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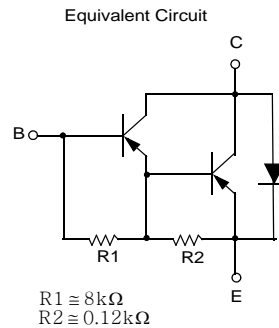
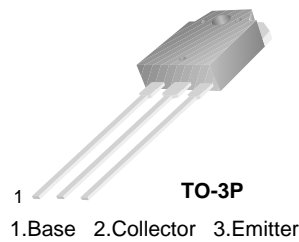


TIP145 / TIP146 / TIP147

PNP Epitaxial Silicon Darlington Transistor

Features

- Monolithic Construction With Built In Base-Emitter Shunt Resistors
- High DC Current Gain : $h_{FE} = 1000$ @ $V_{CE} = -4V$, $I_C = -5A$ (Min.)
- Industrial Use
- Complement to TIP140/141/142



Absolute Maximum Ratings* $T_A = 25^\circ C$ unless otherwise noted

| Symbol | Parameter | Value | Units |
|-----------|--|--------------|------------|
| V_{CBO} | Collector-Base Voltage : TIP145 | - 60 | V |
| | : TIP146 | - 80 | V |
| | : TIP147 | - 100 | V |
| V_{CEO} | Collector-Emitter Voltage : TIP145 | - 60 | V |
| | : TIP146 | - 80 | V |
| | : TIP147 | - 100 | V |
| V_{EBO} | Emitter-Base Voltage | - 5 | V |
| I_C | Collector Current (DC) | - 10 | A |
| I_{CP} | Collector Current (Pulse) | - 15 | A |
| I_B | Base Current (DC) | - 0.5 | A |
| P_C | Collector Dissipation ($T_C=25^\circ C$) | 125 | W |
| T_J | Junction Temperature | 150 | $^\circ C$ |
| T_{STG} | Storage Temperature | - 65 to +150 | $^\circ C$ |

* 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 : TIP145 : TIP146 : TIP147 | $I_C = -30\text{mA}, I_B = 0$ | -60 -80 -100 | | | V V V |
| I_{CEO} | Collector Cut-off Current : TIP145 : TIP146 : TIP147 | $V_{CE} = -30\text{V}, I_B = 0$ $V_{CE} = -40\text{V}, I_B = 0$ $V_{CE} = -50\text{V}, I_B = 0$ | | | -2 -2 -2 | mA mA mA |
| I_{CBO} | Collector Cut-off Current : TIP145 : TIP146 : TIP147 | $V_{CB} = -60\text{V}, I_E = 0$ $V_{CB} = -80\text{V}, I_E = 0$ $V_{CB} = -100\text{V}, I_E = 0$ | | | -1 -1 -1 | mA mA mA |
| I_{EBO} | Emitter Cut-off Current | $V_{BE} = -5\text{V}, I_C = 0$ | | | -2 | mA |
| h_{FE} | DC Current Gain | $V_{CE} = -4\text{V}, I_C = -5\text{A}$ $V_{CE} = -4\text{V}, I_C = -10\text{A}$ | 1000 500 | | | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = -5\text{A}, I_B = -10\text{mA}$ $I_C = -10\text{A}, I_B = -40\text{mA}$ | | | -2 -3 | V V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = -10\text{A}, I_B = -40\text{mA}$ | | | -3.5 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $V_{CE} = -4\text{V}, I_C = -10\text{A}$ | | | -3 | V |
| t_D | Delay Time | $V_{CC} = -30\text{V}, I_C = -5\text{A}$ $I_{B1} = -20\text{mA}, I_{B2} = 20\text{mA}$ $R_L = 6\Omega$ | | 0.15 | | μs |
| t_R | Rise Time | | | 0.55 | | μs |
| t_{STG} | Storage Time | | | 2.5 | | μs |
| t_F | Fall Time | | | 2.5 | | μs |

* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

Typical Performance Characteristics

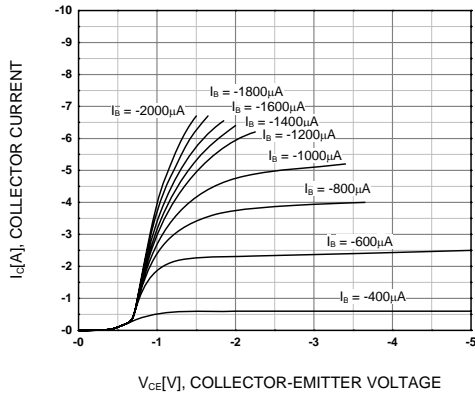


Figure 1. Static Characteristic

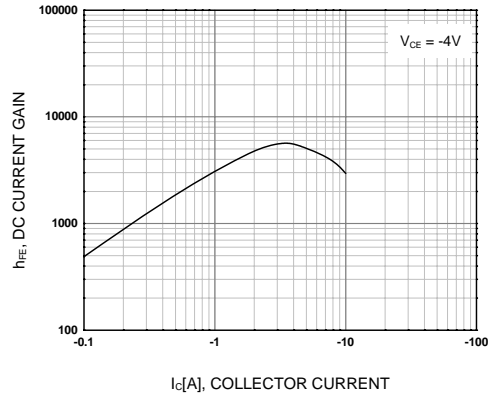


Figure 2. DC current Gain

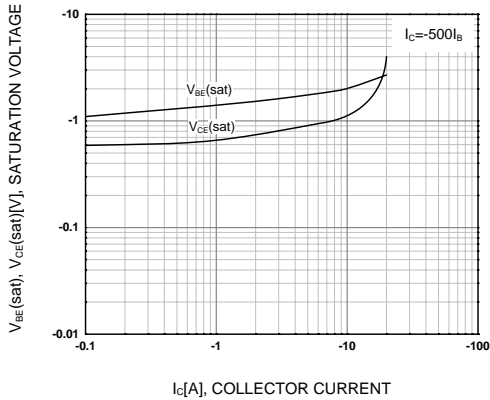


Figure 3. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

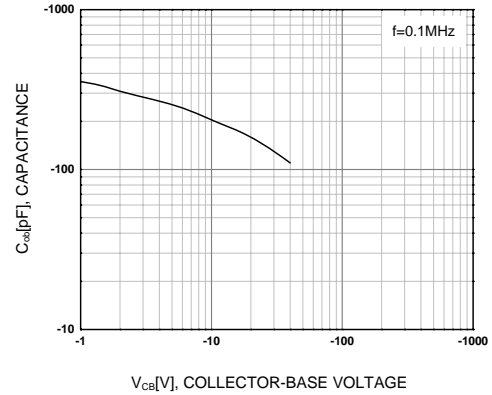


