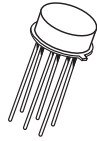


MD3250 MD3250A  
MD3251 MD3251A

DUAL PNP  
SILICON TRANSISTOR



TO-78 CASE

**Central**<sup>TM</sup>  
**Semiconductor Corp.**

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR MD3250 and MD3251 Series types are dual PNP silicon transistors, manufactured by the epitaxial planar process utilizing two individual chips mounted in a hermetically sealed metal case, designed for differential amplifier applications.

**MARKING: FULL PART NUMBER**

**MAXIMUM RATINGS:** ( $T_A=25^\circ\text{C}$ )

|  |
|--|
| Collector-Emitter Voltage                            |
| Collector-Base Voltage                               |
| Emitter-Base Voltage                                 |
| Continuous Collector Current                         |
| Power Dissipation (One Die)                          |
| Power Dissipation (Both Die)                         |
| Power Dissipation (One Die), $T_C=25^\circ\text{C}$  |
| Power Dissipation (Both Die), $T_C=25^\circ\text{C}$ |
| Operating and Storage Junction Temperature           |

| SYMBOL         |             | UNITS            |
|----------------|-------------|------------------|
| $V_{CEO}$      | 40          | V                |
| $V_{CBO}$      | 50          | V                |
| $V_{EBO}$      | 5.0         | V                |
| $I_C$          | 50          | mA               |
| $P_D$          | 575         | mW               |
| $P_D$          | 625         | mW               |
| $P_D$          | 1.8         | W                |
| $P_D$          | 2.5         | W                |
| $T_J, T_{stg}$ | -65 to +200 | $^\circ\text{C}$ |

**ELECTRICAL CHARACTERISTICS:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

| SYMBOL               | TEST CONDITIONS                                     | MIN  | MAX  | UNITS         |
|----------------------|---|------|------|---------------|
| $I_{CBO}$            | $V_{CB}=40\text{V}$                                 |      | 10   | nA            |
| $I_{CBO}$            | $V_{CB}=40\text{V}, T_A=150^\circ\text{C}$          |      | 10   | $\mu\text{A}$ |
| $I_{EBO}$            | $V_{BE}=3.0\text{V}$                                |      | 10   | nA            |
| $BV_{CEO}$           | $I_C=10\text{mA}$                                   | 40   |      | V             |
| $BV_{CBO}$           | $I_C=10\mu\text{A}$                                 | 50   |      | V             |
| $BV_{EBO}$           | $I_E=10\mu\text{A}$                                 | 5.0  |      | V             |
| $V_{CE}(\text{SAT})$ | $I_C=10\text{mA}, I_B=1.0\text{mA}$                 |      | 0.25 | V             |
| $V_{CE}(\text{SAT})$ | $I_C=50\text{mA}, I_B=5.0\text{mA}$                 |      | 0.50 | V             |
| $V_{BE}(\text{SAT})$ | $I_C=10\text{mA}, I_B=1.0\text{mA}$                 | 0.60 | 0.90 | V             |
| $V_{BE}(\text{SAT})$ | $I_C=50\text{mA}, I_B=5.0\text{mA}$                 |      | 1.2  | V             |
| $h_{FE}$             | $V_{CE}=5.0\text{V}, I_C=10\mu\text{A}$ (MD3250,A)  | 25   |      |               |
| $h_{FE}$             | $V_{CE}=5.0\text{V}, I_C=10\mu\text{A}$ (MD3251,A)  | 50   |      |               |
| $h_{FE}$             | $V_{CE}=5.0\text{V}, I_C=100\mu\text{A}$ (MD3250,A) | 50   | 150  |               |
| $h_{FE}$             | $V_{CE}=5.0\text{V}, I_C=100\mu\text{A}$ (MD3251,A) | 80   | 300  |               |
| $h_{FE}$             | $V_{CE}=5.0\text{V}, I_C=1.0\text{mA}$ (MD3250,A)   | 50   | 150  |               |
| $h_{FE}$             | $V_{CE}=5.0\text{V}, I_C=1.0\text{mA}$ (MD3251,A)   | 100  | 300  |               |
| $h_{FE}$             | $V_{CE}=5.0\text{V}, I_C=10\text{mA}$ (MD3250,A)    | 50   |      |               |
| $h_{FE}$             | $V_{CE}=5.0\text{V}, I_C=10\text{mA}$ (MD3251,A)    | 100  |      |               |

