

2N3250 2N3250A  
2N3251 2N3251A

**SILICON  
PNP TRANSISTORS**



**TO-18 CASE**



[www.centrasemi.com](http://www.centrasemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N3250, 2N3251 series devices are silicon PNP transistors designed for small signal, general purpose switching applications.

**MARKING: FULL PART NUMBER**

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

|                                                | SYMBOL         | 2N3250<br>2N3251 | 2N3250A<br>2N3251A | UNITS                |
|------------------------------------------------|----------------|------------------|--------------------|----------------------|
| Collector-Base Voltage                         | $V_{CBO}$      | 50               | 60                 | V                    |
| Collector-Emitter Voltage                      | $V_{CEO}$      | 40               | 60                 | V                    |
| Emitter-Base Voltage                           | $V_{EBO}$      |                  | 5.0                | V                    |
| Continuous Collector Current                   | $I_C$          |                  | 200                | mA                   |
| Power Dissipation                              | $P_D$          |                  | 360                | mW                   |
| Power Dissipation ( $T_C=25^{\circ}\text{C}$ ) | $P_D$          |                  | 1.2                | W                    |
| Operating and Storage Junction Temperature     | $T_J, T_{stg}$ | -65 to +200      |                    | $^{\circ}\text{C}$   |
| Thermal Resistance                             | $\Theta_{JC}$  |                  | 146                | $^{\circ}\text{C/W}$ |
| Thermal Resistance                             | $\Theta_{JA}$  |                  | 486                | $^{\circ}\text{C/W}$ |

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

| SYMBOL        | TEST CONDITIONS                         | MIN  | MAX  | UNITS |
|---------------|-----------------------------------------|------|------|-------|
| $I_{CEV}$     | $V_{CE}=40\text{V}, V_{EB}=3.0\text{V}$ |      | 20   | nA    |
| $BV_{CBO}$    | $I_C=10\mu\text{A}$ (2N3250, 2N3251)    | 50   |      | V     |
| $BV_{CBO}$    | $I_C=10\mu\text{A}$ (2N3250A, 2N3251A)  | 60   |      | V     |
| $BV_{CEO}$    | $I_C=10\text{mA}$ (2N3250, 2N3251)      | 40   |      | V     |
| $BV_{CEO}$    | $I_C=10\text{mA}$ (2N3250A, 2N3251A)    | 60   |      | V     |
| $BV_{EBO}$    | $I_E=10\mu\text{A}$                     | 5.0  |      | V     |
| $V_{CE(SAT)}$ | $I_C=10\text{mA}, I_B=1.0\text{mA}$     |      | 0.25 | V     |
| $V_{CE(SAT)}$ | $I_C=50\text{mA}, I_B=5.0\text{mA}$     |      | 0.50 | V     |
| $V_{BE(SAT)}$ | $I_C=10\text{mA}, I_B=1.0\text{mA}$     | 0.60 | 0.90 | V     |
| $V_{BE(SAT)}$ | $I_C=50\text{mA}, I_B=5.0\text{mA}$     |      | 1.20 | V     |

|          |                                        | 2N3250<br>2N3250A |     | 2N3251<br>2N3251A |     |
|----------|----------------------------------------|-------------------|-----|-------------------|-----|
|          |                                        | MIN               | MAX | MIN               | MAX |
| $h_{FE}$ | $V_{CE}=1.0\text{V}, I_C=0.1\text{mA}$ | 40                | -   | 80                | -   |
| $h_{FE}$ | $V_{CE}=1.0\text{V}, I_C=1.0\text{mA}$ | 45                | -   | 90                | -   |
| $h_{FE}$ | $V_{CE}=1.0\text{V}, I_C=10\text{mA}$  | 50                | 150 | 100               | 300 |
| $h_{FE}$ | $V_{CE}=1.0\text{V}, I_C=50\text{mA}$  | 15                | -   | 30                | -   |

R1 (4-March 2014)

2N3250 2N3250A  
2N3251 2N3251A

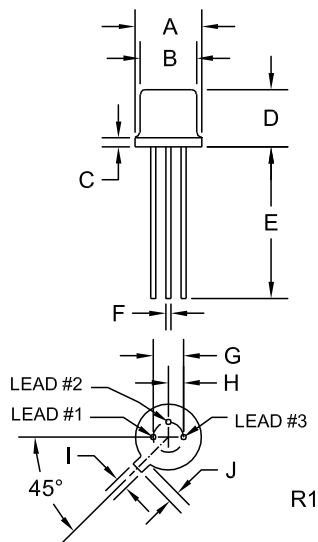
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ELECTRICAL CHARACTERISTICS - Continued: ( $T_A=25^\circ\text{C}$  unless otherwise noted)

| SYMBOL    | TEST CONDITIONS                                                                             | 2N3250  |     | 2N3251  |     | UNITS |
|-----------|---------------------------------------------------------------------------------------------|---------|-----|---------|-----|-------|
|           |                                                                                             | 2N3250A |     | 2N3251A |     |       |
| $f_T$     | $V_{CE}=20\text{V}$ , $I_C=10\text{mA}$ , $f=100\text{MHz}$                                 | 250     | -   | 300     | -   | MHz   |
| $C_{ob}$  | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=100\text{kHz}$                                           | -       | 6.0 | -       | 6.0 | pF    |
| $C_{ib}$  | $V_{EB}=1.0\text{V}$ , $I_C=0$ , $f=100\text{kHz}$                                          | -       | 8.0 | -       | 8.0 | pF    |
| NF        | $V_{CE}=5.0\text{V}$ , $I_C=100\mu\text{A}$ ,<br>$R_S=1.0\text{k}\Omega$ , $f=100\text{Hz}$ | -       | 6.0 | -       | 6.0 | dB    |
| $t_{on}$  | $V_{CC}=3.0\text{V}$ , $V_{BE}=0.5\text{V}$ ,<br>$I_C=10\text{mA}$ , $I_{B1}=1.0\text{mA}$  | -       | 70  | -       | 70  | ns    |
| $t_{off}$ | $V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ ,<br>$I_{B1}=I_{B2}=1.0\text{mA}$                  | -       | 225 | -       | 250 | ns    |

#### TO-18 CASE - MECHANICAL OUTLINE



| SYMBOL  | DIMENSIONS |             | MIN   | MAX  |
|---------|------------|-------------|-------|------|
|         | INCHES     | MILLIMETERS |       |      |
| A (DIA) | 0.209      | 0.230       | 5.31  | 5.84 |
| B (DIA) | 0.178      | 0.195       | 4.52  | 4.95 |
| C       | -          | 0.030       | -     | 0.76 |
| D       | 0.170      | 0.210       | 4.32  | 5.33 |
| E       | 0.500      | -           | 12.70 | -    |
| F (DIA) | 0.016      | 0.019       | 0.41  | 0.48 |
| G (DIA) | 0.100      | -           | 2.54  | -    |
| H       | 0.050      | -           | 1.27  | -    |
| I       | 0.036      | 0.046       | 0.91  | 1.17 |
| J       | 0.028      | 0.048       | 0.71  | 1.22 |

TO-18 (REV: R1)

#### LEAD CODE:

- 1) Emitter
- 2) Base
- 3) Collector

#### MARKING:

FULL PART NUMBER

R1 (4-March 2014)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix "TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix "PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

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