Figure 4. Collector Output Capacitance

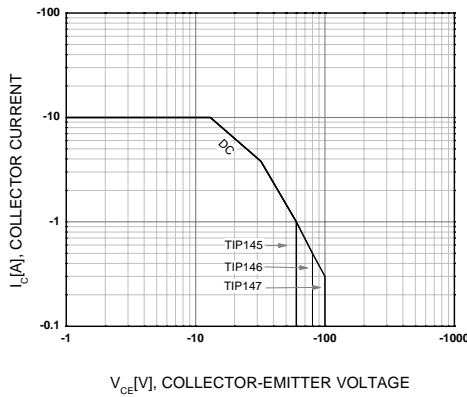


Figure 5. Safe Operating Area

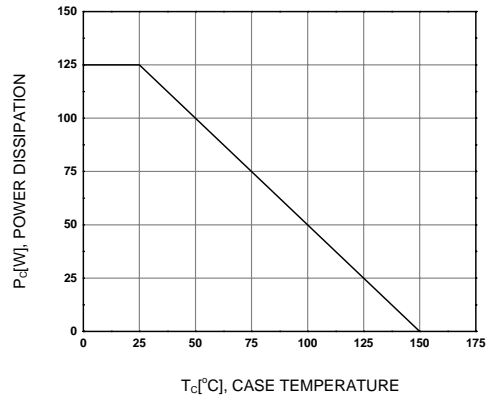
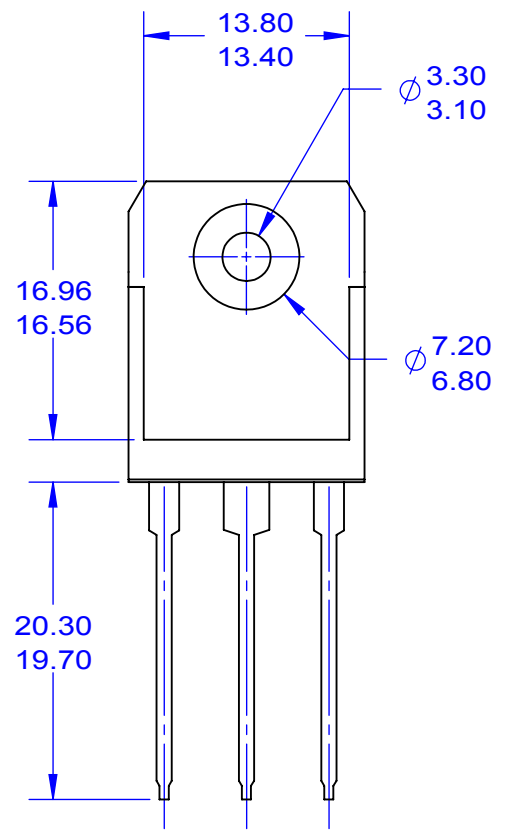
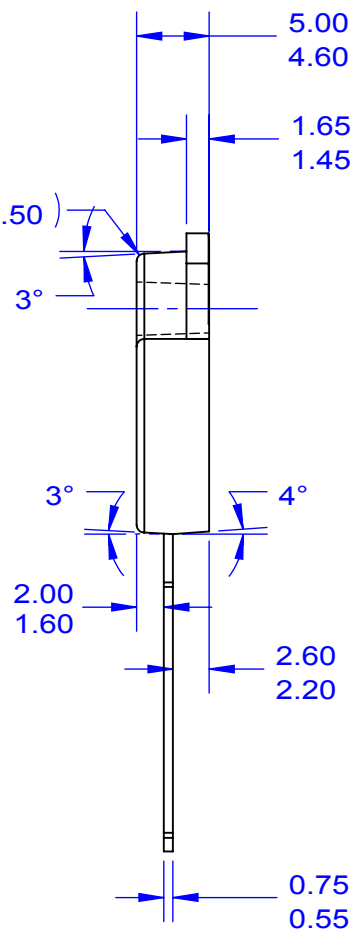
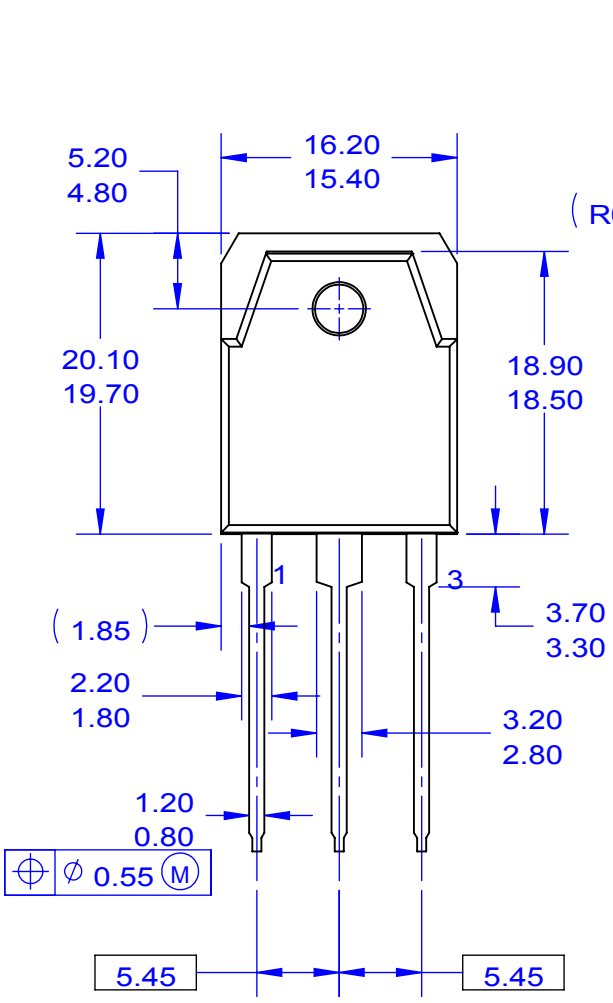
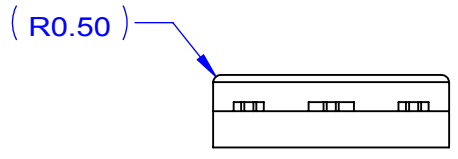


Figure 6. Power Derating



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