

# MJE13002

## Features

- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/RoHS Compliant (Note1) ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Capable of 1.25Watts of Power Dissipation.
- Collector-current 1.0A
- Collector-base Voltage 600V
- Operating and storage junction temperature range: -55°C to +150°C

### Electrical Characteristics @ 25°C Unless Otherwise Specified

| Symbol                     | Parameter  | Min | Max | Units   |
|----------------------------|--|-----|-----|---------|
| <b>OFF CHARACTERISTICS</b> |  |     |     |         |
| $V_{(BR)CEO}$              | Collector-Emitter Breakdown Voltage<br>( $I_C=1.0mA$ , $I_B=0$ ) | 400 |     | Vdc     |
| $V_{(BR)CBO}$              | Collector-Base Breakdown Voltage<br>( $I_C=100\mu A$ , $I_E=0$ ) | 600 |     | Vdc     |
| $V_{(BR)EBO}$              | Emitter-Base Breakdown Voltage<br>( $I_E=100\mu A$ , $I_C=0$ )   | 6.0 |     | Vdc     |
| $I_{CBO}$                  | Collector Cutoff Current<br>( $V_{CB}=600Vdc$ , $I_E=0$ )        |     | 100 | $\mu A$ |
| $I_{EBO}$                  | Emitter Cutoff Current<br>( $V_{EB}=6.0Vdc$ , $I_C=0$ )          |     | 100 | $\mu A$ |

### ON CHARACTERISTICS

|               |  |     |     |     |
|---------------|--|-----|-----|-----|
| $h_{FE(1)}$   | DC Current Gain<br>( $I_C=100mA$ , $V_{CE}=10Vdc$ )                  | 8.0 | 60  |     |
| $h_{FE(2)}$   | DC Current Gain<br>( $I_C=200mA$ , $V_{CE}=10Vdc$ )                  | 9.0 | 40  |     |
| $h_{FE(3)}$   | DC Current Gain<br>( $I_C=10mA$ , $V_{CE}=10Vdc$ )                   | 6.0 |     |     |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage<br>( $I_C=200mA$ , $I_B=40mA$ ) |     | 0.8 | Vdc |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage<br>( $I_C=200mA$ , $I_B=40mA$ )      |     | 1.1 | Vdc |

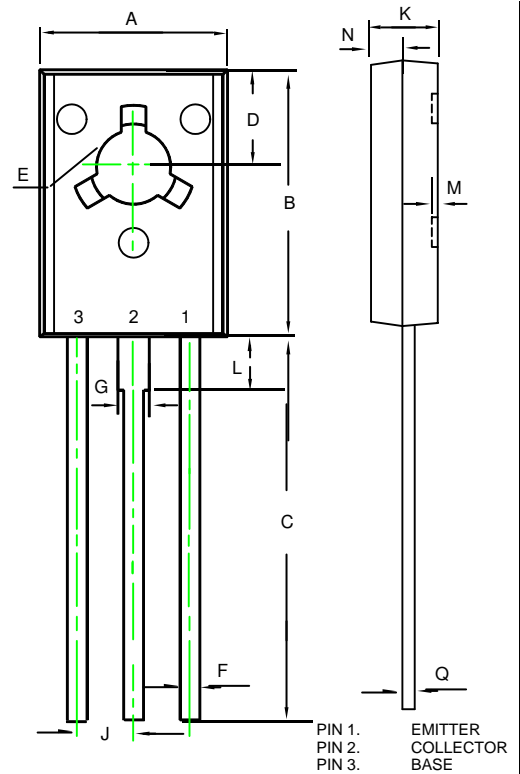
### SMALL-SIGNAL CHARACTERISTICS

|       |   |                              |     |         |
|-------|---|------------------------------|-----|---------|
| $f_T$ | Transistor Frequency<br>( $I_C=100mA$ , $V_{CE}=10Vdc$ , $f=1.0MHz$ ) | 5.0                          |     | MHz     |
| $t_F$ | Fall Time   | $V_{CC}=100V$ , $I_C=1.0A$ , | 0.5 | $\mu S$ |
| $t_S$ | Storage Time  | $I_{B1}=I_{B2}=0.2A$         | 2.5 | $\mu S$ |

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

## NPN Silicon Plastic-Encapsulate Transistor

### TO-18



### DIMENSIONS

| DIM | INCHES   |       | MM       |       | NOTE |
|-----|----------|-------|----------|-------|------|
|     | MIN      | MAX   | MIN      | MAX   |      |
| A   | 0.291    | 0.307 | 7.40     | 7.80  |      |
| B   | 0.417    | 0.433 | 10.60    | 11.00 |      |
| C   | 0.602    | 0.618 | 15.30    | 15.70 |      |
| D   | 0.154    | 0.161 | 3.90     | 4.10  |      |
| E   | 0.118    | 0.126 | 3.00     | 3.20  |      |
| F   | 0.026    | 0.034 | 0.66     | 0.86  |      |
| G   | 0.046    | 0.054 | 1.17     | 1.37  |      |
| J   | 0.090TYP |       | 2.290TYP |       |      |
| K   | 0.098    | 0.114 | 2.50     | 2.90  |      |
| L   | 0.083    | 0.091 | 2.10     | 2.30  |      |
| M   | 0.000    | 0.012 | 0.00     | 0.30  |      |
| N   | 0.043    | 0.059 | 1.10     | 1.50  |      |
| Q   | 0.018    | 0.024 | 0.45     | 0.60  |      |



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### Ordering Information :

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

Note : Adding "-HF" suffix for halogen free, eg. Part Number-BP-HF

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