

**2N3053  
2N3053A**

**SILICON  
NPN TRANSISTORS**



**TO-39 CASE**



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

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N3053, 2N3053A types are epitaxial planar NPN silicon transistors designed for general purpose applications.

**MARKING: FULL PART NUMBER**

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

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

| SYMBOL         | 2N3053 | 2N3053A     | UNITS              |
|----------------|--------|-------------|--------------------|
| $V_{CBO}$      | 60     | 80          | V                  |
| $V_{CEO}$      | 40     | 60          | V                  |
| $V_{EBO}$      |        | 5.0         | V                  |
| $I_C$          |        | 0.7         | A                  |
| $P_D$          |        | 5.0         | W                  |
| $T_J, T_{stg}$ |        | -65 to +200 | $^\circ\text{C}$   |
| $\theta_{JC}$  |        | 35          | $^\circ\text{C/W}$ |

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

| SYMBOL        | TEST CONDITIONS                                       | 2N3053 |     | 2N3053A |     | UNITS |
|---------------|-------------------------------------------------------|--------|-----|---------|-----|-------|
|               |                                                       | MIN    | MAX | MIN     | MAX |       |
| $I_{CEV}$     | $V_{CE}=30\text{V}, V_{EB}=1.5\text{V}$               | -      | 250 | -       | -   | nA    |
| $I_{CEV}$     | $V_{CE}=60\text{V}, V_{EB}=1.5\text{V}$               | -      | -   | -       | 250 | nA    |
| $I_{EBO}$     | $V_{EB}=4.0\text{V}$                                  | -      | 250 | -       | 250 | nA    |
| $BV_{CBO}$    | $I_C=100\mu\text{A}$                                  | 60     | -   | 80      | -   | V     |
| $BV_{CER}$    | $I_C=100\text{mA}, R_{BE}=10\Omega$ (Note 1)          | 50     | -   | 70      | -   | V     |
| $BV_{CEO}$    | $I_C=100\text{mA}$ (Note 1)                           | 40     | -   | 60      | -   | V     |
| $BV_{EBO}$    | $I_E=100\mu\text{A}$                                  | 5.0    | -   | 5.0     | -   | V     |
| $V_{CE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$                   | -      | 1.4 | -       | 0.3 | V     |
| $V_{BE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$                   | -      | 1.7 | 0.6     | 1.0 | V     |
| $V_{BE(ON)}$  | $V_{CE}=2.5\text{V}, I_C=150\text{mA}$                | -      | 1.7 | -       | 1.0 | V     |
| $h_{FE}$      | $V_{CE}=2.5\text{V}, I_C=150\text{mA}$                | 25     | -   | 25      | -   |       |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=150\text{mA}$                 | 50     | 250 | 50      | 250 |       |
| $f_T$         | $V_{CE}=10\text{V}, I_C=50\text{mA}, f=100\text{MHz}$ | 100    | -   | 100     | -   | MHz   |
| $C_{ob}$      | $V_{CB}=10\text{V}, I_E=0, f=1.0\text{MHz}$           | -      | 15  | -       | 15  | pF    |
| $C_{ib}$      | $V_{BE}=0.5\text{V}, I_C=0, f=1.0\text{MHz}$          | -      | 80  | -       | 80  | pF    |

Notes: (1) Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .

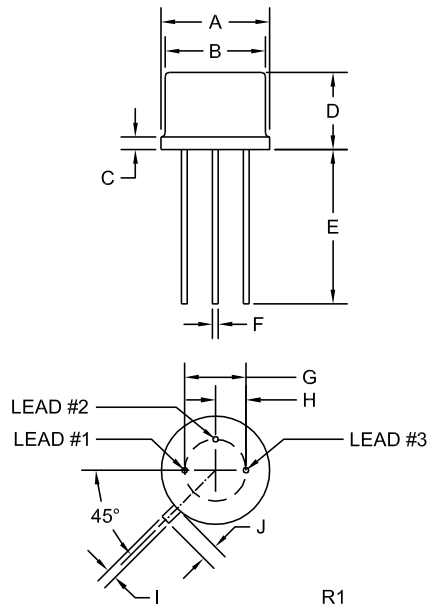
R2 (13-December 2013)

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# TO-39 CASE - MECHANICAL OUTLINE



| SYMBOL  | INCHES |       | MILLIMETERS |      |
|---------|--------|-------|-------------|------|
|         | MIN    | MAX   | MIN         | MAX  |
| A (DIA) | 0.335  | 0.370 | 8.51        | 9.40 |
| B (DIA) | 0.315  | 0.335 | 8.00        | 8.51 |
| C       | -      | 0.040 | -           | 1.02 |
| D       | 0.240  | 0.260 | 6.10        | 6.60 |
| E       | 0.500  | -     | 12.70       | -    |
| F (DIA) | 0.016  | 0.021 | 0.41        | 0.53 |
| G (DIA) | 0.200  |       | 5.08        |      |
| H       | 0.100  |       | 2.54        |      |
| I       | 0.028  | 0.034 | 0.71        | 0.86 |
| J       | 0.029  | 0.045 | 0.74        | 1.14 |

TO-39 (REV: R1)

## LEAD CODE:

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

MARKING: FULL PART NUMBER

R2 (13-December 2013)

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## 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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