

## Features

- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

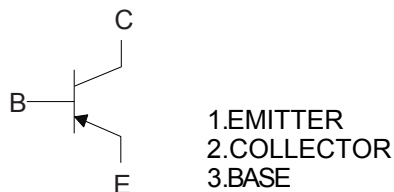
## Maximum Ratings @ 25°C Unless Otherwise Specified

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 250°C/W Junction to Ambient

| Parameter                    | Symbol    | Rating | Unit |
|------------------------------|-----------|--------|------|
| Collector-Base Voltage       | $V_{CBO}$ | -35    | V    |
| Collector-Emitter Voltage    | $V_{CEO}$ | -30    | V    |
| Emitter-Base Voltage         | $V_{EBO}$ | -5     | V    |
| Continuous Collector Current | $I_C$     | -500   | mA   |
| Power Dissipation            | $P_D$     | 500    | mW   |

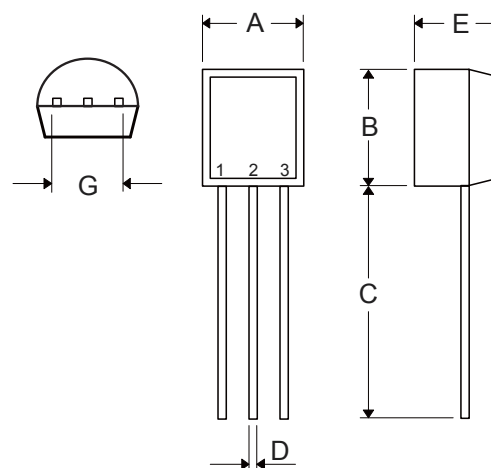
**Marking:**Type Number

**Internal Structure**



# PNP Plastic-Encapsulate Transistors

TO-92



| DIM | DIMENSIONS |       |       |       | NOTE          |
|-----|------------|-------|-------|-------|---------------|
|     | INCHES     |       | MM    |       |               |
|     | MIN        | MAX   | MIN   | MAX   |               |
| A   | 0.169      | 0.185 | 4.30  | 4.70  |               |
| B   | 0.169      | 0.185 | 4.30  | 4.70  |               |
| C   | 0.500      | ----- | 12.70 | ----- |               |
| D   | 0.015      | 0.022 | 0.38  | 0.55  |               |
| E   | 0.130      | 0.146 | 3.30  | 3.70  |               |
| G   | 0.095      | 0.105 | 2.42  | 2.67  | Straight Lead |
|     | 0.173      | 0.220 | 4.40  | 5.60  | Bent          |

**Electrical Characteristics @  $T_A=25^\circ\text{C}$  Unless Otherwise Specified**

| Parameter                            | Symbol        | Min | Typ | Max   | Units         | Conditions   |
|--------------------------------------|---------------|-----|-----|-------|---------------|--|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | -35 |     |       | V             | $I_C=-100\mu\text{A}, I_E=0$                           |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | -30 |     |       | V             | $I_C=-1\text{mA}, I_B=0$                               |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | -5  |     |       | V             | $I_E=-100\mu\text{A}, I_C=0$                           |
| Collector Cut-off Current            | $I_{CBO}$     |     |     | -0.1  | $\mu\text{A}$ | $V_{CB}=-35\text{V}, I_E=0$                            |
| Emitter Cut-off Current              | $I_{EBO}$     |     |     | -0.1  | $\mu\text{A}$ | $V_{EB}=-5\text{V}, I_C=0$                             |
| DC Current Gain                      | $h_{FE(1)}$   | 70  |     | 240   |               | $V_{CE}=-1\text{V}, I_C=-100\text{mA}$                 |
|                                      | $h_{FE(2)}$   | 25  |     |       |               | $V_{CE}=-6\text{V}, I_C=-400\text{mA}$                 |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ |     |     | -0.25 | V             | $I_C=-100\text{mA}, I_B=-10\text{mA}$                  |
| Base-Emitter Voltage                 | $V_{BE}$      |     |     | -1    | V             | $V_{CE}=-1\text{V}, I_C=-100\text{mA}$                 |
| Transition Frequency                 | $f_T$         |     | 200 |       | MHz           | $V_{CE}=-6\text{V}, I_C=-20\text{mA}, f=100\text{MHz}$ |
| Collector Output Capacitance         | $C_{ob}$      |     | 13  |       | pF            | $V_{CB}=-6\text{V}, I_E=0, f=1\text{MHz}$              |

