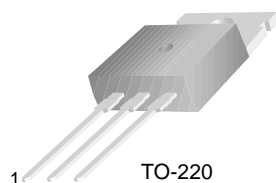


## TIP100/101/102

### 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

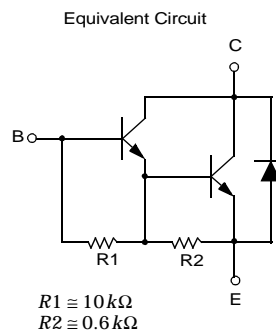


1.Base 2.Collector 3.Emitter

### NPN Epitaxial Silicon Darlington Transistor

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

| Symbol    | Parameter                                  | Value      | 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 ( $T_a=25^\circ C$ ) | 2          | W          |
|           | Collector Dissipation ( $T_C=25^\circ C$ ) | 80         | W          |
| $T_J$     | Junction Temperature                       | 150        | $^\circ C$ |
| $T_{STG}$ | Storage Temperature                        | - 65 ~ 150 | $^\circ C$ |



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

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

## Typical Characteristics

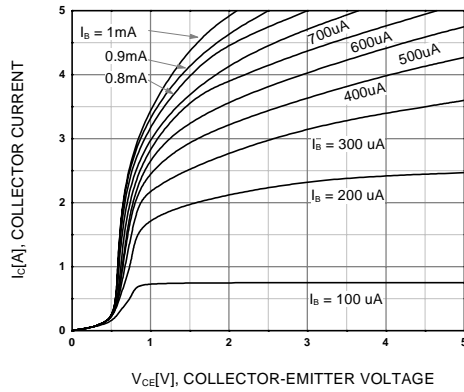


Figure 1. Static Characteristic

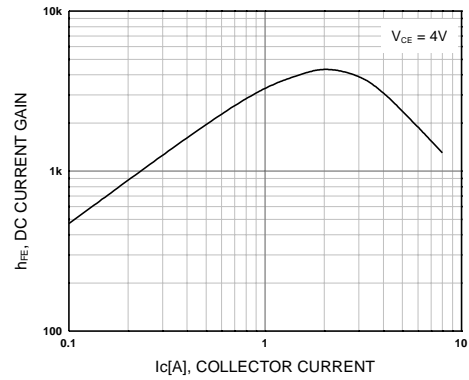


Figure 2. DC current Gain

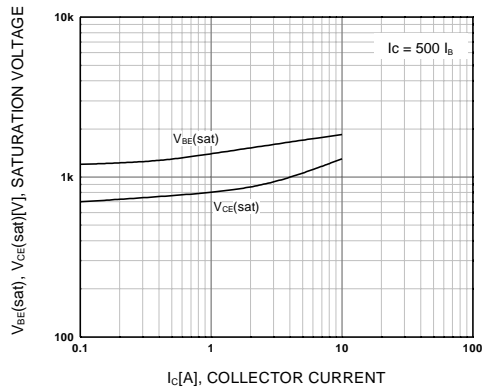


Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

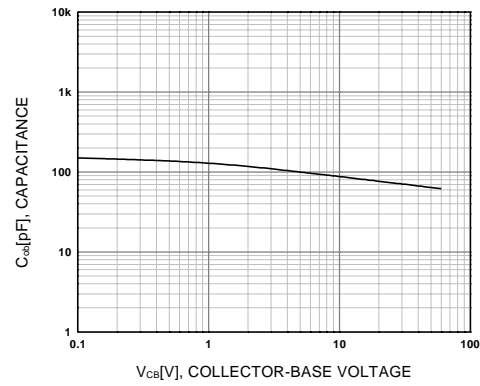


Figure 4. Collector Output Capacitance

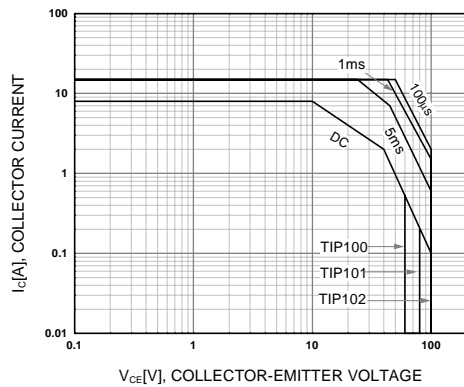


Figure 5. Safe Operating Area

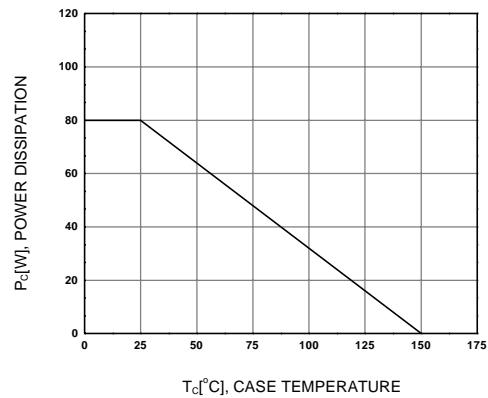
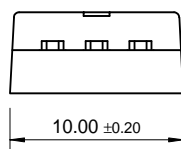
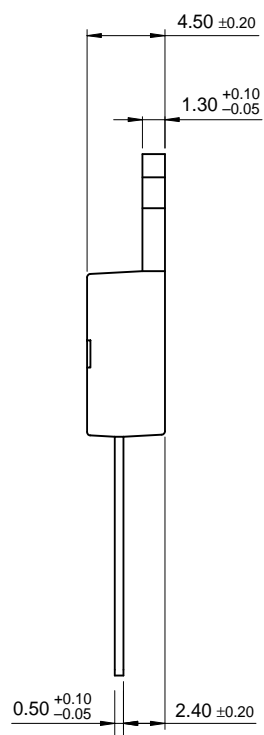


Figure 6. Power Derating

Technical drawing of a 2.54TYP connector. The drawing shows a side view of the component with various dimensions in millimeters. The overall width is 9.90 ±0.20, with a central hole diameter of Ø3.60 ±0.10. The total height is 18.95 MAX. The drawing includes dimensions for the top section (1.70, 1.30 ±0.10, 2.80 ±0.10), the main body (9.20 ±0.20, 1.46, 3.00, 3.70, 15.90 ±0.20), and the bottom section (13.08 ±0.20, 1.00, 1.27 ±0.10, 1.52 ±0.10, 10.08 ±0.30). The bottom section features three pins with a 45° chamfer and a width of 0.80 ±0.10. The drawing is labeled 2.54TYP at the bottom.



Rev. A1, June 2001

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| DenseTrench™         | GTO™                | PowerTrench®        | SuperSOT™-8     |
| DOME™                | HiSeC™              | QFET™               | SyncFET™        |
| EcoSPARK™            | ISOPLANAR™          | QS™                 | TruTranslation™ |
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