

CentralTM Semiconductor Corp.

145 Adams Avenue, Hauppauge, NY 11788 USA
Tel: (631) 435-1110 • Fax: (631) 435-1824

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_{EBO} | 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 | θ_{JA} | 175 | $^\circ\text{C/W}$ |
| Thermal Resistance | θ_{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 | μA |
| I_{EBO} | $V_{BE}=5.0\text{V}$ | | 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_{EBO} | $I_E=100\mu\text{A}$ | 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 | Ω |
| h_{ib} | $V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$ | 4.0 | 8.0 | Ω |
| h_{rb} | $V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$ | | 3×10^{-4} | |
| h_{rb} | $V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$ | | 3×10^{-4} | |
| h_{ob} | $V_{CE}=5.0\text{V}, I_C=1.0\text{mA}, f=1.0\text{kHz}$ | 0.08 | 0.5 | μmho |
| h_{ob} | $V_{CE}=10\text{V}, I_C=5.0\text{mA}, f=1.0\text{kHz}$ | 0.08 | 1.0 | μmho |
| 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 |

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

Corporate Headquarters & Customer Support Team

Central Semiconductor Corp.
145 Adams Avenue
Hauppauge, NY 11788 USA
Main Tel: (631) 435-1110
Main Fax: (631) 435-1824
Support Team Fax: (631) 435-3388
www.centrasemi.com

Worldwide Field Representatives:
www.centrasemi.com/wwreps

Worldwide Distributors:
www.centrasemi.com/wwdistributors

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