

## Silicon NPN Power Transistors

2SD381

## DESCRIPTION

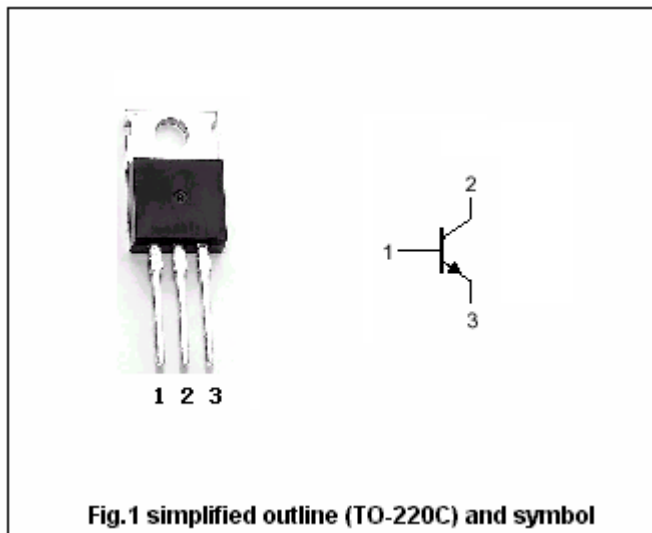
- With TO-220C package
- Complement to type 2SB536
- Low collector saturation voltage

## APPLICATIONS

- Audio frequency power amplifier
- Low speed power switching

## PINNING

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

Absolute maximum ratings( $T_a=25^{\circ}\text{C}$ )

| SYMBOL    | PARAMETER                 | CONDITIONS               | VALUE   | UNIT               |
|-----------|---------------------------|--------------------------|---------|--------------------|
| $V_{CBO}$ | Collector-base voltage    | Open emitter             | 130     | V                  |
| $V_{CEO}$ | Collector-emitter voltage | Open base                | 120     | V                  |
| $V_{EBO}$ | Emitter-base voltage      | Open collector           | 5       | V                  |
| $I_C$     | Collector current         |                          | 1.5     | A                  |
| $I_{CM}$  | Collector current-peak    |                          | 3.0     | A                  |
| $I_B$     | Base current              |                          | 0.3     | A                  |
| $P_T$     | Total power dissipation   | $T_a=25^{\circ}\text{C}$ | 1.5     | W                  |
|           |                           | $T_C=25^{\circ}\text{C}$ | 20      |                    |
| $T_j$     | Junction temperature      |                          | 150     | $^{\circ}\text{C}$ |
| $T_{stg}$ | Storage temperature       |                          | -50~150 | $^{\circ}\text{C}$ |

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## CHARACTERISTICS

T<sub>j</sub>=25°C unless otherwise specified

| SYMBOL               | PARAMETER                            | CONDITIONS                                       | MIN | TYP. | MAX | UNIT |
|----------------------|--------------------------------------|--------------------------------------------------|-----|------|-----|------|
| V <sub>(BR)CEO</sub> | Collector-emitter breakdown voltage  | I <sub>C</sub> =10mA; I <sub>B</sub> =0          | 120 |      |     | V    |
| V <sub>CEsat</sub>   | Collector-emitter saturation voltage | I <sub>C</sub> =1A; I <sub>B</sub> =0.1A         |     |      | 2.0 | V    |
| V <sub>BEsat</sub>   | Base-emitter saturation voltage      | I <sub>C</sub> =1A; I <sub>B</sub> =0.1A         |     |      | 1.5 | V    |
| I <sub>CBO</sub>     | Collector cut-off current            | V <sub>CB</sub> =120V; I <sub>E</sub> =0         |     |      | 1.0 | μ A  |
| I <sub>EBO</sub>     | Emitter cut-off current              | V <sub>EB</sub> =3V; I <sub>C</sub> =0           |     |      | 1.0 | μ A  |
| h <sub>FE-1</sub>    | DC current gain                      | I <sub>C</sub> =5mA ; V <sub>CE</sub> =5V        | 25  |      |     |      |
| h <sub>FE-2</sub>    | DC current gain                      | I <sub>C</sub> =0.3A ; V <sub>CE</sub> =5V       | 40  |      | 250 |      |
| C <sub>OB</sub>      | Output capacitance                   | I <sub>E</sub> =0 ; V <sub>CB</sub> =10V; f=1MHz |     | 25   |     | pF   |
| f <sub>T</sub>       | Transition frequency                 | I <sub>C</sub> =0.1A ; V <sub>CE</sub> =5V       |     | 45   |     | MHz  |

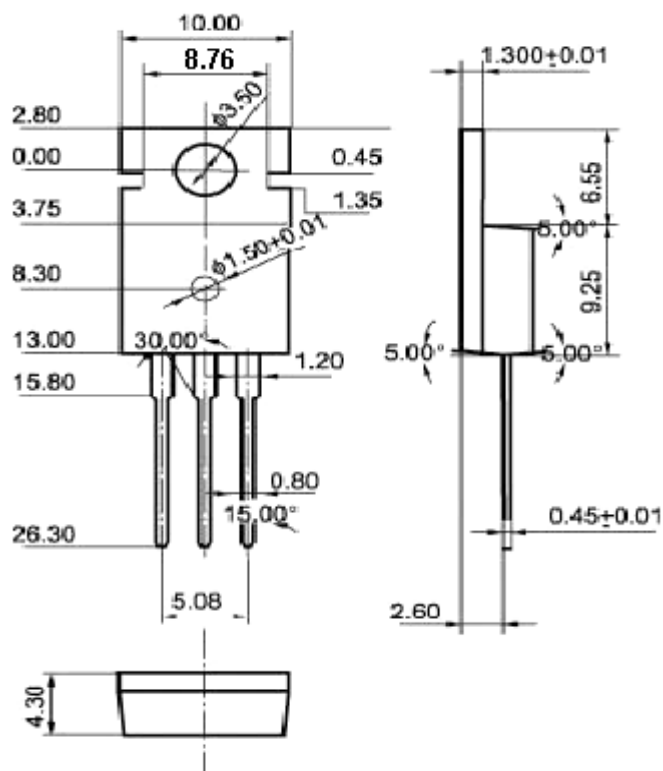
◆ h<sub>FE-2</sub> Classifications

| N     | M      | L      | K       |
|-------|--------|--------|---------|
| 40-80 | 60-120 | 80-160 | 120-250 |

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## PACKAGE OUTLINE

Fig.2 Outline dimensions (unindicated tolerance:  $\pm 0.10\text{mm}$ )