

## GERMANIUM POWER TRANSISTORS

| TYPE NUMBER   | CASE TYPE | V <sub>CBO</sub><br>V | V <sub>CEO</sub><br>V | V <sub>EBO</sub><br>V | V <sub>CER</sub><br>V | V <sub>CES</sub><br>V | CURRENT GAIN    |      |                                   | SATURATION VOLTAGES |                         |                         |                     |                     |
|---|-----------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------|------|-----------------------------------|---------------------|-------------------------|-------------------------|---------------------|---------------------|
|   |           |                       |                       |                       |                       |                       | h <sub>FE</sub> |      | V <sub>CE</sub> <sup>®</sup><br>V | I <sub>C</sub><br>A | V <sub>CE(s)</sub><br>V | V <sub>BE(s)</sub><br>V | I <sub>C</sub><br>A | I <sub>B</sub><br>A |
|   |           |                       |                       |                       |                       |                       | MIN.            | MAX. |                                   |                     |                         |                         |                     |                     |
| <b>7 AMP GERMANIUM PNP</b> Observe (-) Negative Polarity  |           |                       |                       |                       |                       |                       |                 |      |                                   |                     |                         |                         |                     |                     |
| 2N457A  | TO-3      | 60                    | 30                    | 20.0                  |                       |                       | 30              | 90   | 1.5                               | 5.0                 | .50                     |                         | 5.0                 | .500                |
| 2N457B  | TO-3      | 60                    |                       | 30.0                  |                       | 60                    | 30              | 90   | 1.5                               | 5.0                 | .50                     |                         | 5.0                 | .500                |
| 2N458   | TO-3      | 80                    |                       | 20.0                  |                       |                       | 10              |      | 1.5                               | 5.0                 | .50                     |                         | 5.0                 | .500                |
| 2N458A  | TO-3      | 80                    | 40                    | 20.0                  |                       |                       | 30              | 90   | 1.5                               | 5.0                 | .50                     |                         | 5.0                 | .500                |
| 2N458B  | TO-3      | 80                    |                       | 30.0                  |                       | 65                    | 30              | 90   | 1.5                               | 5.0                 | .50                     |                         | 5.0                 | .500                |
| 2N637   | TO-3      | 60                    |                       | 15.0                  | 35                    |                       | 30              | 60   | 5.0                               | 3.0                 | .80                     |                         | 3.0                 | .300                |
| 2N637A  | TO-3      | 90                    |                       | 15.0                  | 65                    |                       | 30              | 60   | 5.0                               | 3.0                 | .80                     |                         | 3.0                 | .300                |
| 2N637B  | TO-3      | 100                   |                       | 15.0                  | 75                    |                       | 30              | 60   | 5.0                               | 3.0                 | .80                     |                         | 3.0                 | .300                |
| 2N638   | TO-3      | 60                    |                       | 15.0                  | 35                    |                       | 20              | 40   | 5.0                               | 3.0                 | .15                     |                         | 3.0                 | .300                |
| 2N638A  | TO-3      | 90                    |                       | 15.0                  | 65                    |                       | 20              | 40   | 5.0                               | 3.0                 | .15                     |                         | 3.0                 | .300                |
| 2N638B  | TO-3      | 100                   |                       | 15.0                  | 75                    |                       | 20              | 40   | 5.0                               | 3.0                 | .15                     |                         | 3.0                 | .300                |
| 2N1021  | TO-3      | 100                   |                       | 20.0                  |                       | 100                   | 30              | 90   | 1.5                               | 5.0                 | .50                     |                         | 5.0                 | .500                |
| 2N1021A   | TO-3      | 100                   | 50                    | 30.0                  |                       | 70                    | 30              | 90   | 1.5                               | 5.0                 | .50                     |                         | 5.0                 | .500                |
| 2N1022  | TO-3      | 120                   |                       | 20.0                  |                       | 120                   | 30              | 90   | 1.5                               | 5.0                 | .50                     |                         | 5.0                 | .500                |
| 2N1022A   | TO-3      | 120                   | 55                    | 30.0                  |                       | 75                    | 30              | 90   | 2.0                               | 5.0                 | .50                     |                         | 5.0                 | .500                |
| 2N1160  | TO-3      | 80                    | 60                    | 20.0                  |                       |                       | 20              | 50   | 2.0                               | 5.0                 | 1.00                    |                         | 5.0                 | .500                |
| 2N3611  | TO-3      | 40                    |                       | 20.0                  |                       | 30                    | 35              | 70   | 2.0                               | 3.0                 | .25                     |                         | 3.0                 | .300                |
