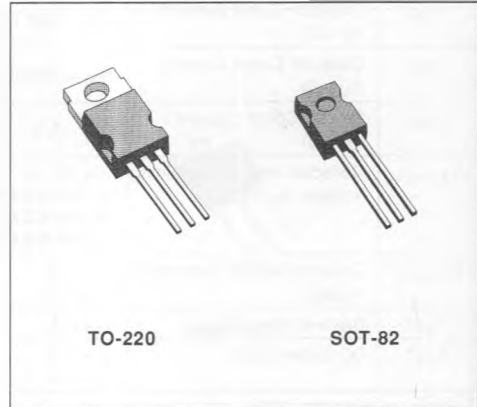


**POWER DARLINGTONS**
**DESCRIPTION**

The TIP130, TIP131, TIP132 and SGS130, SGS131, SGS132 are silicon epitaxial-base NPN transistors in monolithic Darlington configuration respectively in TO-220 and SOT-82 plastic package. They are intended for use in linear and switching applications. The complementary PNP types are the TIP135, TIP136, TIP137 and SGS135, SGS136, SGS137 respectively.


**INTERNAL SCHEMATIC DIAGRAMS**

**ABSOLUTE MAXIMUM RATINGS**

| Symbol    | Parameter  | NPN<br>NPN<br>PNP<br>PNP | Value            |                  |                  | Unit             |
|-----------|--|--------------------------|------------------|------------------|------------------|------------------|
|           |  |                          | TIP130<br>SGS130 | TIP131<br>SGS131 | TIP132<br>SGS132 |                  |
| $V_{CBO}$ | Collector-base Voltage ( $I_E = 0$ )   |                          | 60               | 80               | 100              | V                |
| $V_{CEO}$ | Collector-emitter Voltage ( $I_B = 0$ )  |                          | 60               | 80               | 100              | V                |
| $V_{EBO}$ | Emitter-base Voltage ( $I_C = 0$ )   |                          |                  | 5                |                  | V                |
| $I_C$     | Collector Current  |                          |                  | 8                |                  | A                |
| $I_{CM}$  | Collector Peak Current   |                          |                  | 12               |                  | A                |
| $I_B$     | Base Current   |                          |                  | 0.3              |                  | A                |
| $P_{tot}$ | Total Power Dissipation at $T_{case} \leq 25^\circ\text{C}$<br>$T_{amb} \leq 25^\circ\text{C}$ |                          |                  | 70               |                  | W                |
| $T_{stg}$ | Storage Temperature  |                          |                  | -65 to 150       |                  | $^\circ\text{C}$ |
| $T_j$     | Junction Temperature   |                          |                  | 150              |                  | $^\circ\text{C}$ |

For PNP types voltage and current values are negative.

**THERMAL DATA**

|                  |                                     |     |      |               |
|------------------|-------------------------------------|-----|------|---------------|
| $R_{th(j-case)}$ | Thermal Resistance Junction-case    | Max | 1.78 | $^{\circ}C/W$ |
| $R_{th(j-amb)}$  | Thermal Resistance Junction-ambient | Max | 63.5 | $^{\circ}C/W$ |

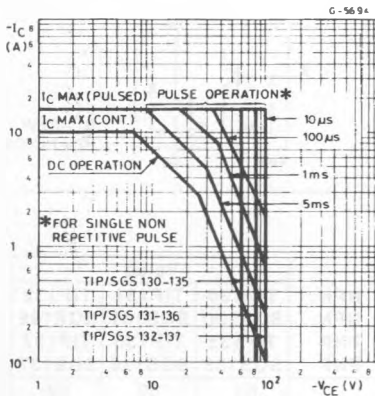
**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$  unless otherwise specified)

| Symbol           | Parameter  | Test Conditions  | Min.            | Typ. | Max.   | Unit        |
|------------------|--|--|-----------------|------|--------|-------------|
| $I_{CEO}$        | Collector Cutoff Current ( $I_B = 0$ )             | $V_{CE} = \text{Half Rated } V_{CEO}$  |                 |      | 0.5    | mA          |
| $I_{CBO}$        | Collector Cutoff Current ( $I_E = 0$ )             | $V_{CB} = \text{Rated } V_{CBO}$   |                 |      | 0.2    | mA          |
| $I_{EBO}$        | Emitter Cutoff Current ( $I_C = 0$ )               | $V_{EB} = 5 V$   |                 |      | 5      | mA          |
| $V_{CEO(sus)}^*$ | Collector-emitter Sustaining Voltage ( $I_B = 0$ ) | $I_C = 30 \text{ mA}$<br>for TIP/SGS130 and TIP/SGS135<br>for TIP/SGS131 and TIP/SGS136<br>for TIP/SGS132 and TIP/SGS137 | 60<br>80<br>100 |      |        | V<br>V<br>V |
| $V_{CE(sat)}^*$  | Collector-emitter Saturation Voltage               | $I_C = 4 A$ $I_B = 16 \text{ mA}$<br>$I_C = 6 A$ $I_B = 30 \text{ mA}$   |                 |      | 2<br>3 | V<br>V      |
| $V_{BE}^*$       | Base-emitter Voltage                               | $I_C = 4 A$ $V_{CE} = 4 V$   |                 |      | 2.5    | V           |
| $h_{FE}^*$       | DC current Gain                                    | $I_C = 1 A$ $V_{CE} = 4 V$<br>$I_C = 4 A$ $V_{CE} = 4 V$   | 500<br>1000     |      | 15000  |             |

\* Pulsed : pulse duration = 300  $\mu s$ , duty cycle  $\leq 2\%$ .  
For PNP types voltage and current values are negative.

**Safe Operating Areas.**

**Power Derating Chart.**



For the others characteristics see TIP100/105 series

