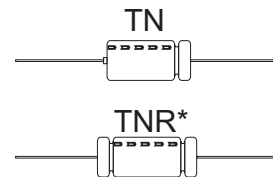


### FEATURES

- 85°C, 1000 hours assured, standard non-polarized series.
- Suitable for use in circuits which have a reversed or unknown polarity.
- Bi-Polar types available (TB) (TBL).



\* TNR available by special request only.

### SPECIFICATIONS

| Item                                                                           | Performance                                                                                                                                           |                                  |           |      |      |      |      |      |      |   |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------|------|------|------|------|------|------|---|
| Operating Temperature Range                                                    | -40°C ~ +85°C                                                                                                                                         |                                  |           |      |      |      |      |      |      |   |
| Capacitance Tolerance                                                          | ± 20% (120Hz, 20°C)                                                                                                                                   |                                  |           |      |      |      |      |      |      |   |
| Leakage Current (at 20°C)                                                      | I = 0.03CV or 3 ( A) whichever is greater (after 2 minutes)<br>Where, C = rated capacitance in F. V=rated DC working voltage in V.                    |                                  |           |      |      |      |      |      |      |   |
| Dissipation Factor<br>Tan δ (max) at 120 Hz, 20°C                              | Rated Voltage                                                                                                                                         | 6.3                              | 10        | 16   | 25   | 35   | 50   | 63   | 100  |   |
|                                                                                |                                                                                                                                                       | 0.25                             | 0.22      | 0.18 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 |   |
| When the capacitance exceed 1000 F, 0.02 shall be added every 1000 F increase. |                                                                                                                                                       |                                  |           |      |      |      |      |      |      |   |
| Low Temperature Characteristics (at 120Hz)                                     | Impedance ratio shall not exceed the values given in the table below                                                                                  |                                  |           |      |      |      |      |      |      |   |
|                                                                                | Rated Voltage                                                                                                                                         | 6.3                              | 10        | 16   | 25   | 35   | 50   | 63   | 100  |   |
|                                                                                | Impedance Ratio                                                                                                                                       | Z(-25°C)<br>Z(-40°C)             | /Z(+20°C) | 4    | 3    | 3    | 2    | 2    | 2    | 2 |
| Load Life Test                                                                 | Test Time                                                                                                                                             | 1000 Hrs                         |           |      |      |      |      |      |      |   |
|                                                                                | Capacitance Change                                                                                                                                    | ≤ ± 20%                          |           |      |      |      |      |      |      |   |
|                                                                                | Dissipation Factor                                                                                                                                    | Less than 200% of specific value |           |      |      |      |      |      |      |   |
|                                                                                | Leakage Current                                                                                                                                       | Within specified values          |           |      |      |      |      |      |      |   |
|                                                                                | The above specification shall be satisfied when the capacitors are restored to 20°C after rated voltage applied for 1000 hrs at 85°C                  |                                  |           |      |      |      |      |      |      |   |
| Shelf Life Test                                                                | Test Time                                                                                                                                             | 1000 Hrs                         |           |      |      |      |      |      |      |   |
|                                                                                | Capacitance Change                                                                                                                                    | ≤ ± 20%                          |           |      |      |      |      |      |      |   |
|                                                                                | Dissipation Factor                                                                                                                                    | Less than 200% of specific value |           |      |      |      |      |      |      |   |
|                                                                                | Leakage Current                                                                                                                                       | Within specified values          |           |      |      |      |      |      |      |   |
|                                                                                | The above specification shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hrs at 85°C without voltage applied. |                                  |           |      |      |      |      |      |      |   |
| Standards                                                                      | Satisfies Characteristic W of JIS C 5141                                                                                                              |                                  |           |      |      |      |      |      |      |   |

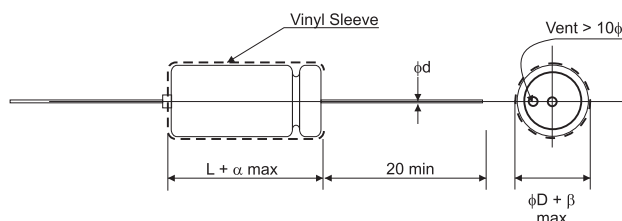
### DIMENSIONS & PERMISSABLE RIPPLE CURRENT

