

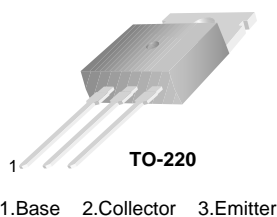


# TIP42/TIP42A/TIP42B/TIP42C

## PNP Epitaxial Silicon Transistor

### Features

- Medium Power Linear Switching Applications
- Complement to TIP41/TIP41A/TIP41B/TIP41C



### Absolute Maximum Ratings $T_A=25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter  | Value       | Units            |   |
|-----------|--|-------------|------------------|---|
| $V_{CBO}$ | Collector-Base Voltage                           | : TIP42     | - 40             | V |
|           |  | : TIP42A    | - 60             | V |
|           |  | : TIP42B    | - 80             | V |
|           |  | : TIP42C    | - 100            | V |
| $V_{CEO}$ | Collector-Emitter Voltage                        | : TIP42     | - 40             | V |
|           |  | : TIP42A    | - 60             | V |
|           |  | : TIP42B    | - 80             | V |
|           |  | : TIP42C    | - 100            | V |
| $V_{EBO}$ | Emitter-Base Voltage                             | - 5         | V                |   |
| $I_C$     | Collector Current (DC)                           | - 6         | A                |   |
| $I_{CP}$  | Collector Current (Pulse)                        | -10         | A                |   |
| $I_B$     | Base Current                                     | -2          | A                |   |
| $P_C$     | Collector Dissipation ( $T_C=25^\circ\text{C}$ ) | 65          | W                |   |
|           | Collector Dissipation ( $T_A=25^\circ\text{C}$ ) | 2           | W                |   |
| $T_J$     | Junction Temperature                             | 150         | $^\circ\text{C}$ |   |
| $T_{STG}$ | Storage Temperature                              | - 65 to 150 | $^\circ\text{C}$ |   |

**Electrical Characteristics**  $T_A=25^\circ\text{C}$  unless otherwise noted

| Symbol         | Parameter   | Test Condition  | Min.                      | Max.                         | Units  |
|----------------|---|---|---------------------------|------------------------------|--|
| $V_{CEO(sus)}$ | * Collector-Emitter Sustaining Voltage<br>: TIP42<br>: TIP42A<br>: TIP42B<br>: TIP42C | $I_C = -30\text{mA}, I_B = 0$   | -40<br>-60<br>-80<br>-100 |                              | V<br>V<br>V<br>V   |
| $I_{CEO}$      | Collector Cut-off Current<br>: TIP42/42A<br>: TIP42B/42C                              | $V_{CE} = -30\text{V}, I_B = 0$<br>$V_{CE} = -60\text{V}, I_B = 0$  |                           | -0.7<br>-0.7                 | mA<br>mA   |
| $I_{CES}$      | Collector Cut-off Current<br>: TIP42<br>: TIP42A<br>: TIP42B<br>: TIP42C              | $V_{CE} = -40\text{V}, V_{EB} = 0$<br>$V_{CE} = -60\text{V}, V_{EB} = 0$<br>$V_{CE} = -80\text{V}, V_{EB} = 0$<br>$V_{CE} = -100\text{V}, V_{EB} = 0$ |                           | -400<br>-400<br>-400<br>-400 | $\mu\text{A}$<br>$\mu\text{A}$<br>$\mu\text{A}$<br>$\mu\text{A}$ |
| $I_{EBO}$      | Emitter Cut-off Current   | $V_{EB} = -5\text{V}, I_C = 0$  |                           | -1                           | mA   |
| $h_{FE}$       | * DC Current Gain   | $V_{CE} = -4\text{V}, I_C = -0.3\text{A}$<br>$V_{CE} = -4\text{V}, I_C = -3\text{A}$  | 30<br>15                  | 75                           |  |
| $V_{CE(sat)}$  | * Collector-Emitter Saturation Voltage  | $I_C = -6\text{A}, I_B = -600\text{mA}$   |                           | -1.5                         | V  |
| $V_{BE(sat)}$  | * Base-Emitter Saturation Voltage   | $V_{CE} = -4\text{V}, I_C = -6\text{A}$   |                           | -2.0                         | V  |
| $f_T$          | Current Gain Bandwidth Product  | $V_{CE} = -10\text{V}, I_C = -500\text{mA},$<br>$f = 1\text{MHz}$   | 3.0                       |                              | MHz  |

