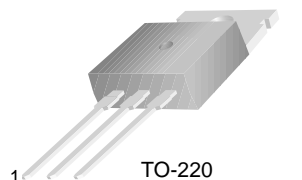


## TIP32 Series(TIP32/32A/32B/32C)

### Medium Power Linear Switching Applications

- Complement to TIP31/31A/31B/31C



1.Base 2.Collector 3.Emitter

### 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 : TIP32<br>: TIP32A<br>: TIP32B<br>: TIP32C    | - 40       | V                |
|           |   | - 60       | V                |
|           |   | - 80       | V                |
|           |   | - 100      | V                |
| $V_{CEO}$ | Collector-Emitter Voltage : TIP32<br>: TIP32A<br>: TIP32B<br>: TIP32C | - 40       | V                |
|           |   | - 60       | V                |
|           |   | - 80       | V                |
|           |   | -100       | V                |
| $V_{EBO}$ | Emitter-Base Voltage  | - 5        | V                |
| $I_C$     | Collector Current (DC)  | - 3        | A                |
| $I_{CP}$  | Collector Current (Pulse)   | - 5        | A                |
| $I_B$     | Base Current  | - 3        | A                |
| $P_C$     | Collector Dissipation ( $T_C=25^\circ\text{C}$ )                      | 40         | 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<br>: TIP32<br>: TIP32A<br>: TIP32B<br>: TIP32C | $I_C = -30\text{mA}, I_B = 0$               | -40  |       | V             |
|                |   |   | -60  |       | V             |
|                |   |   | -80  |       | V             |
|                |   |   | -100 |       | V             |
| $I_{CEO}$      | Collector Cut-off Current<br>: TIP32/32A<br>: TIP32B/32C                              | $V_{CE} = -30\text{V}, I_B = 0$             |      | - 0.3 | mA            |
|                |   | $V_{CE} = -60\text{V}, I_B = 0$             |      | - 0.3 | mA            |
| $I_{CES}$      | Collector Cut-off Current<br>: TIP32<br>: TIP32A<br>: TIP32B<br>: TIP32C              | $V_{CE} = -40\text{V}, V_{EB} = 0$          |      | - 200 | $\mu\text{A}$ |
|                |   | $V_{CE} = -60\text{V}, V_{EB} = 0$          |      | - 200 | $\mu\text{A}$ |
|                |   | $V_{CE} = -80\text{V}, V_{EB} = 0$          |      | - 200 | $\mu\text{A}$ |
|                |   | $V_{CE} = -100\text{V}, V_{CE} = 0$         |      | - 200 | $\mu\text{A}$ |
| $I_{EBO}$      | Emitter Cut-off Current   | $V_{EB} = -5\text{V}, I_C = 0$              |      | - 1   | mA            |
| $h_{FE}$       | * DC Current Gain   | $V_{CE} = -4\text{V}, I_C = -1\text{A}$     | 25   |       |               |
|                |   | $V_{CE} = -4\text{V}, I_C = -3\text{A}$     | 10   | 50    |               |
| $V_{CE(sat)}$  | * Collector-Emitter Saturation Voltage  | $I_C = -3\text{A}, I_B = -375\text{mA}$     |      | - 1.2 | V             |
| $V_{BE(sat)}$  | * Base-Emitter Saturation Voltage   | $V_{CE} = -4\text{V}, I_C = -3\text{A}$     |      | - 1.8 | 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

