

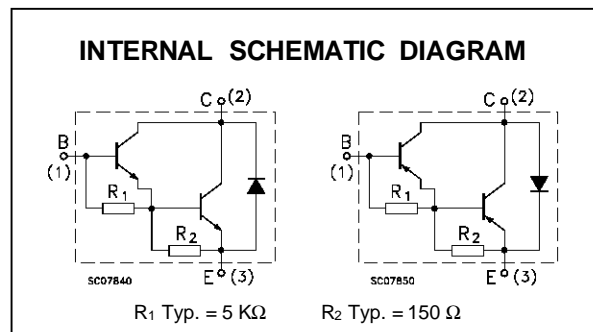
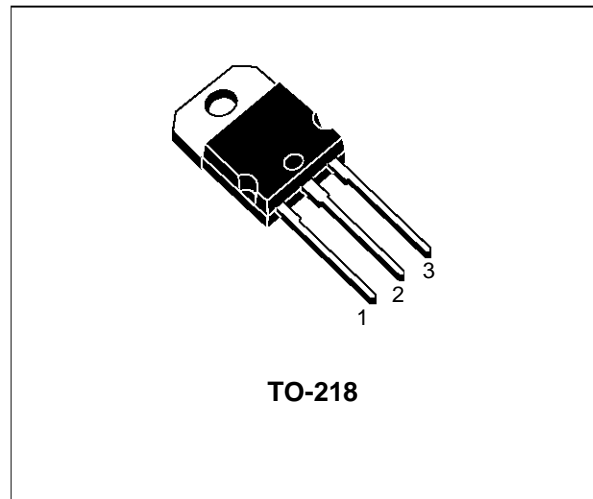
**COMPLEMENTARY SILICON POWER
DARLINGTON TRANSISTORS**

■ SGS-THOMSON PREFERRED SALESTYPES

DESCRIPTION

The TIP141 and TIP142 are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration and are mounted in TO-218 plastic package. They are intended for use in power linear and switching applications.

The complementary PNP types are TIP146 and TIP147 respectively.



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | | Unit | |
|------------------|--|-------|------------|--------|--------|
| | | NPN | TIP141 | | TIP142 |
| | | PNP | TIP146 | TIP147 | |
| V _{CBO} | Collector-Base Voltage (I _E = 0) | | 80 | 100 | V |
| V _{CEO} | Collector-Emitter Voltage (I _B = 0) | | 80 | 100 | V |
| V _{EBO} | Emitter-Base Voltage (I _C = 0) | | 5 | | V |
| I _C | Collector Current | | 10 | | A |
| I _{CM} | Collector Peak Current | | 20 | | A |
| I _B | Base Current | | 0.5 | | A |
| P _{tot} | Total Dissipation at T _{case} ≤ 25 °C | | 125 | | W |
| T _{stg} | Storage Temperature | | -65 to 150 | | °C |
| T _j | Max. Operating Junction Temperature | | 150 | | °C |

* For PNP types voltage and current values are negative.

TIP141/TIP142/TIP146/TIP147

THERMAL DATA

| | | | | |
|----------------|----------------------------------|-----|---|---------------|
| $R_{thj-case}$ | Thermal Resistance Junction-case | Max | 1 | $^{\circ}C/W$ |
|----------------|----------------------------------|-----|---|---------------|

