SS8050
NPN Epitaxial Silicon Transistor

Features
- Complimentary to SS8550
- Collector Current: $I_C = 1.5 \text{ A}$

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Top Mark</th>
<th>Package</th>
<th>Packing Method</th>
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<tbody>
<tr>
<td>SS8050BBU</td>
<td>S8050</td>
<td>TO-92 3L</td>
<td>Bulk</td>
</tr>
<tr>
<td>SS8050CBU</td>
<td>S8050</td>
<td>TO-92 3L</td>
<td>Bulk</td>
</tr>
<tr>
<td>SS8050CTA</td>
<td>S8050</td>
<td>TO-92 3L</td>
<td>Ammo</td>
</tr>
<tr>
<td>SS8050DBU</td>
<td>S8050</td>
<td>TO-92 3L</td>
<td>Bulk</td>
</tr>
<tr>
<td>SS8050DTA</td>
<td>S8050</td>
<td>TO-92 3L</td>
<td>Ammo</td>
</tr>
</tbody>
</table>

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 $T_A = 25^\circ C$ unless otherwise noted.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{CBO}$</td>
<td>Collector-Base Voltage</td>
<td>40</td>
<td>V</td>
</tr>
<tr>
<td>$V_{CEO}$</td>
<td>Collector-Emitter Voltage</td>
<td>25</td>
<td>V</td>
</tr>
<tr>
<td>$V_{EBO}$</td>
<td>Emitter-Base Voltage</td>
<td>6</td>
<td>V</td>
</tr>
<tr>
<td>$I_C$</td>
<td>Collector Current</td>
<td>1.5</td>
<td>A</td>
</tr>
<tr>
<td>$T_J$</td>
<td>Junction Temperature</td>
<td>150</td>
<td>°C</td>
</tr>
<tr>
<td>$T_{STG}$</td>
<td>Storage Temperature</td>
<td>-65 to 150</td>
<td>°C</td>
</tr>
</tbody>
</table>
Thermal Characteristics\(^{(1)}\)
Values are at \(T_A = 25°C\) unless otherwise noted.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(P_D)</td>
<td>Power Dissipation</td>
<td>1</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Derate Above 25°C</td>
<td>8</td>
<td>mW/°C</td>
</tr>
<tr>
<td>(R_{\text{JA}})</td>
<td>Thermal Resistance, Junction-to-Ambient</td>
<td>125</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

Note:
1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics
Values are at \(T_A = 25°C\) unless otherwise noted.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B_{\text{CBO}})</td>
<td>Collector-Base Breakdown Voltage</td>
<td>(I_C = 100 \mu A, I_E = 0)</td>
<td>40</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>(B_{\text{CEO}})</td>
<td>Collector-Emitter Breakdown Voltage</td>
<td>(I_C = 2 mA, I_B = 0)</td>
<td>25</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>(B_{\text{EBO}})</td>
<td>Emitter-Base Breakdown Voltage</td>
<td>(I_E = 100 \mu A, I_C = 0)</td>
<td>6</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>(I_{\text{CBO}})</td>
<td>Collector Cut-Off Current</td>
<td>(V_{CB} = 35 V, I_E = 0)</td>
<td>100</td>
<td>nA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(I_{\text{EBO}})</td>
<td>Emitter Cut-Off Current</td>
<td>(V_{EB} = 6 V, I_C = 0)</td>
<td>100</td>
<td>nA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h_{\text{FE1}})</td>
<td>DC Current Gain</td>
<td>(V_{CE} = 1 V, I_C = 5 mA)</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h_{\text{FE2}})</td>
<td></td>
<td>(V_{CE} = 1 V, I_C = 100 mA)</td>
<td>85</td>
<td>300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(h_{\text{FE3}})</td>
<td></td>
<td>(V_{CE} = 1 V, I_C = 800 mA)</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(V_{\text{CE(sat)}})</td>
<td>Collector-Emitter Saturation Voltage</td>
<td>(I_C = 800 mA, I_B = 80 mA)</td>
<td>0.5</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>(V_{\text{BE(sat)}})</td>
<td>Base-Emitter Saturation Voltage</td>
<td>(I_C = 800 mA, I_B = 80 mA)</td>
<td>1.2</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>(V_{\text{BE(on)}})</td>
<td>Base-Emitter On Voltage</td>
<td>(V_{CE} = 1 V, I_C = 10 mA)</td>
<td>1</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>(C_{\text{ob}})</td>
<td>Output Capacitance</td>
<td>(V_{CB} = 10 V, I_E = 0, f = 1 MHz)</td>
<td>9.0</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>(f_T)</td>
<td>Current Gain Bandwidth Product</td>
<td>(V_{CE} = 10 V, I_C = 50 mA)</td>
<td>100</td>
<td></td>
<td></td>
<td>MHz</td>
</tr>
</tbody>
</table>

\(h_{\text{FE}}\) Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>(h_{\text{FE2}})</td>
<td>85 ~ 160</td>
<td>120 ~ 200</td>
<td>160 ~ 300</td>
</tr>
</tbody>
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Typical Performance Characteristics

Figure 1. Static Characteristic

Figure 2. DC Current Gain

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

Figure 4. Base-Emitter On Voltage

Figure 5. Collector Output Capacitance

Figure 6. Current Gain Bandwidth Product
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D. DRAWING FILENAME: MKT-2A03FREV3.
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<th>Product Status</th>
<th>Definition</th>
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<td>Advance Information</td>
<td>Formative / In Design</td>
<td>Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.</td>
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<tr>
<td>Preliminary</td>
<td>First Production</td>
<td>Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.</td>
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<td>Full Production</td>
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<tr>
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<td>Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.</td>
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