

# Small Signal Transistors

## TO-18 Case (Continued)



| TYPE NO. | DESCRIPTION     | BV <sub>CBO</sub><br>(V)<br>MIN | BV <sub>CEO</sub><br>(V)<br>MIN | BV <sub>EBO</sub><br>(V)<br>MIN | I <sub>CBO</sub> @<br>(mA)<br>MAX<br>*I <sub>CES</sub><br>**I <sub>CEV</sub> | V <sub>CB</sub><br>(V) | h <sub>FE</sub> |     | @ I <sub>C</sub><br>(mA) | @ V <sub>CE</sub><br>(V) | V <sub>CE(SAT)</sub> @ I <sub>C</sub><br>(V)<br>MAX | C <sub>ob</sub><br>(pF)<br>MAX | f <sub>T</sub><br>(MHz)<br>MIN | NF<br>(dB)<br>MAX | t <sub>on</sub><br>(ns)<br>MAX | t <sub>off</sub><br>(ns)<br>MAX |
|----------|-----------------|---------------------------------|---------------------------------|---------------------------------|------------------------------------------------------------------------------|------------------------|-----------------|-----|--------------------------|--------------------------|-----------------------------------------------------|--------------------------------|--------------------------------|-------------------|--------------------------------|---------------------------------|
|          |                 |                                 |                                 |                                 |                                                                              |                        | MIN             | MAX |                          |                          |                                                     |                                |                                |                   |                                |                                 |
| 2N2896   | NPN AMPL/SWITCH | 140                             | 90                              | 7.0                             | 0.01                                                                         | 60                     | 60              | 200 | 150                      | 10                       | 0.6                                                 | 150                            | 15                             | 120               | --                             | --                              |
| 2N2897   | NPN AMPL/SWITCH | 60                              | 45                              | 7.0                             | 0.05                                                                         | 60                     | 50              | 200 | 150                      | 10                       | 1.0                                                 | 150                            | 15                             | 100               | --                             | --                              |
| 2N2906   | PNP AMPL/SWITCH | 60                              | 60                              | 5.0                             | 0.01                                                                         | 50                     | 40              | 120 | 150                      | 10                       | 0.4                                                 | 150                            | 8.0                            | 200               | --                             | 100                             |
| 2N2906A  | PNP AMPL/SWITCH | 60                              | 60                              | 5.0                             | 0.01                                                                         | 50                     | 40              | 120 | 150                      | 10                       | 0.4                                                 | 150                            | 8.0                            | 200               | --                             | 100                             |
| 2N2907   | PNP AMPL/SWITCH | 60                              | 60                              | 5.0                             | 0.01                                                                         | 50                     | 100             | 300 | 150                      | 10                       | 0.4                                                 | 150                            | 8.0                            | 200               | --                             | 100                             |
| 2N2907A  | PNP AMPL/SWITCH | 60                              | 60                              | 5.0                             | 0.01                                                                         | 50                     | 100             | 300 | 150                      | 10                       | 0.4                                                 | 150                            | 8.0                            | 200               | --                             | 100                             |
| 2N2952   | NPN AMPL/SWITCH | 60                              | 20                              | 5.0                             | 0.1                                                                          | 50                     | 20              | --  | 150                      | 10                       | 0.5                                                 | 150                            | 8.0                            | 200               | --                             | --                              |
| 2N3009   | NPN SAT SWITCH  | 40                              | 15                              | 4.0                             | 0.5*                                                                         | 20                     | 30              | 120 | 30                       | 0.4                      | 0.5                                                 | 300                            | 5.0                            | 350               | --                             | 15                              |
| 2N3011   | NPN SAT SWITCH  | 30                              | 12                              | 5.0                             | 0.4*                                                                         | 20                     | 30              | 120 | 10                       | 0.35                     | 0.5                                                 | 100                            | 4.0                            | 400               | --                             | 15                              |
| 2N3012   | PNP SAT SWITCH  | 12                              | 12                              | 4.0                             | 0.08*                                                                        | 6.0                    | 30              | 120 | 30                       | 0.5                      | 0.2                                                 | 30                             | 6.0                            | 400               | --                             | 60                              |
| 2N3013   | NPN SAT SWITCH  | 40                              | 15                              | 5.0                             | 0.3*                                                                         | 20                     | 30              | 120 | 30                       | 0.4                      | 0.5                                                 | 300                            | 5.0                            | 350               | --                             | 15                              |
