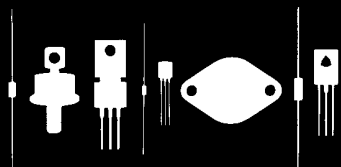


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145 Adams Avenue  
Hauppauge, New York 11788



2N4960 2N4961 TO-39 CASE  
2N4962 2N4963 TO-18 CASE

NPN SILICON TRANSISTORS

DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N4960 Series types are Silicon NPN Epitaxial Planar Transistors designed for general purpose amplifier and switching applications.

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

|  | SYMBOL         | 2N4960, 2N4962        | 2N4961, 2N4963        | UNIT               |
|--|----------------|-----------------------|-----------------------|--------------------|
| Collector-Base Voltage                         | $V_{CB0}$      | 60                    | 80                    | V                  |
| Collector-Emitter Voltage                      | $V_{CE0}$      | 60                    | 80                    | V                  |
| Emitter-Base Voltage                           | $V_{EB0}$      | 6.5                   | 6.5                   | V                  |
| Collector Current                              | $I_C$          | 1.0                   | 1.0                   | A                  |
|  |                | <u>2N4960, 2N4961</u> | <u>2N4962, 2N4963</u> |                    |
| Power Dissipation                              | $P_D$          | 0.8                   | 0.5                   | W                  |
| Power Dissipation ( $T_C=25^{\circ}\text{C}$ ) | $P_D$          | 3.5                   | 1.5                   | W                  |
| Operating & Storage Junc. Temp.                | $T_J, T_{stg}$ | -65 TO +200           |                       | $^{\circ}\text{C}$ |

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

| SYMBOL               | TEST CONDITIONS                                       | MIN  | MAX  | UNIT |
|----------------------|---|------|------|------|
| $I_{CB0}$            | $V_{CB}=50\text{V}$                                   |      | 10   | nA   |
| $I_{EB0}$            | $V_{EB}=4.0\text{V}$                                  |      | 10   | nA   |
| $BV_{CB0}$           | $I_C=10\mu\text{A}$ (2N4960,2)                        | 60   |      | V    |
| $BV_{CB0}$           | $I_C=10\mu\text{A}$ (2N4961,3)                        | 80   |      | V    |
| $BV_{CES}$           | $I_C=10\mu\text{A}$ (2N4960,2)                        | 60   |      | V    |
| $BV_{CES}$           | $I_C=10\mu\text{A}$ (2N4961,3)                        | 80   |      | V    |
| $BV_{CE0}$           | $I_C=10\text{mA}$ (2N4960,2)                          | 60   |      | V    |
| $BV_{CE0}$           | $I_C=10\text{mA}$ (2N4961,3)                          | 80   |      | V    |
| $BV_{EB0}$           | $I_E=10\mu\text{A}$                                   | 6.5  |      | V    |
| $V_{CE}(\text{SAT})$ | $I_C=10\text{mA}, I_B=1.0\text{mA}$                   |      | 0.07 | V    |
| $V_{CE}(\text{SAT})$ | $I_C=150\text{mA}, I_B=15\text{mA}$                   |      | 0.18 | V    |
| $V_{CE}(\text{SAT})$ | $I_C=300\text{mA}, I_B=30\text{mA}$                   |      | 0.31 | V    |
| $V_{CE}(\text{SAT})$ | $I_C=500\text{mA}, I_B=50\text{mA}$                   |      | 0.5  | V    |
| $V_{BE}(\text{SAT})$ | $I_C=10\text{mA}, I_B=1.0\text{mA}$                   |      | 0.72 | V    |
| $V_{BE}(\text{SAT})$ | $I_C=150\text{mA}, I_B=15\text{mA}$                   | 0.78 | 0.90 | V    |
| $V_{BE}(\text{SAT})$ | $I_C=300\text{mA}, I_B=30\text{mA}$                   |      | 1.05 | V    |
| $V_{BE}(\text{SAT})$ | $I_C=500\text{mA}, I_B=50\text{mA}$                   |      | 1.30 | V    |
| $V_{BE}(\text{ON})$  | $V_{CE}=10\text{V}, I_C=150\text{mA}$                 |      | 0.88 | V    |
| $h_{FE}$             | $V_{CE}=10\text{V}, I_C=100\mu\text{A}$               | 30   |      |      |
| $h_{FE}$             | $V_{CE}=10\text{V}, I_C=1.0\text{mA}$                 | 60   |      |      |
| $h_{FE}$             | $V_{CE}=10\text{V}, I_C=10\text{mA}$                  | 90   |      |      |
| $h_{FE}$             | $V_{CE}=10\text{V}, I_C=50\text{mA}$                  | 100  |      |      |
| $h_{FE}$             | $V_{CE}=1.0\text{V}, I_C=150\text{mA}$                | 40   |      |      |
| $h_{FE}$             | $V_{CE}=10\text{V}, I_C=150\text{mA}$                 | 100  | 300  |      |
| $h_{FE}$             | $V_{CE}=10\text{V}, I_C=300\text{mA}$                 | 70   |      |      |
| $h_{FE}$             | $V_{CE}=10\text{V}, I_C=500\text{mA}$                 | 45   |      |      |
| $f_T$                | $V_{CE}=10\text{V}, I_C=50\text{mA}, f=100\text{MHz}$ | 100  |      | MHz  |
| $C_{ob}$             | $V_{CB}=10\text{V}, I_E=0, f=1.0\text{MHz}$           |      | 15   | pF   |
| $C_{ib}$             | $V_{EB}=0.5\text{V}, I_C=0, f=1.0\text{MHz}$          |      | 75   | pF   |

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

## 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

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

**Worldwide Field Representatives:**  
[www.centrasemi.com/wwreps](http://www.centrasemi.com/wwreps)

**Worldwide Distributors:**  
[www.centrasemi.com/wwdistributors](http://www.centrasemi.com/wwdistributors)

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