**Classification of  $h_{FE(1)}$** 

|       |        |         |
|-------|--------|---------|
| Rank  | O      | Y       |
| Range | 70-140 | 120-240 |

## Curve Characteristics

Fig. 1 - Static Characteristics

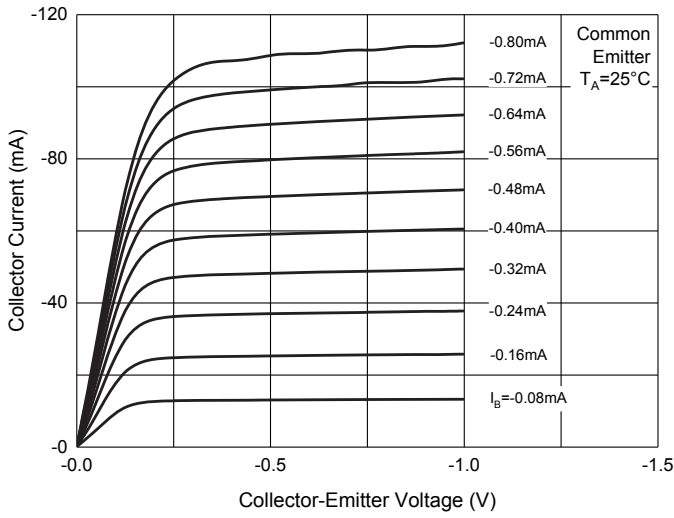


Fig. 2 - DC Current Gain Characteristics

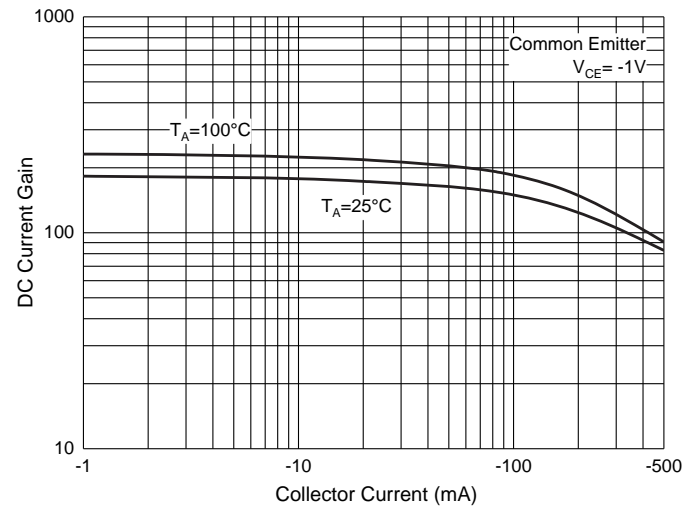


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

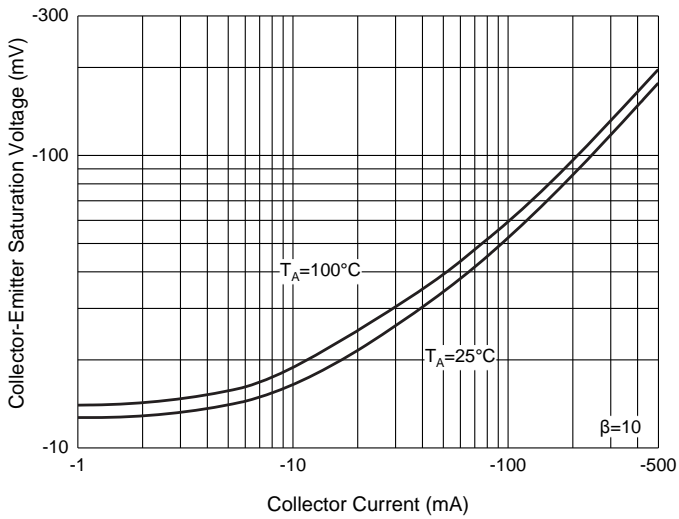


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

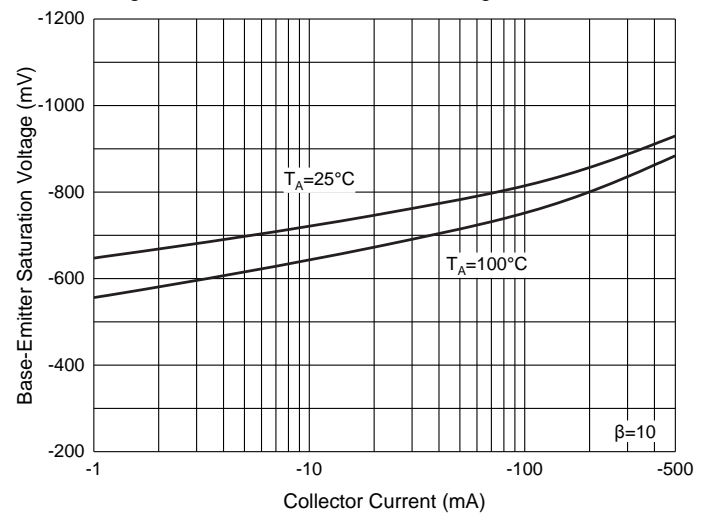


