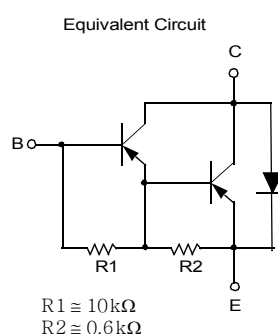
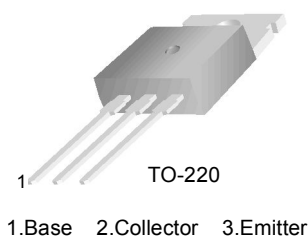


# TIP105/TIP106/TIP107

## PNP 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 TIP100/101/102



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

| Symbol    | Parameter                                                  | Ratings               | Units       |
|-----------|------------------------------------------------------------|-----------------------|-------------|
| $V_{CBO}$ | Collector-Base Voltage : TIP105<br>: TIP106<br>: TIP107    | - 60<br>- 80<br>- 100 | V<br>V<br>V |
| $V_{CEO}$ | Collector-Emitter Voltage : TIP105<br>: TIP106<br>: TIP107 | - 60<br>- 80<br>- 100 | V<br>V<br>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 ( $T_a=25^\circ C$ )                 | 2                     | W           |
|           | Collector Dissipation ( $T_C=25^\circ C$ )                 | 80                    | W           |
| $T_J$     | Junction Temperature                                       | 150                   | $^\circ C$  |
| $T_{STG}$ | Storage Temperature                                        | - 65 ~ 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<br>: TIP105<br>: TIP106<br>: TIP107 | $I_C = -30\text{mA}, I_B = 0$                                                                          | -60<br>-80<br>-100 |      |                   | V<br>V<br>V                                     |
| $I_{CEO}$      | Collector Cut-off Current<br>: TIP105<br>: TIP106<br>: TIP107            | $V_{CE} = -30\text{V}, I_B = 0$<br>$V_{CE} = -40\text{V}, I_B = 0$<br>$V_{CE} = -50\text{V}, I_B = 0$  |                    |      | -50<br>-50<br>-50 | $\mu\text{A}$<br>$\mu\text{A}$<br>$\mu\text{A}$ |
| $I_{CBO}$      | Collector Cut-off Current<br>: TIP105<br>: TIP106<br>: TIP107            | $V_{CB} = -60\text{V}, I_E = 0$<br>$V_{CB} = -80\text{V}, I_E = 0$<br>$V_{CB} = -100\text{V}, I_E = 0$ |                    |      | -50<br>-50<br>-50 | $\mu\text{A}$<br>$\mu\text{A}$<br>$\mu\text{A}$ |
| $I_{EBO}$      | Emitter Cut-off Current                                                  | $V_{BE} = -5\text{V}, I_C = 0$                                                                         |                    |      | -2                | mA                                              |
| $h_{FE}$       | DC Current Gain                                                          | $V_{CE} = -4\text{V}, I_C = -3\text{A}$<br>$V_{CE} = -4\text{V}, I_C = -8\text{A}$                     | 1000<br>200        |      | 20000             |                                                 |
| $V_{CE(sat)}$  | Collector-Emitter Saturation Voltage                                     | $I_C = -3\text{A}, I_B = -6\text{mA}$<br>$I_C = -8\text{A}, I_B = -80\text{mA}$                        |                    |      | -2<br>-2.5        | V<br>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                                                       | $V_{CB} = -10\text{V}, I_E = 0, f = 0.1\text{MHz}$                                                     |                    |      | 300               | pF                                              |

