



**THE DATASHEET OF  
SN331M025ST**



# Type SN 85 °C Non-Polar Aluminum Electrolytic Capacitors

## 85 °C, Radial Leaded Non-Polar Aluminum Electrolytic



Type SN is a non-polar radial leaded aluminum electrolytic capacitor with a +85 °C, 1000 hours life rating. The SN is ideal for applications where the polarity is unknown or reversed such as signal coupling circuits and speakers.

### Highlights

- Non-polar
- +85 °C
- Good for unknown polarity applications
- Available in T&R and ammo pack

### Specifications

|                                     |  |
|-------------------------------------|--|
| <b>Capacitance Range:</b>           | 0.47 to 2200 µF                          |
| <b>Voltage Range:</b>               | 6.3 to 100 WVNP                          |
| <b>Capacitance Tolerance:</b>       | ±20%                                     |
| <b>Operating Temperature Range:</b> | -40 °C to +85 °C                         |
| <b>DC Leakage Current:</b>          | After 2 minutes, +20 °C at rated voltage |

$$I = .03CV + 4 \mu A \text{ Max}$$

C = Capacitance in (µF)  
V = Rated voltage  
I = Leakage current in µA

#### Dissipation Factor @ 120 Hz, +25 °C:

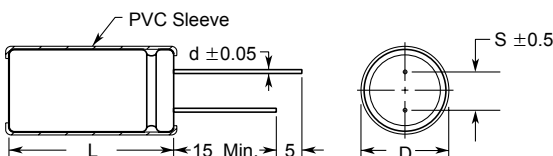
|               |     |    |    |    |    |    |     |
|---------------|-----|----|----|----|----|----|-----|
| <b>WV (V)</b> | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 |
| <b>DF (%)</b> | 24  | 20 | 17 | 15 | 14 | 12 | 10  |

For capacitance values > 1000 µF, the DF (%) value is increased 2% for every additional 1000 µF

**Load Life:** Apply WVNP for 1,000 hours at +85 °C with polarity inverted every 250 hours  
Capacitance change within 20% of initial limit  
DC leakage current meets initial limits  
ESR ≤ 200% of initial value

**Shelf Life:** 500 hrs with no voltage applied at +85 °C  
Cap change within 25% from initial limits  
DC leakage ≤ 200% of initial value  
ESR ≤ 200% of initial value

### Outline Drawing



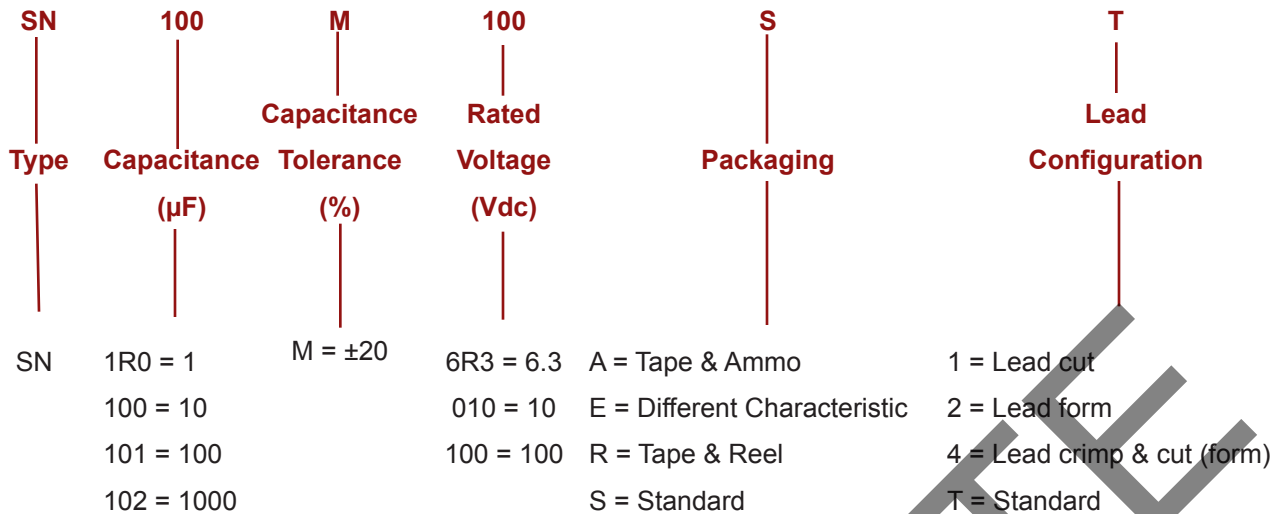
Case vented on diameters 6.3 and greater.

Vinyl sleeve adds .5 Max. to diameter and 2.0 Max. to length.

