



# TIP132 TIP135 TIP137

## COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES

### APPLICATION

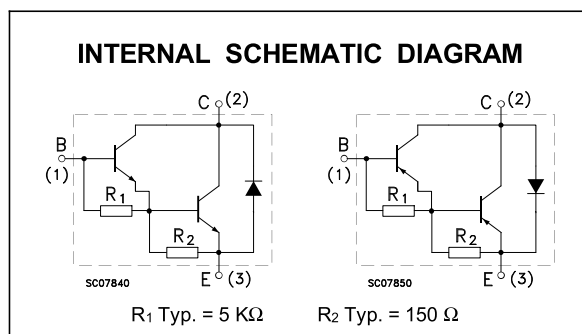
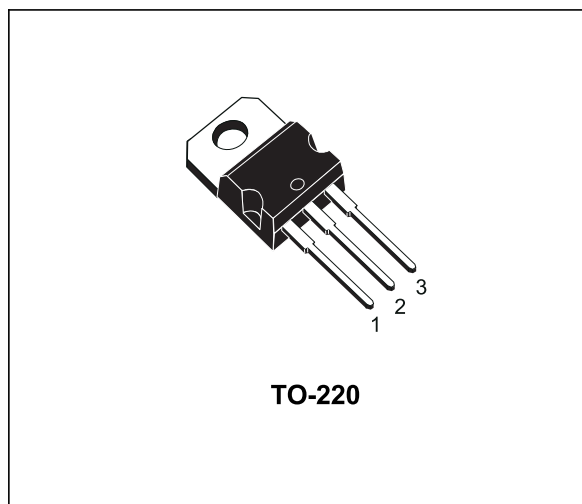
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

### DESCRIPTION

The TIP132 is a silicon Epitaxial-Base NPN power transistor in monolithic Darlington configuration, mounted in Jedec TO-220 plastic package. It is intended for use in power linear and switching applications.

The complementary PNP type is TIP137 .

Also TIP135 is a PNP type.



### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter  | Value      |        | Unit       |
|-----------|--|------------|--------|------------|
|           |  | NPN        | TIP132 |            |
|           |  | PNP        | TIP137 |            |
| $V_{CBO}$ | Collector-Base Voltage ( $I_E = 0$ )   | 60         | 100    | V          |
| $V_{CEO}$ | Collector-Emitter Voltage ( $I_B = 0$ )                                      | 60         | 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 Dissipation at $T_{case} \leq 25^\circ C$<br>$T_{amb} \leq 25^\circ C$ | 70         |        | W          |
|           |  | 2          |        | W          |
| $T_{stg}$ | Storage Temperature  | -65 to 150 |        | $^\circ C$ |
| $T_j$     | Max. Operating Junction Temperature  | 150        |        | $^\circ C$ |

\* For PNP types voltage and current values are negative.

# TIP132 / TIP135 / TIP137

## THERMAL DATA

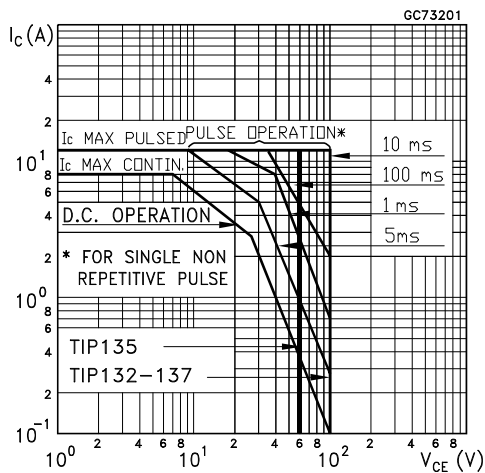
|                |                                     |     |      |               |
|----------------|-------------------------------------|-----|------|---------------|
| $R_{thj-case}$ | Thermal Resistance Junction-case    | Max | 1.78 | $^{\circ}C/W$ |
| $R_{thj-amb}$  | Thermal Resistance Junction-ambient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

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

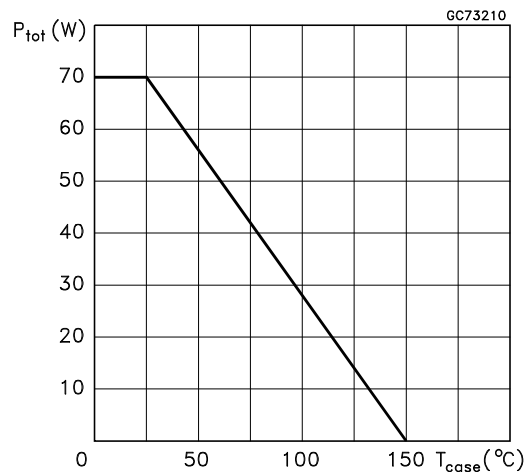
| Symbol           | Parameter  | Test Conditions  | Min.        | Typ. | Max.   | Unit   |
|------------------|--|--|-------------|------|--------|--------|
| $I_{CEO}$        | Collector Cut-off Current ( $I_B = 0$ )            | $V_{CE} = \text{Half Rated } V_{CEO}$                                  |             |      | 0.5    | mA     |
| $I_{CBO}$        | Collector Cut-off Current ( $I_E = 0$ )            | $V_{CB} = \text{Rated } V_{CBO}$                                       |             |      | 0.2    | mA     |
| $I_{EBO}$        | Emitter Cut-off 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 <b>TIP135</b><br>for <b>TIP132/TIP137</b> | 60<br>100   |      |        | V<br>V |
| $V_{CE(sat)}^*$  | Collector-Emitter Saturation Voltage               | $I_C = 4 A$<br>$I_C = 6 A$   |             |      | 2<br>4 | V<br>V |
| $V_{BE}^*$       | Base-Emitter Voltage                               | $I_C = 4 A$<br>$V_{CE} = 4 V$  |             |      | 2.5    | V      |
| $h_{FE}^*$       | DC Current Gain                                    | $I_C = 1 A$<br>$I_C = 4 A$   | 500<br>1000 |      | 15000  |        |

\* Pulsed: Pulse duration = 300  $\mu s$ , duty cycle 1.5 %  
For PNP types voltage and current values are negative.

