

## Features

- Low Collector-Emitter Saturation Voltage
- High DC Current Gain
- Monolithic Construction with Built-in Base-Emitter Shunt Resistors
- 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 (Note1) ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings @ 25°C Unless Otherwise Specified

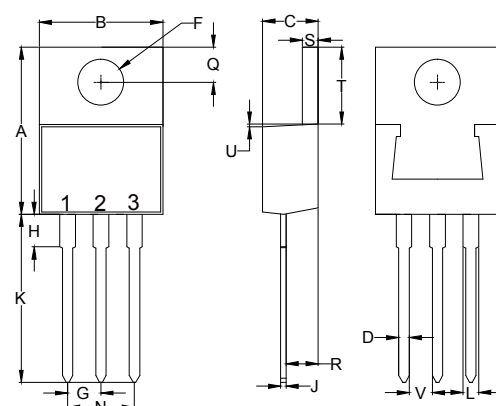
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 1.56°C/W Junction to Case

| Parameter                                  | Symbol    | Rating | Unit |
|--------------------------------------------|-----------|--------|------|
| Collector-Base Voltage                     | TIP100    | 60     | V    |
|                                            | TIP101    | 80     |      |
|                                            | TIP102    | 100    |      |
| Collector-Emitter Voltage                  | TIP100    | 60     | V    |
|                                            | TIP101    | 80     |      |
|                                            | TIP102    | 100    |      |
| Emitter-Base Voltage                       | $V_{EBO}$ | 5      | V    |
| Continuous Collector Current               | $I_C$     | 8      | A    |
| Peak Collector Current                     | $I_{CM}$  | 15     | A    |
| Base Current                               | $I_B$     | 1      | A    |
| Power Dissipation @ $T_C=25^\circ\text{C}$ | $P_D$     | 80     | W    |

Note: 1.High Temperature Solder Exemption Applied, see EU Directive Annex 7.

# NPN Plastic Medium-Power Silicon Transistors

## TO-220



1.BASE  
2.COLLECTOR  
3.EMITTER

| DIM | INCHES |       | MM    |       | NOTE |
|-----|--------|-------|-------|-------|------|
|     | MIN    | MAX   | MIN   | MAX   |      |
| A   | 0.560  | 0.625 | 14.22 | 15.88 |      |
| B   | 0.380  | 0.420 | 9.65  | 10.67 |      |
| C   | 0.140  | 0.190 | 3.56  | 4.82  |      |
| D   | 0.020  | 0.045 | 0.51  | 1.14  |      |
| F   | 0.139  | 0.161 | 3.53  | 4.09  | Φ    |
| G   | 0.090  | 0.110 | 2.29  | 2.79  |      |
| H   | -----  | 0.250 | ----- | 6.35  |      |
| J   | 0.012  | 0.025 | 0.30  | 0.64  |      |
| K   | 0.500  | 0.580 | 12.70 | 14.73 |      |
| L   | 0.045  | 0.060 | 1.14  | 1.52  |      |
| N   | 0.190  | 0.210 | 4.83  | 5.33  |      |
| Q   | 0.100  | 0.135 | 2.54  | 3.43  |      |
| R   | 0.080  | 0.115 | 2.04  | 2.92  |      |
| S   | 0.045  | 0.055 | 1.14  | 1.39  |      |
| T   | 0.230  | 0.270 | 5.84  | 6.86  |      |
| U   | -----  | 0.050 | ----- | 1.27  |      |
| V   | 0.045  | ----- | 1.15  | ----- |      |

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

| Parameter                            |        | Symbol        | Min  | Typ | Max   | Units         | Conditions                                             |
|--------------------------------------|--------|---------------|------|-----|-------|---------------|--------------------------------------------------------|
| Collector-Emitter Breakdown Voltage  | TIP100 | $V_{(BR)CEO}$ | 60   |     |       | V             | $I_C=30\text{mA}, I_B=0$                               |
|                                      | TIP101 |               | 80   |     |       |               |                                                        |
|                                      | TIP102 |               | 100  |     |       |               |                                                        |
| Collector Cutoff Current             | TIP100 | $I_{CBO}$     |      |     | 50    | $\mu\text{A}$ | $V_{CB}=60\text{V}, I_E=0$                             |
|                                      | TIP101 |               |      |     | 50    | $\mu\text{A}$ | $V_{CB}=80\text{V}, I_E=0$                             |
|                                      | TIP102 |               |      |     | 50    | $\mu\text{A}$ | $V_{CB}=100\text{V}, I_E=0$                            |
| Collector Cutoff Current             | TIP100 | $I_{CEO}$     |      |     | 50    | $\mu\text{A}$ | $V_{CE}=30\text{V}, I_B=0$                             |
|                                      | TIP101 |               |      |     | 50    | $\mu\text{A}$ | $V_{CE}=40\text{V}, I_B=0$                             |
|                                      | TIP102 |               |      |     | 50    | $\mu\text{A}$ | $V_{CE}=50\text{V}, I_B=0$                             |
| Emitter Cutoff Current               |        | $I_{EBO}$     |      |     | 8     | mA            | $V_{EB}=5\text{V}, I_C=0$                              |
| DC Current Gain                      |        | $h_{FE(1)}$   | 1000 |     | 20000 |               | $V_{CE}=4\text{V}, I_C=3\text{A}$                      |
|                                      |        | $h_{FE(2)}$   | 200  |     |       |               | $V_{CE}=4\text{V}, I_C=8\text{A}$                      |
| Collector-Emitter Saturation Voltage |        | $V_{CE(sat)}$ |      |     | 2.0   | V             | $I_C=3\text{A}, I_B=6\text{mA}$                        |
|                                      |        |               |      |     | 2.5   | V             | $I_C=8\text{A}, I_B=80\text{mA}$                       |
| Base-Emitter On Voltage              |        | $V_{BE(on)}$  |      |     | 2.8   | V             | $V_{CE}=4\text{V}, I_C=8\text{A}$                      |
| Small-Signal Current Gain            |        | $h_{fe}$      | 4    |     |       |               | $I_C=3.0\text{A}, V_{CE}=4.0\text{V}, f=1.0\text{MHz}$ |
| Output Capacitance                   |        | $C_{ob}$      |      |     | 200   | pF            | $V_{CB}=10\text{V}, I_E=0, f=0.1\text{MHz}$            |

## Ordering Information

| Device         | Packing         |
|----------------|-----------------|
| Part Number-BP | Bulk: 1Kpcs/Box |

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

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