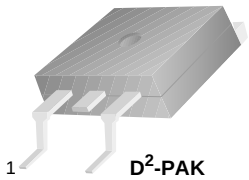
FAIRCHILD SEMICONDUCTOR®

February 2012

# FJB5555
# NPN Silicon Transistor

## Features

- High Voltage Switch Mode Application
- Fast Speed Switching
- Wide Safe Operating Area
- Suitable for Electronic Ballast Application




$D^2$-PAK

1.Base 2.Collector 3.Emitter

## Absolute Maximum Ratings* $T_a$ = 25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $BV_{CBO}$ | Collector-Base Voltage | 1050 | V |
| $BV_{CEO}$ | Collector-Emitter Voltage | 400 | V |
| $BV_{EBO}$ | Emitter-Base Voltage | 14 | V |
| $I_C$ | Collector Current (DC) | 5 | A |
| $I_{CP}$ | Collector Current (Pulse) | 10 | A |
| $I_B$ | Base Current (DC) | 2 | A |
| $I_{BP}$ | Collector Current (Pulse) | 4 | A |
| $T_J$ | Junction Temperature | 150 | °C |
| $T_{STG}$ | Storage Junction Temperature Range | - 55 to 150 | °C |

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

## Thermal Characteristics $T_a$ = 25°C unless otherwise noted

| Symbol | Parameter | | Value | Units |
|---|---|---|---|---|
| $P_D$ | Total Device Dissipation | $T_a$ = 25℃<br>$T_c$ = 25℃ | 1.6<br>100 | W<br>W |
| $R_{\theta ja}$ | Thermal Resistance, Junction to Ambient | | 77.75 | °C/W |
| $R_{\theta jc}$ | Thermal Resistance, Junction to Case | | 1.25 | °C/W |

* Device mounted on minimum pad size

## Ordering Information

| Part Number | Marking | Package | Packing Method | Remarks |
|---|---|---|---|---|
| FJB5555TM | J5555 | D2-PAK | Tape & Reel | |

## Electrical Characteristics* $T_a$ = 25°C unless otherwise noted

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| $BV_{CBO}$ | Collector-Base Breakdown Voltage | $I_C$=500μA, $I_E$=0 | 1050 | | | V |
| $BV_{CEO}$ | Collector-Emitter Breakdown Voltage | $I_C$=5mA, $I_B$=0 | 400 | | | V |
| $BV_{EBO}$ | Emitter-Base Breakdown Voltage | $I_E$=500μA, $I_C$=0 | 14 | | | V |
| $h_{FE}$ | DC Current Gain | $V_{CE}$=5V, $I_C$=10mA | 10 | | | |
| | | $V_{CE}$=3V, $I_C$=0.8A | 20 | | 40 | |
| $V_{CE}$(sat) | Collector-Emitter Saturation Voltage | $I_C$=1A, $I_B$=0.2A | | 0.17 | 0.5 | V |
| | | $I_C$=3.5A, $I_B$=1.0A | | | 1.5 | V |
| $V_{BE}$(sat) | Base-Emitter Saturation Voltage | $I_C$=3.5A, $I_B$=1.0A | | | 1.2 | V |
| $C_{ob}$ | Output Capacitance | $V_{CB}$=10V, f=1MHz | | 45 | | pF |
| $t_{ON}$ | Turn On Time | $V_{CC}$=125V, $I_C$=0.5A<br>$I_{B1}$=45mA, $I_{B2}$=-0.5A<br>$R_L$=250Ω | | | 1.0 | μs |
| $t_{STG}$ | Storage Time | | | | 1.2 | μs |
| $t_F$ | Fall Time | | | 0.3 | | μs |
| $t_{ON}$ | Turn On Time | $V_{CC}$=250V, $I_C$=2.5A<br>$I_{B1}$=0.5A, $I_{B2}$=-1.0A<br>$R_L$=100Ω | | | 2.0 | μs |
| $t_{STG}$ | Storage Time | | | | 2.5 | μs |
| $t_F$ | Fall Time | | | | 0.3 | μs |
| EAS | Avalanche Energy | L=2mH | 6 | | | mJ |

* Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

## Typical Characteristics

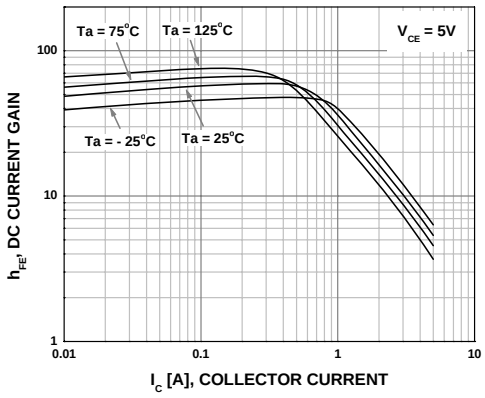



**Figure 1. DC Current Gain**

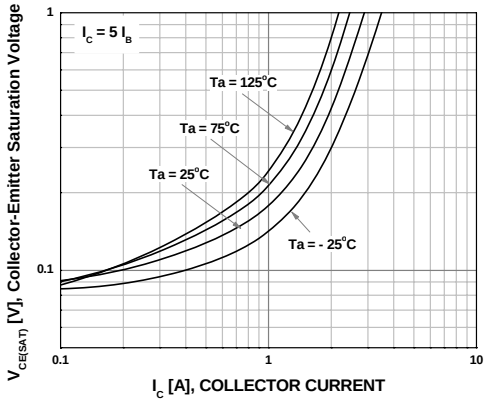



**Figure 2. Saturation Voltage**

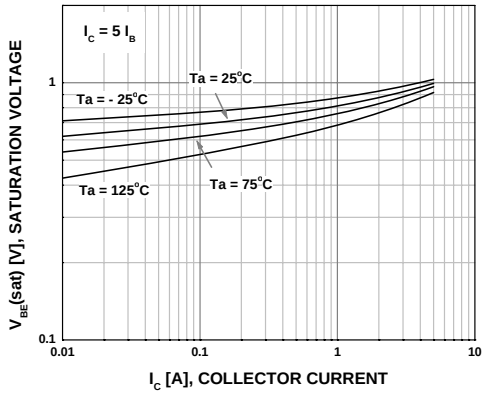



**Figure 3. Saturation Voltage**

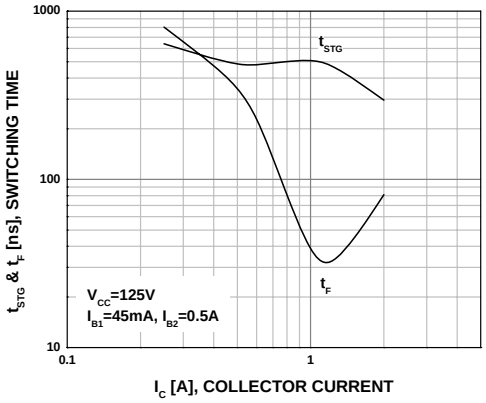



**Figure 4. Resistive Load Switching**

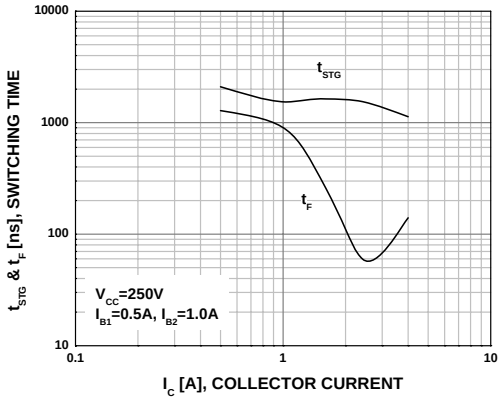



