

# Small Signal Transistors

TO-39 Case (Continued)



| TYPE NO. | DESCRIPTION      | V <sub>CBO</sub><br>(V) | V <sub>CEO</sub><br>(V)<br>*V <sub>CER</sub> | V <sub>EBO</sub><br>(V) | I <sub>CBO</sub><br>(μA)<br>*I <sub>CEO</sub><br>**I <sub>CES</sub><br>***I <sub>CEV</sub><br>****I <sub>CER</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><br>(V) | @ I <sub>C</sub><br>(mA) | f <sub>T</sub><br>(MHz)<br>*TYP | C <sub>ob</sub><br>(pF)<br>*TYP | t <sub>on</sub><br>(ns)<br>*TYP | t <sub>off</sub><br>(ns)<br>*TYP | NF<br>(dB)<br>*TYP |
|----------|------------------|-------------------------|----------------------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------|-----|--------------------------|--------------------------|-----------------------------|--------------------------|---------------------------------|---------------------------------|---------------------------------|----------------------------------|--------------------|
|          |                  | MIN                     | MIN                                          | MIN                     |                                                                                                                    |                          | MIN             | MAX |                          |                          | MAX                         |                          | MIN                             | MAX                             | MAX                             | MAX                              | MAX                |
| 2N2854   | NPN AMPL/SWITCH  | 60                      | 40                                           | 5.0                     | 0.10                                                                                                               | 40                       | 100             | 300 | 1,000                    | 1.0                      | 0.40                        | 1,000                    | --                              | --                              | --                              | --                               | --                 |
| 2N2855   | NPN AMPL/SWITCH  | 60                      | 40                                           | 5.0                     | 0.10                                                                                                               | 40                       | 40              | 120 | 1,000                    | 1.0                      | 0.40                        | 1,000                    | --                              | --                              | --                              | --                               | --                 |
| 2N2890   | NPN AMPL/SWITCH  | 100                     | 80                                           | 5.0                     | 0.50                                                                                                               | 60                       | 30              | 90  | 1,000                    | 2.0                      | 0.50                        | 1,000                    | 30                              | 70                              | --                              | --                               | --                 |
| 2N2891   | NPN AMPL/SWITCH  | 100                     | 80                                           | 5.0                     | 0.50                                                                                                               | 60                       | 50              | 150 | 1,000                    | 2.0                      | 0.50                        | 1,000                    | 30                              | 70                              | --                              | --                               | --                 |
| 2N2904A  | PNP AMPL/SWITCH  | 60                      | 60                                           | 5.0                     | 0.10                                                                                                               | 50                       | 40              | 120 | 150                      | 10                       | 0.40                        | 150                      | 200                             | 8.0                             | --                              | --                               | --                 |
| 2N2905A  | PNP AMPL/SWITCH  | 60                      | 60                                           | 5.0                     | 0.10                                                                                                               | 50                       | 100             | 300 | 150                      | 10                       | 0.40                        | 150                      | 200                             | 8.0                             | --                              | --                               | --                 |
| 2N2927   | PNP AMPL/SWITCH  | 30                      | 25                                           | 4.0                     | --                                                                                                                 | --                       | 30              | 130 | 50                       | 5.0                      | 0.25                        | 50                       | 100                             | 20                              | --                              | --                               | --                 |
| 2N2951   | NPN AMPL/SWITCH  | 60                      | 20                                           | 5.0                     | 0.10                                                                                                               | 50                       | 20              | 150 | 10                       | 10                       | 0.50                        | 150                      | 200                             | 8.0                             | --                              | --                               | --                 |
| 2N2958   | NPN AMPL/SWITCH  | 60                      | 20                                           | 5.0                     | 0.025                                                                                                              | 50                       | 40              | 120 | 150                      | 10                       | 0.50                        | 150                      | 250                             | 8.0                             | --                              | --                               | --                 |
| 2N2959   | NPN AMPL/SWITCH  | 60                      | 20                                           | 5.0                     | 0.025                                                                                                              | 50                       | 100             | 300 | 150                      | 10                       | 0.50                        | 150                      | 250                             | 8.0                             | --                              | --                               | --                 |
| 2N2960   | NPN AMPL/SWITCH  | 60                      | 30                                           | 5.0                     | --                                                                                                                 | --                       | 100             | 300 | 150                      | 10                       | 0.50                        | 150                      | 250                             | 8.0                             | --                              | --                               | --                 |
| 2N2961   | NPN AMPL/SWITCH  | 60                      | 30                                           | 5.0                     | --                                                                                                                 | --                       | 100             | 300 | 150                      | 10                       | 2.00                        | 500                      | 250                             | 8.0                             | --                              | --                               | --                 |
