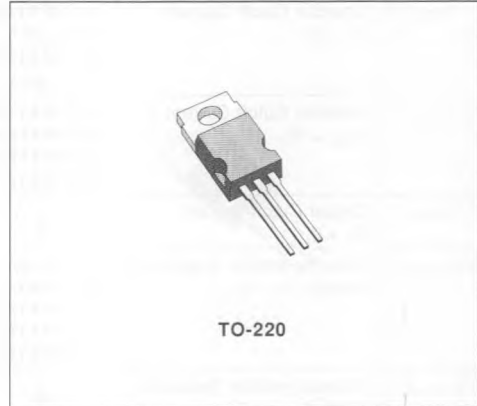


MEDIUM POWER LINEAR AND SWITCHING APPLICATIONS

DESCRIPTION

The TIP41, TIP41A, TIP41B and TIP41C are silicon axial-base NPN power transistors in Jedec TO-220 plastic package intended for use in medium power linear and switching applications. The complementary PNP types are the TIP42, TIP42A, TIP42B and TIP42C respectively.



INTERNAL SCHEMATIC DIAGRAMS



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | NPN PNP* | Value | | | | Unit |
|-----------|--|-------------|----------------|------------------|------------------|------------------|------------------|
| | | | TIP41 TIP42 | TIP41A TIP42A | TIP41B TIP42B | TIP41C TIP42C | |
| V_{CBO} | Collector-base Voltage ($I_E = 0$) | | 40 | 60 | 80 | 100 | V |
| V_{CEO} | Collector-emitter Voltage ($I_B = 0$) | | 40 | 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 Power Dissipation at $T_{case} \leq 25^\circ\text{C}$ $T_{amb} \leq 25^\circ\text{C}$ | | 65 | | | | W |
| | | | 2 | | | | 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 | 1.92 | °C/W |
| $R_{th\ j-amb}$ | Thermal Resistance Junction-ambient | Max | 62.5 | °C/W |

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

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|------------------|--|---|-----------------------|------|------|------|
| I_{CEO} | Collector Cutoff Current ($I_B = 0$) | for TIP41/41A/42/42A $V_{CE} = 30\text{ V}$ for TIP41B/41C/42B/42C $V_{CE} = 60\text{ V}$ | | | 0.7 | mA |
| I_{CES} | Collector Cutoff Current ($V_{BE} = 0$) | for TIP41/42 $V_{CE} = 40\text{ V}$ for TIP41A/42A $V_{CE} = 60\text{ V}$ for TIP41B/42B $V_{CE} = 80\text{ V}$ for TIP41C/42C $V_{CE} = 100\text{ V}$ | | | 0.4 | mA |
| I_{EBO} | Emitter Cutoff Current ($I_C = 0$) | $V_{EB} = 5\text{ V}$ | | | 1 | mA |
| $V_{CEO(sus)}^*$ | Collector-emitter Sustaining Voltage ($I_B = 0$) | $I_C = 30\text{ mA}$ for TIP41/42 for TIP41A/42A for TIP41B/42B for TIP41C/42C | 40 60 80 100 | | | V |
| $V_{CE(sat)}^*$ | Collector-emitter Saturation Voltage | $I_C = 6\text{ A}$ $I_B = 0.6\text{ A}$ | | | 1.5 | V |
| V_{BE}^* | Base-emitter Voltage | $I_C = 6\text{ A}$ $V_{CE} = 4\text{ V}$ | | | 2 | V |
| h_{FE}^* | DC current Gain | $I_C = 0.3\text{ A}$ $V_{CE} = 4\text{ V}$ $I_C = 3\text{ A}$ $V_{CE} = 4\text{ V}$ | 30 15 | | 75 | |
| h_{fe} | Small Signal Current Gain | $I_C = 0.5\text{ A}$ $V_{CE} = 10\text{ V}$ $f = 1\text{ KHz}$ $f = 1\text{ MHz}$ | 20 3 | | | |

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