Fig. 5 - Base-Emitter Voltage Characteristics

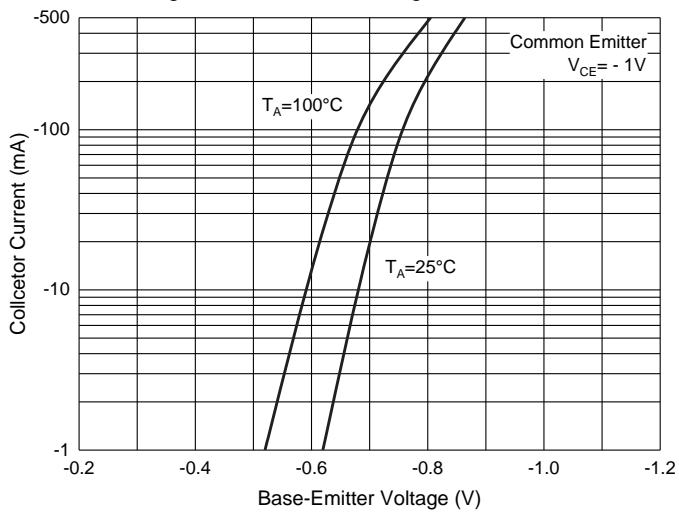
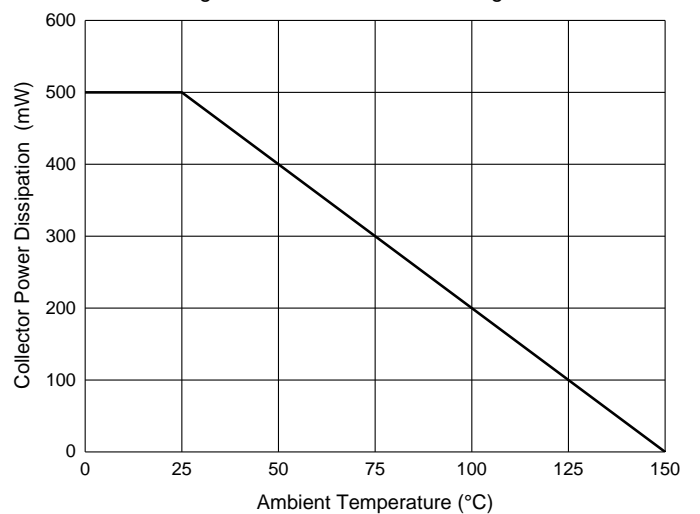


Fig. 6 - Collector Power Derating Curve



## Ordering Information

| Device         | Packing                     |
|----------------|-----------------------------|
| Part Number-AP | Ammo Packing: 20Kpcs/Carton |
| Part Number-BP | Bulk: 100Kpcs/Carton        |

Note : Adding "-HF" Suffix for Halogen Free, eg. Part Number-TP-HF

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