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

## Typical Characteristics

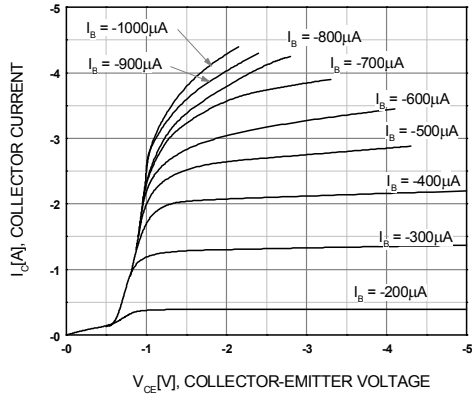


Figure 1. Static Characteristic

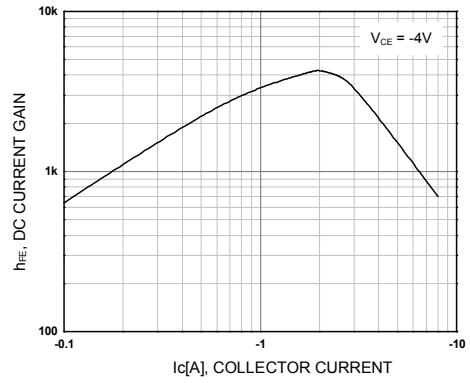


Figure 2. DC current Gain

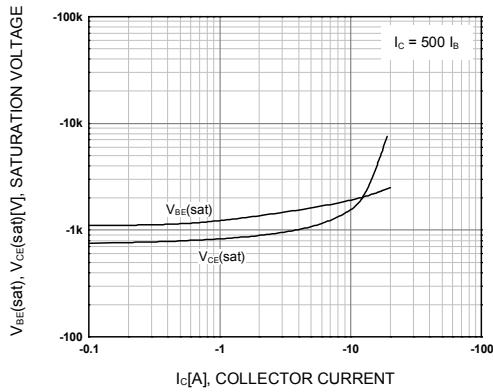


Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

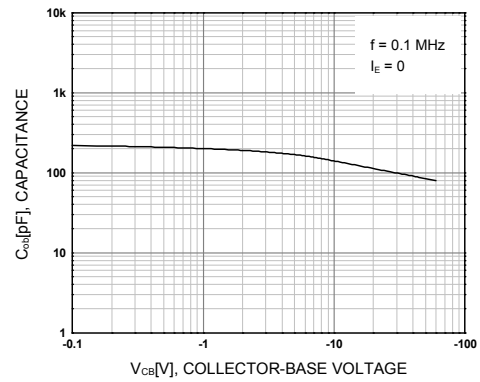


Figure 4. Collector Output Capacitance

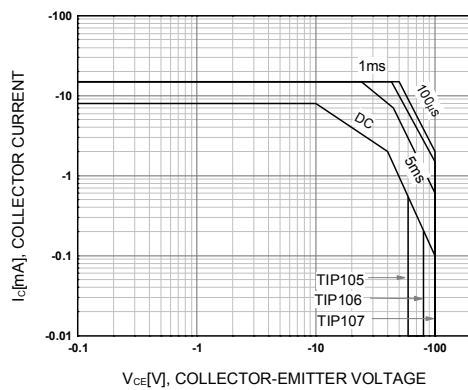


Figure 5. Safe Operating Area

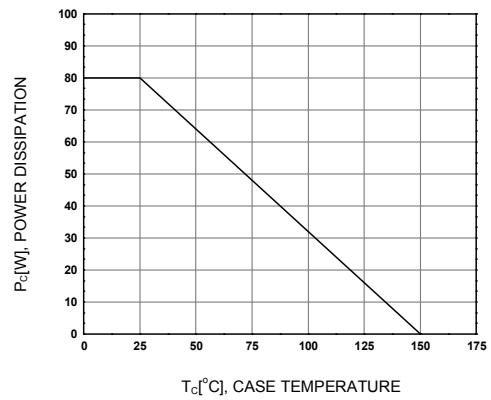


Figure 6. Power Derating





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| FPS <sup>™</sup>                     |  <sup>®</sup> | SuperSOT <sup>™</sup> -3               | VCX <sup>™</sup>                 |
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| Global Power Resource <sup>SM</sup>  | Power220 <sup>®</sup>                                                                          |                                        |                                  |

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