| 2N3612  | TO-3      | 60                    |                       | 30.0                  |                       | 45                    | 35              | 70   | 2.0                               | 3.0                 | .25                     |                         | 3.0                 | .300                |
| 2N3613  | TO-3      | 40                    |                       | 20.0                  |                       | 30                    | 60              | 120  | 2.0                               | 3.0                 | .25                     |                         | 3.0                 | .300                |
| 2N3614  | TO-3      | 60                    |                       | 30.0                  |                       | 45                    | 60              | 120  | 2.0                               | 3.0                 | .25                     |                         | 3.0                 | .300                |
| 2N3615  | TO-3      | 80                    |                       | 40.0                  |                       | 60                    | 30              | 60   | 2.0                               | 3.0                 | .25                     |                         | 3.0                 | .300                |
| 2N3616  | TO-3      | 100                   |                       | 50.0                  |                       | 75                    | 30              | 60   | 2.0                               | 3.0                 | .25                     |                         | 3.0                 | .300                |
| 2N3617  | TO-3      | 80                    |                       | 40.0                  |                       | 60                    | 45              | 90   | 2.0                               | 3.0                 | .25                     |                         | 3.0                 | .300                |
| 2N3618  | TO-3      | 100                   |                       | 50.0                  |                       | 75                    | 45              | 90   | 2.0                               | 3.0                 | .25                     |                         | 3.0                 | .300                |
| <b>10 AMP GERMANIUM PNP</b> Observe (-) Negative Polarity |           |                       |                       |                       |                       |                       |                 |      |                                   |                     |                         |                         |                     |                     |
| DA3F3   | MT-7      | 60                    | 35                    |                       |                       |                       | 25              |      | 2.0                               | 10.0                |                         |                         |                     |                     |
| 2N574   | MT-7      | 60                    | 55                    |                       |                       | 55                    | 9               | 22   | 2.0                               | 10.0                | .20                     |                         | 1.0                 | 2.000               |
| 2N574A  | MT-7      | 80                    | 60                    |                       |                       | 70                    | 9               | 22   | 2.0                               | 10.0                | .20                     |                         | 1.0                 | 2.000               |
| 2N627   | TO-3      | 40                    |                       | 20.0                  |                       | 30                    | 10              | 30   | 2.0                               | 10.0                | 1.00                    |                         | 10.0                | 1.000               |
| 2N628   | TO-3      | 60                    |                       | 30.0                  |                       | 45                    | 10              | 30   | 2.0                               | 10.0                | 1.00                    |                         | 10.0                | 1.000               |
| 2N629   | TO-3      | 80                    |                       | 40.0                  |                       | 60                    | 10              | 30   | 2.0                               | 10.0                | 1.00                    |                         | 10.0                | 1.000               |
| 2N630   | TO-3      | 100                   |                       | 50.0                  |                       | 75                    | 10              | 30   | 2.0                               | 10.0                | 1.00                    |                         | 10.0                | 1.000               |
| 2N1073  | TO-3      | 40                    |                       | .8                    | 40                    |                       | 20              | 60   | 2.0                               | 5.0                 | 1.00                    |                         | 5.0                 | .500                |
| 2N1073A   | TO-3      | 80                    |                       | .8                    | 80                    |                       | 20              | 60   | 2.0                               | 5.0                 | 1.00                    |                         | 5.0                 | .500                |
| 2N1073B   | TO-3      | 120                   |                       | .8                    | 120                   |                       | 20              | 60   | 2.0                               | 5.0                 | 1.00                    |                         | 5.0                 | .500                |
| 2N1430  | TO-41*    | 120                   | 100                   | 1.0                   |                       |                       | 30              | 120  | 2.0                               | 5.0                 | .40                     | .90                     | 10.0                | 1.000               |
| 2N2212  | TO-41*    | 120                   | 60                    | 1.5                   | 120                   |                       | 50              | 120  | 2.0                               | 5.0                 | 1.00                    | 1.00                    | 5.0                 | .500                |
| 2N2288  | TO-3      | 40                    | 30                    | .8                    | 40                    |                       | 20              | 60   | 2.0                               | 5.0                 | 1.00                    | 1.00                    | 5.0                 | .500                |
| 2N2289  | TO-3      | 80                    | 50                    | .8                    | 80                    |                       | 20              | 60   | 2.0                               | 5.0                 | 1.00                    | 1.00                    | 5.0                 | .500                |
| 2N2290  | TO-3      | 120                   | 70                    | .8                    | 120                   |                       | 20              | 60   | 2.0                               | 5.0                 | 1.00                    | 1.00                    | 5.0                 | .500                |