Dimension: φD×L(mm); Ripple Current: mA/RMS at 120Hz 85°C

| VDC  |      | 6.3V(0J) |     | 10V(1A)  |      | 16V(1C)  |      | 25V(1E)  |      | 35V(1V)  |     | 50V(1H)  |      | 63V(1J)  |     | 100V(2A) |     |
|------|------|----------|-----|----------|------|----------|------|----------|------|----------|-----|----------|------|----------|-----|----------|-----|
| μF   | Code | φDXL     | mA  | φDXL     | mA   | φDXL     | mA   | φDXL     | mA   | φDXL     | mA  | φDXL     | mA   | φDXL     | mA  | φDXL     | mA  |
| 0.1  | 0R1  |          |     |          |      |          |      |          |      |          |     | 6.3 x 13 | 5    | 6.3 x 13 | 5   | 6.3 x 13 | 5   |
| 0.22 | R22  |          |     |          |      |          |      |          |      |          |     | 6.3 x 13 | 7    | 6.3 x 13 | 8   | 6.3 x 13 | 8   |
| 0.33 | R33  |          |     |          |      |          |      |          |      |          |     | 6.3 x 13 | 9    | 6.3 x 13 | 10  | 6.3 x 13 | 10  |
| 0.47 | R47  |          |     |          |      |          |      |          |      |          |     | 6.3 x 13 | 10   | 6.3 x 13 | 12  | 6.3 x 13 | 12  |
| 1    | 010  |          |     |          |      |          |      |          |      |          |     | 6.3 x 13 | 16   | 6.3 x 13 | 18  | 6.3 x 13 | 18  |
| 2.2  | 2R2  |          |     |          |      |          |      |          |      |          |     | 6.3 x 13 | 23   | 6.3 x 13 | 27  | 6.3 x 13 | 27  |
| 3.3  | 3R3  |          |     |          |      |          |      |          |      |          |     | 6.3 x 13 | 29   | 6.3 x 13 | 31  | 6.3 x 13 | 35  |
| 4.7  | 4R7  |          |     |          |      |          |      |          |      |          |     | 6.3 x 13 | 34   | 6.3 x 13 | 40  | 6.3 x 13 | 42  |
| 10   | 100  |          |     |          |      |          |      |          |      | 6.3 x 13 | 46  | 6.3 x 13 | 54   | 8 x 13   | 59  | 8 x 16   | 69  |
| 22   | 220  |          |     |          |      | 6.3 x 13 | 61   | 6.3 x 13 | 69   | 6.3 x 13 | 74  | 8 x 13   | 89   | 8 x 16   | 97  | 10 x 21  | 120 |
| 33   | 330  |          |     | 6.3 x 13 | 71   | 6.3 x 13 | 80   | 8 x 13   | 85   | 8 x 16   | 101 | 10 x 16  | 109  | 10 x 17  | 139 | 10 x 21  | 153 |
| 47   | 470  |          |     | 6.3 x 13 | 85   | 8 x 13   | 95   | 8 x 13   | 113  | 8 x 16   | 120 | 10 x 17  | 152  | 10 x 21  | 174 | 13 x 22  | 203 |
| 100  | 101  | 6.3 x 13 | 118 | 8 x 13   | 147  | 8 x 16   | 155  | 10 x 17  | 192  | 10 x 21  | 205 | 10 x 21  | 232  | 13 x 22  | 269 | 16 x 27  | 317 |
| 220  | 221  | 8 x 16   | 195 | 8 x 16   | 254  | 10 x 17  | 268  | 10 x 21  | 298  | 13 x 22  | 338 | 13 x 27  | 381  | 16 x 27  | 447 | 16 x 37  | 501 |
| 330  | 331  | 8 x 16   | 239 | 10 x 17  | 312  | 10 x 21  | 344  | 13 x 22  | 387  | 13 x 27  | 433 | 16 x 27  | 500  | 16 x 33  | 567 |          |     |
| 470  | 471  | 10 x 17  | 333 | 10 x 21  | 389  | 13 x 22  | 436  | 13 x 27  | 483  | 16 x 27  | 552 | 16 x 33  | 618  | 18 x 42  | 792 |          |     |
| 1000 | 102  | 13 x 21  | 508 | 13 x 22  | 603  | 13 x 27  | 664  | 16 x 27  | 781  | 16 x 37  | 857 | 18 x 42  | 1054 |          |     |          |     |
| 2200 | 222  | 13 x 27  | 836 | 16 x 28  | 1000 | 16 x 37  | 1121 | 18 x 42  | 1355 |          |     |          |      |          |     |          |     |

### LEAD SPACING AND DIAMETER

|     |     |   |     |    |    |    |
|-----|-----|---|-----|----|----|----|
| φ D | 6.3 | 8 | 10  | 13 | 16 | 18 |
| φ d | 0.6 |   | 0.8 |    |    |    |
| α   | 1.5 |   | 2.0 |    |    |    |
| β   | 0.5 |   | 1.0 |    |    |    |



### PART NUMBER EXAMPLE TN 331 M 0J TR 080 160 TNR 331 M 1V TA 130 320