

# Z21D Series

## Specifications

| Part No.  | Varistor Voltage     | Maximum Allowable Voltage |       | Clamping Voltage (max.) | Rated Power | Maximum Energy |       | Maximum Peak Current (8/20μs) |         | Capacitance (max.) 1kHz |
|-----------|----------------------|---------------------------|-------|-------------------------|-------------|----------------|-------|-------------------------------|---------|-------------------------|
|           |                      | AC <sub>rms</sub> (V)     | DC(V) |                         |             | (10/1000μs)    | (2ms) | 1 time                        | 2 times |                         |
|           | V <sub>1mA</sub> (V) |                           |       | V(V)                    | (W)         | (J)            | (J)   | (A)                           | (A)     | (pF)                    |
| Z21D180   | 18(16-20)            | 11                        | 14    | 36 at 20A               | 0.2         | 13             | 12    | 3000                          | 2000    | 40000                   |
| Z21D220   | 22(20-24)            | 14                        | 18    | 43                      | 0.2         | 16             | 14    | 3000                          | 2000    | 30000                   |
| Z21D270   | 27(24-30)            | 17                        | 22    | 53                      | 0.2         | 19             | 17    | 3000                          | 2000    | 24500                   |
| Z21D330   | 33(30-36)            | 20                        | 26    | 65                      | 0.2         | 24             | 21    | 3000                          | 2000    | 20000                   |
| Z21D390   | 39(35-43)            | 25                        | 31    | 77                      | 0.2         | 28             | 25    | 3000                          | 2000    | 13800                   |
| Z21D470   | 47(42-52)            | 30                        | 38    | 93                      | 0.2         | 34             | 30    | 3000                          | 2000    | 13500                   |
| Z21D560   | 56(50-62)            | 35                        | 45    | 110                     | 0.2         | 41             | 36    | 3000                          | 2000    | 12200                   |
| Z21D680   | 68(61-75)            | 40                        | 56    | 135                     | 0.2         | 49             | 44    | 3000                          | 2000    | 11500                   |
| * Z21D820 | 82(74-90)            | 50                        | 65    | 135 at 100A             | 1.0         | 56             | 40    | 10000                         | 6500    | 7500                    |
| * Z21D101 | 100(90-110)          | 60                        | 85    | 165                     | 1.0         | 70             | 50    | 10000                         | 6500    | 6500                    |
| * Z21D121 | 120(108-132)         | 75                        | 100   | 200                     | 1.0         | 85             | 60    | 10000                         | 6500    | 5500                    |
| * Z21D151 | 150(135-165)         | 95                        | 125   | 250                     | 1.0         | 106            | 75    | 10000                         | 6500    | 4500                    |
| * Z21D201 | 200(185-225)         | 130                       | 170   | 340                     | 1.0         | 140            | 100   | 10000                         | 6500    | 1700                    |
| * Z21D221 | 220(198-242)         | 140                       | 180   | 360                     | 1.0         | 155            | 110   | 10000                         | 6500    | 1600                    |
| * Z21D241 | 240(216-264)         | 150                       | 200   | 395                     | 1.0         | 168            | 120   | 10000                         | 6500    | 1500                    |
| * Z21D271 | 270(247-303)         | 175                       | 225   | 455                     | 1.0         | 190            | 135   | 10000                         | 6500    | 1300                    |
| * Z21D331 | 330(297-363)         | 210                       | 270   | 545                     | 1.0         | 228            | 160   | 10000                         | 6500    | 1100                    |
| * Z21D361 | 360(324-396)         | 230                       | 300   | 595                     | 1.0         | 255            | 180   | 10000                         | 6500    | 1100                    |
| * Z21D391 | 390(351-429)         | 250                       | 320   | 650                     | 1.0         | 275            | 195   | 10000                         | 6500    | 1100                    |
| * Z21D431 | 430(387-473)         | 275                       | 350   | 710                     | 1.0         | 303            | 215   | 10000                         | 6500    | 1000                    |
| * Z21D471 | 470(423-517)         | 300                       | 385   | 775                     | 1.0         | 350            | 250   | 10000                         | 6500    | 900                     |
| * Z21D511 | 510(459-561)         | 320                       | 410   | 845                     | 1.0         | 382            | 273   | 10000                         | 6500    | 800                     |
| * Z21D561 | 560(504-616)         | 350                       | 450   | 930                     | 1.0         | 382            | 273   | 7500                          | 6500    | 750                     |
| * Z21D681 | 680(612-748)         | 420                       | 560   | 1120                    | 1.0         | 382            | 273   | 7500                          | 6500    | 650                     |
| * Z21D751 | 750(675-825)         | 460                       | 615   | 1240                    | 1.0         | 420            | 300   | 7500                          | 6500    | 600                     |
| * Z21D821 | 820(738-902)         | 510                       | 670   | 1355                    | 1.0         | 460            | 325   | 7500                          | 6500    | 530                     |
| * Z21D911 | 910(819-1001)        | 550                       | 745   | 1500                    | 1.0         | 510            | 360   | 7500                          | 6500    | 500                     |
| * Z21D102 | 1000(900-1100)       | 625                       | 825   | 1650                    | 1.0         | 565            | 400   | 7500                          | 6500    | 450                     |

