



Micro Commercial Components

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# TIP31/31A/31B/31C

## Features

- Lead Free Finish/RoHS Compliant(Note 1) ("P" Suffix designates RoHS Compliant. See ordering information)
- The complementary PNP types are the TIP32 respectively
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0 and MSL Rating 1
- Marking : Part Number

### Absolute Maximum Ratings @ T<sub>i</sub> = 25°C (unless otherwise noted)

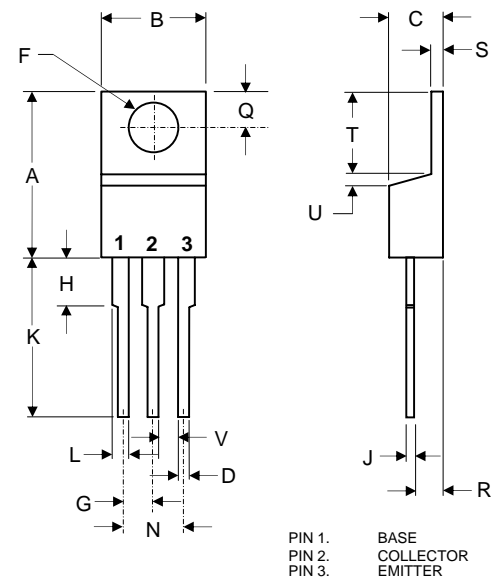
| Symbol  | Parameter                             | Value                 | Unit |
|---|---------------------------------------|-----------------------|------|
| V <sub>CB0</sub><br>TIP31<br>TIP31A<br>TIP31B<br>TIP31C | Collector-base voltage (Open emitter) | 40<br>60<br>80<br>100 | V    |
| V <sub>CE0</sub><br>TIP31<br>TIP31A<br>TIP31B<br>TIP31C | Collector-emitter voltage (Open base) | 40<br>60<br>80<br>100 | V    |
| V <sub>EBO</sub>  | Emitter-base Voltage (Open collector) | 5                     | V    |
| I <sub>C</sub>  | Collector Current                     | 3                     | A    |
| I <sub>CM</sub>   | Collector Current Pulse               | 5                     | A    |
| I <sub>B</sub>  | Base Current                          | 1                     | A    |
| P <sub>C</sub>  | Total Device Dissipation(Ta=25°C)     | 2                     | W    |
|   | Total Device Dissipation(Tc=25°C)     | 40                    | W    |
| T <sub>J</sub>  | Junction Temperature                  | 150                   | °C   |
| T <sub>STG</sub>  | Storage Temperature Range             | -65 to +150           | °C   |

### Electrical Characteristics @ 25°C Unless Otherwise Specified

| Symbol   | Parameter  | Min                   | Max | Units |
|--|--|-----------------------|-----|-------|
| V <sub>CE0(SUS)</sub><br>TIP31<br>TIP31A<br>TIP31B<br>TIP31C | Collector-emitter sustaining voltage<br>(I <sub>C</sub> =30mA; I <sub>B</sub> =0)  | 40<br>60<br>80<br>100 |     | V     |
| V <sub>CE(sat)</sub>   | Collector-emitter Saturation Voltage<br>(I <sub>C</sub> =3A; I <sub>B</sub> =0.375A)   |                       | 1.2 | V     |
| V <sub>BE</sub>  | Base-emitter Voltage<br>(I <sub>C</sub> =3A; V <sub>CE</sub> =4V)  |                       | 1.8 | V     |
| I <sub>CES</sub><br>TIP31<br>TIP31A<br>TIP31B<br>TIP31C      | Collector cut-off current<br>(V <sub>CE</sub> =40V; V <sub>EB</sub> =0)<br>(V <sub>CE</sub> =60V; V <sub>EB</sub> =0)<br>(V <sub>CE</sub> =80V; V <sub>EB</sub> =0)<br>(V <sub>CE</sub> =100V; V <sub>EB</sub> =0) | 0.2                   |     | mA    |
| I <sub>CEO</sub><br>TIP31/31A<br>TIP31B/C                    | Collector cut-off current<br>(V <sub>CE</sub> =30V; V <sub>EB</sub> =0)<br>(V <sub>CE</sub> =60V; V <sub>EB</sub> =0)  | 0.3                   |     | mA    |
| I <sub>EBO</sub>   | Emitter cut-off current<br>(V <sub>EB</sub> =5V; I <sub>C</sub> =0)  |                       | 1.0 | mA    |
| H <sub>fe</sub>  | DC current gain<br>(I <sub>C</sub> =1A; V <sub>CE</sub> =4V)<br>(I <sub>C</sub> =3A; V <sub>CE</sub> =4V)  | 25<br>10              | 50  |       |
| f <sub>T</sub>   | Transition frequency<br>(I <sub>C</sub> =0.5A; V <sub>CE</sub> =10V)   | 3                     |     | MHZ   |

## Silicon NPN Power Transistors

### TO-220AB



| DIM | DIMENSIONS |      |       |       | NOTE |
|-----|------------|------|-------|-------|------|
|     | INCHES     |      | MM    |       |      |
| A   | .560       | .625 | 14.22 | 15.88 |      |
| B   | .380       | .420 | 9.65  | 10.67 |      |
| C   | .140       | .190 | 3.56  | 4.82  |      |
| D   | .020       | .045 | 0.51  | 1.14  |      |
| F   | .139       | .161 | 3.53  | 4.09  | ∅    |
| G   | .190       | .110 | 2.29  | 2.79  |      |
| H   | ---        | .250 | ---   | 6.35  |      |
| J   | .012       | .025 | 0.30  | 0.64  |      |
| K   | .500       | .580 | 12.70 | 14.73 |      |
| L   | .045       | .060 | 1.14  | 1.52  |      |
| N   | .190       | .210 | 4.83  | 5.33  |      |
| Q   | .100       | .135 | 2.54  | 3.43  |      |
| R   | .080       | .115 | 2.04  | 2.92  |      |
| S   | .045       | .055 | 1.14  | 1.39  |      |
| T   | .230       | .270 | 5.84  | 6.86  |      |
| U   | ----       | .050 | ----  | 1.27  |      |
| V   | .045       | ---- | 1.15  | ----  |      |

Notes:1.High Temperature Solder Exemption Applied, see EU Directive Annex 7.



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## Ordering Information

|                  |                |
|------------------|----------------|
| Device           | Packing        |
| (Part Number)-BP | Bulk;1Kpcs/Box |

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