

# Small Signal Transistors

## TO-39 Case (Continued)



| TYPE NO. | DESCRIPTION      | V <sub>CBO</sub> | V <sub>CEO</sub>         | V <sub>EBO</sub> | I <sub>CBO</sub>   | @ V <sub>CB</sub> | h <sub>FE</sub> |     | @ I <sub>C</sub> | @ V <sub>CE</sub> | V <sub>CE(SAT)</sub> | @ I <sub>C</sub> | f <sub>T</sub>                          | C <sub>ob</sub> | t <sub>on</sub> | t <sub>off</sub> | NF           |
|----------|------------------|------------------|--------------------------|------------------|--|-------------------|-----------------|-----|------------------|-------------------|----------------------|------------------|---|-----------------|-----------------|------------------|--------------|
|          |                  | (V)              | (V)<br>*V <sub>CER</sub> | (V)              | (μA)<br>*I <sub>CEO</sub><br>**I <sub>CES</sub><br>***I <sub>CEV</sub><br>****I <sub>CER</sub> | (V)               | MIN             | MAX | (mA)             | (V)               | (V)                  | (mA)             | (MHz)<br>*TYP<br>†TYP<br>‡TYP<br>in GHz | (pF)<br>*TYP    | (ns)<br>*TYP    | (ns)<br>*TYP     | (dB)<br>*TYP |
|          |                  | MIN              | MIN                      | MIN              |  |                   |                 |     |                  |                   | MAX                  |                  | MIN                                     | MAX             | MAX             | MAX              | MAX          |
| 2N5784   | NPN AMPL/SWITCH  | 80               | 65                       | 5.0              | 10***  | 75                | 20              | 100 | 1,000            | 2.0               | 0.50                 | 1,000            | 1.0                                     | --              | --              | --               | --           |
| 2N5785   | NPN AMPL/SWITCH  | 65               | 50                       | 5.0              | 10***  | 60                | 20              | 100 | 1,200            | 2.0               | 0.75                 | 1,200            | 1.0                                     | --              | --              | --               | --           |
| 2N5786   | NPN AMPL/SWITCH  | 45               | 40                       | 3.5              | 10***  | 45                | 20              | 100 | 1,600            | 2.0               | 1.00                 | 1,600            | 1.0                                     | --              | --              | --               | --           |
| 2N5859   | NPN CORE DRIVER  | 80               | 40                       | 6.0              | 0.25   | 50                | 30              | 120 | 500              | 1.0               | 0.70                 | 1,000            | 250                                     | 7.0             | 35              | 60               | --           |
| 2N5861   | NPN CORE DRIVER  | 100              | 50                       | 6.0              | 0.30   | 50                | 25              | 100 | 500              | 1.0               | 0.50                 | 500              | 200                                     | 7.0             | 25              | 60               | --           |
| 2N6190   | NPN HIGH CURRENT | 80               | 80                       | 6.0              | 10   | 80                | 30              | 120 | 2,000            | 2.0               | 0.70                 | 2,000            | 30                                      | 300             | --              | --               | --           |
| 2N6191   | PNP HIGH CURRENT | 80               | 80                       | 6.0              | 10   | 80                | 60              | 240 | 2,000            | 2.0               | 0.70                 | 2,000            | 30                                      | 300             | --              | --               | --           |
| 2N6192   | PNP HIGH CURRENT | 100              | 100                      | 6.0              | 10   | 100               | 30              | 120 | 2,000            | 2.0               | 0.70                 | 2,000            | 30                                      | 300             | --              | --               | --           |
| 2N6193   | PNP HIGH CURRENT | 100              | 100                      | 6.0              | 10   | 100               | 60              | 240 | 2,000            | 2.0               | 0.70                 | 2,000            | 30                                      | 300             | --              | --               | --           |
| BC140    | NPN AMPL/SWITCH  | 80               | 40                       | 7.0              | 0.10**   | 60                | 40              | 250 | 100              | 1.0               | 1.00                 | 1,000            | 50                                      | 25              | 250             | 850              | --           |
| BC141    | NPN AMPL/SWITCH  | 100              | 60                       | 7.0              | 0.10**   | 60                | 40              | 250 | 100              | 1.0               | 1.00                 | 1,000            | 50                                      | 25              | 250             | 850              | --           |
| BC160    | PNP AMPL/SWITCH  | 40               | 40                       | 5.0              | 0.10**   | 40                | 40              | 250 | 100              | 1.0               | 1.00                 | 1,000            | 50                                      | 30              | 500             | 650              | --           |
| BC161    | PNP AMPL/SWITCH  | 60               | 60                       | 5.0              | 0.10**   | 60                | 40              | 250 | 100              | 1.0               | 1.00                 | 1,000            | 50                                      | 30              | 500             | 650              | --           |
| BC300    | NPN AMPL/SWITCH  | 120              | 80                       | 7.0              | 0.02   | 60                | 40              | 240 | 150              | 10                | 0.50                 | 150              | 100*                                    | 12*             | --              | --               | --           |
| BC301    | NPN AMPL/SWITCH  | 90               | 60                       | 7.0              | 0.02   | 60                | 40              | 240 | 150              | 10                | 0.50                 | 150              | 100*                                    | 12*             | --              | --               | --           |
| BC302    | NPN AMPL/SWITCH  | 60               | 45                       | 7.0              | 0.02   | 60                | 40              | 240 | 150              | 10                | 0.50                 | 150              | 100*                                    | 12*             | --              | --               | --           |
| BC303    | PNP AMPL/SWITCH  | 85               | 60                       | 6.0              | 0.02   | 60                | 40              | 240 | 150              | 10                | 0.65                 | 150              | 100*                                    | 15*             | --              | --               | --           |
