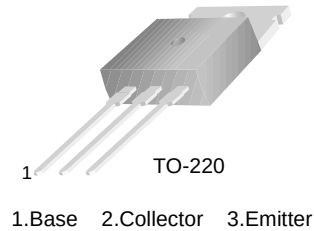


## TIP42 SERIES(TIP42/42A/42B/42C)

### Medium Power Linear Switching Applications

- Complement to TIP41/41A/41B/41C



### PNP Epitaxial Silicon Transistor

#### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ 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                |
| $P_C$     | Collector Dissipation ( $T_a=25^\circ\text{C}$ ) | 2          | W                |
| $T_J$     | Junction Temperature                             | 150        | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                              | - 65 ~ 150 | $^\circ\text{C}$ |

#### Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

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

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

## Typical Characteristics

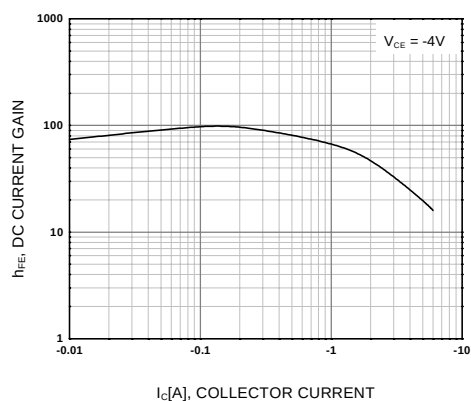


Figure 1. DC current Gain

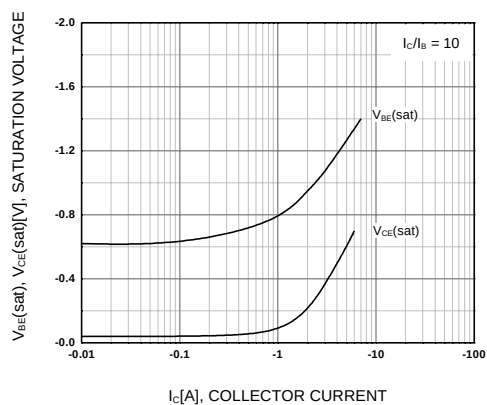


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

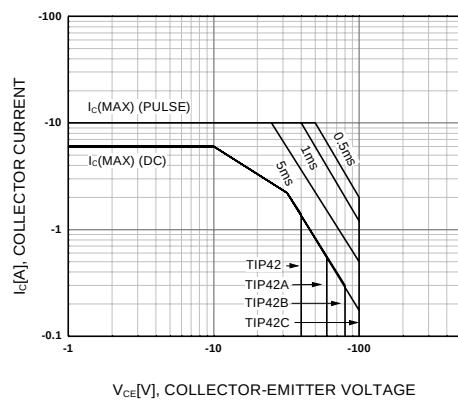


Figure 3. Safe Operating Area

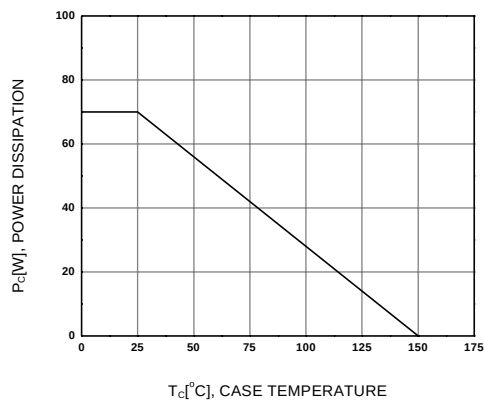
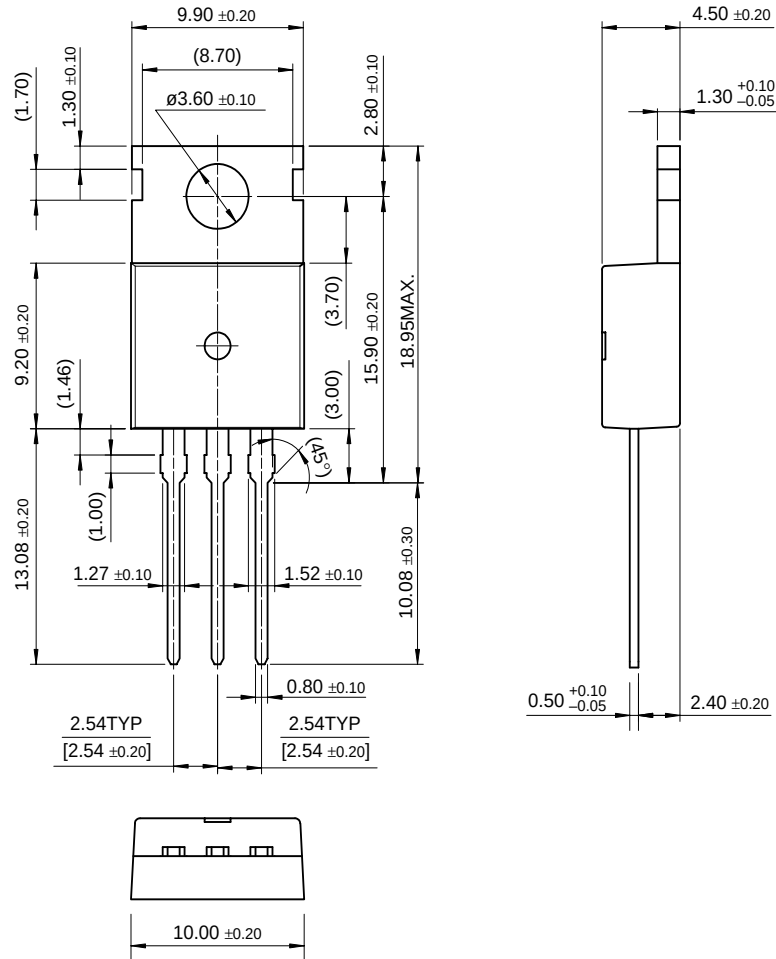


Figure 4. Power derating

# Package Dimensions

## TO-220



Dimensions in Millimeters

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