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

### Typical Performance Characteristics

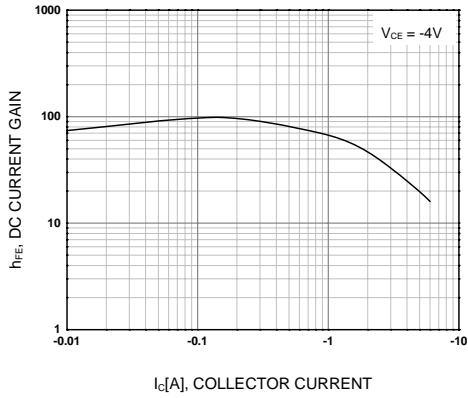


Figure 1. DC current Gain

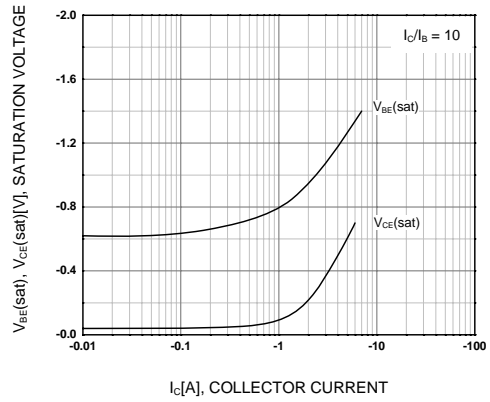


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

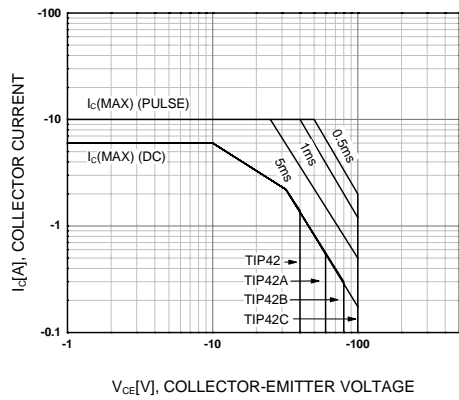


Figure 3. Safe Operating Area

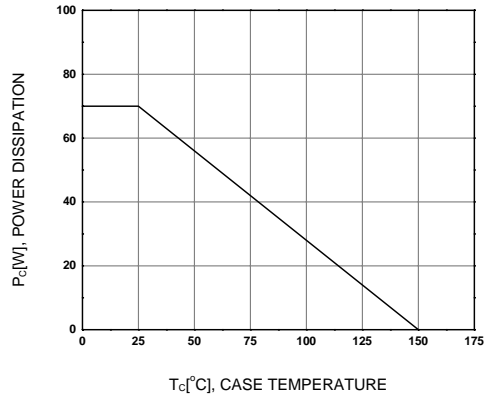
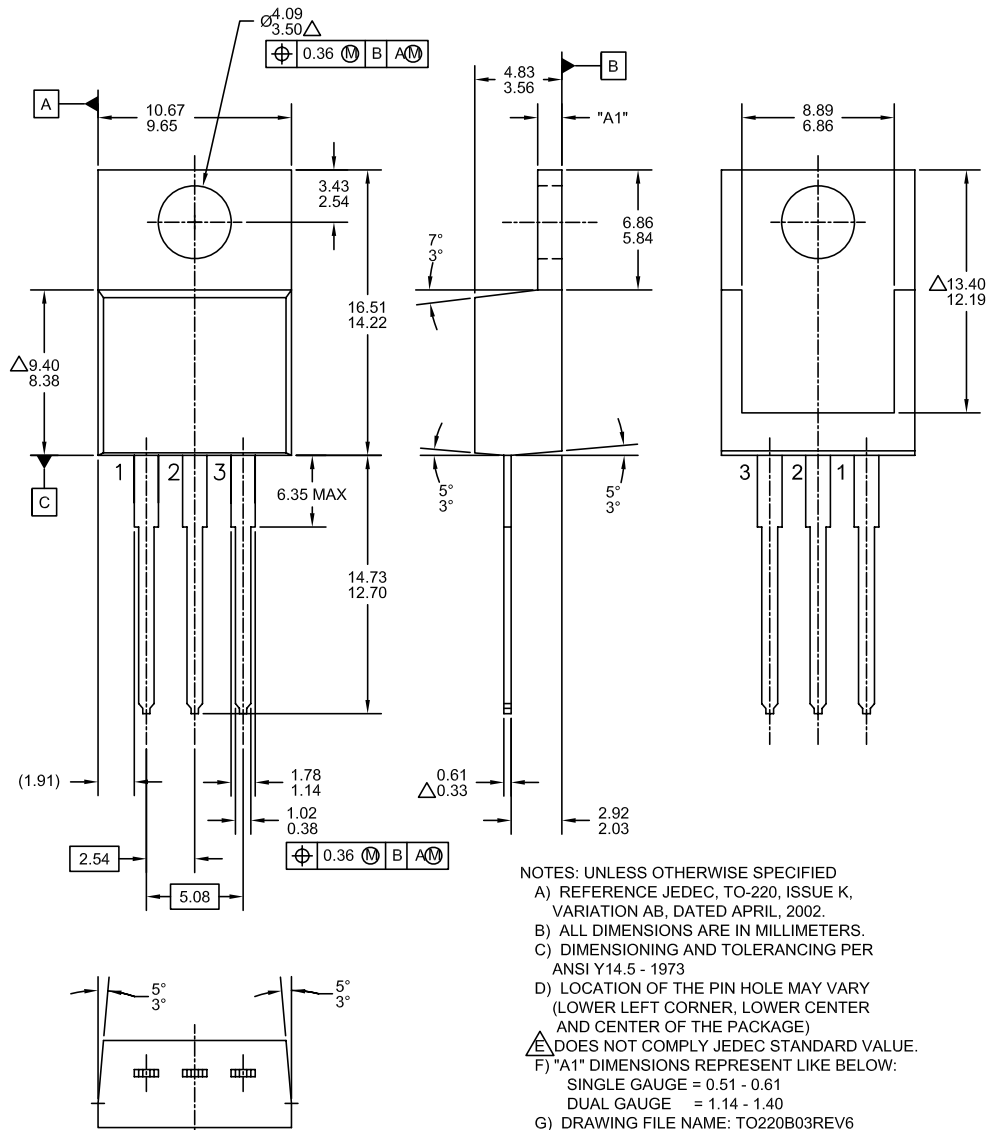


Figure 4. Power derating

Mechanical Dimensions

TO-220









- NOTES: UNLESS OTHERWISE SPECIFIED  
A) REFERENCE JEDEC, TO-220, ISSUE K, VARIATION AB, DATED APRIL, 2002.  
B) ALL DIMENSIONS ARE IN MILLIMETERS.  
C) DIMENSIONING AND TOLERANCING PER ANSI Y14.5 - 1973  
D) LOCATION OF THE PIN HOLE MAY VARY (LOWER LEFT CORNER, LOWER CENTER AND CENTER OF THE PACKAGE)  
 $\Delta$  DOES NOT COMPLY JEDEC STANDARD VALUE.  
F) "A1" DIMENSIONS REPRESENT LIKE BELOW:  
SINGLE GAUGE = 0.51 - 0.61  
DUAL GAUGE = 1.14 - 1.40  
G) DRAWING FILE NAME: TO220B03REV6

Dimensions in Millimeters



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