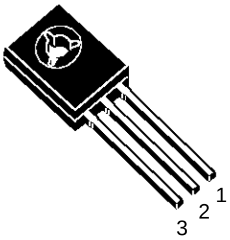
# MJE172
# MJE182

# COMPLEMENTARY SILICON POWER TRANSISTORS

- SGS-THOMSON PREFERRED SALESTYPES

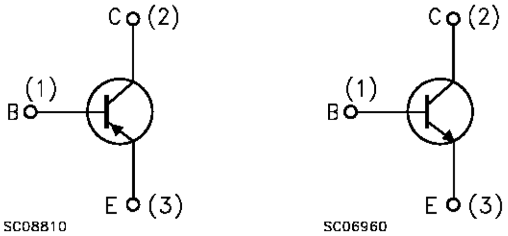
## DESCRIPTION

The MJE172 (PNP types) and MJE182 (NPN types) 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.



**SOT-32**

## INTERNAL SCHEMATIC DIAGRAM



## ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CEO}$ | Collector-Emitter Voltage ($I_B$ = 0) | 80 | V |
| $V_{CBO}$ | Collector-Base Voltage (IE = 0) | 100 | V |
| $V_{EBO}$ | Base-Emitter Voltage (IC = 0) | 7 | V |
| $I_C$ | Collector Current | 3 | A |
| $I_{CM}$ | Collector Peak Current | 6 | A |
| $I_B$ | Base Current | 1 | A |
| $P_{tot}$ | Total Power Dissipation at $T_{case} \leq 25\ ^oC$ | 12.5 | W |
| $T_{stg}$ | Storage Temperature | -65 to 150 | $^oC$ |
| $T_j$ | Max Operating Junction Temperature | 150 | $^oC$ |

For PNP types voltage and current values are negative.

## THERMAL DATA

| | | | | |
|---|---|---|---|---|
| $R_{thj-amb}$ | Thermal Resistance Junction-ambient | Max | 83.4 | $^oC/W$ |
| $R_{thj-case}$ | Thermal Resistance Junction-case | Max | 10 | $^oC/W$ |

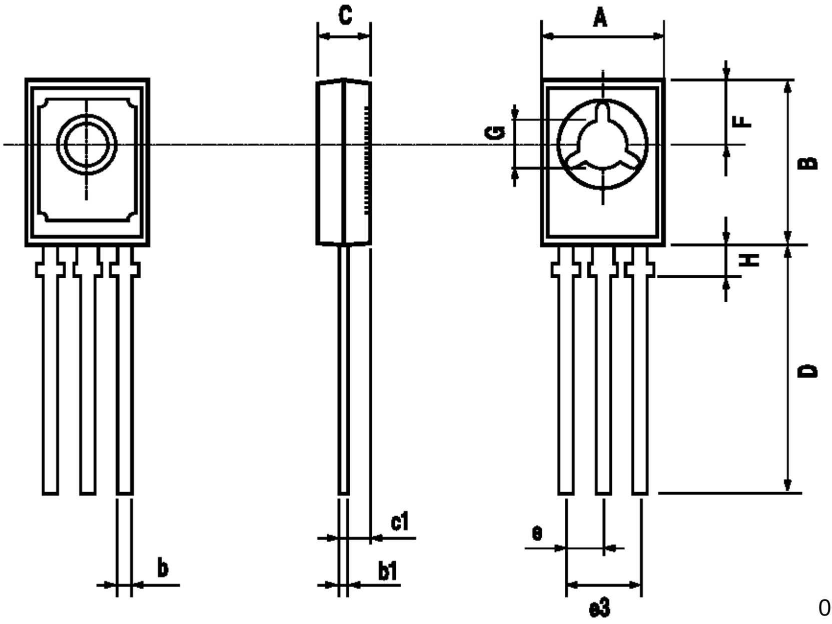
## ELECTRICAL CHARACTERISTICS ($T_{case}$ = 25 $^oC$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CBO}$ | Collector Cut-off Current ($I_E$ = 0) | $V_{CB}$ = rated $V_{CBO}$<br>$T_{CASE}$ = 150$^o$C | | | 0.1<br>0.1 | μA<br>mA |
| $I_{EBO}$ | Emitter Cut-off Current ($I_C$ = 0) | $V_{EB}$ = 7 V | | | 0.1 | μA |
| $V_{CEO(sus)}$* | Collector-Emitter Sustaining Voltage | $I_C$ = 10 mA | 80 | | | V |
| $V_{CE(sat)}$* | Collector-Emitter Sustaining Voltage | $I_C$ = 0.5 A $I_B$ = 50 mA<br>$I_C$ = 1.5 A $I_B$ = 0.15 A<br>$I_C$ = 3 A $I_B$ = 0.6 A | | | 0.3<br>0.9<br>1.7 | V<br>V<br>V |
| $V_{BE(sat)}$* | Base-Emitter on Voltage | $I_C$ = 1.5 A $I_B$ = 0.15 A<br>$I_C$ = 3 A $I_B$ = 0.6 A | | | 1.5<br>2 | V |
| $V_{BE}$* | Base-Emitter on Voltage | $I_C$ = 0.5 A $V_{CE}$ = 1 V | | | 1.2 | V |
| $h_{FE}$ | DC Current Gain | $I_C$ = 0.1 A $V_{CE}$ = 1 V<br>$I_C$ = 0.5 A $V_{CE}$ = 1 V<br>$I_C$ = 1.5 A $V_{CE}$ = 1 V | 50<br>30<br>12 | | 250 | |
| $f_T$ | Transistor Frequency | $I_C$ = 0.1 A $V_{CE}$ = 10 V<br>f = 10 MHz | 50 | | | MHz |
| $C_{CBO}$ | Collector-base Capacitance | $V_{CB}$ = 10 V $I_E$ = 0 f = 0.1MHz<br>for **MJE172**<br>for **MJE182** | | | <br>60<br>40 | <br>pF<br>pF |

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

## SOT-32 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 | | 0.445 |
| b | 0.7 | | 0.9 | 0.028 | | 0.035 |
| b1 | 0.49 | | 0.75 | 0.019 | | 0.030 |
| C | 2.4 | | 2.7 | 0.04 | | 0.106 |
| c1 | | 1.2 | | | 0.047 | |
| D | | 15.7 | | | 0.618 | |
| 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 |



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