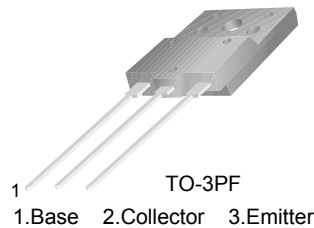


# KSC5030F

## High Voltage Fast Switching Transistor

### Features

- Fast Speed Switching
- Wide Safe Operating Area



### Absolute Maximum Ratings

| 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)                             | 6         | A                |
| $I_{CP}$  | * Collector Current (Pulse)                        | 20        | A                |
| $P_C$     | Collector Dissipation ( $T_C = 25^\circ\text{C}$ ) | 60        | W                |
| $T_J$     | Junction Temperature                               | 150       | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                                | -55 ~ 150 | $^\circ\text{C}$ |

\* Pulse Test: PW = 300 $\mu\text{s}$ , Duty Cycle = 2% Pulsed

### Package Marking and Ordering Information

| Device Marking | Device      | Package | Reel Size | Tape Width | Quantity |
|----------------|-------------|---------|-----------|------------|----------|
| KSC5030F       | KSC5030FRTU | TO3PF   | -         | -          | 50       |

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

| Symbol                 | Parameter                            | Conditions                                                                                          | Min.    | Typ. | Max | Units         |
|------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------|---------|------|-----|---------------|
| $BV_{CBO}$             | Collector-Base Breakdown Voltage     | $I_C = 1\text{mA}, I_E = 0$                                                                         | 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 | $I_C = 3\text{A}, I_{B1} = -I_{B2} = 0.6\text{A}$<br>$L=1\text{mH}$ , 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                      | $V_{CE} = 5\text{V}, I_C = 0.6\text{A}$<br>$V_{CE} = 5\text{V}, I_C = 2.0\text{A}$                  | 10<br>8 |      | 40  |               |
| $V_{CE(sat)}$          | Collector-Emitter Saturation Voltage | $I_C = 3\text{A}, I_B = 0.6\text{A}$                                                                |         |      | 2.0 | V             |
| $V_{BE(sat)}$          | Base-Emitter Saturation Voltage      | $I_C = 3\text{A}, I_B = 0.6\text{A}$                                                                |         |      | 1.5 | V             |
| $C_{OB}$               | Output Capacitance                   | $V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$                                                     |         | 120  |     | pF            |
| $t_{ON}$               | Turn On Time                         | $V_{CC}=400\text{V}, I_C=4\text{A}$<br>$I_{B1}=0.8\text{A}, I_{B2}=-1.6\text{A}$<br>$R_L=100\Omega$ |         |      | 0.5 | $\mu\text{s}$ |
| $t_{STG}$              | Storage Time                         |                                                                                                     |         |      | 3.0 | $\mu\text{s}$ |
| $t_F$                  | Fall Time                            |                                                                                                     |         |      | 0.3 | $\mu\text{s}$ |

