

2N4033

PNP SILICON TRANSISTOR



TO-39 CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N4033 type is a PNP silicon transistor manufactured by the epitaxial planar process, designed for high current general purpose amplifier 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                            |
| Power Dissipation ( $T_C=25^\circ\text{C}$ ) |
| Operating and Storage Junction Temperature   |
| Thermal Resistance                           |
| Thermal Resistance                           |

SYMBOL

|                |             |
|----------------|-------------|
| $V_{CBO}$      | 80          |
| $V_{CEO}$      | 80          |
| $V_{EBO}$      | 5.0         |
| $I_C$          | 1.0         |
| $P_D$          | 1.25        |
| $P_D$          | 7.0         |
| $T_J, T_{stg}$ | -65 to +200 |
| $\Theta_{JA}$  | 140         |
| $\Theta_{JC}$  | 20          |

UNITS

|                    |
|--------------------|
| V                  |
| V                  |
| V                  |
| A                  |
| W                  |
| W                  |
| $^\circ\text{C}$   |
| $^\circ\text{C/W}$ |
| $^\circ\text{C/W}$ |

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

| SYMBOL        | TEST CONDITIONS                               | MIN | MAX  | UNITS         |
|---------------|-----------------------------------------------|-----|------|---------------|
| $I_{CBO}$     | $V_{CB}=60\text{V}$                           |     | 50   | nA            |
| $I_{CBO}$     | $V_{CB}=60\text{V}, T_A=150^\circ\text{C}$    |     | 50   | $\mu\text{A}$ |
| $I_{EBO}$     | $V_{EB}=5.0\text{V}$                          |     | 10   | $\mu\text{A}$ |
| $BV_{CBO}$    | $I_C=10\mu\text{A}$                           | 80  |      | V             |
| $BV_{CEO}$    | $I_C=10\text{mA}$                             | 80  |      | V             |
| $BV_{EBO}$    | $I_E=10\mu\text{A}$                           | 5.0 |      | V             |
| $V_{CE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$           |     | 0.15 | V             |
| $V_{CE(SAT)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$           |     | 0.50 | V             |
| $V_{BE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$           |     | 0.90 | V             |
| $V_{BE(ON)}$  | $V_{CE}=0.5\text{V}, I_C=500\text{mA}$        |     | 1.10 | V             |
| $h_{FE}$      | $V_{CE}=5.0\text{V}, I_C=0.1\text{mA}$        | 75  |      |               |
| $h_{FE}$      | $V_{CE}=5.0\text{V}, I_C=100\text{mA}$        | 100 | 300  |               |
| $h_{FE}$      | $V_{CE}=5.0\text{V}, I_C=500\text{mA}$        | 70  |      |               |
| $h_{FE}$      | $V_{CE}=5.0\text{V}, I_C=1.0\text{A}$         | 25  |      |               |
| $f_T$         | $V_{CE}=10\text{V}, I_C=50\text{mA}$          | 100 | 400  | MHz           |
| $C_{ob}$      | $V_{CB}=10\text{V}, I_E=0, f=1.0\text{MHz}$   |     | 20   | pF            |
| $C_{ib}$      | $V_{EB}=0.5\text{V}, I_C=0, f=1.0\text{MHz}$  |     | 110  | pF            |
| $t_{on}$      | $I_C=500\text{mA}, I_{B1}=50\text{mA}$        |     | 100  | ns            |
| $t_s$         | $I_C=500\text{mA}, I_{B1}=I_{B2}=50\text{mA}$ |     | 350  | ns            |
| $t_f$         | $I_C=500\text{mA}, I_{B1}=I_{B2}=50\text{mA}$ |     | 50   | ns            |

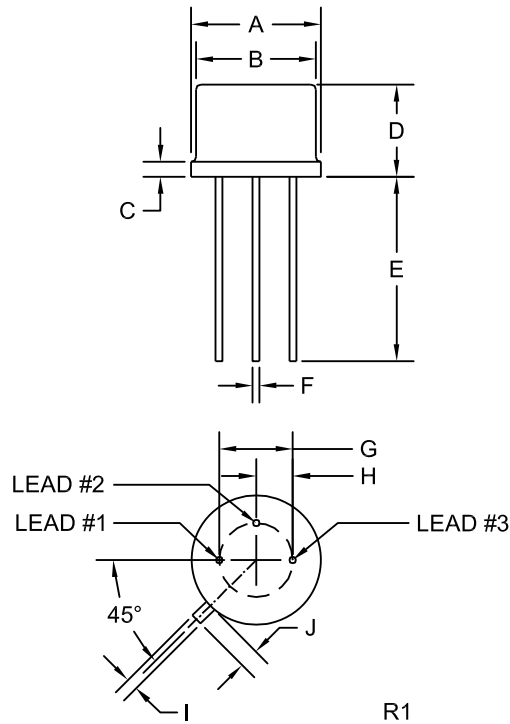
R1 (15-March 2012)

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TO-39 CASE - MECHANICAL OUTLINE



| DIMENSIONS |        |       |             |      |
|------------|--------|-------|-------------|------|
| 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

R1 (15-March 2012)

## 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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