| BC304    | PNP AMPL/SWITCH  | 60               | 45                       | 6.0              | 0.02   | 60                | 40              | 240 | 150              | 10                | 0.65                 | 150              | 100*                                    | 15*             | --              | --               | --           |
| BC440    | NPN AMPL/SWITCH  | 50               | 40                       | 5.0              | 0.10   | 40                | 40              | 250 | 500              | 4.0               | 1.00                 | 1,000            | 50                                      | --              | --              | --               | --           |
| BC441    | NPN AMPL/SWITCH  | 70               | 60                       | 5.0              | 0.10   | 40                | 40              | 250 | 500              | 4.0               | 1.00                 | 1,000            | 50                                      | --              | --              | --               | --           |
| BC460    | PNP AMPL/SWITCH  | 50               | 40                       | 5.0              | 0.10   | 40                | 40              | 250 | 500              | 4.0               | 1.00                 | 1,000            | 50                                      | --              | --              | --               | --           |
| BC461    | PNP AMPL/SWITCH  | 70               | 60                       | 5.0              | 0.10   | 40                | 40              | 250 | 500              | 4.0               | 1.00                 | 1,000            | 50                                      | --              | --              | --               | --           |
| BCW78    | NPN AMPL/SWITCH  | 45               | 45                       | 5.0              | 0.02**   | 45                | 100             | 630 | 100              | 1.0               | 0.70                 | 500              | --                                      | --              | --              | --               | --           |
| BCW80    | PNP AMPL/SWITCH  | 45               | 45                       | 5.0              | 0.02**   | 45                | 63              | 400 | 100              | 1.0               | 0.70                 | 500              | --                                      | --              | --              | --               | --           |
| BD115    | NPN HIGH VOLTAGE | 250              | 180                      | 5.0              | 550*   | 200               | 22              | --  | 50               | 100               | 9.00                 | 100              | 150*                                    | --              | --              | --               | --           |
| BF178    | NPN AMPL/SWITCH  | 185              | 115                      | 5.0              | 0.01   | 185               | 20              | --  | 30               | 20                | --                   | --               | 120*                                    | --              | --              | --               | --           |
| BF257    | NPN HIGH VOLTAGE | 160              | 160                      | 5.0              | 50   | 100               | 25              | --  | 30               | 10                | 1.00                 | 30               | 90*                                     | --              | --              | --               | --           |
| BF258    | NPN HIGH VOLTAGE | 250              | 250                      | 5.0              | 50   | 200               | 25              | --  | 30               | 10                | 1.00                 | 30               | 90*                                     | --              | --              | --               | --           |
| BF259    | NPN HIGH VOLTAGE | 300              | 300                      | 5.0              | 50   | 250               | 25              | --  | 30               | 10                | 1.00                 | 30               | 90*                                     | --              | --              | --               | --           |
| BF337    | NPN HIGH VOLTAGE | 250              | 200                      | 5.0              | 100****  | 200               | 20              | --  | 30               | 10                | --                   | --               | --                                      | --              | --              | --               | --           |
| BFR36    | NPN AMPL/SWITCH  | 40               | 30                       | 3.0              | 0.15   | 20                | 60              | --  | 70               | 5.0               | --                   | --               | 1.0                                     | --              | --              | --               | 4.0*         |
| BFS89    | NPN HIGH VOLTAGE | 300              | 300                      | 5.0              | 0.05   | 250               | 25              | --  | 50               | 10                | --                   | --               | --                                      | --              | --              | --               | --           |
| BFS95    | PNP AMPL/SWITCH  | 40               | 35                       | 6.0              | 0.05   | 30                | 15              | --  | 1,000            | 10                | 0.20                 | 150              | --                                      | --              | --              | --               | --           |
| BFT28C   | PNP HIGH VOLTAGE | 300              | 250                      | --               | 5.00   | 150               | 20              | --  | 10               | 10                | 5.00                 | 30               | 25                                      | --              | --              | --               | --           |
| BFW16A   | NPN AMPL/SWITCH  | 40               | 25                       | 3.0              | 20   | 20                | 25              | --  | 50               | 5.0               | --                   | --               | 1.2†                                    | --              | --              | --               | 6.0          |
| BFW44    | PNP AMPL/SWITCH  | 150              | 150                      | 6.0              | 0.01   | 100               | 40              | --  | 10               | 10                | 0.50                 | 10               | 60                                      | 7.0             | --              | --               | --           |
| BFX34    | NPN AMPL/SWITCH  | 120              | 60                       | 6.0              | 10**   | 60                | 40              | 150 | 2,000            | 2.0               | 1.00                 | 5,000            | 70                                      | 100             | 600             | 1,200            | --           |
| BFX84    | NPN AMPL/SWITCH  | 100              | 60                       | 6.0              | 0.50   | 100               | 30              | --  | 150              | 10                | 1.00                 | 500              | 50                                      | 12              | --              | --               | --           |
| BFX85    | NPN AMPL/SWITCH  | 100              | 60                       | 6.0              | 0.50   | 100               | 70              | --  | 150              | 10                | 1.00                 | 500              | 50                                      | 12              | --              | --               | --           |

(5-November 2010)