Dimensions in (millimeters)

# Type SN 85 °C Non-Polar Aluminum Electrolytic Capacitors

## Part Numbering System



## Ratings

| Cap<br>(μF)                   | Catalog<br>Part Number | Max ESR<br>120 Hz<br>+25 °C<br>(Ω) | Max Ripple<br>120 Hz<br>+85 °C<br>(mA) | Size in. (mm)   |               |                   |                  |
|-------------------------------|------------------------|------------------------------------|--|-----------------|---------------|-------------------|------------------|
|                               |                        |                                    |  | Diameter<br>(D) | Length<br>(L) | Lead Space<br>(S) | Lead Dia.<br>(d) |
| <b>6.3 WVNP (8 VNP Surge)</b> |                        |                                    |  |                 |               |                   |                  |
| 33                            | SN330M6R3ST            | 9.65                               | 63                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 47                            | SN470M6R3ST            | 6.78                               | 84                                     | .236 (6.0)      | .433 (11.0)   | .098 (2.5)        | .0197 (0.5)      |
| 100                           | SN101M6R3ST            | 3.18                               | 140                                    | .315 (8.0)      | .453 (11.5)   | .138 (3.5)        | .0197 (0.5)      |
| 220                           | SN221M6R3ST            | 1.45                               | 235                                    | .394 (10.0)     | .472 (12.0)   | .197 (5.0)        | .0236 (0.6)      |
| 330                           | SN331M6R3ST            | 0.97                               | 310                                    | .394 (10.0)     | .630 (16.0)   | .197 (5.0)        | .0236 (0.6)      |
| 470                           | SN471M6R3ST            | 0.68                               | 400                                    | .394 (10.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 1000                          | SN102M6R3ST            | 0.32                               | 690                                    | .512 (13.0)     | .984 (25.0)   | .197 (5.0)        | .0236 (0.6)      |
| 2200                          | SN222M6R3ST            | 0.16                               | 1250                                   | .630 (16.0)     | 1.26 (32.0)   | .295 (7.5)        | .0315 (0.8)      |
| <b>10 WVNP (13 VNP Surge)</b> |                        |                                    |  |                 |               |                   |                  |
| 10                            | SN100M010ST            | 26.54                              | 42                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 22                            | SN220M010ST            | 12.06                              | 57                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 33                            | SN330M010ST            | 8.04                               | 77                                     | .236 (6.0)      | .433 (11.0)   | .098 (2.5)        | .0197 (0.5)      |
| 47                            | SN470M010ST            | 5.65                               | 93                                     | .236 (6.0)      | .433 (11.0)   | .098 (2.5)        | .0197 (0.5)      |
| 100                           | SN101M010ST            | 2.65                               | 193                                    | .315 (8.0)      | .453 (11.5)   | .138 (3.5)        | .0197 (0.5)      |
| 220                           | SN221M010ST            | 1.21                               | 255                                    | .394 (10.0)     | .630 (16.0)   | .197 (5.0)        | .0236 (0.6)      |
| 330                           | SN331M010ST            | 0.80                               | 380                                    | .394 (10.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 470                           | SN471M010ST            | 0.56                               | 470                                    | .512 (13.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 1000                          | SN102M010ST            | 0.27                               | 885                                    | .630 (16.0)     | .984 (25.0)   | .295 (7.5)        | .0315 (0.8)      |
| 2200                          | SN222M010ST            | 0.13                               | 1450                                   | .630 (16.0)     | 1.42 (36.0)   | .295 (7.5)        | .0315 (0.8)      |
| <b>16 WVNP (20 VNP Surge)</b> |                        |                                    |  |                 |               |                   |                  |
| 10                            | SN100M016ST            | 22.56                              | 42                                     | .236 (6.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 22                            | SN220M016ST            | 10.25                              | 69                                     | .236 (6.0)      | .433 (11.0)   | .098 (2.5)        | .0197 (0.5)      |
| 33                            | SN330M016ST            | 6.84                               | 98                                     | .315 (8.0)      | .453 (11.5)   | .138 (3.5)        | .0197 (0.5)      |
| 47                            | SN470M016ST            | 4.80                               | 115                                    | .315 (8.0)      | .453 (11.5)   | .138 (3.5)        | .0197 (0.5)      |
| 100                           | SN101M016ST            | 2.26                               | 205                                    | .394 (10.0)     | .630 (16.0)   | .197 (5.0)        | .0236 (0.6)      |
| 220                           | SN221M016ST            | 1.03                               | 330                                    | .394 (10.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 330                           | SN331M016ST            | 0.68                               | 445                                    | .512 (13.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 470                           | SN471M016ST            | 0.48                               | 570                                    | .512 (13.0)     | .984 (25.0)   | .197 (5.0)        | .0236 (0.6)      |
| 1000                          | SN102M016ST            | 0.23                               | 1020                                   | .630 (16.0)     | 1.26 (32.0)   | .295 (7.5)        | .0315 (0.8)      |