**Figure 5. Resistive Load Switching**

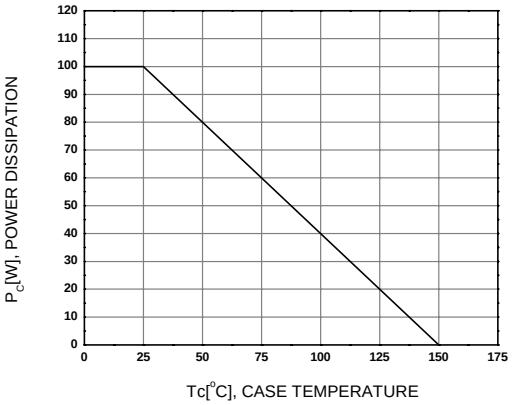



**Figure 6. Power Derating**

## Typical Characteristics (Continued)

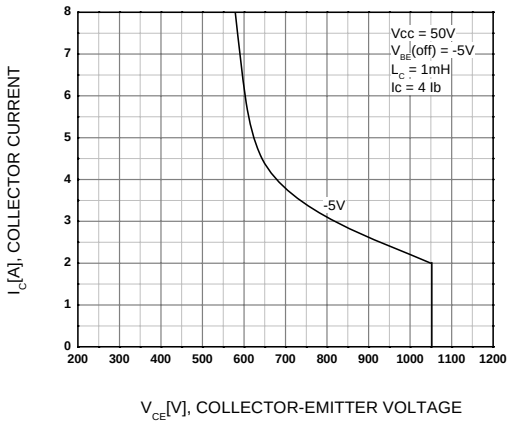
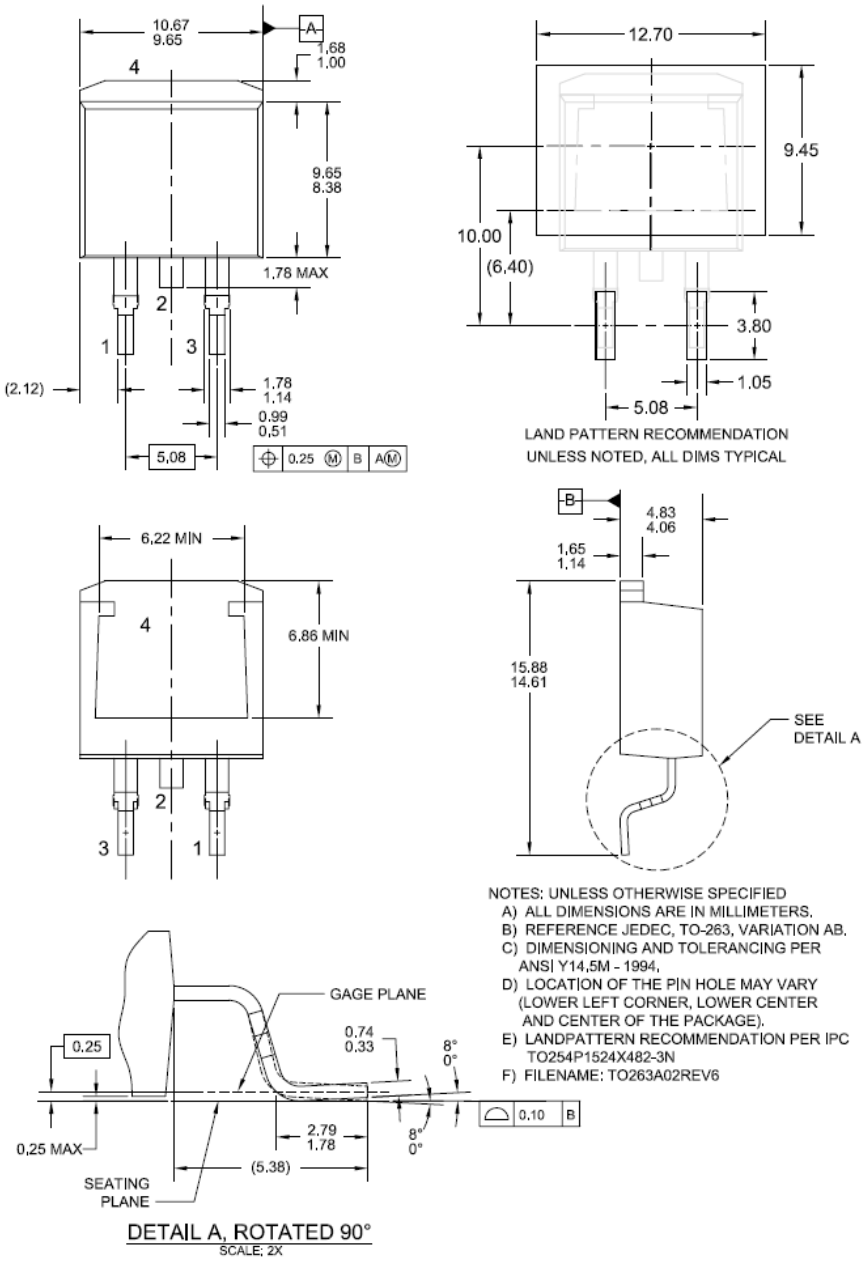



**Figure 7. Reverse Bias Safe Operating**

## Physical Dimensions

# $D^2$-PAK




Dimensions in Millimeters

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Rev. I61