

## silicon transistors

### UHF/VHF power transistors

### NPN type

T-37-01

| Type   | Rated Breakdown Voltages |                 |                 | Power Out       |                      |                     |                    | C <sub>OB</sub> (pF) | f <sub>P</sub> (MHz) (Min.) | Case   |
|--------|--------------------------|-----------------|-----------------|-----------------|----------------------|---------------------|--------------------|----------------------|-----------------------------|--------|
|        | V <sub>CB</sub>          | V <sub>CE</sub> | V <sub>EB</sub> | V <sub>CE</sub> | f <sub>o</sub> (MHz) | P <sub>IE</sub> (W) | P <sub>O</sub> (W) |                      |                             |        |
| 2N3375 | 65                       | 40              | 4.0             | 28              | 400                  | 1.0                 | 3.0                | 12.0                 | 500 Typ                     | TO-60  |
| 2N3553 | 65                       | 40              | 4.0             | 28              | 175                  | .25                 | 2.5                | 12.0                 | 350                         | TO-5   |
| 2N3632 | 65                       | 40              | 4.0             | 28              | 175                  | 3.5                 | 13.5               | 25.0                 | 250                         | TO-60  |
| 2N3733 | 65                       | 40              | 4.0             | 28              | 400                  | 4.0                 | 10.0               | 25.0                 | 250                         | TO-60  |
| 2N3866 | 55                       | 30              | 3.5             | 28              | 400                  | 0.1                 | 1.0                | 3.0                  | 500                         | TO-5   |
| 2N3924 | 36                       | 18              | 4.0             | 13.6            | 175                  | 1.0                 | 4.0                | 20.0                 | 250                         | TO-5   |
| 2N3928 | 36                       | 18              | 4.0             | 13.6            | 175                  | 2.0                 | 7.0                | 20.0                 | 250                         | TO-60  |
| 2N3927 | 36                       | 18              | 4.0             | 13.6            | 175                  | 4.0                 | 12.0               | 45.0                 | 200                         | TO-60  |
| 2N4012 | 65                       | 40              | 4.0             | 13.6            | 1000                 | 1.0                 | 2.5                | 10.0                 | 350                         | TO-60  |
| 2N4040 | 60                       | 40              | 4.0             | 28              | 400                  | 3.0                 | 8.0                | 15.0                 | 400                         | MT-72j |
| 2N4041 | 60                       | 40              | 4.0             | 28              | 400                  | 1.0                 | 3.3                | 8.0                  | 400                         | MT-72j |
| 2N4127 | 60                       | 40              | 4.0             | 25              | 175                  | 2.5                 | 13.5               | 25.0                 | 300                         | MT-72j |
| 2N4128 | 60                       | 40              | 4.0             | 25              | 175                  | 6.0                 | 24.0               | 45.0                 | 200                         | MT-72j |
| 2N4427 | 40                       | 20              | 2.0             | 12              | 175                  | 0.1                 | 1.0                | 4.0                  | 500                         | TO-5   |
| 2N4428 | 55                       | 35              | 3.5             | 28              | 500                  | .075                | .75                | 3.5                  | 700                         | TO-5   |
| 2N4429 | 55                       | 35              | 3.5             | 28              | 1000                 | .25                 | 1.0                | 3.5                  | 700                         | MT-72j |
| 2N4430 | 55                       | 40              | 3.5             | 28              | 1000                 | .7                  | 2.5                | 5.0                  | 600                         | MT-66  |
| 2N4431 | 55                       | 40              | 3.5             | 28              | 1000                 | 1.15                | 5.0                | 10.0                 | 600                         | MT-66  |
| 2N4440 | 65                       | 40              | 4.0             | 28              | 400                  | 1.7                 | 5.0                | 12.0                 | 500 Typ                     | TO-60  |