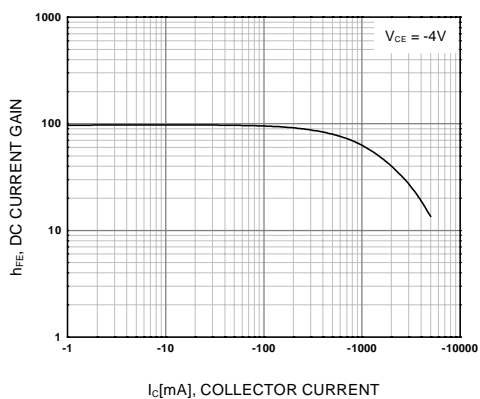


Figure 1. DC current Gain

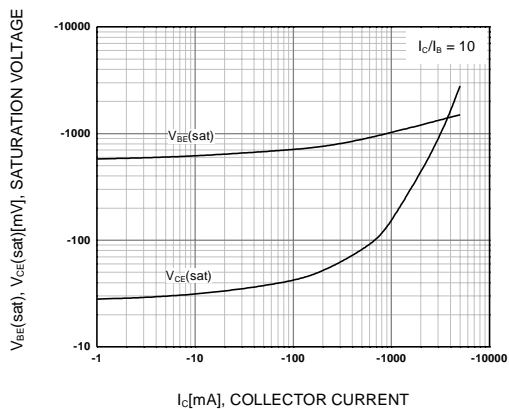


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

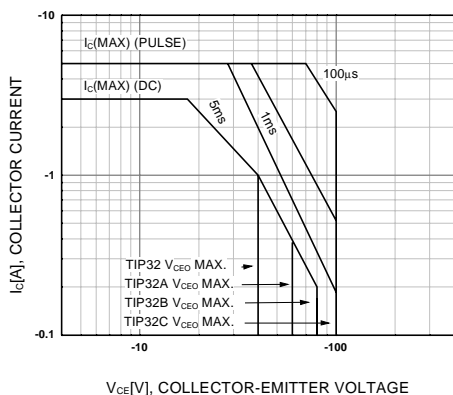


Figure 3. Safe Operating Area

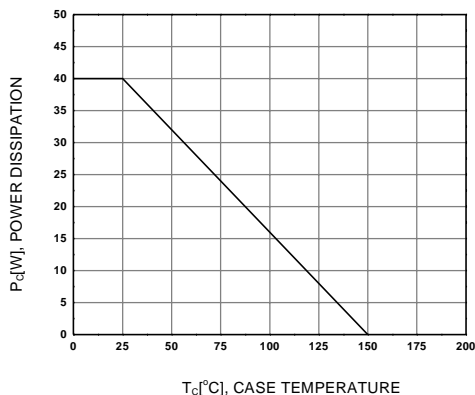
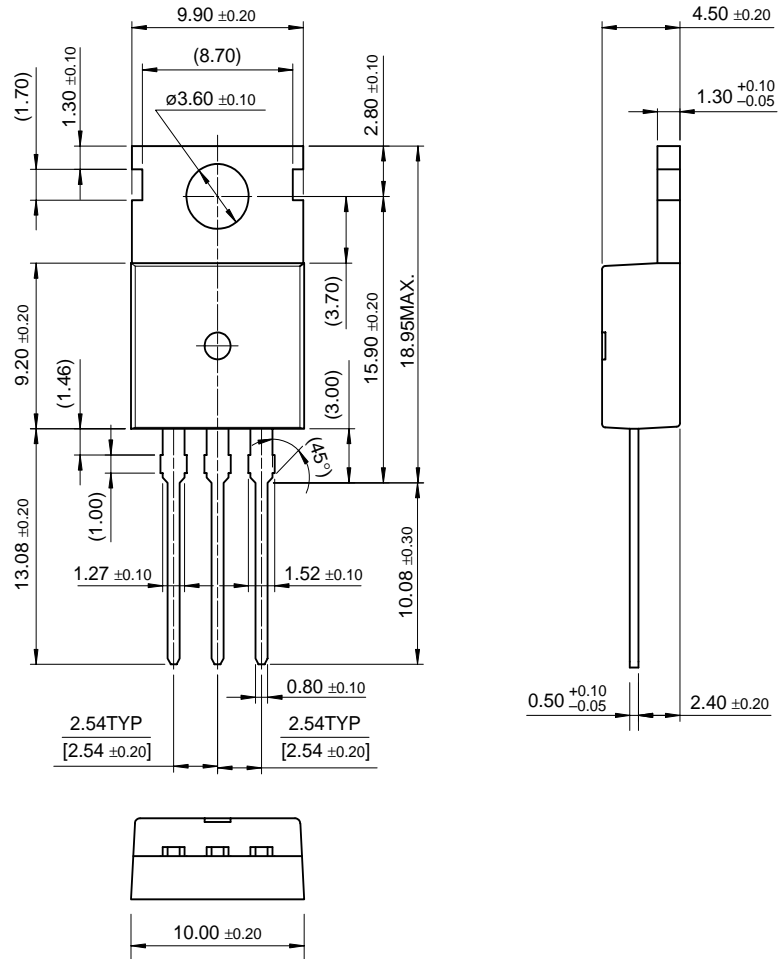


Figure 4. Power Derating

# Package Dimensions

## TO-220



TIP32 Series (TIP32/32A/32B/32C)

Dimensions in Millimeters

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| E <sup>2</sup> CMOS™ | PowerTrench®  | VCX™        |
| FACT™                | QFET™         |             |
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