# Type SN 85 °C Non-Polar Aluminum Electrolytic Capacitors

## Ratings

| Cap<br>( $\mu$ F)             | Catalog<br>Part Number | Max ESR<br>120 Hz<br>+25 °C<br>( $\Omega$ ) | Max Ripple<br>120 Hz<br>+85 °C<br>(mA) | Size in. (mm)   |               |                   |                  |
|-------------------------------|------------------------|---|--|-----------------|---------------|-------------------|------------------|
|                               |                        |   |  | Diameter<br>(D) | Length<br>(L) | Lead Space<br>(S) | Lead Dia.<br>(d) |
| <b>25 WVNP (32 VNP Surge)</b> |                        |   |  |                 |               |                   |                  |
| 1.0                           | SN010M025ST            | 199.04                                      | 17                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 2.2                           | SN2R2M025ST            | 90.47                                       | 25                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 4.7                           | SN4R7M025ST            | 42.35                                       | 34                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 10                            | SN100M025ST            | 19.90                                       | 50                                     | .236 (6.0)      | .433 (11.0)   | .098 (2.5)        | .0197 (0.5)      |
| 22                            | SN220M025ST            | 9.05  | 86                                     | .315 (8.0)      | .453 (11.5)   | .138 (3.5)        | .0197 (0.5)      |
| 33                            | SN330M025ST            | 6.03  | 105                                    | .315 (8.0)      | .453 (11.5)   | .138 (3.5)        | .0197 (0.5)      |
| 47                            | SN470M025ST            | 4.23  | 140                                    | .394 (10.0)     | .472 (12.0)   | .197 (5.0)        | .0236 (0.6)      |
| 100                           | SN101M025ST            | 1.99  | 240                                    | .394 (10.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 220                           | SN221M025ST            | 0.90  | 390                                    | .512 (13.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 330                           | SN331M025ST            | 0.60  | 580                                    | .630 (16.0)     | .984 (25.0)   | .295 (7.5)        | .0315 (0.8)      |
| 470                           | SN471M025ST            | 0.42  | 690                                    | .630 (16.0)     | .984 (25.0)   | .295 (7.5)        | .0315 (0.8)      |
| <b>35 WVNP (44 VNP Surge)</b> |                        |   |  |                 |               |                   |                  |
| 3.3                           | SN3R3M035ST            | 56.30                                       | 27                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 4.7                           | SN4R7M035ST            | 39.53                                       | 34                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 10                            | SN100M035ST            | 18.58                                       | 54                                     | .236 (6.0)      | .433 (11.0)   | .098 (2.5)        | .0197 (0.5)      |
| 22                            | SN220M035ST            | 8.44  | 94                                     | .315 (8.0)      | .453 (11.5)   | .138 (3.5)        | .0197 (0.5)      |
| 33                            | SN330M035ST            | 5.63  | 125                                    | .394 (10.0)     | .472 (12.0)   | .197 (5.0)        | .0236 (0.6)      |
| 47                            | SN470M035ST            | 3.95  | 165                                    | .394 (10.0)     | .630 (16.0)   | .197 (5.0)        | .0236 (0.6)      |
| 100                           | SN101M035ST            | 1.86  | 285                                    | .512 (13.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 220                           | SN221M035ST            | 0.84  | 520                                    | .630 (16.0)     | .984 (25.0)   | .197 (5.0)        | .0236 (0.6)      |
| 330                           | SN331M035ST            | 0.56  | 630                                    | .630 (16.0)     | .984 (25.0)   | .295 (7.5)        | .0315 (0.8)      |
| 470                           | SN471M035ST            | 0.40  | 820                                    | .630 (16.0)     | 1.26 (32.0)   | .295 (7.5)        | .0315 (0.8)      |
| <b>50 WVNP (63 VNP Surge)</b> |                        |   |  |                 |               |                   |                  |
| 0.47                          | SNR47M050ST            | 338.80                                      | 11                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 1.0                           | SN010M050ST            | 159.24                                      | 17                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 2.2                           | SN2R2M050ST            | 72.38                                       | 25                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 3.3                           | SN3R3M050ST            | 48.25                                       | 31                                     | .236 (6.0)      | .433 (11.0)   | .098 (2.5)        | .0197 (0.5)      |
| 4.7                           | SN4R7M050ST            | 33.88                                       | 41                                     | .236 (6.0)      | .433 (11.0)   | .098 (2.5)        | .0197 (0.5)      |
| 10                            | SN100M050ST            | 15.92                                       | 70                                     | .315 (8.0)      | .453 (11.5)   | .138 (3.5)        | .0197 (0.5)      |
| 22                            | SN220M050ST            | 7.24  | 115                                    | .394 (10.0)     | .472 (12.0)   | .197 (5.0)        | .0236 (0.6)      |
| 33                            | SN330M050ST            | 4.83  | 150                                    | .394 (10.0)     | .630 (16.0)   | .197 (5.0)        | .0236 (0.6)      |
| 47                            | SN470M050ST            | 3.39  | 190                                    | .394 (10.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 100                           | SN101M050ST            | 1.59  | 310                                    | .512 (13.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 220                           | SN221M050ST            | 0.72  | 570                                    | .630 (16.0)     | .984 (25.0)   | .295 (7.5)        | .0315 (0.8)      |
| 330                           | SN331M050ST            | 0.48  | 790                                    | .630 (16.0)     | 1.42 (36.0)   | .295 (7.5)        | .0315 (0.8)      |
| <b>63 WVNP (79 VNP Surge)</b> |                        |   |  |                 |               |                   |                  |
| 1.0                           | SN010M063ST            | 159.24                                      | 17                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 2.2                           | SN2R2M063ST            | 72.38                                       | 25                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 3.3                           | SN3R3M063ST            | 48.25                                       | 37                                     | .197 (5.0)      | .433 (11.0)   | .098 (2.5)        | .0197 (0.5)      |
| 4.7                           | SN4R7M063ST            | 33.88                                       | 44                                     | .236 (6.0)      | .433 (11.0)   | .098 (2.5)        | .0197 (0.5)      |
| 10.0                          | SN100M063ST            | 15.92                                       | 74                                     | .315 (8.0)      | .453 (11.5)   | .138 (3.5)        | .0197 (0.5)      |
| 22                            | SN220M063ST            | 7.24  | 130                                    | .394 (10.0)     | .630 (16.0)   | .197 (5.0)        | .0236 (0.6)      |
| 33                            | SN330M063ST            | 4.83  | 175                                    | .394 (10.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 47                            | SN470M063ST            | 3.39  | 230                                    | .512 (13.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 100                           | SN101M063ST            | 1.59  | 410                                    | .630 (16.0)     | .984 (25.0)   | .295 (7.5)        | .0315 (0.8)      |
| 220                           | SN221M063ST            | 0.72  | 660                                    | .630 (16.0)     | 1.26 (32.0)   | .295 (7.5)        | .0315 (0.8)      |

