**NPN Silicon Transistor**

### Absolute Maximum Ratings ($T_C=25^\circ C$ unless otherwise noted)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{CEO}$</td>
<td>Collector-Base Voltage</td>
<td>70</td>
<td>V</td>
</tr>
<tr>
<td>$V_{CEO}$</td>
<td>Collector-Emitter Voltage</td>
<td>60</td>
<td>V</td>
</tr>
<tr>
<td>$V_{EBO}$</td>
<td>Emitter-Base Voltage</td>
<td>5</td>
<td>V</td>
</tr>
<tr>
<td>$I_C$</td>
<td>Collector Current</td>
<td>10</td>
<td>A</td>
</tr>
<tr>
<td>$I_B$</td>
<td>Base Current</td>
<td>6</td>
<td>A</td>
</tr>
<tr>
<td>$P_C$</td>
<td>Collector Dissipation ($T_C=25^\circ C$)</td>
<td>75</td>
<td>W</td>
</tr>
<tr>
<td>$P_C$</td>
<td>Collector Dissipation ($T_a=25^\circ C$)</td>
<td>0.6</td>
<td>W</td>
</tr>
<tr>
<td>$T_J$</td>
<td>Junction Temperature</td>
<td>150</td>
<td>$^\circ C$</td>
</tr>
<tr>
<td>$T_{STG}$</td>
<td>Storage Temperature</td>
<td>-55 ~ 150</td>
<td>$^\circ C$</td>
</tr>
</tbody>
</table>

### Electrical Characteristics ($T_C=25^\circ C$ unless otherwise noted)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Test Condition</th>
<th>Min.</th>
<th>Max.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>$BV_{CEO}$</td>
<td>Collector-Emitter Breakdown Voltage</td>
<td>$I_C = 200 \text{mA}, I_B = 0$</td>
<td>60</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>$I_{CEO}$</td>
<td>Collector Cut-off Current</td>
<td>$V_{CE} = 30 \text{V}, I_B = 0$</td>
<td>700</td>
<td>$\mu A$</td>
<td></td>
</tr>
<tr>
<td>$ICEX1$</td>
<td>Collector Cut-off Current</td>
<td>$V_{CE} = 70 \text{V}, V_{BE(off)} = -1.5 \text{V}$</td>
<td>1</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>$ICEX2$</td>
<td>Collector Cut-off Current</td>
<td>$V_{CE} = 70 \text{V}, V_{BE(off)} = -1.5 \text{V}$</td>
<td>5</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>$I_{EBO}$</td>
<td>Emitter Cut-off Current</td>
<td>$V_{EB} = 5 \text{V}, I_C = 0$</td>
<td>5</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>$HFE$</td>
<td>DC Current Gain</td>
<td>$V_{CE} = 4 \text{V}, I_C = 4 \text{A}$</td>
<td>20</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>$V_{CE(sat)}$</td>
<td>Collector-Emitter Saturation Voltage</td>
<td>$I_C = 4 \text{A}, I_B = 0.4 \text{A}$</td>
<td>1.1</td>
<td>8</td>
<td>V</td>
</tr>
<tr>
<td>$V_{BE(\text{on})}$</td>
<td>Base-Emitter On Voltage</td>
<td>$V_{CE} = 4 \text{V}, I_C = 4 \text{A}$</td>
<td>1.8</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>$f_T$</td>
<td>Current Gain Bandwidth Product</td>
<td>$V_{CE} = 10 \text{V}, I_C = 500 \text{mA}$</td>
<td>2</td>
<td>MHz</td>
<td></td>
</tr>
</tbody>
</table>

* Pulse test: $PW=300\mu s$, duty cycle=2% Pulse
Typical Characteristics

Figure 1. DC current Gain

Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

Figure 3. Safe Operating Area

Figure 4. Power Derating
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