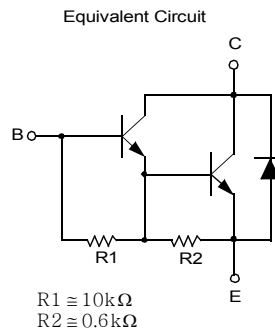
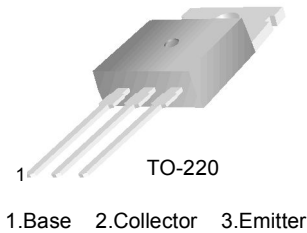


TIP100/TIP101/TIP102

NPN Epitaxial Silicon Darlington Transistor

- Monolithic Construction With Built In Base-Emitter Shunt Resistors
- High DC Current Gain : $h_{FE}=1000$ @ $V_{CE}=4V$, $I_C=3A$ (Min.)
- Collector-Emitter Sustaining Voltage
- Low Collector-Emitter Saturation Voltage
- Industrial Use
- Complementary to TIP105/106/107



Absolute Maximum Ratings* $T_a = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Ratings | Units |
|-----------|--|------------|------------------|
| V_{CBO} | Collector-Base Voltage : TIP100 | 60 | V |
| | : TIP101 | 80 | V |
| | : TIP102 | 100 | V |
| V_{CEO} | Collector-Emitter Voltage : TIP100 | 60 | V |
| | : TIP101 | 80 | V |
| | : TIP102 | 100 | V |
| V_{EBO} | Emitter-Base Voltage | 5 | V |
| I_C | Collector Current (DC) | 8 | A |
| I_{CP} | Collector Current (Pulse) | 15 | A |
| I_B | Base Current (DC) | 1 | A |
| P_C | Collector Dissipation ($T_a=25^\circ\text{C}$) | 2 | W |
| | Collector Dissipation ($T_C=25^\circ\text{C}$) | 80 | W |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature | - 65 ~ 150 | $^\circ\text{C}$ |

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

Electrical Characteristics* $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|----------------|--|---|-----------------|------|----------------|---|
| $V_{CEO(sus)}$ | Collector-Emitter Sustaining Voltage : TIP100 : TIP101 : TIP102 | $I_C = 30\text{mA}, I_B = 0$ | 60 80 100 | | | V V V |
| I_{CEO} | Collector Cut-off Current : TIP100 : TIP101 : TIP102 | $V_{CE} = 30\text{V}, I_B = 0$ $V_{CE} = 40\text{V}, I_B = 0$ $V_{CE} = 50\text{V}, I_B = 0$ | | | 50 50 50 | μA μA μA |
| I_{CBO} | Collector Cut-off Current : TIP100 : TIP101 : TIP102 | $V_{CE} = 60\text{V}, I_E = 0$ $V_{CE} = 80\text{V}, I_E = 0$ $V_{CE} = 100\text{V}, I_E = 0$ | | | 50 50 50 | μA μA μA |
| I_{EBO} | Emitter Cut-off Current | $V_{EB} = 5\text{V}, I_C = 0$ | | | 2 | mA |
| h_{FE} | DC Current Gain | $V_{CE} = 4\text{V}, I_C = 3\text{A}$ $V_{CE} = 4\text{V}, I_C = 8\text{A}$ | 1000 200 | | 20000 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 3\text{A}, I_B = 6\text{mA}$ $I_C = 8\text{A}, I_B = 80\text{mA}$ | | | 2 2.5 | V V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $V_{CE} = 4\text{V}, I_C = 8\text{A}$ | | | 2.8 | V |
| C_{ob} | Output Capacitance | $V_{CB} = 10\text{V}, I_E = 0, f = 0.1\text{MHz}$ | | | 200 | pF |