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DUAL PNP  
SILICON TRANSISTOR

**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

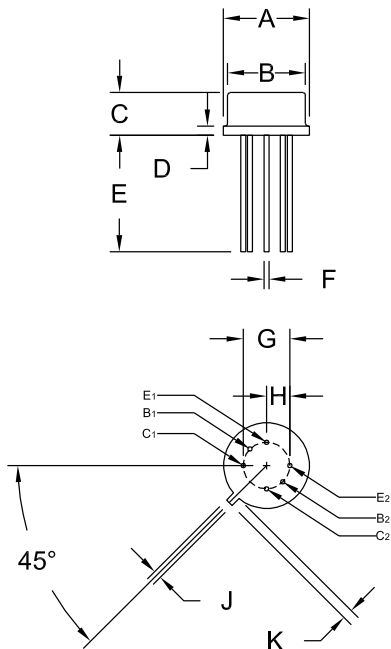
| SYMBOL   | TEST CONDITIONS  | MIN | MAX | UNITS |
|----------|--|-----|-----|-------|
| $h_{FE}$ | $V_{CE}=5.0\text{V}$ , $I_C=50\text{mA}$ (MD3250,A)                    | 15  |     |       |
| $h_{FE}$ | $V_{CE}=5.0\text{V}$ , $I_C=50\text{mA}$ (MD3251,A)                    | 30  |     |       |
| $f_T$    | $V_{CE}=20\text{V}$ , $I_C=10\text{mA}$ , $f=100\text{MHz}$ (MD3250,A) | 200 |     | MHz   |
| $f_T$    | $V_{CE}=20\text{V}$ , $I_C=10\text{mA}$ , $f=100\text{MHz}$ (MD3251,A) | 250 |     | MHz   |
| $C_{ob}$ | $V_{CB}=5.0\text{V}$ , $I_E=0$ , $f=100\text{kHz}$                     |     | 6.0 | pF    |
| $C_{ib}$ | $V_{BE}=1.0\text{V}$ , $I_C=0$ , $f=100\text{kHz}$                     |     | 8.0 | pF    |

**MATCHING CHARACTERISTICS:**

| SYMBOL                     | TEST CONDITIONS                             | MIN  | MAX | UNITS |
|----------------------------|---|------|-----|-------|
| $h_{FE1}/h_{FE2}$ (Note 1) | $V_{CE}=5.0\text{V}$ , $I_C=100\mu\text{A}$ | 0.90 | 1.0 |       |
| $h_{FE1}/h_{FE2}$ (Note 1) | $V_{CE}=5.0\text{V}$ , $I_C=1.0\text{mA}$   | 0.90 | 1.0 |       |
| $ V_{BE1}-V_{BE2} $        | $V_{CE}=5.0\text{V}$ , $I_C=10\mu\text{A}$  |      | 5.0 | mV    |
| $ V_{BE1}-V_{BE2} $        | $V_{CE}=5.0\text{V}$ , $I_C=100\mu\text{A}$ |      | 3.0 | mV    |
| $ V_{BE1}-V_{BE2} $        | $V_{CE}=5.0\text{V}$ , $I_C=10\text{mA}$    |      | 5.0 | mV    |

1) The lowest  $h_{FE}$  reading is taken as  $h_{FE1}$ .

**TO-78 CASE - MECHANICAL OUTLINE**



| SYMBOL  | DIMENSIONS |       |             |      |
|---------|------------|-------|-------------|------|
|         | INCHES     |       | MILLIMETERS |      |
|         | MIN        | MAX   | MIN         | MAX  |
| A (DIA) | 0.335      | 0.370 | 8.51        | 9.40 |
| B (DIA) | 0.305      | 0.335 | 7.75        | 8.51 |
| C       | 0.150      | 0.185 | 3.81        | 4.70 |
| D       | -          | 0.040 | -           | 1.02 |
| E       | 0.500      | -     | 12.70       | -    |
| F (DIA) | 0.016      | 0.021 | 0.41        | 0.53 |
| G       | 0.200      |       | 5.08        |      |
| H       | 0.100      |       | 2.54        |      |
| J       | 0.028      | 0.034 | 0.71        | 0.86 |
| K       | 0.029      | 0.045 | 0.74        | 1.14 |

TO-78 (REV: R1)

**MARKING: FULL PART NUMBER**

R1

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