

**POWER DISCRETES**
**Description**

Quick reference data

$V_{BR\ MIN} = 6.12 - 180V$

$V_{RWM} = 5.2 - 152V$

$V_c\ (max) = 11 - 273V$

$I_{(BR)}\ 1N6138 - 1N6173 = 5mA - 175mA$

**Features**

- ◆ Low dynamic impedance
- ◆ Hermetically sealed non-cavity construction
- ◆ 1500 watt peak pulse power
- ◆ 7.5W continuous

These products are qualified to MIL-PRF-19500/516 and are preferred parts as listed in MIL-HDBK-5961. They can be supplied fully released as JANTX and JANTXV versions.

**Electrical Specifications**

Electrical specifications @  $T_A = 25^\circ C$  unless otherwise specified.

| Device Type | Minimum Breakdown Voltage<br>$V_{(BR)} @ I_{(BR)}$ | Test Current<br>$I_{(BR)}$ | Working Pk. Reverse Voltage<br>$V_{RWM}$ | Maximum Reverse Current<br>$I_{R1}$ | Maximum Clamping Voltage<br>$V_c @ I_p$ | Maximum Pk. Pulse Current<br>$I_p$<br>$T_p = 1mS$ | Temp. Coeff. of<br>$V_{(BR)}$<br>$\alpha_{(VZ)}$ | Maximum Reverse Current<br>$I_{R2} @ 150^\circ C$ |
|-------------|--|----------------------------|--|-------------------------------------|---|---|--|---|
|             | Volts  | mA                         | Volts                                    | $\mu A$                             | Volts                                   | Amps  | %/ $^\circ C$                                    | $\mu A$   |
| 1N6138      | 6.12   | 175                        | 5.2                                      | 500                                 | 11.0                                    | 136.4   | 0.05   | 12,000  |
| 1N6139      | 6.75   | 175                        | 5.7                                      | 300                                 | 11.8                                    | 127.1   | 0.06   | 3,000   |
| 1N6139A     | 7.13   | 175                        | 5.7                                      | 300                                 | 11.2                                    | 133.9   | 0.06   | 3,000   |
| 1N6140      | 7.38   | 150                        | 6.2                                      | 100                                 | 12.7                                    | 118.1   | 0.06   | 2,000   |
| 1N6140A     | 7.79   | 150                        | 6.2                                      | 100                                 | 12.1                                    | 124.0   | 0.06   | 2,000   |
| 1N6141      | 8.19   | 150                        | 6.9                                      | 100                                 | 14.0                                    | 107.1   | 0.06   | 1,200   |
| 1N6141A     | 8.65   | 150                        | 6.9                                      | 100                                 | 13.4                                    | 111.9   | 0.06   | 1,200   |
| 1N6142      | 9.0  | 125                        | 7.6                                      | 100                                 | 15.2                                    | 98.7  | 0.07   | 800   |
| 1N6142A     | 9.5  | 125                        | 7.6                                      | 100                                 | 14.5                                    | 103.4   | 0.07   | 800   |
| 1N6143      | 9.9  | 125                        | 8.4                                      | 20                                  | 16.3                                    | 92.0  | 0.07   | 800   |
| 1N6143A     | 10.45  | 125                        | 8.4                                      | 20                                  | 15.6                                    | 96.2  | 0.07   | 800   |
| 1N6144      | 10.8   | 100                        | 9.1                                      | 20                                  | 17.7                                    | 84.7  | 0.07   | 600   |
| 1N6144A     | 11.4   | 100                        | 9.1                                      | 20                                  | 16.9                                    | 88.8  | 0.07   | 600   |
| 1N6145      | 11.7   | 100                        | 9.9                                      | 20                                  | 19.0                                    | 78.9  | 0.08   | 600   |
| 1N6145A     | 12.35  | 100                        | 9.9                                      | 20                                  | 18.2                                    | 82.4  | 0.08   | 600   |
| 1N6146      | 13.5   | 75                         | 11.4                                     | 20                                  | 21.9                                    | 68.5  | 0.08   | 400   |
| 1N6146A     | 14.25  | 75                         | 11.4                                     | 20                                  | 21.0                                    | 71.4  | 0.08   | 400   |
| 1N6147      | 14.4   | 75                         | 12.2                                     | 20                                  | 23.4                                    | 64.1  | 0.08   | 400   |
| 1N6147A     | 15.2   | 75                         | 12.2                                     | 20                                  | 22.3                                    | 67.3  | 0.08   | 400   |