| 2N2291  | TO-3      | 40                    | 30                    | .8                    | 40                    |                       | 50              | 120  | 2.0                               | 5.0                 | 1.00                    | 1.00                    | 5.0                 | .500                |
| 2N2292  | TO-3      | 80                    | 50                    | .8                    | 80                    |                       | 50              | 120  | 2.0                               | 5.0                 | 1.00                    | 1.00                    | 5.0                 | .500                |
| 2N2293  | TO-3      | 120                   | 70                    | .8                    | 120                   |                       | 50              | 120  | 2.0                               | 5.0                 | 1.00                    | 1.00                    | 5.0                 | .500                |
| 2N2294  | TO-41*    | 40                    |                       | .8                    | 40                    |                       | 50              | 120  | 2.0                               | 5.0                 | 1.00                    | 1.00                    | 5.0                 | .500                |
| 2N2295  | TO-41*    | 80                    |                       | .8                    | 80                    |                       | 50              | 120  | 2.0                               | 5.0                 | 1.00                    | 1.00                    | 5.0                 | .500                |
| 2N2296  | TO-41*    | 120                   |                       | .8                    | 120                   |                       | 50              | 120  | 2.0                               | 5.0                 | 1.00                    | 1.00                    | 5.0                 | .500                |
| 2N2444  | TO-3      | 80                    | 80                    | 1.0                   |                       |                       | 75              | 120  | 2.0                               | 3.0                 | 1.00                    | 1.50                    | 5.0                 | .500                |
| 2N2869  | TO-3      | 60                    | 50                    | 10.0                  |                       |                       | 50              | 165  | 2.0                               | 1.0                 | .75                     |                         | 5.0                 | .500                |
| 2N2870  | TO-3      | 80                    | 50                    | 10.0                  |                       |                       | 50              | 165  | 2.0                               | 1.0                 | .50                     |                         | 5.0                 | .500                |
| 2N5156  | TO-3      | 100                   | 60                    | 60.0                  |                       |                       | 25              | 60   | 2.0                               | 5.0                 | 1.00                    | 1.80                    | 10.0                | 1.000               |
| <b>12 AMP GERMANIUM PNP</b> Observe (-) Negative Polarity |           |                       |                       |                       |                       |                       |                 |      |                                   |                     |                         |                         |                     |                     |
| 2N173   | TO-36     | 60                    | 50                    | 40.0                  |                       | 50                    | 35              | 70   | 2.0                               | 5.0                 | .30                     |                         | 12.0                | 2.000               |
| 2N174   | TO-36     | 80                    | 55                    | 60.0                  |                       | 70                    | 25              | 70   | 2.0                               | 5.0                 | .90                     |                         | 12.0                | 2.000               |
| 2N441   | TO-36     | 40                    | 40                    | 20.0                  |                       | 40                    | 20              | 40   | 2.0                               | 5.0                 | .30                     |                         | 12.0                | 2.000               |
| 2N442   | TO-36     | 50                    | 45                    | 30.0                  |                       | 45                    | 20              | 40   | 2.0                               | 5.0                 | .30                     |                         | 12.0                | 2.000               |
| 2N443   | TO-36     | 60                    | 55                    |                       |                       | 50                    | 20              | 40   | 2.0                               | 5.0                 | .30                     |                         | 12.0                | 2.000               |

\*TO-3 with Solder Lugs

## GERMANIUM POWER TRANSISTORS

| $\theta_{J-C}$<br>°C/W                                    | TYPICAL SWITCHING TIMES |                     |                  |                  |                      | $V_{CE}$<br>V | $I_C$<br>A | EL | TYPE<br>NUMBER |
|---|-------------------------|---------------------|------------------|------------------|----------------------|---------------|------------|----|----------------|
|   | $t_r$<br>$\mu s$        | $t_{on}$<br>$\mu s$ | $t_s$<br>$\mu s$ | $t_f$<br>$\mu s$ | $t_{off}$<br>$\mu s$ |               |            |    |                |
| <b>7 AMP GERMANIUM PNP</b> Observe (–) Negative Polarity  |                         |                     |                  |                  |                      |               |            |    |                |
| .50   |                         |                     |                  |                  |                      |               |            | G6 | 2N457A         |
| .50   |                         |                     |                  |                  |                      |               |            | G7 | 2N457B         |
| .50   |                         |                     |                  |                  |                      |               |            | G6 | 2N458          |
| .50   |                         |                     |                  |                  |                      |               |            | G6 | 2N458A         |
| .50   |                         |                     |                  |                  |                      |               |            | G7 | 2N458B         |
| 1.50  |                         |                     |                  |                  |                      |               |            | G4 | 2N637          |
| 1.50  |                         |                     |                  |                  |                      |               |            | G4 | 2N637A         |
