

## Silicon NPN Power Transistors

## MJE180/181/182

## DESCRIPTION

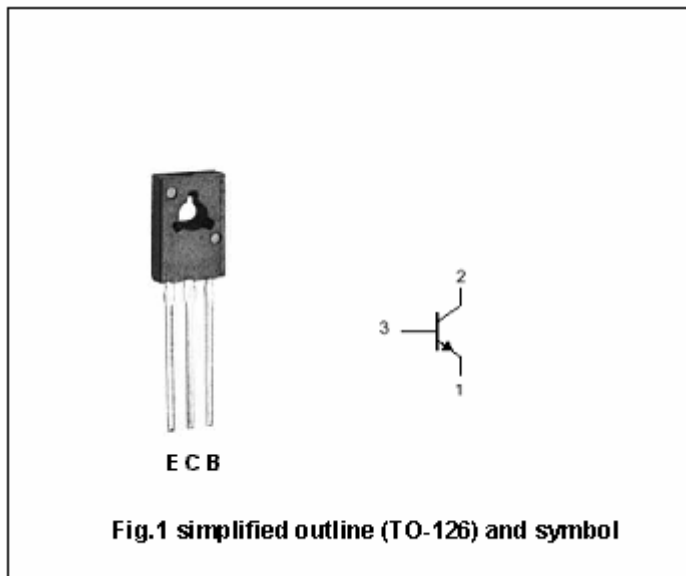
- With TO-126 package
- Complement to type MJE170/171/172

## APPLICATIONS

- For low power audio amplifier and low current high speed switching applications

## PINNING (see Fig.2)

| PIN | DESCRIPTION                          |
|-----|--------------------------------------|
| 1   | Emitter                              |
| 2   | Collector;connected to mounting base |
| 3   | Base                                 |

ABSOLUTE MAXIMUM RATINGS( $T_c=25^\circ\text{C}$ )

| SYMBOL    | PARAMETER                   |                        | CONDITIONS     | VALUE   | UNIT             |
|-----------|-----------------------------|------------------------|----------------|---------|------------------|
| $V_{CBO}$ | Collector-base voltage      | MJE180                 | Open emitter   | 60      | V                |
|           |                             | MJE181                 |                | 80      |                  |
|           |                             | MJE182                 |                | 100     |                  |
| $V_{CEO}$ | Collector-emitter voltage   | MJE180                 | Open base      | 40      | V                |
|           |                             | MJE181                 |                | 60      |                  |
|           |                             | MJE182                 |                | 80      |                  |
| $V_{EBO}$ | Emitter-base voltage        |                        | Open collector | 7       | V                |
| $I_C$     | Collector current           |                        |                | 3       | A                |
| $I_{CM}$  | Collector current-peak      |                        |                | 6       | A                |
| $I_B$     | Base current                |                        |                | 1       | A                |
| $P_C$     | Collector power dissipation | $T_a=25^\circ\text{C}$ |                | 1.5     | W                |
|           |                             | $T_c=25^\circ\text{C}$ |                | 12.5    |                  |
| $T_j$     | Junction temperature        |                        |                | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage temperature         |                        |                | -65~150 | $^\circ\text{C}$ |

