

FJD5553

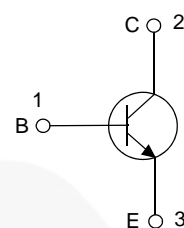
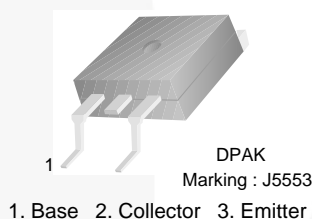
NPN Silicon Transistor

Features

- Fast Speed Switching
- Wide Safe Operating Area
- High Voltage Capability

Application

- Electronic Ballast
- Switch Mode Power Supplies



Ordering Information

| Part Number | Marking | Package | Packing Method |
|-------------|---------|---------|----------------|
| FJD5553TM | J5553 | D-PAK | Tape and Reel |

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^\circ\text{C}$ 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) | 3 | A |
| I_{CP} | Collector Current (Pulse) | 6 | A |
| I_B | Base Current (DC) | 1 | A |
| I_{BP} | Base Current (Pulse) | 2 | A |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{STG} | Storage Junction Temperature Range | - 55 to +150 | $^\circ\text{C}$ |

Thermal Characteristics

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Value | Units |
|-----------------------|---|-------|--------------------|
| P_D | Total Device Dissipation | 1.25 | W |
| $R_{\theta ja}^{(1)}$ | Thermal Resistance, Junction to Ambient | 100 | $^\circ\text{C/W}$ |

Note:

1. $R_{\theta ja}$ test board and fixture under natural convection; JESD51-3 recommended thermal test board.

Electrical Characteristics⁽²⁾Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Conditions | Min. | Typ. | Max | Units |
|---------------|--------------------------------------|--|------|------|------|---------------|
| BV_{CBO} | Collector-Base Breakdown Voltage | $I_C = 500\ \mu\text{A}$, $I_E = 0$ | 1050 | | | V |
| BV_{CEO} | Collector-Emitter Breakdown Voltage | $I_C = 5\ \text{mA}$, $I_B = 0$ | 400 | | | V |
| BV_{EBO} | Emitter-Base Breakdown Voltage | $I_E = 500\ \mu\text{A}$, $I_C = 0$ | 14 | | | V |
| h_{FE} | DC Current Gain | $V_{CE} = 5\ \text{V}$, $I_C = 10\ \text{mA}$ | 10 | | | |
| | | $V_{CE} = 3\ \text{V}$, $I_C = 0.4\ \text{A}$ | 30 | | 60 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 1\ \text{A}$, $I_B = 0.2\ \text{A}$ | | 0.23 | 0.50 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = 1\ \text{A}$, $I_B = 0.2\ \text{A}$ | | | 1.2 | V |
| C_{ob} | Output Capacitance | $V_{CB} = 10\ \text{V}$, $f = 1\ \text{MHz}$ | | 45 | | pF |
| t_{ON} | Turn-On Time | $V_{CC} = 125\ \text{V}$, $I_C = 0.5\ \text{A}$, $I_{B1} = 45\ \text{mA}$, $I_{B2} = 0.5\ \text{A}$, $R_L = 250\ \Omega$ | | | 1.0 | μs |
| t_{STG} | Storage Time | | | | 1.2 | μs |
| t_F | Fall Time | | | 0.3 | | μs |
| t_{ON} | Turn-On Time | $V_{CC} = 250\ \text{V}$, $I_C = 2.5\ \text{A}$, $I_{B1} = 0.5\ \text{A}$, $I_{B2} = 1.0\ \text{A}$, $R_L = 100\ \Omega$ | | | 2.0 | μs |
| t_{STG} | Storage Time | | | | 2.5 | μs |
| t_F | Fall Time | | | | 0.3 | μs |
| EAS | Avalanche Energy | $L = 2\ \text{mH}$ | 3.5 | | | mJ |

Note:2. Pulse test: pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.

