



THE DATASHEET OF
2202233



2N3019
2N3020

NPN SILICON TRANSISTOR



TO-39 CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N3019, 2N3020 types are NPN silicon transistors designed for 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 |

| SYMBOL | | UNITS |
|----------------|-------------|------------------|
| V_{CB0} | 140 | V |
| V_{CEO} | 80 | V |
| V_{EBO} | 7.0 | V |
| I_C | 1.0 | A |
| P_D | 0.8 | W |
| P_D | 5.0 | 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 | 2N3019 | | 2N3020 | | UNITS |
|---------------|---|--------|-----|--------|-----|---------------|
| | | MIN | MAX | MIN | MAX | |
| I_{CBO} | $V_{CB}=90\text{V}$ | - | 10 | - | 10 | nA |
| I_{CBO} | $V_{CB}=90\text{V}, T_A=150^\circ\text{C}$ | - | 10 | - | 10 | μA |
| I_{EBO} | $V_{EB}=5.0\text{V}$ | - | 10 | - | 10 | nA |
| BV_{CB0} | $I_C=100\mu\text{A}$ | 140 | - | 140 | - | V |
| BV_{CEO} | $I_C=30\text{mA}$ | 80 | - | 80 | - | V |
| BV_{EBO} | $I_E=100\mu\text{A}$ | 7.0 | - | 7.0 | - | V |
| $V_{CE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$ | - | 0.2 | - | 0.2 | V |
| $V_{CE(SAT)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$ | - | 0.5 | - | 0.5 | V |
| $V_{BE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$ | - | 1.1 | - | 1.1 | V |
| h_{FE} | $V_{CE}=10\text{V}, I_C=100\mu\text{A}$ | 50 | - | 30 | 200 | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=10\text{mA}$ | 90 | - | 40 | 200 | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=150\text{mA}$ | 100 | 300 | 40 | 200 | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=150\text{mA}, T_A=-55^\circ\text{C}$ | 40 | - | - | - | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=500\text{mA}$ | 50 | - | 30 | 120 | |
| h_{FE} | $V_{CE}=10\text{V}, I_C=1.0\text{A}$ | 15 | - | 15 | - | |
| f_T | $V_{CE}=10\text{V}, I_C=50\text{mA}, f=20\text{MHz}$ | 100 | - | 100 | - | MHz |
| C_{ob} | $V_{CB}=10\text{V}, I_E=0, f=1.0\text{MHz}$ | - | 12 | - | 12 | pF |
| C_{ib} | $V_{EB}=0.5\text{V}, I_C=0, f=1.0\text{MHz}$ | - | 60 | - | 60 | pF |
| $r_b'C_c$ | $V_{CB}=10\text{V}, I_C=10\text{mA}, f=4.0\text{MHz}$ | - | 400 | - | 400 | ps |
| NF | $V_{CE}=10\text{V}, I_C=100\mu\text{A}, f=1.0\text{kHz}, R_S=1.0\text{k}\Omega$ | - | 4.0 | - | - | dB |

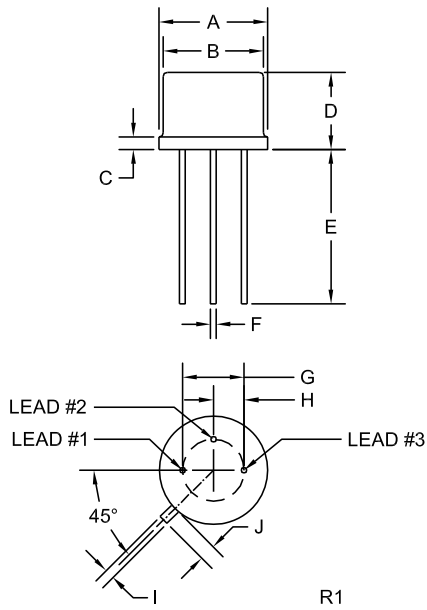
R3 (22-July 2021)

2N3019
2N3020

NPN SILICON TRANSISTOR



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

R3 (22-July 2021)

OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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

DESIGNER SUPPORT/SERVICES

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

- Free quick ship samples (2nd 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

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).

CONTACT US

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