| 2N3014   | NPN SAT SWITCH  | 40                              | 20                              | 5.0                             | 0.3*                                                                         | 20                     | 30              | 120 | 30                       | 0.4                      | 0.35                                                | 100                            | 5.0                            | 350               | --                             | 16                              |
| 2N3073   | PNP AMPL/SWITCH | 60                              | 60                              | 4.0                             | 0.01*                                                                        | 30                     | 30              | 130 | 50                       | 1.0                      | 0.25                                                | 50                             | 10                             | 130               | --                             | 40                              |
| 2N3115   | NPN AMPL/SWITCH | 20                              | 20                              | 5.0                             | --                                                                           | --                     | 40              | 120 | 150                      | 10                       | 0.5                                                 | 150                            | 8.0                            | 250               | --                             | --                              |
| 2N3116   | NPN AMPL/SWITCH | 20                              | 20                              | 5.0                             | --                                                                           | --                     | 100             | 300 | 150                      | 10                       | 0.5                                                 | 150                            | 8.0                            | 250               | --                             | --                              |
| 2N3117   | NPN AMPL/SWITCH | 60                              | 60                              | 6.0                             | 10nA                                                                         | 45                     | 250             | 500 | 0.01                     | 10                       | 0.35                                                | 1.0                            | 4.5                            | 60                | --                             | --                              |
| 2N3121   | PNP AMPL/SWITCH | 45                              | 45                              | 4.0                             | 0.01                                                                         | 30                     | 30              | --  | 150                      | 10                       | 0.5                                                 | 150                            | 10                             | 130               | --                             | --                              |
| 2N3135   | PNP AMPL/SWITCH | 50                              | 35                              | 4.0                             | 0.05                                                                         | 30                     | 40              | --  | 150                      | 10                       | 0.5                                                 | 150                            | 10                             | 200               | --                             | --                              |
| 2N3136   | PNP AMPL/SWITCH | 50                              | 35                              | 4.0                             | 0.05                                                                         | 30                     | 100             | 300 | 150                      | 10                       | 0.6                                                 | 150                            | 10                             | 200               | --                             | --                              |
| 2N3209   | PNP SAT SWITCH  | 20                              | 20                              | 4.0                             | 0.08                                                                         | 10                     | 25              | --  | 10                       | 0.3                      | 0.15                                                | 10                             | 5.0                            | 400               | --                             | 60                              |
| 2N3210   | NPN SAT SWITCH  | 40                              | 15                              | 5.0                             | --                                                                           | --                     | 30              | 120 | 10                       | 5.0                      | 0.5                                                 | 100                            | 4.0                            | 400               | --                             | 15                              |
| 2N3241A  | NPN AMPL/SWITCH | 30                              | 25                              | 7.5                             | 100                                                                          | 25                     | 100             | 200 | 10                       | 10                       | 0.25                                                | 200                            | 20                             | 50                | 10                             | --                              |
| 2N3242A  | NPN AMPL/SWITCH | 40                              | 40                              | 8.0                             | 10                                                                           | 25                     | 125             | 300 | 10                       | 10                       | 0.3                                                 | 300                            | 20                             | 50                | 6.0                            | --                              |
| 2N3246   | NPN LOW NOISE   | 60                              | 40                              | 10                              | 0.10                                                                         | 40                     | 400             | --  | 1.0                      | 5.0                      | 0.5                                                 | 5.0                            | 5.0                            | 60                | 2.0                            | --                              |
| 2N3248   | PNP SAT SWITCH  | 15                              | 12                              | 5.0                             | 0.05                                                                         | 10                     | 50              | 150 | 10                       | 1.0                      | 0.125                                               | 10                             | 8.0                            | 250               | --                             | 15                              |
| 2N3249   | PNP SAT SWITCH  | 15                              | 12                              | 5.0                             | 0.05**                                                                       | 10                     | 100             | 300 | 0.1                      | 1.0                      | 0.25                                                | 50                             | 8.0                            | 300               | --                             | 90                              |
