

# **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<sub>C</sub>=25°C unless otherwise noted

| Symbol           | Parameter                                    | Value      | Units |
|------------------|--|------------|-------|
| V <sub>CBO</sub> | Collector-Base Voltage : TIP32               | - 40       | V     |
|                  | : TIP32A                                     | - 60       | V     |
|                  | : TIP32B                                     | - 80       | V     |
|                  | : TIP32C                                     | - 100      | V     |
| V <sub>CEO</sub> | Collector-Emitter Voltage: TIP32             | - 40       | V     |
|                  | : TIP32A                                     | - 60       | V     |
|                  | : TIP32B                                     | - 80       | V     |
|                  | : TIP32C                                     | -100       | V     |
| V <sub>EBO</sub> | Emitter-Base Voltage                         | - 5        | V     |
| I <sub>C</sub>   | Collector Current (DC)                       | - 3        | А     |
| I <sub>CP</sub>  | Collector Current (Pulse)                    | - 5        | А     |
| I <sub>B</sub>   | Base Current                                 | - 3        | А     |
| P <sub>C</sub>   | Collector Dissipation (T <sub>C</sub> =25°C) | 40         | W     |
| P <sub>C</sub>   | Collector Dissipation (T <sub>a</sub> =25°C) | 2          | W     |
| T <sub>J</sub>   | Junction Temperature                         | 150        | °C    |
| T <sub>STG</sub> | Storage Temperature                          | - 65 ~ 150 | °C    |

## Electrical Characteristics $T_C=25$ °C unless otherwise noted

| Symbol                 | Parameter                              | Test Condition                                    | Min. | Max.  | Units |
|------------------------|--|---|------|-------|-------|
| V <sub>CEO</sub> (sus) | * Collector-Emitter Sustaining Voltage |   |      |       |       |
|                        | : TIP32                                | $I_C = -30 \text{mA}, I_B = 0$                    | -40  |       | V     |
|                        | : TIP32A                               |   | -60  |       | V     |
|                        | : TIP32B                               |   | -80  |       | V     |
|                        | : TIP32C                               |   | -100 |       | V     |
| I <sub>CEO</sub>       | Collector Cut-off Current              |   |      |       |       |
|                        | : TIP32/32A                            | $V_{CE} = -30V, I_{B} = 0$                        |      | - 0.3 | mA    |
|                        | : TIP32B/32C                           | $V_{CE} = -60V, I_{B} = 0$                        |      | - 0.3 | mA    |
| I <sub>CES</sub>       | Collector Cut-off Current              |   |      |       |       |
|                        | : TIP32                                | $V_{CE} = -40V, V_{EB} = 0$                       |      | - 200 | μΑ    |
|                        | : TIP32A                               | $V_{CE} = -60V, V_{EB} = 0$                       |      | - 200 | μΑ    |
|                        | : TIP32B                               | $V_{CE} = -80V, V_{EB} = 0$                       |      | - 200 | μΑ    |
|                        | : TIP32C                               | $V_{CE} = -100V, V_{CE} = 0$                      |      | - 200 | μΑ    |
| I <sub>EBO</sub>       | Emitter Cut-off Current                | $V_{EB} = -5V, I_{C} = 0$                         |      | - 1   | mA    |
| h <sub>FE</sub>        | * DC Current Gain                      | V <sub>CE</sub> = - 4V, I <sub>C</sub> = - 1A     | 25   |       |       |
|                        |  | $V_{CE} = -4V, I_{C} = -3A$                       | 10   | 50    |       |
| V <sub>CE</sub> (sat)  | * Collector-Emitter Saturation Voltage | I <sub>C</sub> = - 3A, I <sub>B</sub> = - 375mA   |      | - 1.2 | V     |
| V <sub>BE</sub> (sat)  | * Base-Emitter Saturation Voltage      | V <sub>CE</sub> = - 4V, I <sub>C</sub> = - 3A     |      | - 1.8 | V     |
| f <sub>T</sub>         | Current Gain Bandwidth Product         | V <sub>CE</sub> = - 10V, I <sub>C</sub> = - 500mA | 3.0  |       | MHz   |
| Pulse Test: PW≤3       | 300μs, Duty Cycle≤2%                   |   |      |       | •     |

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# **Typical Characteristics**

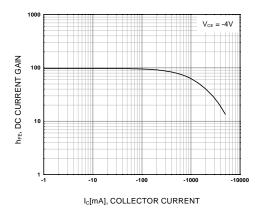


Figure 1. DC current Gain

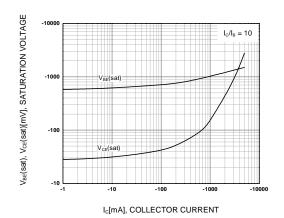


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

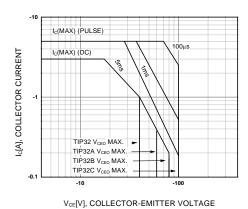


Figure 3. Safe Operating Area

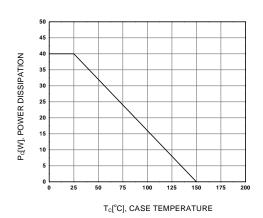
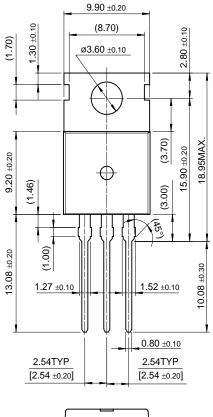


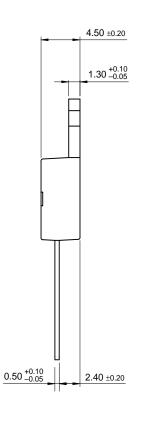
Figure 4. Power Derating

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# **Package Demensions**

# TO-220





10.00 ±0.20

Dimensions in Millimeters

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