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| Device Type | Minimum Breakdown Voltage<br>$V_{(BR)} @ I_{(BR)}$ | Test Current<br>$I_{(BR)}$ | Working Pk. Reverse Voltage<br>$V_{RWM}$ | Maximum Reverse Current<br>$I_{R1}$ | Maximum Clamping Voltage<br>$V_C @ I_P$ | Maximum Pk. Pulse Current<br>$I_P$<br>$T_P = 1\text{mS}$ | Temp. Coeff. of<br>$V_{(BR)}$<br>$\alpha_{(VZ)}$ | Maximum Reverse Current<br>$I_{R2} @ 150^\circ\text{C}$ |
|-------------|--|----------------------------|--|-------------------------------------|---|--|--|---|
|             | Volts  | mA                         | Volts                                    | $\mu\text{A}$                       | Volts                                   | Amps   | $\%/^\circ\text{C}$                              | $\mu\text{A}$   |
| 1N6148      | 16.2   | 65                         | 13.7                                     | 10                                  | 26.3                                    | 57.0   | 0.085  | 400   |
| 1N6148A     | 17.1   | 65                         | 13.7                                     | 10                                  | 25.1                                    | 59.8   | 0.085  | 400   |
| 1N6149      | 18.0   | 65                         | 15.2                                     | 5                                   | 29.0                                    | 51.7   | 0.085  | 400   |
| 1N6149A     | 19.0   | 65                         | 15.2                                     | 5                                   | 27.7                                    | 54.2   | 0.085  | 400   |
| 1N6150      | 19.8   | 50                         | 16.7                                     | 5                                   | 31.9                                    | 47.0   | 0.085  | 400   |
| 1N6150A     | 20.9   | 50                         | 16.7                                     | 5                                   | 30.5                                    | 49.2   | 0.085  | 400   |
| 1N6151      | 21.6   | 50                         | 18.2                                     | 5                                   | 34.8                                    | 43.1   | 0.09   | 400   |
| 1N6151A     | 22.8   | 50                         | 18.2                                     | 5                                   | 33.3                                    | 45.0   | 0.09   | 400   |
| 1N6152      | 24.3   | 50                         | 20.6                                     | 5                                   | 39.2                                    | 38.3   | 0.09   | 400   |
| 1N6152A     | 25.7   | 50                         | 20.6                                     | 5                                   | 37.4                                    | 40.1   | 0.09   | 400   |
| 1N6153      | 27.0   | 40                         | 22.8                                     | 5                                   | 43.6                                    | 34.4   | 0.09   | 400   |
| 1N6153A     | 28.5   | 40                         | 22.8                                     | 5                                   | 41.6                                    | 36.0   | 0.09   | 400   |
| 1N6154      | 29.7   | 40                         | 25.1                                     | 5                                   | 47.9                                    | 31.3   | 0.095  | 400   |
| 1N6154A     | 31.4   | 40                         | 25.1                                     | 5                                   | 45.7                                    | 32.8   | 0.095  | 400   |
| 1N6155      | 32.4   | 30                         | 27.4                                     | 5                                   | 52.3                                    | 28.7   | 0.095  | 400   |
| 1N6155A     | 34.2   | 30                         | 27.4                                     | 5                                   | 49.9                                    | 30.1   | 0.095  | 400   |
| 1N6156      | 35.1   | 30                         | 29.7                                     | 5                                   | 56.2                                    | 26.7   | 0.095  | 400   |
| 1N6156A     | 37.1   | 30                         | 29.7                                     | 5                                   | 53.6                                    | 28.0   | 0.095  | 400   |
| 1N6157      | 38.7   | 30                         | 32.7                                     | 5                                   | 62.0                                    | 24.2   | 0.095  | 400   |
| 1N6157A     | 40.9   | 30                         | 32.7                                     | 5                                   | 59.1                                    | 25.4   | 0.095  | 400   |
| 1N6158      | 42.3   | 25                         | 35.8                                     | 5                                   | 67.7                                    | 22.2   | 0.095  | 400   |
| 1N6158A     | 44.7   | 25                         | 35.8                                     | 5                                   | 64.6                                    | 23.2   | 0.095  | 400   |
| 1N6159      | 45.9   | 25                         | 38.8                                     | 5                                   | 73.5                                    | 20.4   | 0.095  | 400   |
| 1N6159A     | 48.5   | 25                         | 38.8                                     | 5                                   | 70.1                                    | 21.4   | 0.095  | 400   |
| 1N6160      | 50.4   | 20                         | 42.6                                     | 5                                   | 80.7                                    | 18.6   | 0.095  | 400   |
| 1N6160A     | 53.2   | 20                         | 42.6                                     | 5                                   | 77.0                                    | 19.5   | 0.095  | 400   |