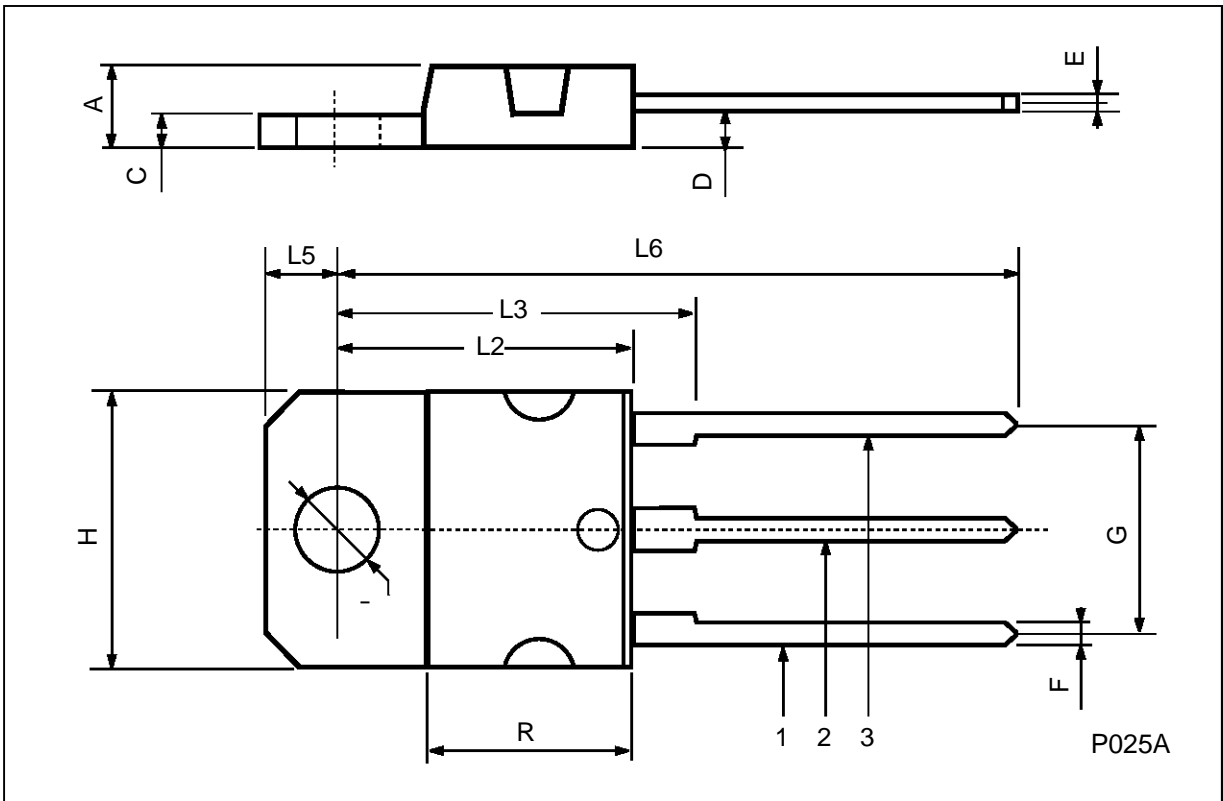
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|------------------|--|---|-------------|------|--------|----------|
| I_{CBO} | Collector Cut-off Current ($I_E = 0$) | for TIP141/146 $V_{CB} = 80 V$ for TIP142/147 $V_{CB} = 100 V$ | | | 1 1 | mA mA |
| I_{CEO} | Collector Cut-off Current ($I_B = 0$) | for TIP141/146 $V_{CE} = 40 V$ for TIP142/147 $V_{CE} = 50 V$ | | | 2 2 | mA mA |
| I_{EBO} | Emitter Cut-off Current ($I_C = 0$) | $V_{EBO} = 5 V$ | | | 2 | mA |
| $V_{CEO(sus)}^*$ | Collector-Emitter Sustaining Voltage ($I_B = 0$) | $I_C = 30 mA$ for TIP141/146 for TIP142/147 | 80 100 | | | V V |
| $V_{CE(sat)}^*$ | Collector-Emitter Saturation Voltage | $I_C = 5 A$ $I_B = 10 mA$ $I_C = 10 A$ $I_B = 40 mA$ | | | 2 3 | V V |
| $V_{BE(on)}^*$ | Base-Emitter Voltage | $I_C = 10 A$ $V_{CE} = 4 V$ | | | 3 | V |
| h_{FE}^* | DC Current Gain | $I_C = 5 A$ $V_{CE} = 4 V$ $I_C = 10 A$ $V_{CE} = 4 V$ | 1000 500 | | | |
| t_{on} | Turn-on Time | $I_C = 10 A$ $I_{B1} = 40 mA$ | | 0.9 | | μs |
| t_{off} | Turn-off Time | $I_{B2} = -40 mA$ $R_L = 3 \Omega$ | | 4 | | μs |

* For PNP types voltage and current values are negative.

TO-218 (SOT-93) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|------|------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 4.7 | | 4.9 | 0.185 | | 0.193 |
| C | 1.17 | | 1.37 | 0.046 | | 0.054 |
| D | | 2.5 | | | 0.098 | |
| E | 0.5 | | 0.78 | 0.019 | | 0.030 |
| F | 1.1 | | 1.3 | 0.043 | | 0.051 |
| G | 10.8 | | 11.1 | 0.425 | | 0.437 |
| H | 14.7 | | 15.2 | 0.578 | | 0.598 |
| L2 | - | | 16.2 | - | | 0.637 |
| L3 | | 18 | | | 0.708 | |
| L5 | 3.95 | | 4.15 | 0.155 | | 0.163 |
| L6 | | 31 | | | 1.220 | |
| R | - | | 12.2 | - | | 0.480 |
| ∅ | 4 | | 4.1 | 0.157 | | 0.161 |



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