| Type   | Rated Breakdown Voltages |                 |                 | Power Out       |                      |                     |                    | C <sub>OB</sub> (pF) | f <sub>P</sub> (MHz) (Min.) | Case   |
|--------|--------------------------|-----------------|-----------------|-----------------|----------------------|---------------------|--------------------|----------------------|-----------------------------|--------|
|        | V <sub>CB</sub>          | V <sub>CE</sub> | V <sub>EB</sub> | V <sub>CE</sub> | f <sub>o</sub> (MHz) | P <sub>IE</sub> (W) | P <sub>O</sub> (W) |                      |                             |        |
| 2N4933 | 70                       | 35              | 4.0             | 24              | 70                   | 3.5                 | 20.0               | 85.0                 | 200                         | TO-60  |
| 2N5016 | 65                       | 30              | 4.0             | 28              | 400                  | 5.0                 | 15.0               | 25.0                 | 500                         | TO-60  |
| 2N5070 | 65                       | 30              | 4.0             | 28              | 30                   | .625                | 12.5               | 85                   | 100                         | TO-60  |
| 2N5071 | 65                       | 30              | 4.0             | 24              | 70                   | 3.0                 | 24.0               | 85                   | 100                         | TO-60  |
| 2N5090 | 55                       | 30              | 3.5             | 28              | 400                  | 0.2                 | 1.2                | 3.5                  | 500                         | TO-60  |
| 2N5102 | 55                       | 30              | 3.5             | 28              | 400                  | 0.2                 | 1.2                | 3.5                  | 500                         | TO-60  |
| 2N5108 | 55                       | 30              | 3.0             | 28              | 1000                 | .316                | 1.0                | 3.0                  | 1200                        | TO-5   |
| 2N5109 | 40                       | 20              | 3.0             | 28              | 1000                 | .32                 | 1.0                | 3.5                  | 1200                        | TO-5   |
| 2N5421 | 36                       | 18              | 4.0             | 13.5            | 175                  | .125                | 1.0                | 5.0                  | 300                         | TO-5   |
| 2N5423 | 36                       | 18              | 4.0             | 13.5            | 175                  | 1.25                | 5.0                | 25.0                 | 300                         | TO-60  |
| 2N5424 | 36                       | 18              | 4.0             | 13.5            | 175                  | 4.1                 | 13.0               | 45.0                 | 250                         | TO-60  |
| 2N5591 | 36                       | 18              | 4.0             | 13.6            | 175                  | 9.5                 | 25.0               | 120.0                | 200                         | MT-72  |
| 2N5641 | 65                       | 35              | 4.0             | 28              | 175                  | 1.0                 | 7.0                | 15.0                 | 300                         | MT-71  |
| 2N5642 | 65                       | 35              | 4.0             | 28              | 175                  | 2.8                 | 20.0               | 35.0                 | 250                         | MT-72e |
| 2N5643 | 65                       | 35              | 4.0             | 28              | 175                  | 8.0                 | 40.0               | 65.0                 | 200                         | MT-72e |
| 2N6080 | 36                       | 18              | 4.0             | 13.6            | 100                  |                     | 4                  | 20                   | 200                         | MT-72h |
| 2N6081 | 36                       | 18              | 4.0             | 13.6            | 100                  |                     | 15                 | 85                   | 200                         | MT-72h |
| 2N6082 | 36                       | 18              | 4.0             | 13.6            | 100                  |                     | 25                 | 130                  | 200                         | MT-72h |
| 2N6083 | 36                       | 18              | 4.0             | 13.6            | 100                  |                     | 30                 | 130                  | 200                         | MT-72h |
| 2N6084 | 36                       | 18              | 4.0             | 13.6            | 100                  |                     | 40                 | 200                  | 200                         | MT-72h |

## germanium transistors

diffused-base MESA transistors  
ultra-high-speed switching

| Type   | Polarity | BVCBO Max. Volts | BVCES Max. Volts | Typ. Gain HFE | f <sub>cb</sub> Avg. mc | V <sub>sat</sub> Avg. Volts | Case  |
|--------|----------|------------------|------------------|---------------|-------------------------|-----------------------------|-------|
| 2N705  | PNP      | -15              | -15              | 25            | 300                     | 0.125                       | TO-18 |
| 2N705A | PNP      | -15              | -15              | 40            | -                       | 0.125                       | TO-18 |
| 2N710  | PNP      | -15              | -15              | 25            | 300                     | 0.125                       | TO-18 |
| 2N710A | PNP      | -15              | -15              | 70            | -                       | 0.125                       | TO-18 |
| 2N711  | PNP      | -12              | -12              | 80            | 300                     | 0.125                       | TO-18 |
| 2N711A | PNP      | -15              | -14              | 80            | -                       | 0.125                       | TO-18 |
| 2N711B | PNP      | 18               | 15               | 80            | 320*                    | 0.18                        | TO-18 |
| 2N782  | PNP      | -12              | -12              | 20            | -                       | 0.125                       | TO-18 |
| 2N797  | NPN      | 20               | 7                | 40            | 600                     | 0.5                         | TO-18 |
| 2N828  | PNP      | -15              | -15              | 25            | -                       | 0.125                       | TO-18 |
| 2N837  | PNP      | 12               | 12               | 30            | -                       | 0.18                        | TO-18 |
| 2N855  | NPN      | 12               | 11               | 30            | 1000                    | 0.3                         | TO-18 |
| 2N855A | NPN      | 12               | 11               | 30            | 1000                    | 0.3                         | TO-18 |
| 2N860  | PNP      | 15               | 15               | 20            | 460*                    | 0.125                       | TO-18 |
| 2N861  | PNP      | 12               | 12               | 20            | 460*                    | 0.125                       | TO-18 |
| 2N862  | PNP      | 12               | 12               | 20            | 460*                    | 0.125                       | TO-18 |
| 2N863  | PNP      | 12               | 12               | 20            | 460*                    | 0.18                        | TO-18 |
| 2N864  | PNP      | 15               | 15               | 60            | 460*                    | 0.125                       | TO-18 |
| 2N864A | PNP      | 15               | 15               | 60            | -                       | 0.10                        | TO-18 |
| 2N865  | PNP      | 12               | 12               | 40            | 460*                    | 0.125                       | TO-18 |

