

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

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Manufacturers of World Class Discrete Semiconductors

2N2102  
2N2102A

NPN SILICON TRANSISTOR

JEDEC TO-39 CASE

**DESCRIPTION**

The CENTRAL SEMICONDUCTOR 2N2102,A types are NPN Silicon Transistors designed for high current general purpose amplifier applications, where low leakage and low  $V_{CE(SAT)}$  is required. Higher  $h_{FE}$  versions are also available on special order.

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

|                                                 | SYMBOL         |             | UNIT               |
|-------------------------------------------------|----------------|-------------|--------------------|
| Collector Base Voltage                          | $V_{CB0}$      | 120         | V                  |
| Collector Emitter Voltage ( $R_{BE}=10\Omega$ ) | $V_{CER}$      | 80          | V                  |
| Collector Emitter Voltage                       | $V_{CEO}$      | 65          | V                  |
| Emitter Base Voltage                            | $V_{EB0}$      | 7.0         | V                  |
| Collector Current                               | $I_C$          | 1.0         | A                  |
| Power Dissipation                               | $P_D$          | 1.0         | W                  |
| Power Dissipation ( $T_C=25^\circ\text{C}$ )    | $P_D$          | 5.0         | W                  |
| Operating and Storage Junction Temperature      | $T_J, T_{stg}$ | -65 TO +200 | $^\circ\text{C}$   |
| Thermal Resistance                              | $\theta_{JA}$  | 175         | $^\circ\text{C/W}$ |
| Thermal Resistance                              | $\theta_{JC}$  | 35          | $^\circ\text{C/W}$ |

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

| SYMBOL        | TEST CONDITIONS                                                                                                | MIN  | MAX                | UNIT            |
|---------------|----------------------------------------------------------------------------------------------------------------|------|--------------------|-----------------|
| $I_{CB0}$     | $V_{CB}=60\text{V}$                                                                                            |      | 2.0                | nA              |
| $I_{CB0}$     | $V_{CB}=60\text{V}, T_A=150^\circ\text{C}$                                                                     |      | 2.0                | $\mu\text{A}$   |
| $I_{EB0}$     | $V_{BE}=5.0\text{V}$                                                                                           |      | 2.0                | nA              |
| $BV_{CB0}$    | $I_C=100\mu\text{A}$                                                                                           | 120  |                    | V               |
| $BV_{CER}$    | $I_C=100\text{mA}, R_{BE}=10\Omega$                                                                            | 80   |                    | V               |
| $BV_{CEO}$    | $I_C=100\text{mA}$                                                                                             | 65   |                    | V               |
| $BV_{EB0}$    | $I_E=100\mu\text{A}$                                                                                           | 7.0  |                    | V               |
| $V_{CE(SAT)}$ | $I_C=150\text{mA}$ (2N2102)                                                                                    |      | 0.5                | V               |
| $V_{CE(SAT)}$ | $I_C=150\text{mA}$ (2N2102A)                                                                                   |      | 0.3                | V               |
| $V_{BE(SAT)}$ | $I_C=150\text{mA}, I_B=15\text{mA}$                                                                            |      | 1.1                | V               |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=10\mu\text{A}$                                                                         | 10   |                    |                 |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=100\mu\text{A}$                                                                        | 20   |                    |                 |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=10\text{mA}$                                                                           | 35   |                    |                 |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=10\text{mA}, T_C=55^\circ\text{C}$                                                     | 20   |                    |                 |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=150\text{mA}$                                                                          | 40   | 120                |                 |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=500\text{mA}$                                                                          | 25   |                    |                 |
| $h_{FE}$      | $V_{CE}=10\text{V}, I_C=1.0\text{A}$                                                                           | 10   |                    |                 |
| $h_{fe}$      | $V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$                                                        | 30   | 100                |                 |
| $h_{fe}$      | $V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$                                                         | 35   | 150                |                 |
| $h_{ib}$      | $V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$                                                        | 24   | 34                 | $\Omega$        |
| $h_{ib}$      | $V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$                                                         | 4.0  | 8.0                | $\Omega$        |
| $h_{rb}$      | $V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$                                                        |      | $3 \times 10^{-4}$ |                 |
| $h_{rb}$      | $V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$                                                         |      | $3 \times 10^{-4}$ |                 |
| $h_{ob}$      | $V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$                                                        | 0.08 | 0.5                | $\mu\text{mho}$ |
| $h_{ob}$      | $V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$                                                         | 0.08 | 1.0                | $\mu\text{mho}$ |
| $f_T$         | $V_{CE}=10\text{V}, I_C=50\text{mA}, f=20\text{MHz}$                                                           | 60   |                    | MHz             |
| $C_{ob}$      | $V_{CB}=10\text{V}, I_E=0, f=100\text{kHz}$                                                                    |      | 15                 | pF              |
| $C_{ib}$      | $V_{BE}=0.5\text{V}, I_C=0, f=100\text{kHz}$                                                                   |      | 80                 | pF              |
| NF            | $V_{CE}=10\text{V}, I_C=300\mu\text{A}, R_S=1.0\text{k}\Omega, f=1.0\text{kHz}, \text{Bandwidth}=1.0\text{Hz}$ |      | 6.0                | dB              |

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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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- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
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### CONTACT US

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