



# TIP41A/41B/41C TIP42A/42C

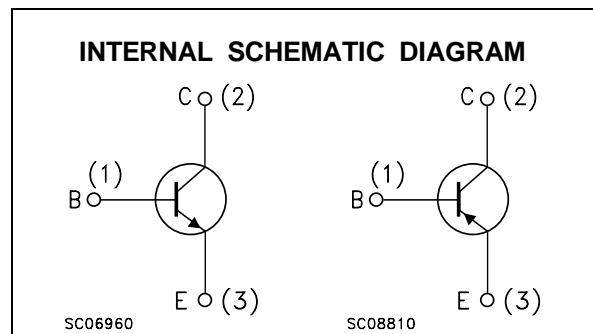
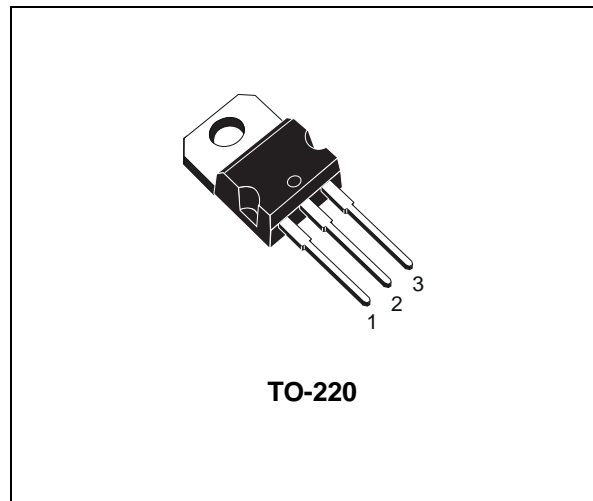
## COMPLEMENTARY SILICON POWER TRANSISTORS

### ■ COMPLEMENTARY PNP - NPN DEVICES

#### DESCRIPTION

The TIP41A, TIP41B and TIP41C are silicon Epitaxial-Base NPN power transistors mounted in Jedec TO-220 plastic package. They are intended for use in medium power linear and switching applications.

The TIP41A and TIP41C complementary PNP types are TIP42A and TIP42C respectively.



### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter  | Value      |                  |                            | Unit |            |
|-----------|--|------------|------------------|----------------------------|------|------------|
|           |  | NPN<br>PNP | TIP41A<br>TIP42A | TIP41B<br>TIP41C<br>TIP42C |      |            |
| $V_{CBO}$ | 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  |            |                  | 6                          |      | A          |
| $I_{CM}$  | Collector Peak Current   |            |                  | 10                         |      | A          |
| $I_B$     | Base Current   |            |                  | 3                          |      | A          |
| $P_{tot}$ | Total Dissipation at $T_{case} \leq 25^\circ C$<br>$T_{amb} \leq 25^\circ C$ |            |                  | 65                         |      | 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.

## TIP41A/TIP41B/TIP41C/TIP42A/TIP42C

### THERMAL DATA

|                       |                                     |     |      |      |
|-----------------------|-------------------------------------|-----|------|------|
| R <sub>thj-case</sub> | Thermal Resistance Junction-case    | Max | 1.92 | °C/W |
| R <sub>thj-amb</sub>  | Thermal Resistance Junction-ambient | Max | 62.5 | °C/W |