| 2N3015   | NPN CORE DRIVER  | 60                      | 30                                           | 5.0                     | 0.20                                                                                                               | 30                       | 30              | 120 | 150                      | 10                       | 0.40                        | 150                      | 250                             | 8.0                             | --                              | 60                               | --                 |
| 2N3019   | NPN AMPL/SWITCH  | 140                     | 80                                           | 7.0                     | 0.10                                                                                                               | 90                       | 100             | 300 | 150                      | 10                       | 0.20                        | 150                      | 100                             | 12                              | --                              | --                               | --                 |
| 2N3020   | NPN AMPL/SWITCH  | 140                     | 80                                           | 7.0                     | 0.10                                                                                                               | 90                       | 40              | 120 | 150                      | 10                       | 0.20                        | 150                      | 100                             | 12                              | --                              | --                               | --                 |
| 2N3053   | NPN AMPL/SWITCH  | 60                      | 40                                           | 5.0                     | 0.25                                                                                                               | 30                       | 50              | 250 | 150                      | 10                       | 1.40                        | 150                      | 100                             | 15                              | --                              | --                               | --                 |
| 2N3072   | PNP AMPL/SWITCH  | 60                      | 60                                           | 4.0                     | 0.01**                                                                                                             | 30                       | 30              | 130 | 50                       | 1.0                      | 1.00                        | 300                      | 130                             | 10                              | --                              | --                               | --                 |
| 2N3107   | NPN AMPL/SWITCH  | 100                     | 60                                           | 7.0                     | 0.01**                                                                                                             | 60                       | 100             | 300 | 150                      | 10                       | 1.00                        | 1,000                    | 70                              | 20                              | --                              | --                               | --                 |
| 2N3108   | NPN AMPL/SWITCH  | 100                     | 60                                           | 7.0                     | 0.01*                                                                                                              | 60                       | 40              | 120 | 150                      | 10                       | 1.00                        | 1,000                    | 60                              | 20                              | --                              | --                               | --                 |
| 2N3109   | NPN AMPL/SWITCH  | 80                      | 40                                           | 7.0                     | 0.01*                                                                                                              | 60                       | 100             | 300 | 150                      | 10                       | 0.25                        | 150                      | 70                              | 25                              | --                              | --                               | --                 |
| 2N3110   | NPN AMPL/SWITCH  | 80                      | 40                                           | 7.0                     | 0.01*                                                                                                              | 60                       | 40              | 120 | 150                      | 10                       | 0.25                        | 150                      | 60                              | 25                              | --                              | --                               | --                 |
| 2N3114   | NPN HIGH VOLTAGE | 150                     | 150                                          | 5.0                     | 0.01                                                                                                               | 100                      | 30              | 120 | 30                       | 10                       | 1.00                        | 50                       | 40                              | 9.0                             | --                              | --                               | --                 |
| 2N3119   | NPN AMPL/SWITCH  | 100                     | 80                                           | 4.0                     | 50                                                                                                                 | 60                       | 50              | 200 | 100                      | 10                       | 0.50                        | 100                      | 250                             | 6.0                             | 40                              | 700                              | --                 |
| 2N3120   | PNP AMPL/SWITCH  | 45                      | 45                                           | 4.0                     | 0.01*                                                                                                              | 30                       | 30              | 130 | 150                      | 1.0                      | 0.50                        | 300                      | 130                             | 10                              | --                              | --                               | --                 |
| 2N3122   | NPN AMPL/SWITCH  | 50                      | 30                                           | 5.0                     | --                                                                                                                 | --                       | 25              | 100 | 300                      | 10                       | 1.50                        | 300                      | 60                              | 25                              | --                              | --                               | --                 |
| 2N3133   | PNP AMPL/SWITCH  | 50                      | 35                                           | 4.0                     | 0.50                                                                                                               | 30                       | 40              | 120 | 150                      | 10                       | 0.60                        | 150                      | 200                             | 10                              | --                              | --                               | --                 |