| 1.50  |                         |                     |                  |                  |                      |               |            | G4 | 2N637B         |
| 2.00  |                         |                     |                  |                  |                      |               |            | G4 | 2N638          |
| 2.00  |                         |                     |                  |                  |                      |               |            | G4 | 2N638A         |
| 2.00  |                         |                     |                  |                  |                      |               |            | G4 | 2N638B         |
| .50   |                         |                     |                  |                  |                      |               |            | G7 | 2N1021         |
| .50   |                         |                     |                  |                  |                      |               |            | G7 | 2N1021A        |
| .50   |                         |                     |                  |                  |                      |               |            | G7 | 2N1022         |
| .50   |                         |                     |                  |                  |                      |               |            | G7 | 2N1022A        |
| 1.20  |                         |                     |                  |                  |                      |               |            | G7 | 2N1160         |
| .90   |                         |                     |                  |                  |                      |               |            | G6 | 2N3611         |
| .90   |                         |                     |                  |                  |                      |               |            | G6 | 2N3612         |
| .90   |                         |                     |                  |                  |                      |               |            | G6 | 2N3613         |
| .90   |                         |                     |                  |                  |                      |               |            | G6 | 2N3614         |
| .90   |                         |                     |                  |                  |                      |               |            | G6 | 2N3615         |
| .90   |                         |                     |                  |                  |                      |               |            | G6 | 2N3616         |
| .90   |                         |                     |                  |                  |                      |               |            | G6 | 2N3617         |
| .90   |                         |                     |                  |                  |                      |               |            | G6 | 2N3618         |
| <b>10 AMP GERMANIUM PNP</b> Observe (–) Negative Polarity |                         |                     |                  |                  |                      |               |            |    |                |
| .40   |                         |                     |                  |                  |                      |               |            | 10 | DA3F3          |
| .40   |                         |                     |                  |                  |                      |               |            | 10 | 2N574          |
| .40   |                         |                     |                  |                  |                      |               |            | 10 | 2N574A         |
| .80   |                         |                     |                  |                  |                      |               |            | G7 | 2N627          |
| .80   |                         |                     |                  |                  |                      |               |            | G7 | 2N628          |
| .80   |                         |                     |                  |                  |                      |               |            | G7 | 2N629          |
| .80   |                         |                     |                  |                  |                      |               |            | G7 | 2N630          |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N1073         |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N1073A        |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N1073B        |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N1430         |
| .80   |                         |                     |                  |                  |                      |               |            | D2 | 2N2212         |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N2288         |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N2289         |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N2290         |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N2291         |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N2292         |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N2293         |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N2294         |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N2295         |
| 1.20  |                         |                     |                  |                  |                      |               |            | D2 | 2N2296         |
| 1.00  |                         |                     |                  |                  |                      |               |            | D2 | 2N2444         |
| 1.50  |                         |                     |                  |                  |                      |               |            | G4 | 2N2869         |
| 1.50  |                         |                     |                  |                  |                      |               |            | G4 | 2N2870         |
| .80   |                         |                     |                  |                  |                      |               |            | G7 | 2N5156         |
| <b>12 AMP GERMANIUM PNP</b> Observe (–) Negative Polarity |                         |                     |                  |                  |                      |               |            |    |                |
| 1.00  |                         |                     |                  |                  |                      |               |            | 17 | 2N173          |
| .80   |                         |                     |                  |                  |                      |               |            | 17 | 2N174          |
| 1.00  |                         |                     |                  |                  |                      |               |            | 17 | 2N441          |
| 1.00  |                         |                     |                  |                  |                      |               |            | 17 | 2N442          |
| 1.00  |                         |                     |                  |                  |                      |               |            | 17 | 2N443          |