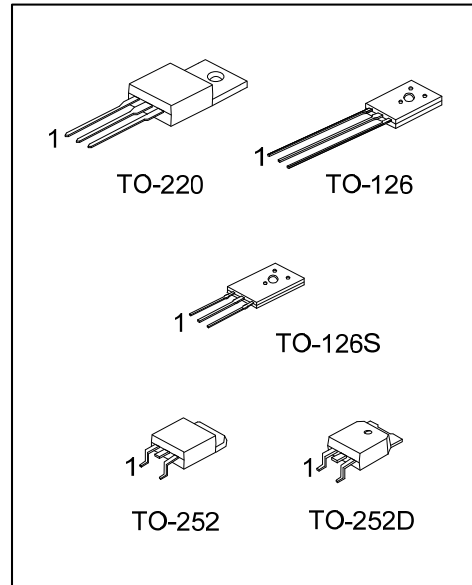




TIP31C

NPN EXPITAXIAL TRANSISTOR

NPN EXPITAXIAL PLANAR TRANSISTOR



■ DESCRIPTION

The UTC **TIP31C** is a NPN epitaxial planar transistor, designed for using in general purpose amplifier and switching applications.

■ FEATURES

* Complement to TIP32C.

■ ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|---------------|---------|----------------|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| TIP31CL-TA3-T | TIP31CG-TA3-T | TO-220 | B | C | E | Tube |
| TIP31CL-TN3-R | TIP31CG-TN3-R | TO-252 | B | C | E | Tape Reel |
| TIP31CL-TND-R | TIP31CG-TND-R | TO-252D | B | C | E | Tape Reel |
| TIP31CL-T60-K | TIP31CG-T60-K | TO-126 | B | C | E | Bulk |
| TIP31CL-T6S-K | TIP31CG-T6S-K | TO-126S | B | C | E | Bulk |

Note: Pin Assignment: B: Base C: Collector E: Emitter

| | |
|----------------------|---|
| <p>TIP31CG-TA3-T</p> | <p>(1) T: Tube, R: Tape Reel, K: Bulk (2) TA3: TO-220, T60: TO-126, T6S: TO-126S TN3: TO-252, TND: TO-252D (3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|----------------------|---|

■ MARKING

| TO-220 / TO-252 / TO-252D | TO-126 / TO-126C |
|---------------------------|------------------|
| | |

■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|--|----------------|-----------|------------|------------------|
| Collector-Base Voltage | | V_{CBO} | 100 | V |
| Collector-Emitter Voltage | | V_{CEO} | 100 | V |
| Emitter-Base Voltage | | V_{EBO} | 5 | V |
| Collector Current | DC | I_C | 3 | A |
| | Pulse | | 5 | A |
| Base Current | | I_B | 1 | A |
| Collector Dissipation ($T_A=25^\circ\text{C}$) | TO-126/TO-126S | P_C | 1.4 | W |
| | TO-220 | | 2 | W |
| | TO-252/TO-252D | | 1.56 | W |
| Collector Dissipation ($T_C=25^\circ\text{C}$) | TO-126/TO-126S | | 10 | W |
| | TO-220 | | 40 | W |
| | TO-252/TO-252D | | 15 | W |
| Junction Temperature | | T_J | +150 | $^\circ\text{C}$ |
| Storage Temperature | | T_{STG} | -65 ~ +150 | $^\circ\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA (NOTE)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---------------------|----------------|---------------|---------|--------------------|
| Junction to Ambient | TO-126/TO-126S | θ_{JA} | 89 | $^\circ\text{C/W}$ |
| | TO-220 | | 62.5 | $^\circ\text{C/W}$ |
| | TO-252/TO-252D | | 80 | $^\circ\text{C/W}$ |
| Junction to Case | TO-126/TO-126S | θ_{JC} | 12.5 | $^\circ\text{C/W}$ |
| | TO-220 | | 3.125 | $^\circ\text{C/W}$ |
| | TO-252/TO-252D | | 8.33 | $^\circ\text{C/W}$ |

