



## GENERAL PURPOSE AMPS AND SWITCHES (Cont.)

## PNP Transistors

| Type No. | Case Style | V <sub>CB0</sub><br>(V)<br>Min | V <sub>CE0</sub><br>(V)<br>Min | V <sub>EB0</sub><br>(V)<br>Min | I <sub>CB0</sub><br>(nA)<br>@ V <sub>CB</sub><br>(V)<br>Max | h <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub> (V) |     |      | V <sub>CE(sat)</sub><br>(V)<br>Max & |      | V <sub>BE(sat)</sub><br>(V)<br>Min & Max |      | I <sub>C</sub><br>(mA)<br>@<br>Max | C <sub>ob</sub><br>(pF)<br>Max | f <sub>T</sub><br>(MHz)<br>@ I <sub>C</sub><br>(mA)<br>Min Max |     | t <sub>off</sub><br>(ns)<br>Max | NF<br>(dB)<br>Max | Test Condition | Process No. |
|----------|------------|--------------------------------|--------------------------------|--------------------------------|---|--|-----|------|--------------------------------------|------|--|------|------------------------------------|--------------------------------|--|-----|---------------------------------|-------------------|----------------|-------------|
|          |            |                                |                                |                                |   | Min  | Max | Min  | Max                                  | Min  | Max                                      | Min  |                                    |                                | Max  | Min |                                 |                   |                |             |
| 2N3502   | TO-5       | 45                             | 45                             | 5                              | 10<br>ICES  | 30   | 80  | 0.01 | 10                                   | 0.25 | 1.0                                      | 50   | 8                                  | 200                            | 50   | 100 | 7                               | 5                 | 63             |             |
|          |            |                                |                                |                                |   |  | 120 | 0.1  | 10                                   | 0.4  | 1.3                                      | 150  |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 135 | 1    | 10                                   | 1.0  | 2.0                                      | 300  |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 140 | 10   | 10                                   | 1.6  | 20                                       | 500  |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 100 | 300  | 150                                  | 10   |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 50  | 500  | 10                                   |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
| 2N3503   | TO-5       | 60                             | 60                             | 5                              | 10<br>ICES  | 50   | 80  | 0.01 | 10                                   | 0.25 | 1.0                                      | 50   | 8                                  | 200                            | 50   | 100 | 4                               | 7                 | 5              | 63          |
|          |            |                                |                                |                                |   |  | 120 | 0.1  | 10                                   | 0.4  | 1.3                                      | 150  |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 135 | 1    | 10                                   | 1.0  | 2.0                                      | 300  |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 140 | 10   | 10                                   | 1.6  | 20                                       | 500  |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 100 | 300  | 150                                  | 10   |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 50  | 500  | 10                                   |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
| 2N3504   | TO-18      | 45                             | 45                             | 5                              | 10<br>ICES  | 30   | 80  | 0.01 | 10                                   | 0.25 | 1.0                                      | 50   | 8                                  | 200                            | 50   | 100 | 4                               | 7                 | 5              | 63          |
|          |            |                                |                                |                                |   |  | 120 | 0.1  | 10                                   | 0.4  | 1.3                                      | 150  |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 135 | 1    | 10                                   | 1.0  | 2.0                                      | 300  |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 140 | 10   | 10                                   | 1.6  | 20                                       | 500  |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 100 | 300  | 150                                  | 10   |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 50  | 500  | 10                                   |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
| 2N3505   | TO-18      | 60                             | 60                             | 5                              | 10<br>ICES  | 50   | 80  | 0.01 | 10                                   | 0.25 | 1.0                                      | 50   | 8                                  | 200                            | 50   | 100 | 4                               | 7                 | 5              | 63          |
|          |            |                                |                                |                                |   |  | 120 | 0.1  | 10                                   | 0.4  | 1.3                                      | 150  |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 135 | 1    | 10                                   | 1.0  | 2.0                                      | 300  |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 140 | 10   | 10                                   | 1.6  | 20                                       | 500  |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 100 | 300  | 150                                  | 10   |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 50  | 500  | 10                                   |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
| 2N3638   | TO-105     | 25                             | 25                             | 4                              | 35  | 15   | 30  | 50   | 2                                    | 1.0  | 0.8                                      | 2.0  | 300                                | 20                             | 100  | 50  | 170                             | 4                 | 63             |             |
|          |            |                                |                                |                                |   |  | 20  | 300  | 1                                    | 0.25 | 1.1                                      | 50   |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 100 | 10   | 1                                    | 0.15 | 1.1                                      | 50   |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 100 | 50   | 10                                   |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 20  | 300  | 10                                   |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 100 | 10   | 10                                   |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
| 2N3644   | TO-105     | 45                             | 45                             | 5                              | 35  | 30   | 40  | 0.1  | 10                                   | 1.0  | 0.8                                      | 2.0  | 300                                | 8                              | 200  | 20  | 100                             | 7                 | 63             |             |
|          |            |                                |                                |                                |   |  | 80  | 1    | 10                                   |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 100 | 10   | 10                                   |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 115 | 300  | 50                                   | 10   |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 100 | 300  | 150                                  | 2    |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 20  | 300  | 1                                    |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
| 2N3645   | TO-105     | 60                             | 60                             | 5                              | 35  | 50   | 40  | 0.1  | 10                                   | 1.0  | 0.8                                      | 2.0  | 300                                | 8                              | 200  | 20  | 100                             | 7                 | 63             |             |
|          |            |                                |                                |                                |   |  | 80  | 1    | 10                                   | 0.25 | 1.0                                      | 50   |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 100 | 10   | 10                                   |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 115 | 300  | 50                                   | 10   |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 100 | 300  | 150                                  | 2    |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 20  | 300  | 1                                    |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
| 2N3905   | TO-92(72)  | 40                             | 40                             | 5                              |   |  | 30  | 0.1  | 1                                    | 0.25 | 0.65                                     | 0.65 | 10                                 | 4.5                            | 200  | 10  | 5                               | 2                 | 66             |             |
|          |            |                                |                                |                                |   |  | 40  | 1    | 1                                    | 0.4  | 0.95                                     | 50   |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 50  | 150  | 1                                    |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 30  | 50   | 1                                    |      |  |      |                                    |                                |  |     |                                 |                   |                |             |
|          |            |                                |                                |                                |   |  | 15  | 100  | 1                                    |      |  |      |                                    |                                |  |     |                                 |                   |                |             |