{s}$ |
| $t_F$                  | Falling Time                         |  | -       | -      | 0.5     | $\mu\text{s}$ |
| $t_{ON}$               | Turn On Time                         | $V_{CC} = 250\text{V}, I_C = 1\text{A}$<br>$I_{B1} = 0.2\text{A}, I_{B2} = -0.4\text{A}$<br>$R_L = 250\Omega$    | -       | -      | 0.5     | $\mu\text{s}$ |
| $t_{STG}$              | Storage Time                         |  | -       | -      | 4.0     | $\mu\text{s}$ |
| $t_F$                  | Falling Time                         |  | -       | -      | 0.5     | $\mu\text{s}$ |

# Typical Characteristics

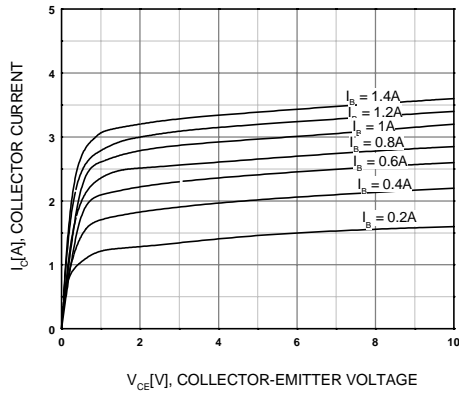


Figure 1. Static Characteristic

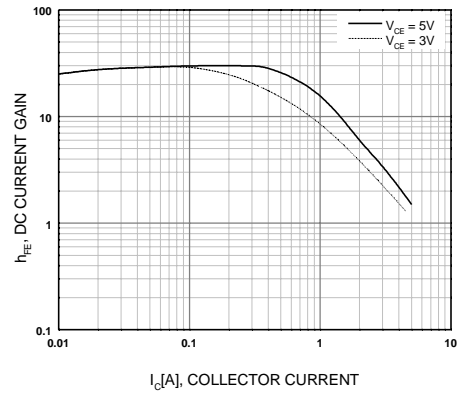


Figure 2. DC current Gain

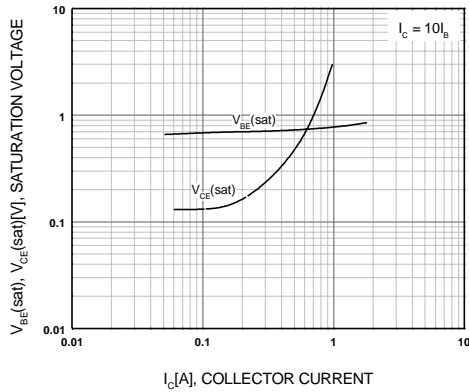


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

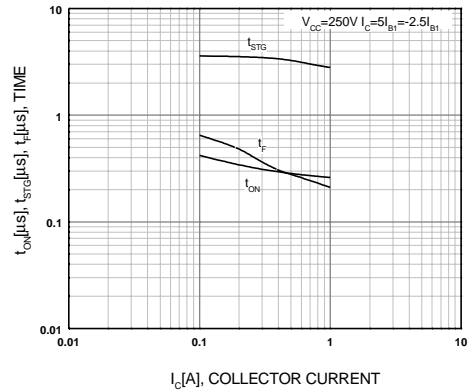


Figure 4. Switching Time

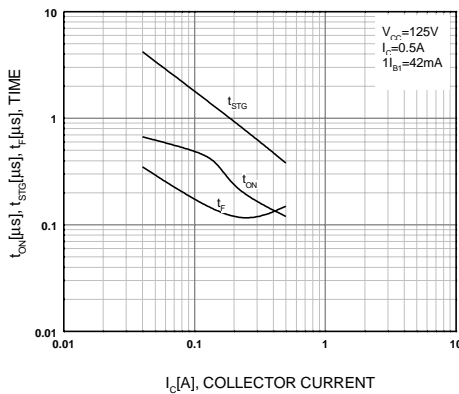


Figure 5. Switching Time

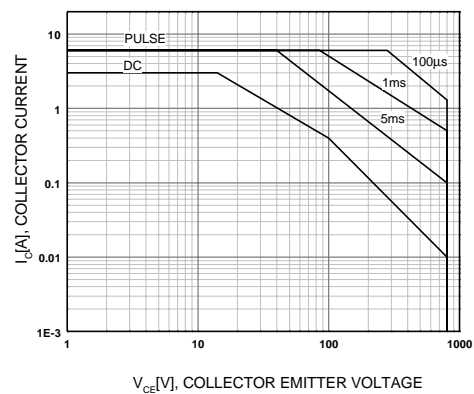


Figure 6. Safe Operating Area

Typical Characteristics (Continued)