## POWER DISCRETES

### Electrical Specifications

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| Device Type | Minimum Breakdown Voltage $V_{(BR)}$ @ $I_{(BR)}$ | Test Current $I_{(BR)}$ | Working Pk. Reverse Voltage $V_{RWM}$ | Maximum Reverse Current $I_{R1}$ | Maximum Clamping Voltage $V_C$ @ $I_P$ | Maximum Pk. Pulse Current $I_P$ $T_P = 1\text{mS}$ | Temp. Coeff. of $V_{(BR)}$ $\alpha$ ( $\%/^\circ\text{C}$ ) | Maximum Reverse Current $I_{R2}$ @ $150^\circ\text{C}$ |
|-------------|---|-------------------------|---------------------------------------|----------------------------------|--|--|---|--|
|             | Volts   | mA                      | Volts                                 | $\mu\text{A}$                    | Volts                                  | Amps   | $\%/^\circ\text{C}$   | $\mu\text{A}$  |
| 1N6161      | 55.8  | 20                      | 47.1                                  | 5                                | 89.3                                   | 16.8   | 0.1   | 400  |
| 1N6161A     | 58.9  | 20                      | 47.1                                  | 5                                | 85.3                                   | 17.6   | 0.1   | 400  |
| 1N6162      | 61.2  | 20                      | 51.7                                  | 5                                | 98.0                                   | 15.3   | 0.1   | 400  |
| 1N6162A     | 64.6  | 20                      | 51.7                                  | 5                                | 97.1                                   | 15.4   | 0.1   | 400  |
| 1N6163      | 67.5  | 20                      | 56.0                                  | 5                                | 108.1                                  | 13.9   | 0.1   | 400  |
| 1N6163A     | 71.3  | 20                      | 56.0                                  | 5                                | 103.1                                  | 14.5   | 0.1   | 400  |
| 1N6164      | 73.8  | 15                      | 62.2                                  | 5                                | 118.2                                  | 12.7   | 0.1   | 400  |
| 1N6164A     | 77.9  | 15                      | 62.2                                  | 5                                | 112.8                                  | 13.3   | 0.1   | 400  |
| 1N6165      | 81.9  | 15                      | 69.2                                  | 5                                | 131.1                                  | 11.4   | 0.1   | 400  |
| 1N6165A     | 86.5  | 15                      | 69.2                                  | 5                                | 125.1                                  | 12.0   | 0.1   | 400  |
| 1N6166      | 90.0  | 12                      | 76.0                                  | 5                                | 144.1                                  | 10.4   | 0.1   | 400  |
| 1N6166A     | 95.0  | 12                      | 76.0                                  | 5                                | 137.6                                  | 10.9   | 0.1   | 400  |
| 1N6167      | 99.0  | 12                      | 83.6                                  | 5                                | 158.5                                  | 9.5  | 0.1   | 400  |
| 1N6167A     | 104.5   | 12                      | 83.6                                  | 5                                | 151.3                                  | 9.9  | 0.1   | 400  |
| 1N6168      | 108.0   | 10                      | 91.2                                  | 5                                | 172.9                                  | 8.7  | 0.1   | 400  |
| 1N6168A     | 114.0   | 10                      | 91.2                                  | 5                                | 165.1                                  | 9.1  | 0.1   | 400  |
| 1N6169      | 117.0   | 10                      | 98.8                                  | 5                                | 187.3                                  | 8.0  | 0.105   | 400  |
| 1N6169A     | 123.5   | 10                      | 98.8                                  | 5                                | 178.8                                  | 8.4  | 0.105   | 400  |
| 1N6170      | 135.0   | 8                       | 114.0                                 | 5                                | 216.2                                  | 6.9  | 0.105   | 400  |
| 1N6170A     | 142.5   | 8                       | 114.0                                 | 5                                | 206.3                                  | 7.3  | 0.105   | 400  |
| 1N6171      | 144   | 8                       | 121.6                                 | 5                                | 228.8                                  | 6.6  | 0.105   | 400  |
| 1N6171A     | 152   | 8                       | 121.6                                 | 5                                | 218.4                                  | 6.9  | 0.105   | 400  |
| 1N6172      | 162   | 5                       | 136.8                                 | 5                                | 257.4                                  | 5.8  | 0.11  | 400  |
| 1N6172A     | 171   | 5                       | 136.8                                 | 5                                | 245.7                                  | 6.1  | 0.11  | 400  |
| 1N6173      | 180   | 5                       | 152.0                                 | 5                                | 286.0                                  | 5.2  | 0.11  | 400  |
| 1N6173A     | 190   | 5                       | 152.0                                 | 5                                | 273.0                                  | 5.5  | 0.11  | 400  |

