



Micro Commercial Components



Micro Commercial Components  
130 W Cochran St, Unit B  
Simi Valley, CA 93065  
Tel:818-701-4933

## TIP31/31A/31B/31C

### Features

- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/RoHS Compliant(Note 1) ("P" Suffix designates RoHS Compliant. See ordering information)
- The complementary PNP types are the TIP32 respectively
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Marking : Part Number
- Mounting Torque: 5 in-lbs Maximum

**Absolute Maximum Ratings @ T<sub>a</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(T <sub>a</sub> =25°C) | 2                     | W    |
|                                                         | Total Device Dissipation(T <sub>c</sub> =25°C) | 40                    | W    |
| T <sub>J</sub>                                          | Junction Temperature                           | 150                   | °C   |
| T <sub>STG</sub>                                        | Storage Temperature Range                      | -65 to +150           | °C   |

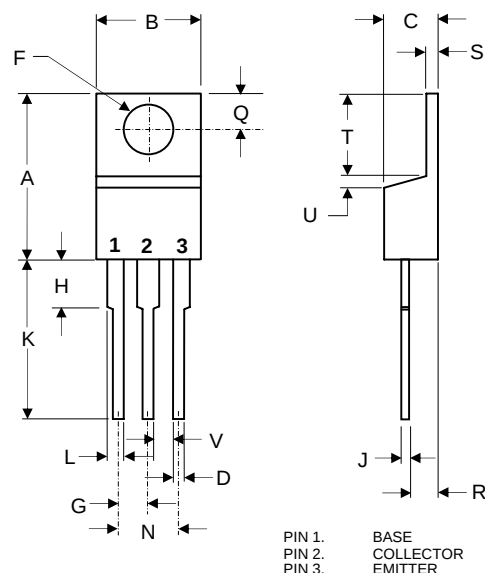
### Electrical Characteristics @ 25°C Unless Otherwise Specified

| 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   |

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

## 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  | Ø    |
| 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  | ----  |      |

Fig. 1 - DC Current Gain Curve

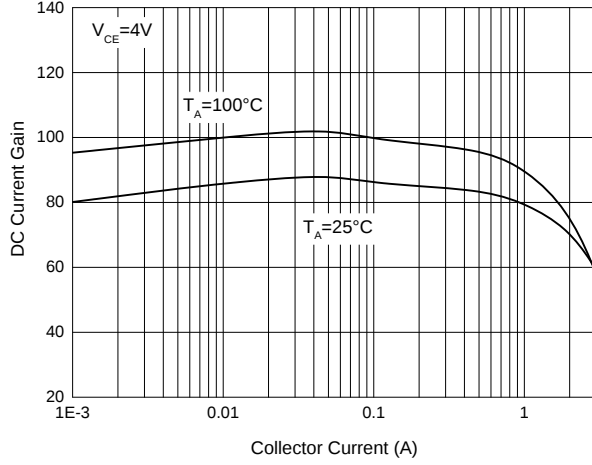


Fig. 2 - Collector-emitter Saturation Voltage Curve

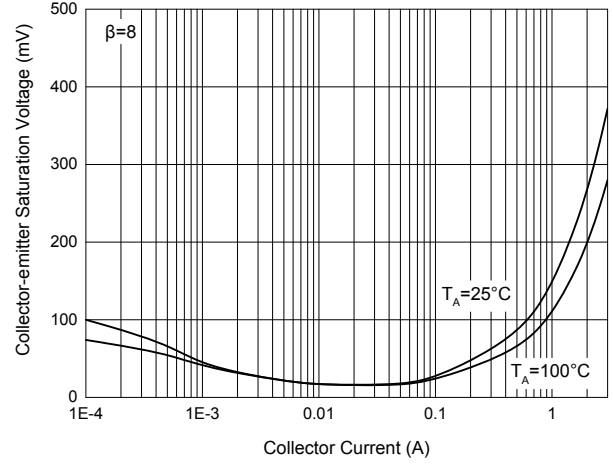


Fig. 3 - Base-emitter Voltage Curve

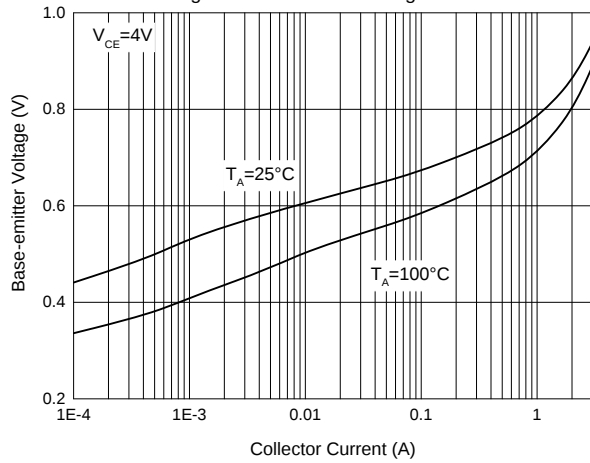
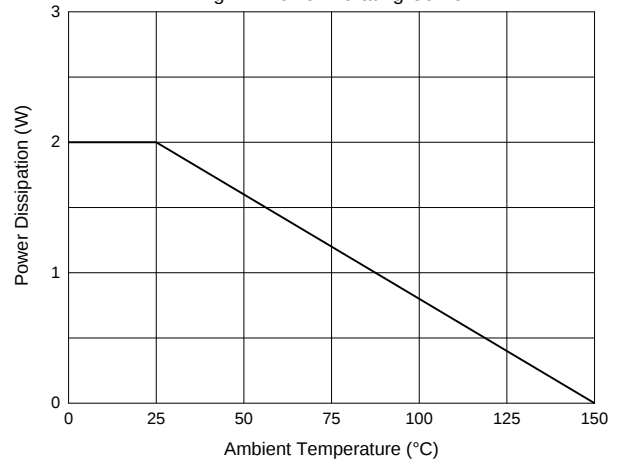


Fig. 4 - Power Derating Curve



## Ordering Information :

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

Note : Adding "-HF" suffix for halogen free, eg. Part Number-BP-HF

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- Техническая поддержка проекта;
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#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.