Typical Performance Characteristics

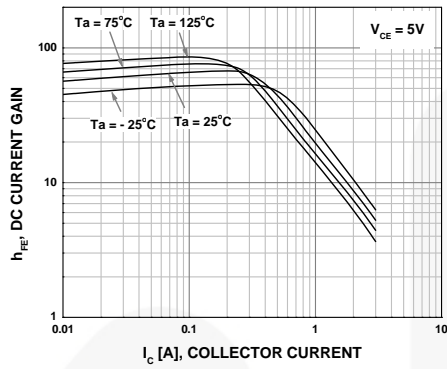


Figure 1. DC Current Gain

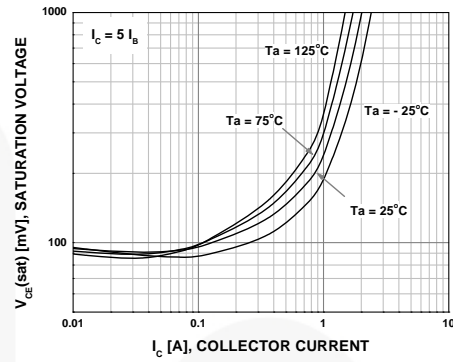


Figure 2. Saturation Voltage

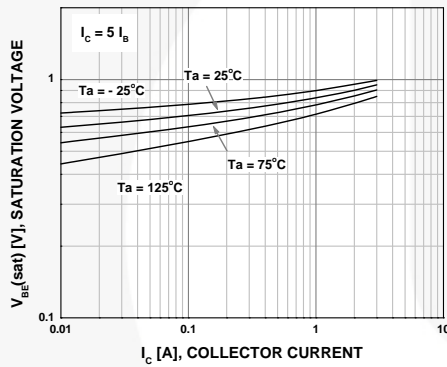


Figure 3. Saturation Voltage

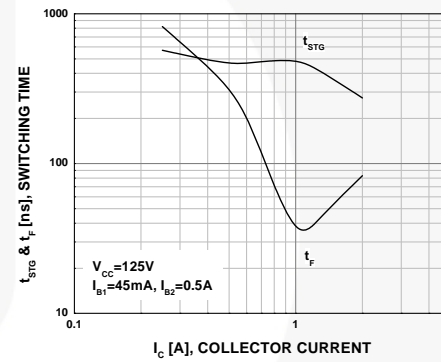


Figure 4. Resistive Load Switching

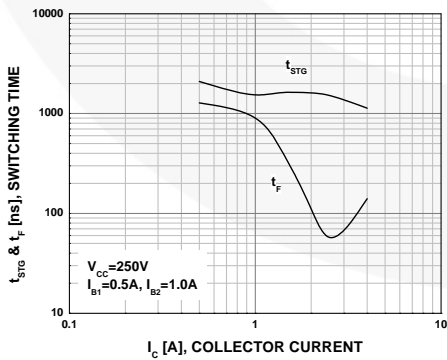


Figure 5. Resistive Load Switching

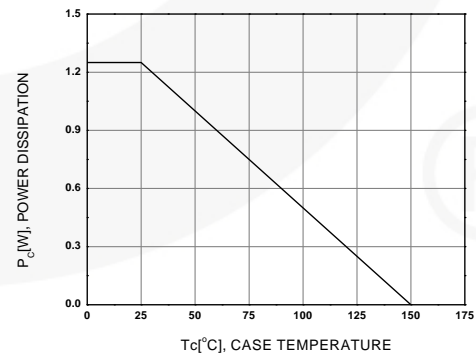


Figure 6. Power Derating

Physical Dimensions

D-PAK

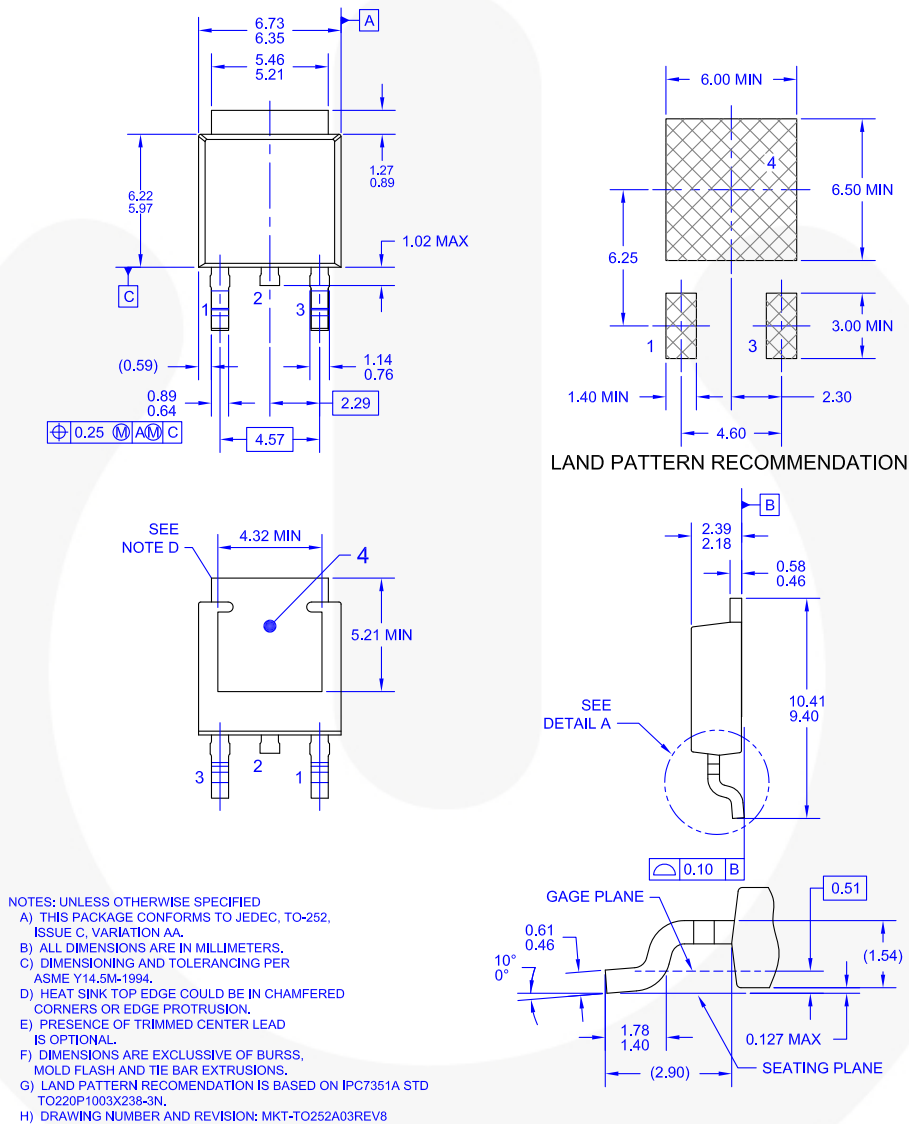


Figure 7. TO252 (D-PAK), MOLDED, 3-LEAD, OPTION AA&AB (ACTIVE)

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