



Micro Commercial Components

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## TIP31/A/B/C

### Features

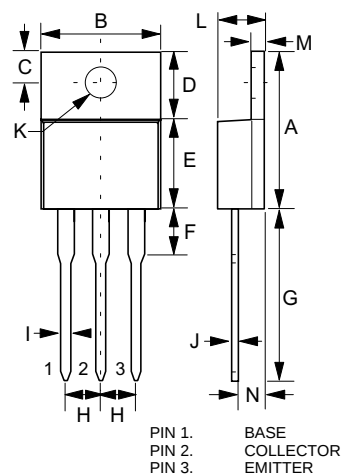
- TO-220 package
- The complementary PNP types are the TIP32 respectively
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Marking : Part Number

## Silicon NPN Power Transistors

Absolute Maximum Ratings @  $T_a = 25^\circ\text{C}$  (unless otherwise noted)

| Symbol                                           | Parameter                                          | Value                 | Unit             |
|--------------------------------------------------|----------------------------------------------------|-----------------------|------------------|
| $V_{CBO}$<br>TIP31<br>TIP31A<br>TIP31B<br>TIP31C | Collector-base voltage<br>(Open emitter)           | 40<br>60<br>80<br>100 | V                |
| $V_{CEO}$<br>TIP31<br>TIP31A<br>TIP31B<br>TIP31C | Collector-emitter voltage<br>(Open base)           | 40<br>60<br>80<br>100 | V                |
| $V_{EBO}$                                        | Emitter-base Voltage<br>(Open collector)           | 5                     | V                |
| $I_C$                                            | Collector Current                                  | 3                     | A                |
| $I_{CM}$                                         | Collector Current Pulse                            | 5                     | A                |
| $I_B$                                            | Base Current                                       | 1                     | A                |
| $P_C$                                            | Total Device Dissipation( $T_a=25^\circ\text{C}$ ) | 2                     | W                |
|                                                  | Total Device Dissipation( $T_c=25^\circ\text{C}$ ) | 40                    | W                |
| $T_J$                                            | Junction Temperature                               | 150                   | $^\circ\text{C}$ |
| $T_{STG}$                                        | Storage Temperature Range                          | -65 to +150           | $^\circ\text{C}$ |

### TO-220AB



Electrical Characteristics @  $25^\circ\text{C}$  Unless Otherwise Specified

| Symbol                                               | Parameter                                                                                                                                                      | Min                   | Max | Units |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----|-------|
| $V_{CE(SUS)}$<br>TIP31<br>TIP31A<br>TIP31B<br>TIP31C | Collector-emitter sustaining voltage<br>( $I_C=30\text{mA}$ ; $I_B=0$ )                                                                                        | 40<br>60<br>80<br>100 |     | V     |
| $V_{CE(sat)}$                                        | Collector-emitter Saturation Voltage<br>( $I_C=3A$ ; $I_B=0.375A$ )                                                                                            |                       | 1.2 | V     |
| $V_{BE}$                                             | Base-emitter Voltage<br>( $I_C=3A$ ; $V_{CE}=4V$ )                                                                                                             |                       | 1.8 | V     |
| $I_{CES}$<br>TIP31<br>TIP31A<br>TIP31B<br>TIP31C     | Collector cut-off current<br>( $V_{CE}=40V$ ; $V_{EB}=0$ )<br>( $V_{CE}=60V$ ; $V_{EB}=0$ )<br>( $V_{CE}=80V$ ; $V_{EB}=0$ )<br>( $V_{CE}=100V$ ; $V_{EB}=0$ ) | 0.2                   |     | mA    |
| $I_{CEO}$<br>TIP31/31A<br>TIP31B/31C                 | Collector cut-off current<br>( $V_{CE}=30V$ ; $V_{EB}=0$ )<br>( $V_{CE}=60V$ ; $V_{EB}=0$ )                                                                    | 0.3                   |     | mA    |
| $I_{EBO}$                                            | Emitter cut-off current<br>( $V_{EB}=5V$ ; $I_C=0$ )                                                                                                           |                       | 1.0 | mA    |
| $H_{fe}$                                             | DC current gain<br>( $I_C=1A$ ; $V_{CE}=4V$ )<br>( $I_C=3A$ ; $V_{CE}=4V$ )                                                                                    | 25<br>10              | 50  |       |
| $f_T$                                                | Transition frequency<br>( $I_C=0.5A$ ; $V_{CE}=10V$ )                                                                                                          | 3                     |     | MHZ   |

| DIMENSIONS |        |      |       |       |      |
|------------|--------|------|-------|-------|------|
| DIM        | INCHES |      | MM    |       | NOTE |
|            | MIN    | MAX  | MIN   | MAX   |      |
| A          | .560   | .625 | 14.22 | 15.88 |      |
| B          | .380   | .420 | 9.65  | 10.67 |      |
| C          | .100   | .135 | 2.54  | 3.43  |      |
| D          | .230   | .270 | 5.84  | 6.86  |      |
| E          | .335   | .368 | 8.50  | 9.35  |      |
| F          | -----  | .250 | ----- | 6.35  |      |
| G          | .500   | .580 | 12.70 | 14.73 |      |
| H          | .090   | .110 | 2.29  | 2.79  |      |
| I          | .020   | .045 | 0.51  | 1.14  |      |
| J          | .012   | .025 | 0.30  | 0.64  |      |
| K          | .139   | .161 | 3.53  | 4.09  | Ø    |
| L          | .140   | .190 | 3.56  | 4.83  |      |
| M          | .045   | .055 | 1.14  | 1.40  |      |
| N          | .080   | .115 | 2.03  | 2.92  |      |

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