 **$h_{FE}$  Classification**

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

## Typical Performance Characteristics

Figure 1. Static Characteristic

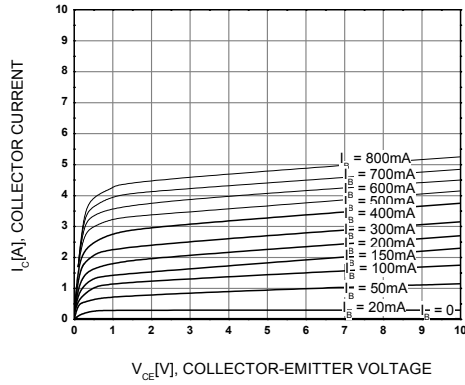


Figure 2. DC Current Gain

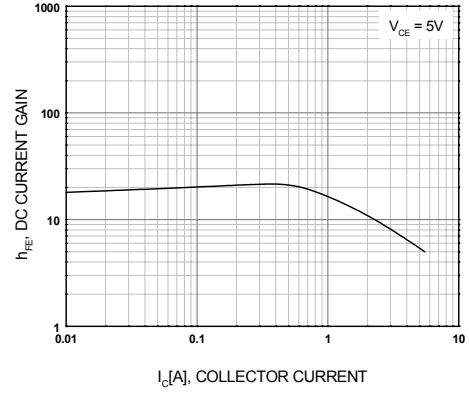


Figure 3. Collector-Emitter Saturation Voltage

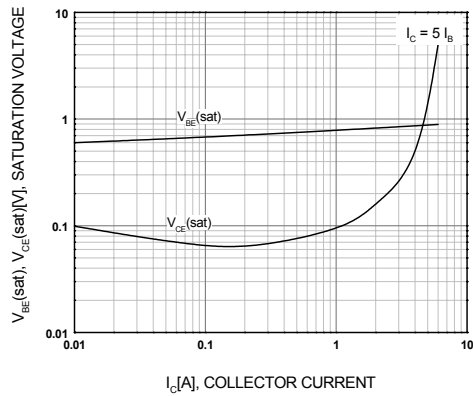


Figure 4. Base-Emitter On Voltage

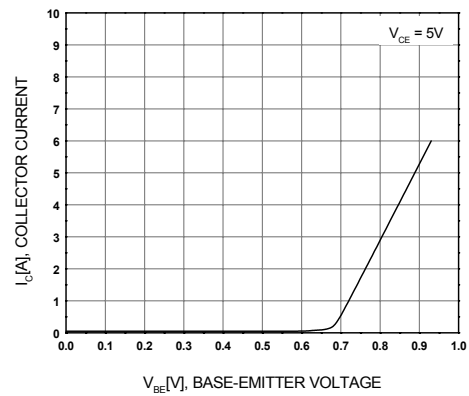


Figure 5. Switching Time

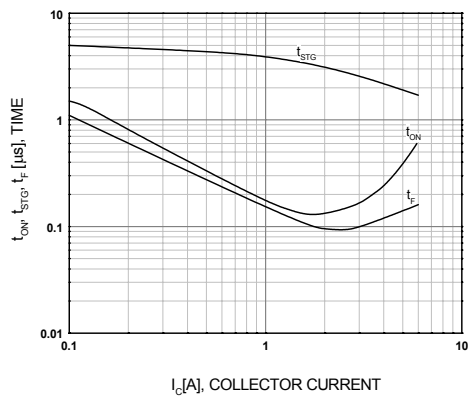
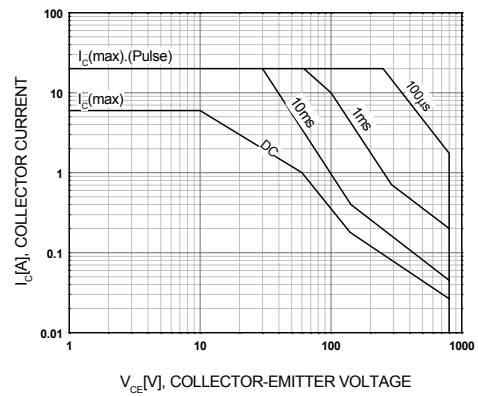


Figure 6. Forward Biased Safe Operating Area



## Typical Performance Characteristics (Continued)

Figure 7. Reverse Biased Safe Operating Area

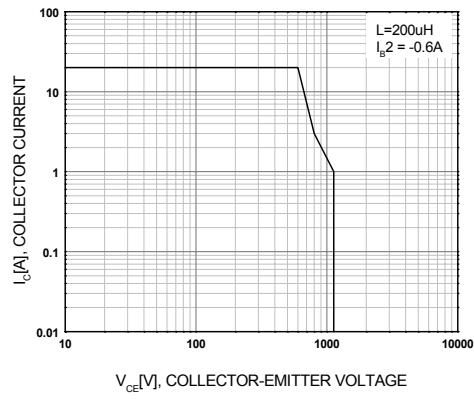
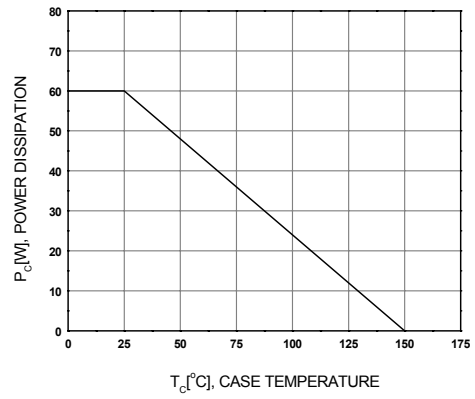
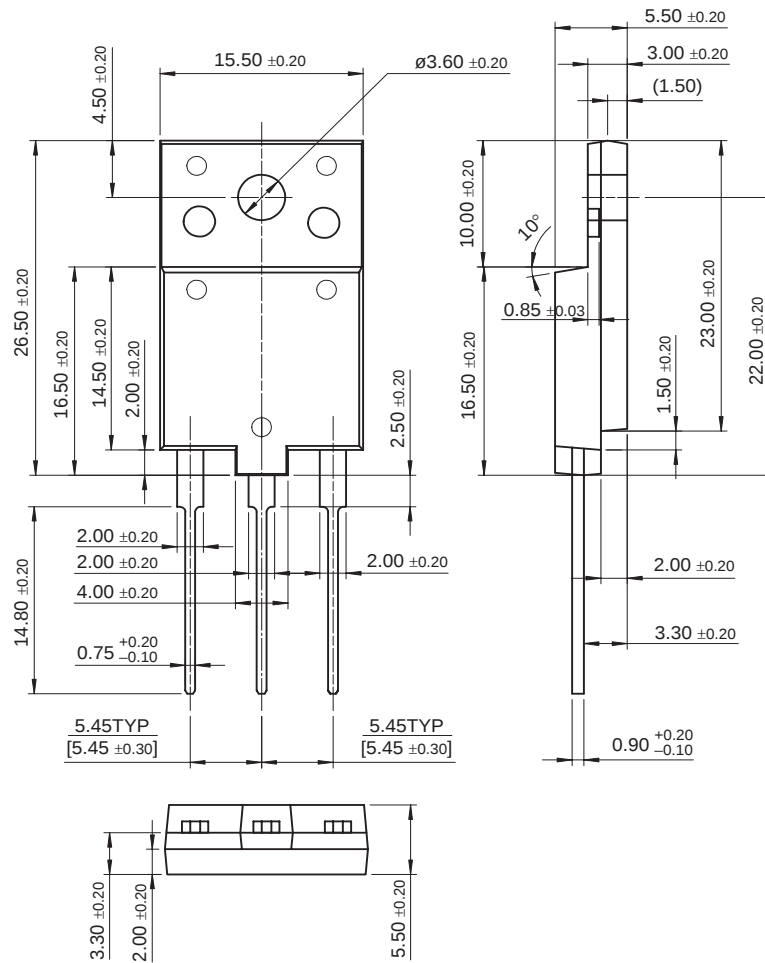


Figure 8. Power Derating Curve



# Mechanical Dimensions

## TO-3PF



Dimensions in Millimeters

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| ActiveArray <sup>™</sup>                         | FAST <sup>™</sup>               | LittleFET <sup>™</sup>    | PowerTrench <sup>®</sup>        | SuperSOT <sup>™</sup> -8    |
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