| 2N3250A  | PNP AMPL/SWITCH | 60                              | 60                              | 5.0                             | 0.02                                                                         | 40                     | 50              | 150 | 10                       | 1.0                      | 0.25                                                | 10                             | 6.0                            | 250               | --                             | 35                              |
| 2N3251A  | PNP AMPL/SWITCH | 60                              | 60                              | 5.0                             | 0.02                                                                         | 40                     | 100             | 300 | 10                       | 1.0                      | 0.25                                                | 10                             | 6.0                            | 300               | --                             | 35                              |
| 2N3301   | NPN AMPL/SWITCH | 60                              | 30                              | 5.0                             | 0.01                                                                         | 50                     | 40              | 120 | 150                      | 10                       | 0.22                                                | 150                            | 8.0                            | 250               | --                             | --                              |
| 2N3302   | NPN AMPL/SWITCH | 60                              | 30                              | 5.0                             | 0.01                                                                         | 50                     | 100             | 300 | 150                      | 10                       | 0.22                                                | 150                            | 8.0                            | 250               | --                             | --                              |
| 2N3496   | PNP AMPL/SWITCH | 80                              | 80                              | 4.0                             | 0.1                                                                          | 50                     | 40              | --  | 10                       | 10                       | 0.3                                                 | 10                             | 7.0                            | 200               | --                             | --                              |
| 2N3497   | PNP AMPL/SWITCH | 120                             | 120                             | 4.0                             | 0.1                                                                          | 90                     | 40              | --  | 10                       | 10                       | 0.35                                                | 10                             | 6.0                            | 150               | --                             | --                              |
| 2N3504   | PNP AMPL/SWITCH | 45                              | 45                              | 5.0                             | --                                                                           | --                     | 100             | 300 | 150                      | 10                       | 0.25                                                | 50                             | 8.0                            | 200               | --                             | --                              |
| 2N3505   | PNP AMPL/SWITCH | 60                              | 60                              | 5.0                             | 0.01                                                                         | 30                     | 100             | 300 | 150                      | 10                       | 0.4                                                 | 150                            | 8.0                            | 200               | --                             | --                              |
| 2N3545   | PNP SAT SWITCH  | 20                              | 20                              | 5.0                             | --                                                                           | --                     | 40              | 120 | 10                       | 1.0                      | 0.5                                                 | 100                            | 8.0                            | 250               | --                             | 60                              |
| 2N3546   | PNP SAT SWITCH  | 15                              | 12                              | 4.5                             | 0.01                                                                         | 10                     | 30              | 120 | 10                       | 1.0                      | 0.5                                                 | 100                            | 6.0                            | 700               | --                             | 40                              |
| 2N3547   | PNP LOW NOISE   | 60                              | 60                              | 6.0                             | 0.025                                                                        | 45                     | 100             | 500 | 1.0                      | 5.0                      | 1.0                                                 | 10                             | 8.0                            | 45                | 5.0                            | --                              |
| 2N3548   | PNP LOW NOISE   | 60                              | 45                              | 6.0                             | 0.01                                                                         | 45                     | 100             | 300 | 0.01                     | 5.0                      | 1.0                                                 | 10                             | 8.0                            | 60                | 4.0                            | --                              |
| 2N3549   | PNP LOW NOISE   | 60                              | 60                              | 6.0                             | 0.01                                                                         | 45                     | 100             | 500 | 0.01                     | 5.0                      | 1.0                                                 | 10                             | 8.0                            | 60                | 4.0                            | --                              |
| 2N3550   | PNP LOW NOISE   | 60                              | 45                              | 8.0                             | 0.01                                                                         | 45                     | 200             | 600 | 0.01                     | 5.0                      | 0.5                                                 | 5.0                            | 8.0                            | 60                | 4.0                            | --                              |

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## 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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