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

Typical Characteristics

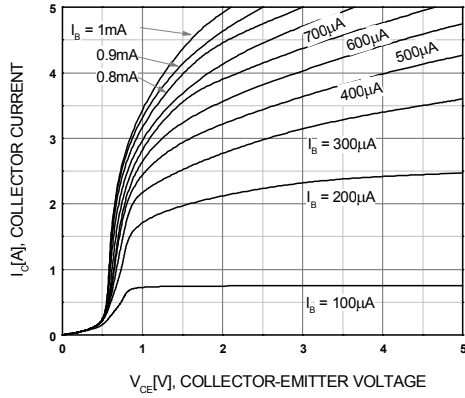


Figure 1. Static Characteristic

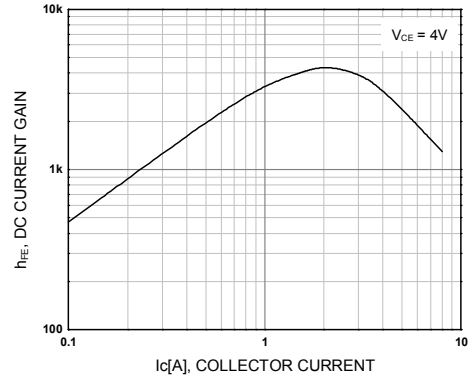


Figure 2. DC current Gain

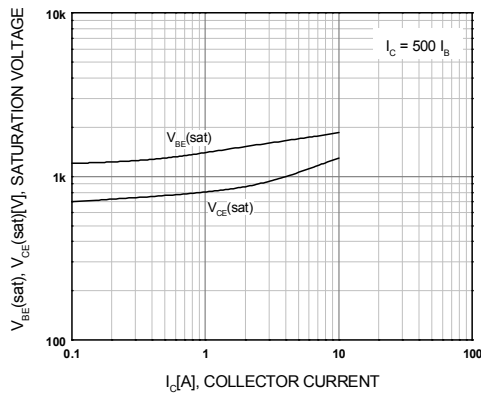


Figure 3. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