- Operating temperature range: -40 to 85°C
- Storage temperature range: -40 to 125°C

\* UL 1449 approved model

## Dimensions

| <p><b>Z5D</b></p> <p><b>Z7D</b></p> <p><b>Z10D</b></p> <p><b>Z15D</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p><b>Z21D</b></p> <p><b>Crimped Leads and Taped</b><br/>Z5D □□□ T4C<br/>Z7D □□□ T4C</p> <p><b>Straight Leads and Taped</b><br/>Z5D □□□ T4D<br/>Z7D □□□ T4D</p> |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---|----------|----------------|----------|----------------|-----------|----------------|-----------|----|----------------------------------------|---|---------|----|-----|---|--------------------------------------|----|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|----------------|--------|----------------|---------|----------------|------|---|------------|----------------|----------|-----------------|----------|---|---------|---|-------|
| <p>*Dimension "T": Conforms to each individual specification<br/>*Packing quantity: 1000pcs/BOX</p> <table> <tr> <th>Symbol</th><th>Type I</th></tr> <tr> <td>P</td><td>12.7±1.0</td></tr> <tr> <td>P<sub>0</sub></td><td>12.7±0.3</td></tr> <tr> <td>P<sub>1</sub></td><td>3.85±0.70</td></tr> <tr> <td>P<sub>2</sub></td><td>6.35±1.30</td></tr> <tr> <td>φd</td><td>0.60<sup>+0.08</sup><sub>-0.05</sub></td></tr> <tr> <td>F</td><td>5.0±0.5</td></tr> <tr> <td>Δh</td><td>0±2</td></tr> <tr> <td>W</td><td>18.0<sup>+1.0</sup><sub>-0.5</sub></td></tr> <tr> <td>φD</td><td>Z5D: 7max,<br/>Z7D: 8.5max</td></tr> </table> | Symbol                                                                                                                                                          | Type I | P | 12.7±1.0 | P <sub>0</sub> | 12.7±0.3 | P <sub>1</sub> | 3.85±0.70 | P <sub>2</sub> | 6.35±1.30 | φd | 0.60 <sup>+0.08</sup> <sub>-0.05</sub> | F | 5.0±0.5 | Δh | 0±2 | W | 18.0 <sup>+1.0</sup> <sub>-0.5</sub> | φD | Z5D: 7max,<br>Z7D: 8.5max | <p>*Dimension "T": Conforms to each individual specification<br/>*Packing quantity: 1000pcs/BOX</p> <table> <tr> <th>Symbol</th><th>Type I</th></tr> <tr> <td>W<sub>0</sub></td><td>5.0min</td></tr> <tr> <td>W<sub>1</sub></td><td>9.0±0.5</td></tr> <tr> <td>W<sub>2</sub></td><td>3max</td></tr> <tr> <td>H</td><td>Approx. 20</td></tr> <tr> <td>H<sub>0</sub></td><td>17.0±0.5</td></tr> <tr> <td>φD<sub>0</sub></td><td>φ4.0±0.2</td></tr> <tr> <td>t</td><td>0.6±0.3</td></tr> <tr> <td>L</td><td>11max</td></tr> </table> | Symbol | Type I | W <sub>0</sub> | 5.0min | W <sub>1</sub> | 9.0±0.5 | W <sub>2</sub> | 3max | H | Approx. 20 | H <sub>0</sub> | 17.0±0.5 | φD <sub>0</sub> | φ4.0±0.2 | t | 0.6±0.3 | L | 11max |
| Symbol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Type I                                                                                                                                                          |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| P                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 12.7±1.0                                                                                                                                                        |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| P <sub>0</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 12.7±0.3                                                                                                                                                        |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| P <sub>1</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3.85±0.70                                                                                                                                                       |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| P <sub>2</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 6.35±1.30                                                                                                                                                       |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| φd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.60 <sup>+0.08</sup> <sub>-0.05</sub>                                                                                                                          |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 5.0±0.5                                                                                                                                                         |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| Δh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0±2                                                                                                                                                             |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 18.0 <sup>+1.0</sup> <sub>-0.5</sub>                                                                                                                            |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| φD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Z5D: 7max,<br>Z7D: 8.5max                                                                                                                                       |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| Symbol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Type I                                                                                                                                                          |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| W <sub>0</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5.0min                                                                                                                                                          |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| W <sub>1</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 9.0±0.5                                                                                                                                                         |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| W <sub>2</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3max                                                                                                                                                            |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Approx. 20                                                                                                                                                      |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| H <sub>0</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 17.0±0.5                                                                                                                                                        |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| φD <sub>0</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | φ4.0±0.2                                                                                                                                                        |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| t                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.6±0.3                                                                                                                                                         |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |
| L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 11max                                                                                                                                                           |        |   |          |                |          |                |           |                |           |    |                                        |   |         |    |     |   |                                      |    |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |                |        |                |         |                |      |   |            |                |          |                 |          |   |         |   |       |

Unit(mm)