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## CHARACTERISTICS

T<sub>j</sub>=25℃ unless otherwise specified

| SYMBOL                 | PARAMETER                            |        | CONDITIONS                                                       | MIN | TYP. | MAX        | UNIT     |
|------------------------|--------------------------------------|--------|------------------------------------------------------------------|-----|------|------------|----------|
| V <sub>(BR)CEO</sub>   | Collector-emitter breakdown voltage  | MJE180 | I <sub>C</sub> =10mA; I <sub>B</sub> =0                          | 40  |      |            | V        |
|                        |                                      | MJE181 |                                                                  | 60  |      |            |          |
|                        |                                      | MJE182 |                                                                  | 80  |      |            |          |
| V <sub>CE(sat)-1</sub> | Collector-emitter saturation voltage |        | I <sub>C</sub> =500mA ; I <sub>B</sub> =50mA                     |     |      | 0.3        | V        |
| V <sub>CE(sat)-2</sub> | Collector-emitter saturation voltage |        | I <sub>C</sub> =1.5A ; I <sub>B</sub> =150mA                     |     |      | 0.9        | V        |
| V <sub>CE(sat)-3</sub> | Collector-emitter saturation voltage |        | I <sub>C</sub> =3A ; I <sub>B</sub> =600mA                       |     |      | 1.7        | V        |
| V <sub>BE(sat)-1</sub> | Base-emitter saturation voltage      |        | I <sub>C</sub> =1.5A ; I <sub>B</sub> =150mA                     |     |      | 1.5        | V        |
| V <sub>BE(sat)-2</sub> | Base-emitter saturation voltage      |        | I <sub>C</sub> =3A ; I <sub>B</sub> =600mA                       |     |      | 2.0        | V        |
| V <sub>BE</sub>        | Base-emitter on voltage              |        | I <sub>C</sub> =500mA ; V <sub>CE</sub> =1V                      |     |      | 1.2        | V        |
| I <sub>CBO</sub>       | Collector cut-off current            | MJE180 | V <sub>CB</sub> =60V; I <sub>E</sub> =0<br>T <sub>C</sub> =150℃  |     |      | 0.1<br>0.1 | μA<br>mA |
|                        |                                      | MJE181 | V <sub>CB</sub> =80V; I <sub>E</sub> =0<br>T <sub>C</sub> =150℃  |     |      | 0.1<br>0.1 | μA<br>mA |
|                        |                                      | MJE182 | V <sub>CB</sub> =100V; I <sub>E</sub> =0<br>T <sub>C</sub> =150℃ |     |      | 0.1<br>0.1 | μA<br>mA |
| I <sub>EBO</sub>       | Emitter cut-off current              |        | V <sub>EB</sub> =7V; I <sub>C</sub> =0                           |     |      | 0.1        | μA       |
| h <sub>FE-1</sub>      | DC current gain                      |        | I <sub>C</sub> =100mA ; V <sub>CE</sub> =1V                      | 50  |      | 250        |          |
| h <sub>FE-2</sub>      | DC current gain                      |        | I <sub>C</sub> =500mA ; V <sub>CE</sub> =1V                      | 30  |      |            |          |
| h <sub>FE-3</sub>      | DC current gain                      |        | I <sub>C</sub> =1.5A ; V <sub>CE</sub> =1V                       | 12  |      |            |          |
| f <sub>T</sub>         | Transition frequency                 |        | I <sub>C</sub> =100mA ; V <sub>CE</sub> =10V                     | 50  |      |            | MHz      |
| C <sub>OB</sub>        | Output capacitance                   |        | I <sub>E</sub> =0 ; V <sub>CB</sub> =10V, f=0.1MHz               |     |      | 30         | pF       |

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## PACKAGE OUTLINE

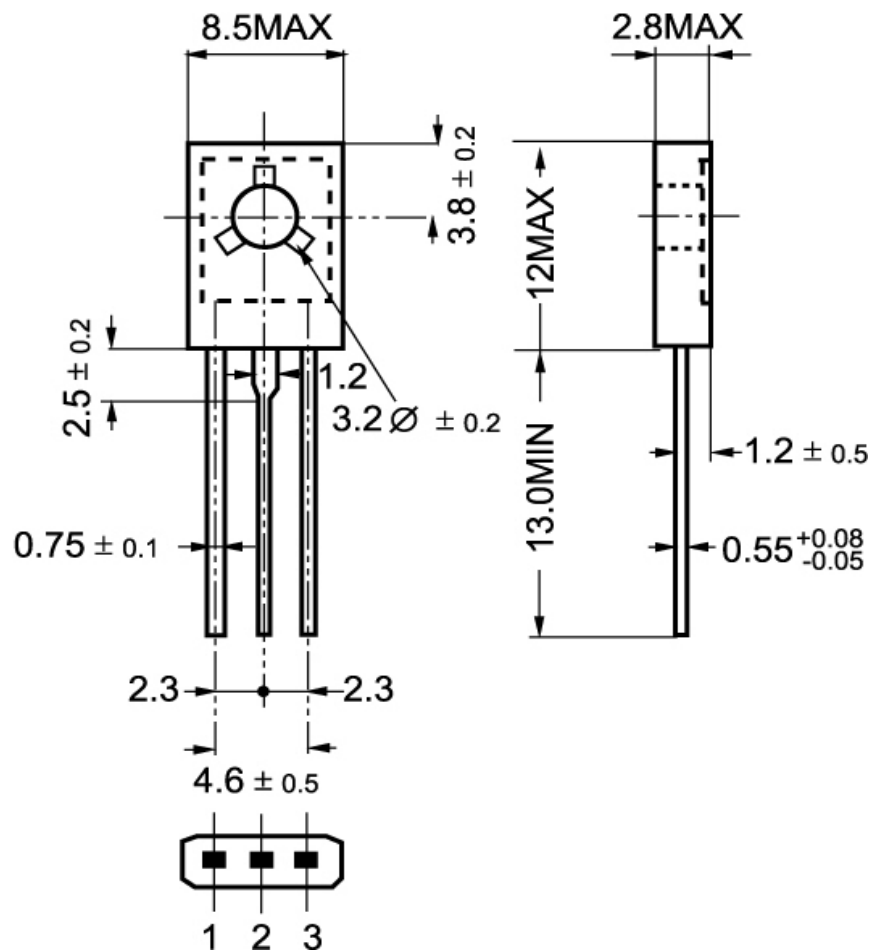


Fig.2 Outline dimensions