## Safe Operating Areas

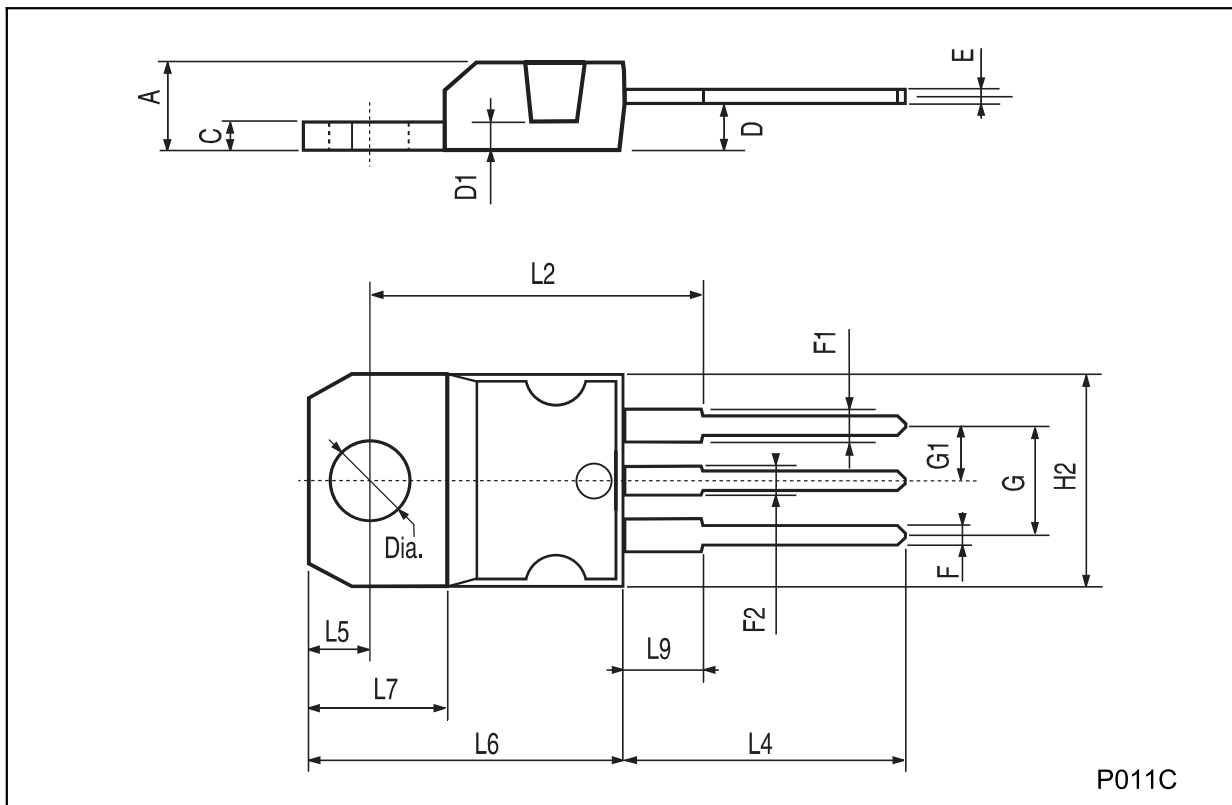


## Power Derating Curve



**TO-220 MECHANICAL DATA**

| DIM. | mm    |      |       | inch  |       |       |
|------|-------|------|-------|-------|-------|-------|
|      | MIN.  | TYP. | MAX.  | MIN.  | TYP.  | MAX.  |
| A    | 4.40  |      | 4.60  | 0.173 |       | 0.181 |
| C    | 1.23  |      | 1.32  | 0.048 |       | 0.051 |
| D    | 2.40  |      | 2.72  | 0.094 |       | 0.107 |
| D1   |       | 1.27 |       |       | 0.050 |       |
| E    | 0.49  |      | 0.70  | 0.019 |       | 0.027 |
| F    | 0.61  |      | 0.88  | 0.024 |       | 0.034 |
| F1   | 1.14  |      | 1.70  | 0.044 |       | 0.067 |
| F2   | 1.14  |      | 1.70  | 0.044 |       | 0.067 |
| G    | 4.95  |      | 5.15  | 0.194 |       | 0.203 |
| G1   | 2.4   |      | 2.7   | 0.094 |       | 0.106 |
| H2   | 10.0  |      | 10.40 | 0.393 |       | 0.409 |
| L2   |       | 16.4 |       |       | 0.645 |       |
| L4   | 13.0  |      | 14.0  | 0.511 |       | 0.551 |
| L5   | 2.65  |      | 2.95  | 0.104 |       | 0.116 |
| L6   | 15.25 |      | 15.75 | 0.600 |       | 0.620 |
| L7   | 6.2   |      | 6.6   | 0.244 |       | 0.260 |
| L9   | 3.5   |      | 3.93  | 0.137 |       | 0.154 |
| DIA. | 3.75  |      | 3.85  | 0.147 |       | 0.151 |



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