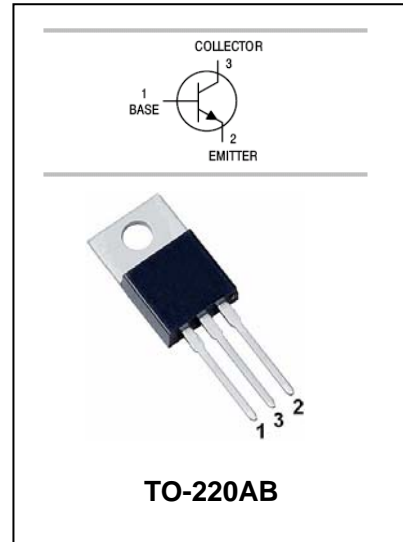


Epitaxial Planar NPN Transistor

TIP31/31A/31B/31C

FEATURES

- Complementary to TIP32/32A/32B/32C.



MAXIMUM RATING operating temperature range applies unless otherwise specified

| Symbol | Parameter | | Value | Unit |
|----------------|----------------------------------|------------------------|-------------|------------------|
| V_{CBO} | Collector-Base Voltage | TIP31 | 40 | V |
| | | TIP31A | 60 | |
| | | TIP31B | 80 | |
| | | TIP31C | 100 | |
| V_{CEO} | Collector-Emitter Voltage | TIP31 | 40 | V |
| | | TIP31A | 60 | |
| | | TIP31B | 80 | |
| | | TIP31C | 100 | |
| V_{EBO} | Emitter-Base Voltage | | 5 | V |
| I_C | Collector Current | DC | 3 | A |
| | | Pulse | 5 | |
| I_B | Base Current | | 1 | A |
| P_C | Collector Dissipation | $T_a=25^\circ\text{C}$ | 2 | W |
| T_j, T_{stg} | Junction and Storage Temperature | | -65 to +150 | $^\circ\text{C}$ |

Epitaxial Planar NPN Transistor

TIP31/31A/31B/31C

ELECTRICAL CHARACTERISTICS Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter | Symbol | Test conditions | MIN | TYP | MAX | UNIT |
|---|----------------|---|-----------------------|-----|--------------------------|---------|
| Collector-emitter Sustaining Voltage TIP31 TIP31A TIP31B TIP31C | $V_{CEO(SUS)}$ | $I_C=30mA, I_B=0$ | 40 60 80 100 | | | V |
| Collector Cut-off Current TIP31/31A TIP31B/31C | I_{CEO} | $V_{CE}=30V, I_B=0$ $V_{CE}=60V, I_B=0$ | | | 0.3 0.3 | mA |
| Collector Cut-off Current TIP31 TIP31A TIP31B TIP31C | I_{CES} | $V_{CE}=40V, V_{EB}=0$ $V_{CE}=60V, V_{EB}=0$ $V_{CE}=80V, V_{EB}=0$ $V_{CE}=100V, V_{EB}=0$ | | | 200 200 200 200 | μA |
| Emitter Cut-off Current | I_{EBO} | $V_{EB}=5V, I_C=0$ | | | 1 | mA |
| DC Current Gain | h_{FE} | $V_{CE}=4V, I_C=1A$ $V_{CE}=4V, I_C=3A$ | 25 10 | | 50 | |
| Collector-emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=3A, I_B=375mA$ | | | 1.2 | V |
| Base-emitter Saturation Voltage | $V_{BE(sat)}$ | $V_{CE}=4V, I_C=3A$ | | | 1.8 | V |
| Transition Frequency | f_T | $V_{CE}=10V, I_C=0.5A$ | 3 | | | MHz |

TYPICAL CHARACTERISTICS @ $T_a=25^\circ C$ unless otherwise specified

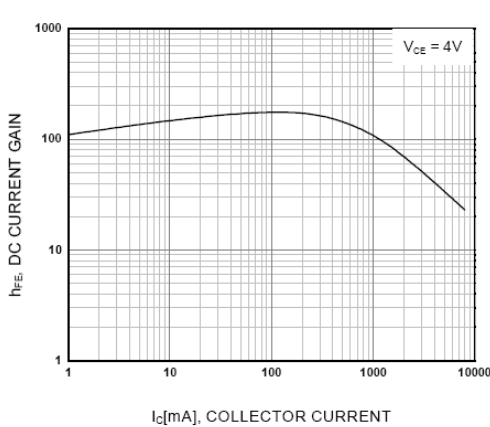


Figure 1. DC current Gain

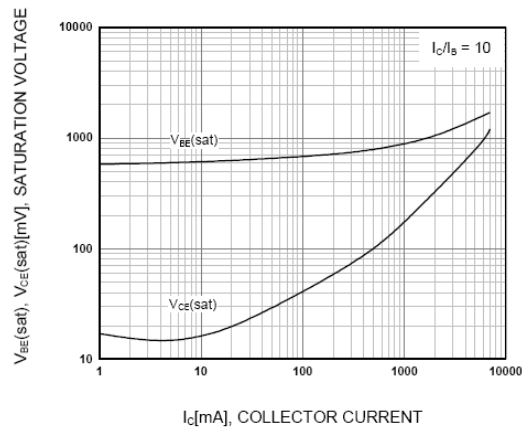


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

Epitaxial Planar NPN Transistor

TIP31/31A/31B/31C

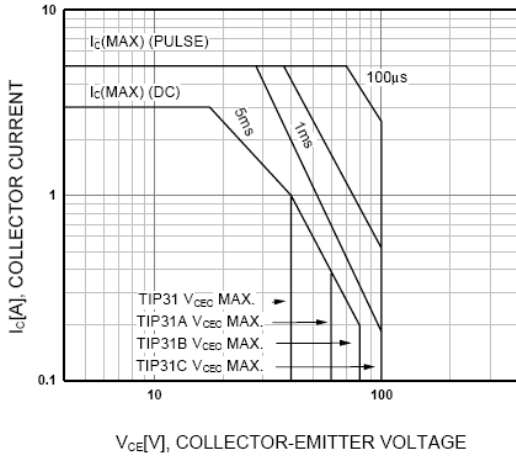


Figure 3. Safe Operating Area

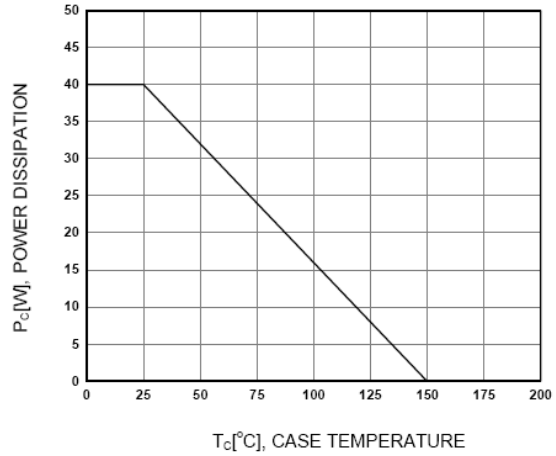


Figure 4. Power Derating

PACKAGE OUTLINE

Plastic surface mounted package

TO-220AB