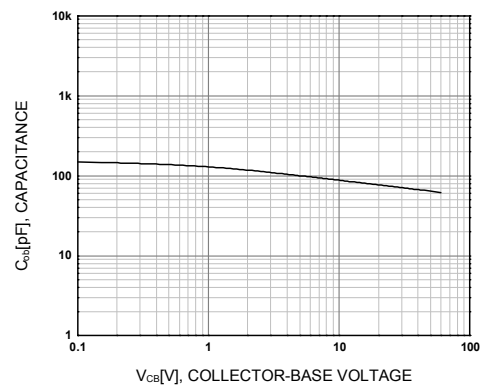


Figure 4. Collector Output Capacitance

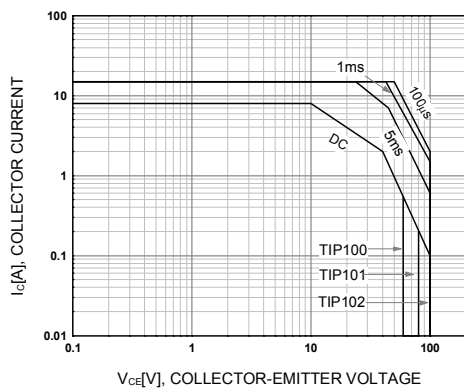


Figure 5. Safe Operating Area

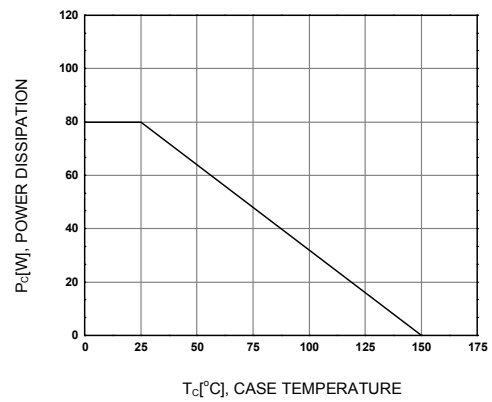
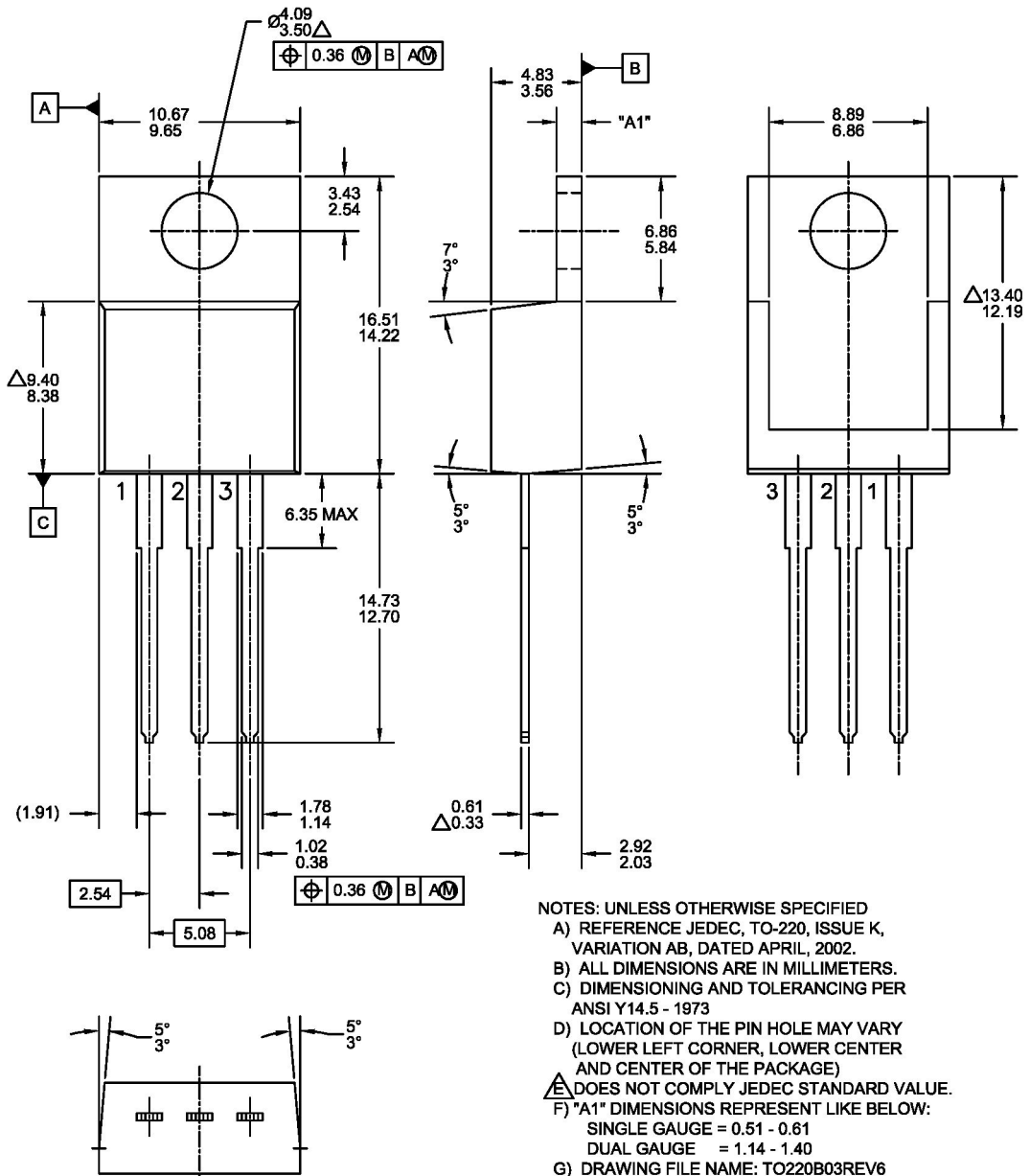


Figure 6. Power Derating

Mechanical Dimensions


TO220





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