TIP41A / TIP41B / TIP41C
NPN Epitaxial Silicon Transistor

Features
• Medium Power Linear Switching Applications
• Complement to TIP42 Series

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Top Mark</th>
<th>Package</th>
<th>Packing Method</th>
</tr>
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<tbody>
<tr>
<td>TIP41A</td>
<td>TIP41A</td>
<td>TO-220 3L (Single Gauge)</td>
<td>Bulk</td>
</tr>
<tr>
<td>TIP41B</td>
<td>TIP41B</td>
<td>TO-220 3L (Single Gauge)</td>
<td>Bulk</td>
</tr>
<tr>
<td>TIP41C</td>
<td>TIP41C</td>
<td>TO-220 3L (Single Gauge)</td>
<td>Bulk</td>
</tr>
<tr>
<td>TIP41CTU</td>
<td>TIP41C</td>
<td>TO-220 3L (Single Gauge)</td>
<td>Rail</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 $T_C = 25°C$ unless otherwise noted.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{CBO}$</td>
<td>Collector-Base Voltage</td>
<td>TIP41A 60</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TIP41B 80</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TIP41C 100</td>
<td>V</td>
</tr>
<tr>
<td>$V_{CEO}$</td>
<td>Collector-Emitter Voltage</td>
<td>TIP41A 60</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TIP41B 80</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TIP41C 100</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 (DC)</td>
<td>6</td>
<td>A</td>
</tr>
<tr>
<td>$I_{CP}$</td>
<td>Collector Current (Pulse)</td>
<td>10</td>
<td>A</td>
</tr>
<tr>
<td>$I_B$</td>
<td>Base Current</td>
<td>2</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 Range</td>
<td>-65 to 150</td>
<td>°C</td>
</tr>
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</table>
## Thermal Characteristics

Values are at $T_C = 25^\circ$C unless otherwise noted.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P_C$</td>
<td>Collector Dissipation ($T_C = 25^\circ$C)</td>
<td>65</td>
<td>W</td>
</tr>
<tr>
<td></td>
<td>Collector Dissipation ($T_A = 25^\circ$C)</td>
<td>2</td>
<td></td>
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</table>

## Electrical Characteristics

Values are at $T_C = 25^\circ$C unless otherwise noted.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{CE(sus)}$</td>
<td>Collector-Emitter Sustaining Voltage$^{(1)}$</td>
<td>TIP41A $I_C = 30$ mA, $I_B = 0$</td>
<td>60</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TIP41B</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TIP41C</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$I_{CEO}$</td>
<td>Collector Cut-Off Current</td>
<td>TIP41A $V_C = 30$ V, $I_B = 0$</td>
<td>0.7</td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TIP41B / TIP41C $V_C = 60$ V, $I_B = 0$</td>
<td>0.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$I_{CES}$</td>
<td>Collector Cut-Off Current</td>
<td>TIP41A $V_C = 60$ V, $V_{EB} = 0$</td>
<td>400</td>
<td></td>
<td>μA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TIP41B $V_C = 80$ V, $V_{EB} = 0$</td>
<td>400</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TIP41C $V_C = 100$ V, $V_{EB} = 0$</td>
<td>400</td>
<td></td>
<td></td>
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<tr>
<td>$I_{EBO}$</td>
<td>Emitter Cut-Off Current</td>
<td>$V_{EB} = 5$ V, $I_C = 0$</td>
<td>1</td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>$h_FE$</td>
<td>DC Current Gain$^{(1)}$</td>
<td>$V_C = 4$ V, $I_C = 0.3$ A</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_C = 4$ V, $I_C = 3$ A</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$V_{CE(sat)}$</td>
<td>Collector-Emitter Saturation Voltage$^{(1)}$</td>
<td>$I_C = 6$ A, $I_B = 600$ mA</td>
<td>1.5</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>$V_{BE(on)}$</td>
<td>Base-Emitter On Voltage$^{(1)}$</td>
<td>$V_C = 4$ V, $I_C = 6$ A</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$f_T$</td>
<td>Current Gain Bandwidth Product</td>
<td>$V_C = 10$ V, $I_C = 500$ mA, $f = 1$ MHz</td>
<td>3.0</td>
<td></td>
<td>MHz</td>
</tr>
</tbody>
</table>

**Note:**

1. Pulse test: $pw \leq 300$ μs, duty cycle $\leq 2\%$. 
Typical Performance Characteristics

**Figure 1. DC Current Gain**

- $h_v$, DC CURRENT GAIN
- $I_C$, COLLECTOR CURRENT
- $V_{CE} = 4V$

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

- $V_BE(sat)$, $V_{CE(sat)}$, SATURATION VOLTAGE
- $I_C$, COLLECTOR CURRENT
- $I_B$, COLLECTOR CURRENT

**Figure 3. Safe Operating Area**

- $I_C(MAX)$, COLLECTOR CURRENT
- $V_{CE}(MAX)$, COLLECTOR-EMITTER VOLTAGE
- $V_C$, COLLECTOR CURRENT

**Figure 4. Power Derating**

- $P_J(W)$, POWER DISSIPATION
- $T_J^oC$, CASE TEMPERATURE
Physical Dimensions

Figure 5. TO-220, MOLDED, 3LEAD, JEDEC VARIATION AB
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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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<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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