Parts highlighted in yellow are obsolete.

# Type SN 85 °C Non-Polar Aluminum Electrolytic Capacitors

## Ratings



| Cap<br>( $\mu$ F)               | Catalog<br>Part Number | Max ESR<br>120 Hz<br>+25 °C<br>( $\Omega$ ) | Max Ripple<br>120 Hz<br>+85 °C<br>(mA) | Size in. (mm)   |               |                   |                  |
|---------------------------------|------------------------|---|--|-----------------|---------------|-------------------|------------------|
|                                 |                        |   |  | Diameter<br>(D) | Length<br>(L) | Lead Space<br>(S) | Lead Dia.<br>(d) |
| <b>100 WVNP (125 VNP Surge)</b> |                        |   |  |                 |               |                   |                  |
| 0.47                            | SNR47M100ST            | 282.33                                      | 14                                     | .197 (5.0)      | .433 (11.0)   | .079 (2.0)        | .0197 (0.5)      |
| 1.0                             | SN010M100ST            | 132.70                                      | 21                                     | .197 (5.0)      | .433 (11.0)   | .098 (2.5)        | .0197 (0.5)      |
| 2.2                             | SN2R2M100ST            | 60.32                                       | 34                                     | .236 (6.0)      | .433 (11.0)   | .098 (2.5)        | .0197 (0.5)      |
| 3.3                             | SN3R3M100ST            | 40.21                                       | 49                                     | .315 (8.0)      | .453 (11.5)   | .138 (3.5)        | .0197 (0.5)      |
| 4.7                             | SN4R7M100ST            | 28.23                                       | 58                                     | .315 (8.0)      | .453 (11.5)   | .138 (3.5)        | .0197 (0.5)      |
| 10.0                            | SN100M100ST            | 13.27                                       | 100                                    | .394 (10.0)     | .472 (12.0)   | .197 (5.0)        | .0236 (0.6)      |
| 22                              | SN220M100ST            | 6.03  | 180                                    | .512 (13.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 33                              | SN330M100ST            | 4.02  | 220                                    | .512 (13.0)     | .787 (20.0)   | .197 (5.0)        | .0236 (0.6)      |
| 47                              | SN470M100ST            | 2.82  | 285                                    | .512 (13.0)     | .984 (25.0)   | .197 (5.0)        | .0236 (0.6)      |
| 100                             | SN101M100ST            | 1.33  | 510                                    | .630 (16.0)     | 1.26 (32.0)   | .295 (7.5)        | .0315 (0.8)      |

Parts highlighted in yellow are obsolete.

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