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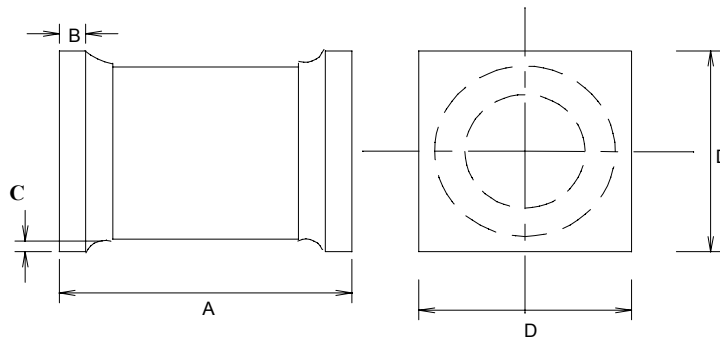
### Ordering Information

| Part Number  | Description                      |
|--|----------------------------------|
| 1N6138US thru 1N6173US<br>1N6139AUS thru 1N6173AUS | Surface Mount(US) <sup>(1)</sup> |

Note:

(1) Available in trays or tape and reel packaging. Please consult factory for quantities.

### Outline Drawing



|   | Dimensions                                   |       |
|---|--|-------|
|   | 1N6138US - 1N6173US<br>1N6139AUS - 1N6173AUS |       |
|   | Inches                                       |       |
|   | MIN  | MAX   |
| A | 0.205  | 0.245 |
| B | 0.019  | 0.028 |
| C | 0.003  | -     |
| D | 0.183  | 0.202 |

### Contact Information

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