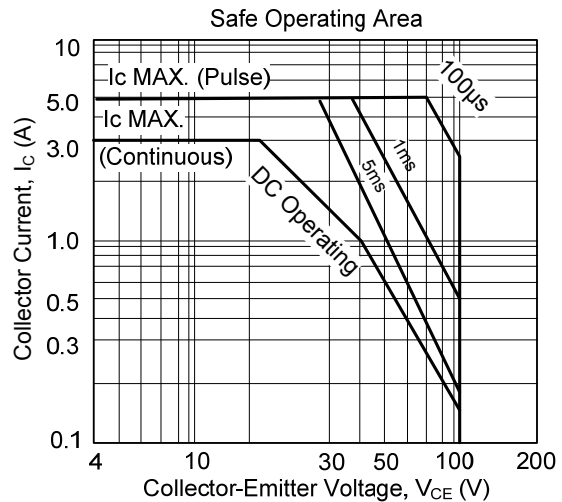
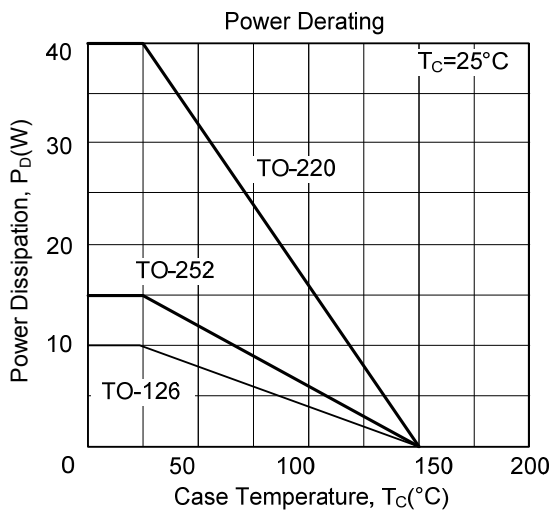
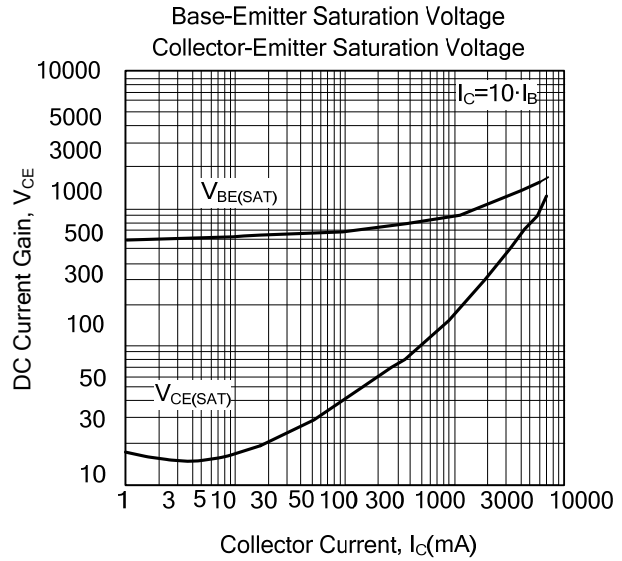
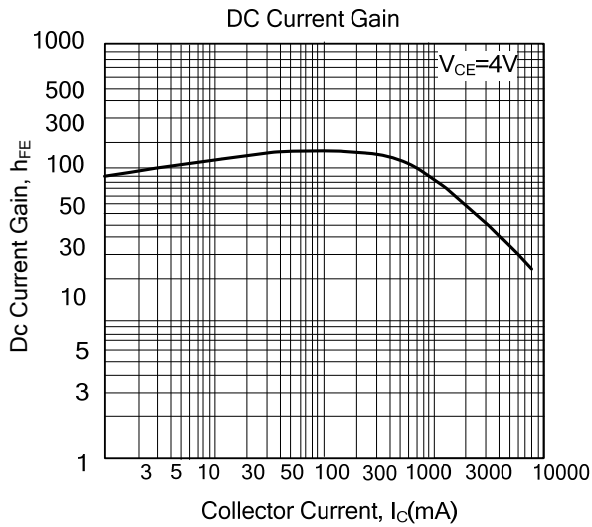
Note: These ratings are applicable when surface mounted on the minimum pad sizes recommended.

■ ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---------------|--|-----|-----|-----|---------------|
| Collector Emitter Sustaining Voltage (Note) | BV_{CEO} | $I_C=30\text{mA}, I_B=0$ | 100 | | | V |
| Collector Cutoff Current | I_{CES} | $V_{CE}=100\text{V}, V_{EB}=0$ | | | 200 | μA |
| Collector Cutoff Current | I_{CEO} | $V_{CE}=60\text{V}, I_B=0$ | | | 0.3 | mA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB}=5\text{V}, I_C=0$ | | | 1 | mA |
| Collector-Emitter Saturation Voltage (Note) | $V_{CE(SAT)}$ | $I_C=3\text{A}, I_B=375\text{mA}$ | | | 1.2 | V |
| Base-Emitter On Voltage (Note) | $V_{BE(ON)}$ | $I_C=3\text{A}, V_{CE}=4\text{V}$ | | | 1.8 | V |
| DC Current Gain (Note) | h_{FE1} | $I_C=1\text{A}, V_{CE}=4\text{V}$ | 25 | | | |
| | h_{FE2} | $I_C=3\text{A}, V_{CE}=4\text{V}$ | 10 | | 50 | |
| Current Gain Bandwidth Product | f_T | $I_C=0.5\text{A}, V_{CE}=10\text{V} f=1\text{MHz}$ | 3 | | | MHz |

Note: Pulse Test: $PW \leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.