

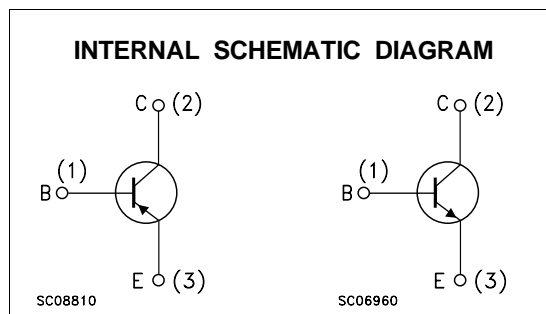
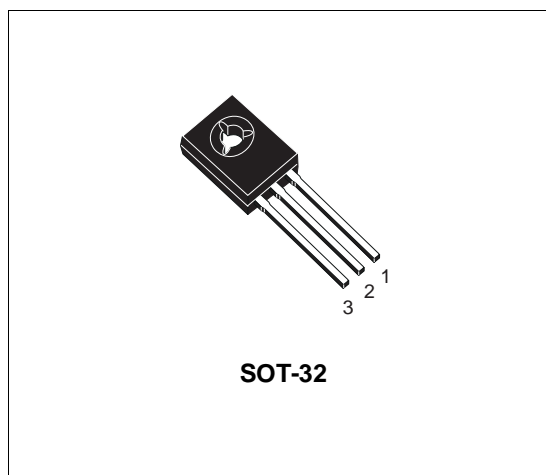
## COMPLEMENTARY SILICON POWER TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES
- COMPLEMENTARY PNP - NPN DEVICES

### DESCRIPTION

The MJE172 (PNP type) and MJE182 (NPN type) are silicon Epitaxial Planar, complementary transistors in Jedec SOT-32 plastic package.

They are designed for low power audio amplifier and low current, high speed switching applications.



### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter  | Value |            | Unit |
|-----------|--|-------|------------|------|
|           |  | NPN   | MJE182     |      |
|           |  | PNP   | MJE172     |      |
| $V_{CEO}$ | Collector-Emitter Voltage ( $I_B = 0$ )          |       | 80         | V    |
| $V_{CBO}$ | Collector-Base Voltage ( $I_E = 0$ )             |       | 100        | V    |
| $V_{EBO}$ | Base-Emitter Voltage ( $I_C = 0$ )               |       | 7          | V    |
| $I_C$     | Collector Current                                |       | 3          | A    |
| $I_{CM}$  | Collector Peak Current ( $t_p < 5$ ms)           |       | 6          | A    |
| $I_B$     | Base Current                                     |       | 1          | A    |
| $P_{tot}$ | Total Power Dissipation at $T_{case} \leq 25$ °C |       | 12.5       | W    |
| $T_{stg}$ | Storage Temperature                              |       | -65 to 150 | °C   |
| $T_j$     | Total Power Dissipation at $T_{case} \leq 25$ °C |       | 150        | °C   |

For PNP type voltage and current values are negative.

## MJE172 - MJE182

### THERMAL DATA

|                       |                                     |     |      |      |
|-----------------------|-------------------------------------|-----|------|------|
| R <sub>thj-amb</sub>  | Thermal Resistance Junction-ambient | Max | 83.4 | °C/W |
| R <sub>thj-case</sub> | Thermal Resistance Junction-case    | Max | 10   | °C/W |

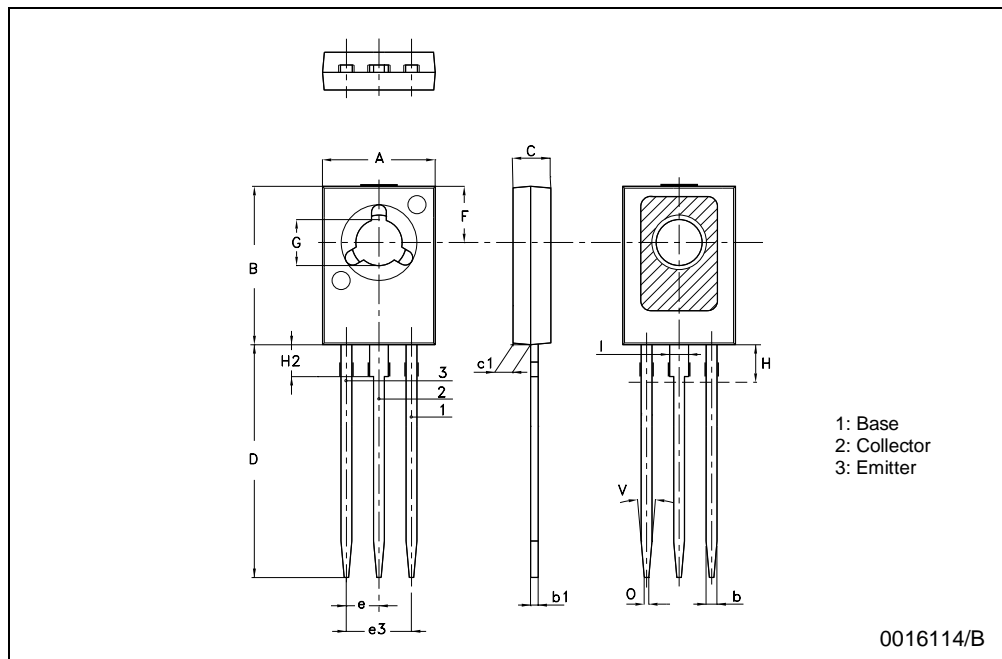
### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