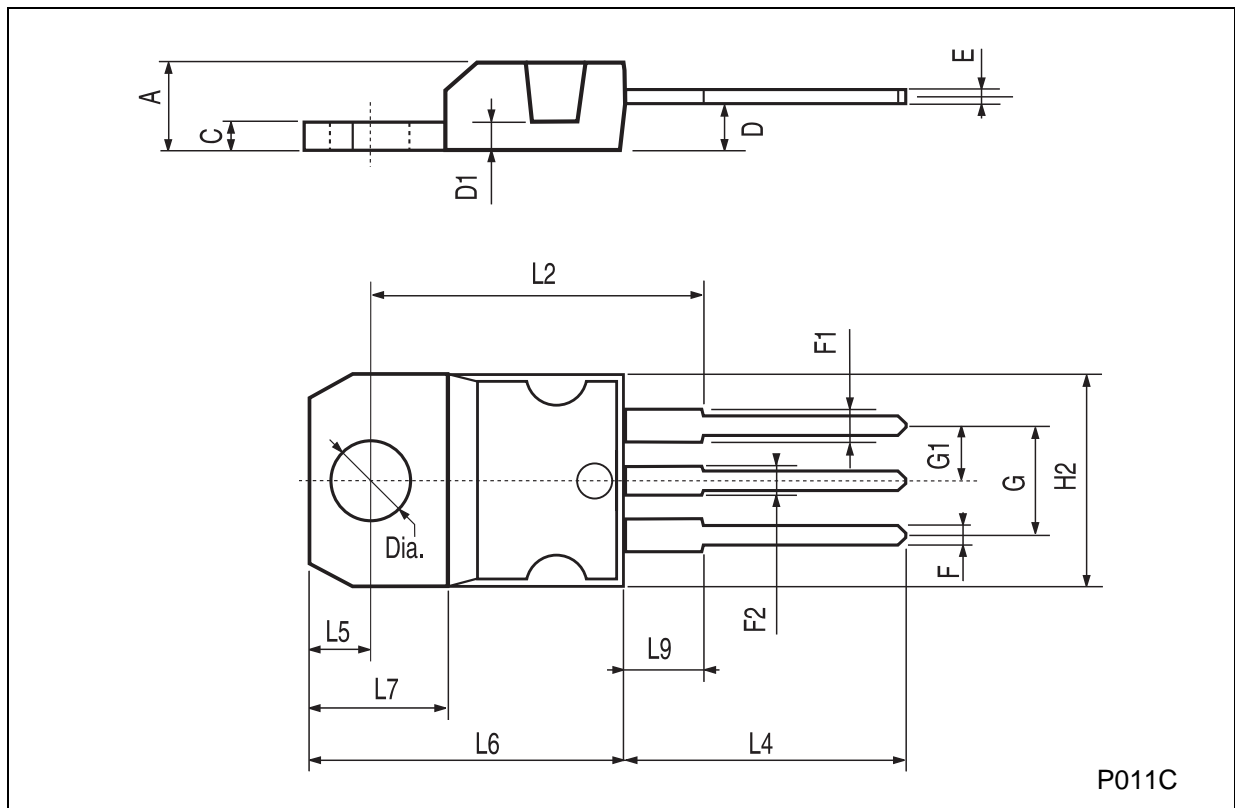
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

| Symbol                  | Parameter   | Test Conditions   | Min.            | Typ. | Max.              | Unit           |
|-------------------------|---|---|-----------------|------|-------------------|----------------|
| I <sub>CEO</sub>        | Collector Cut-off Current (I <sub>B</sub> = 0)            | for <b>TIP41A/42A</b> V <sub>CE</sub> = 30 V<br>for <b>TIP41B/41C/42C</b> V <sub>CE</sub> = 60 V  |                 |      | 0.7<br>0.7        | mA<br>mA       |
| I <sub>CES</sub>        | Collector Cut-off Current (V <sub>BE</sub> = 0)           | for <b>TIP41A/42A</b> V <sub>CE</sub> = 60 V<br>for <b>TIP41B</b> V <sub>CE</sub> = 80 V<br>for <b>TIP41C/42C</b> V <sub>CE</sub> = 100 V |                 |      | 0.4<br>0.4<br>0.4 | mA<br>mA<br>mA |
| I <sub>EBO</sub>        | Emitter Cut-off Current (I <sub>C</sub> = 0)              | V <sub>EB</sub> = 5 V   |                 |      | 1                 | mA             |
| V <sub>CEO(sus)</sub> * | Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0) | I <sub>C</sub> = 30 mA<br>for <b>TIP41A/42A</b><br>for <b>TIP41B</b><br>for <b>TIP41C/42C</b>   | 60<br>80<br>100 |      |                   | V<br>V<br>V    |
| V <sub>CE(sat)</sub> *  | Collector-Emitter Saturation Voltage                      | I <sub>C</sub> = 6 A I <sub>B</sub> = 0.6 A   |                 |      | 1.5               | V              |
| V <sub>BE(on)</sub> *   | Base-Emitter Voltage                                      | I <sub>C</sub> = 6 A V <sub>CE</sub> = 4 V  |                 |      | 2                 | V              |
| h <sub>FE</sub> *       | DC Current Gain   | I <sub>C</sub> = 0.3 A V <sub>CE</sub> = 4 V<br>I <sub>C</sub> = 3 A V <sub>CE</sub> = 4 V  | 30<br>15        |      | 75                |                |
| h <sub>fe</sub>         | Small Signal Current Gain                                 | I <sub>C</sub> = 0.5 A V <sub>CE</sub> = 10 V f = 1 KHz<br>I <sub>C</sub> = 0.5 A V <sub>CE</sub> = 10 V f = 1 MHz                        | 20<br>3         |      |                   |                |

\* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 2 %  
For PNP types voltage and current values are negative.

**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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