| Type   | Polarity | BVCBO Max. Volts | BVCES Max. Volts | Typ. Gain HFE | f <sub>cb</sub> Avg. mc | V <sub>sat</sub> Avg. Volts | Case   |
|--------|----------|------------------|------------------|---------------|-------------------------|-----------------------------|--------|
| 2N866  | PNP      | 12               | 12               | 40            | 460*                    | 0.125                       | TO-18  |
| 2N867  | PNP      | 12               | -                | 40            | 460*                    | 0.11                        | TO-18  |
| 2N868  | PNP      | 15               | 15               | 20            | 320*                    | 0.18                        | TO-18  |
| 2N868  | PNP      | 12               | 12               | 17            | 320*                    | 0.18                        | TO-18  |
| 2N870  | PNP      | 12               | 12               | 20            | 320*                    | 0.18                        | TO-18  |
| 2N871  | PNP      | 7                | 7                | 20            | 320*                    | 0.18                        | TO-1C  |
| 2N872  | PNP      | 15               | 15               | 40            | 320*                    | 0.18                        | TO-18  |
| 2N873  | PNP      | 12               | 12               | 40            | 320*                    | 0.18                        | TO-18  |
| 2N874  | PNP      | 12               | 12               | 40            | 320*                    | 0.18                        | TO-18  |
| 2N875  | PNP      | 7                | 7                | 40            | 320*                    | 0.18                        | TO-18  |
| 2N885  | PNP      | 15               | -                | 40            | -                       | 0.10                        | TO-18  |
| 2N894  | PNP      | 15               | 15               | 45            | -                       | 0.18                        | TO-18  |
| 2N1692 | PNP      | 25               | 25               | 10            | 500                     | 0.4                         | TO-102 |
| 2N1693 | PNP      | 25               | 25               | 9             | 450                     | 0.4                         | TO-102 |
| 2N2188 | PNP      | 40               | 40               | 80            | 60                      | -                           | TO-1   |
| 2N2189 | PNP      | 40               | 40               | 80            | 102                     | -                           | TO-1   |
| 2N2190 | PNP      | 60               | 60               | 80            | 60                      | -                           | TO-1   |
| 2N2191 | PNP      | 60               | 60               | 80            | 102                     | -                           | TO-1   |
| 2N2482 | NPN      | 20               | 12               | 15            | 600                     | 2.                          | TO-18  |





case outline drawings cont'd

**D01-3**

**D013**

**D027**

**D04**

**D035**

**D041**

**D05**

**A245**

| TYPE  | MIN.  | MAX.  | MIN.  | MAX.  | MIN.  | MAX.  |
|-------|-------|-------|-------|-------|-------|-------|
| 2000  | 0.110 | 0.120 | 0.020 | 0.030 | 0.010 | 0.015 |
| 2000B | 0.110 | 0.120 | 0.020 | 0.030 | 0.010 | 0.015 |
| 2000C | 0.110 | 0.120 | 0.020 | 0.030 | 0.010 | 0.015 |
| 2000D | 0.110 | 0.120 | 0.020 | 0.030 | 0.010 | 0.015 |

**D07**

MILLIMETER DIMENSIONS ARE DERIVED FROM ORIGINAL INCH DIMENSIONS

| SYMBOL         | INCHES | MILLIMETERS | NOTES |
|----------------|--------|-------------|-------|
| Ø              | 0.010  | 0.254       | 0.004 |
| Ø              | 0.015  | 0.381       | 1     |
| Ø              | 0.020  | 0.508       | 1     |
| L              | 0.005  | 0.127       | 1     |
| L <sub>1</sub> | -      | 0.127       | 2     |

**C212**

**C223**

SPACED ON 200 IS ±1 CENTERS

LEADS 050 ±0.13 DIA

750 IS ±1

150 IS ±1

DIMENSIONS IN INCHES AND MILLIMETERS

**D08**

**D09**

**D010**

**F22**

| TYPE | MIN.  | MAX.  | MIN.  | MAX.  | MIN.  | MAX.  |
|------|-------|-------|-------|-------|-------|-------|
| F22A | 0.100 | 0.110 | 0.010 | 0.015 | 0.010 | 0.015 |
| F22B | 0.100 | 0.110 | 0.010 | 0.015 | 0.010 | 0.015 |
| F22C | 0.100 | 0.110 | 0.010 | 0.015 | 0.010 | 0.015 |
| F22D | 0.100 | 0.110 | 0.010 | 0.015 | 0.010 | 0.015 |
| F22E | 0.100 | 0.110 | 0.010 | 0.015 | 0.010 | 0.015 |
| F22F | 0.100 | 0.110 | 0.010 | 0.015 | 0.010 | 0.015 |
| F22G | 0.100 | 0.110 | 0.010 | 0.015 | 0.010 | 0.015 |
| F22H | 0.100 | 0.110 | 0.010 | 0.015 | 0.010 | 0.015 |