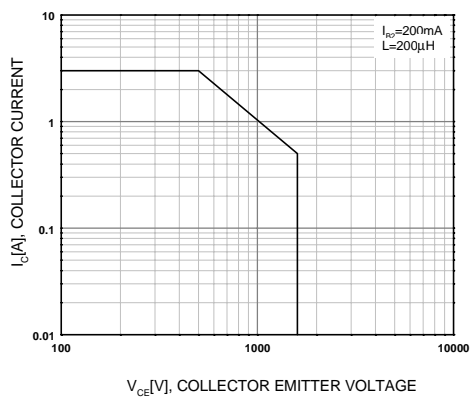


Figure 7. Reverse Bias Safe Operating Area

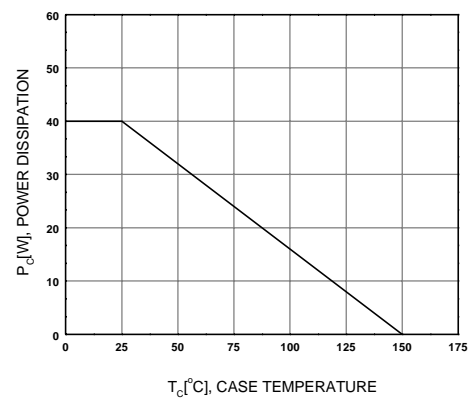
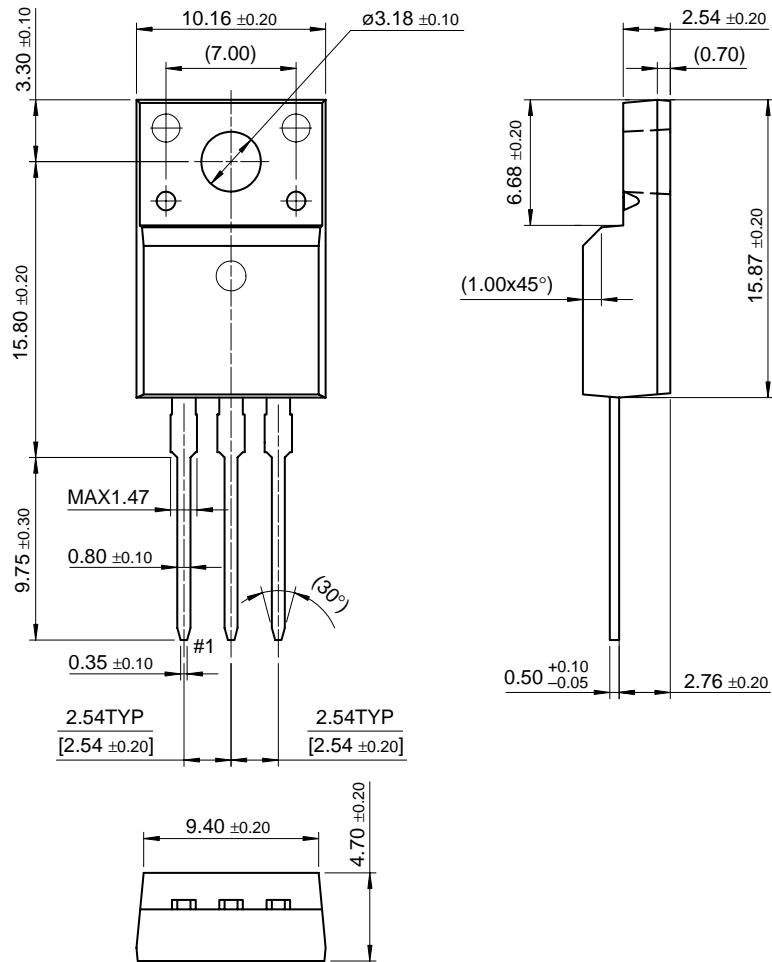


Figure 8. Power Derating

# Package Dimensions

## TO-220F



Dimensions in Millimeters

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| ActiveArray <sup>TM</sup>                         | FACT Quiet series <sup>TM</sup>  | ISOPLANAR <sup>TM</sup>         | POP <sup>TM</sup>                | Stealth <sup>TM</sup>        |
| Bottomless <sup>TM</sup>                          | FAST <sup>®</sup>                | LittleFET <sup>TM</sup>         | Power247 <sup>TM</sup>           | SuperSOT <sup>TM</sup> -3    |
| CoolFET <sup>TM</sup>                             | FAST <sub>r</sub> <sup>TM</sup>  | MicroFET <sup>TM</sup>          | PowerTrench <sup>®</sup>         | SuperSOT <sup>TM</sup> -6    |
| CROSSVOLT <sup>TM</sup>                           | FRFET <sup>TM</sup>              | MicroPak <sup>TM</sup>          | QFET <sup>TM</sup>               | SuperSOT <sup>TM</sup> -8    |
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| Across the board. Around the world. <sup>TM</sup> |                                  | OCXPro <sup>TM</sup>            | RapidConnect <sup>TM</sup>       | UltraFET <sup>®</sup>        |
| The Power Franchise <sup>TM</sup>                 |                                  | OPTOLOGIC <sup>®</sup>          | SILENT SWITCHER <sup>®</sup>     | VCX <sup>TM</sup>            |
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