| Symbol                 | Parameter   | Test Conditions  |   | Min.           | Typ. | Max.              | Unit        |
|------------------------|---|--|---|----------------|------|-------------------|-------------|
| I <sub>CBO</sub>       | Collector Cut-off Current (I <sub>E</sub> = 0)            | V <sub>CB</sub> = rated V <sub>CBO</sub><br>T <sub>case</sub> = 150°C      |   |                |      | 0.1<br>0.1        | μA<br>mA    |
| I <sub>EBO</sub>       | Emitter Cut-off Current (I <sub>C</sub> = 0)              | V <sub>EB</sub> = 7 V  |   |                |      | 0.1               | μA          |
| V <sub>CEO(sus)*</sub> | Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0) | I <sub>C</sub> = 10 mA   |   | 80             |      |                   | V           |
| V <sub>CE(sat)*</sub>  | Collector-Emitter Saturation Voltage                      | I <sub>C</sub> = 0.5 A<br>I <sub>C</sub> = 1.5 A<br>I <sub>C</sub> = 3 A   | I <sub>B</sub> = 50 mA<br>I <sub>B</sub> = 0.15 A<br>I <sub>B</sub> = 0.6 A |                |      | 0.3<br>0.9<br>1.7 | V<br>V<br>V |
| V <sub>BE(sat)*</sub>  | Base-Emitter on Voltage                                   | I <sub>C</sub> = 1.5 A<br>I <sub>C</sub> = 3 A                             | I <sub>B</sub> = 0.15 A<br>I <sub>B</sub> = 0.6 A                           |                |      | 1.5<br>2          | V<br>V      |
| V <sub>BE*</sub>       | Base-Emitter on Voltage                                   | I <sub>C</sub> = 0.5 A   | V <sub>CE</sub> = 1 V   |                |      | 1.2               | V           |
| h <sub>FE</sub>        | DC Current Gain   | I <sub>C</sub> = 0.1 A<br>I <sub>C</sub> = 0.5 A<br>I <sub>C</sub> = 1.5 A | V <sub>CE</sub> = 1 V<br>V <sub>CE</sub> = 1 V<br>V <sub>CE</sub> = 1 V     | 50<br>30<br>12 |      | 250               |             |
| f <sub>T</sub>         | Transistor Frequency                                      | I <sub>C</sub> = 0.1 A<br>f = 10 MHz                                       | V <sub>CE</sub> = 10 V  | 50             |      |                   | MHz         |
| C <sub>CBO</sub>       | Collector-base Capacitance                                | V <sub>CB</sub> = 10 V<br>for <b>MJE172</b><br>for <b>MJE182</b>           | I <sub>E</sub> = 0<br>f = 0.1MHz  |                |      | 60<br>40          | pF<br>pF    |

\* Pulsed: Pulse duration = 300μs, duty cycle ≤ 1.5%  
For PNP type voltage and current values are negative.

**SOT-32 (TO-126) MECHANICAL DATA**

| DIM. | mm   |      |      | inch  |       |       |
|------|------|------|------|-------|-------|-------|
|      | MIN. | TYP. | MAX. | MIN.  | TYP.  | MAX.  |
| A    | 7.4  |      | 7.8  | 0.291 |       | 0.307 |
| B    | 10.5 |      | 10.8 | 0.413 |       | 0.425 |
| b    | 0.7  |      | 0.9  | 0.028 |       | 0.035 |
| b1   | 0.40 |      | 0.65 | 0.015 |       | 0.025 |
| C    | 2.4  |      | 2.7  | 0.094 |       | 0.106 |
| c1   | 1.0  |      | 1.3  | 0.039 |       | 0.051 |
| D    | 15.4 |      | 16.0 | 0.606 |       | 0.630 |
| e    |      | 2.2  |      |       | 0.087 |       |
| e3   |      | 4.4  |      |       | 0.173 |       |
| F    |      | 3.8  |      |       | 0.150 |       |
| G    | 3    |      | 3.2  | 0.118 |       | 0.126 |
| H    |      |      | 2.54 |       |       | 0.100 |
| H2   |      | 2.15 |      |       | 0.084 |       |
| I    |      | 1.27 |      |       | 0.05  |       |
| O    |      | 0.3  |      |       | 0.011 |       |
| V    |      | 10°  |      |       | 10°   |       |



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