| 2N3134   | PNP AMPL/SWITCH  | 50                      | 35                                           | 4.0                     | 0.50                                                                                                               | 30                       | 100             | 300 | 150                      | 10                       | 0.60                        | 150                      | 200                             | 10                              | --                              | --                               | --                 |
| 2N3137   | NPN VHF/UHF OSC  | 40                      | 20                                           | 4.0                     | 0.50                                                                                                               | 20                       | 20              | 120 | 50                       | 5.0                      | 0.30                        | 50                       | 500                             | 3.5                             | --                              | --                               | --                 |
| 2N3244   | PNP CORE DRIVER  | 40                      | 40                                           | 5.0                     | 0.50                                                                                                               | 30                       | 50              | 150 | 500                      | 1.0                      | 1.00                        | 1,000                    | 175                             | 25                              | 50                              | 185                              | --                 |
| 2N3245   | PNP CORE DRIVER  | 50                      | 50                                           | 5.0                     | 0.50                                                                                                               | 30                       | 30              | 90  | 500                      | 1.0                      | 1.20                        | 1,000                    | 150                             | 25                              | 55                              | 165                              | --                 |
| 2N3252   | NPN CORE DRIVER  | 60                      | 30                                           | 5.0                     | 0.50                                                                                                               | 40                       | 30              | 90  | 500                      | 1.0                      | 1.00                        | 1,000                    | 200                             | 12                              | 45                              | 70                               | --                 |
| 2N3253   | NPN CORE DRIVER  | 75                      | 40                                           | 5.0                     | 0.50                                                                                                               | 60                       | 25              | 75  | 500                      | 1.0                      | 1.20                        | 1,000                    | 175                             | 12                              | 50                              | 70                               | --                 |
| 2N3299   | NPN AMPL/SWITCH  | 60                      | 30                                           | 5.0                     | 0.01**                                                                                                             | 50                       | 40              | 120 | 150                      | 10                       | 0.60                        | 500                      | 250                             | 8.0                             | 60                              | 150                              | --                 |
| 2N3300   | NPN AMPL/SWITCH  | 60                      | 30                                           | 5.0                     | 0.01**                                                                                                             | 50                       | 100             | 300 | 150                      | 10                       | 0.60                        | 500                      | 250                             | 8.0                             | 60                              | 150                              | --                 |
| 2N3326   | NPN AMPL/SWITCH  | 60                      | 40                                           | 5.0                     | 0.10                                                                                                               | 50                       | 40              | 120 | 150                      | 10                       | 0.40                        | 150                      | 250                             | 8.0                             | --                              | --                               | --                 |
| 2N3388   | NPN AMPL/SWITCH  | 125                     | 100                                          | 6.0                     | --                                                                                                                 | --                       | 60              | --  | 2.5                      | 5.0                      | 1.00                        | 2.5                      | 36                              | 35                              | --                              | --                               | --                 |
| 2N3420   | NPN AMPL/SWITCH  | 85                      | 60                                           | 6.0                     | 0.50***                                                                                                            | 80                       | 40              | 160 | 1,000                    | 2.0                      | 0.50                        | 2,000                    | 40                              | 150                             | --                              | --                               | --                 |
| 2N3421   | NPN AMPL/SWITCH  | 125                     | 80                                           | 8.0                     | 0.50***                                                                                                            | 120                      | 40              | 160 | 1,000                    | 2.0                      | 0.50                        | 2,000                    | 40                              | 150                             | --                              | --                               | --                 |
| 2N3439   | NPN HIGH VOLTAGE | 450                     | 350                                          | 7.0                     | 20                                                                                                                 | 360                      | 40              | 160 | 20                       | 10                       | 0.50                        | 50                       | 15                              | 10                              | --                              | --                               | --                 |
| 2N3440   | NPN HIGH VOLTAGE | 300                     | 250                                          | 7.0                     | 20                                                                                                                 | 250                      | 40              | 160 | 20                       | 10                       | 0.50                        | 50                       | 15                              | 10                              | --                              | --                               | --                 |

(04-April 2014)

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