



**THE DATASHEET OF
SN220M010ST**



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

| | |
|-------------------------------------|--|
| Capacitance Range: | 0.47 to 2200 µF |
| Voltage Range: | 6.3 to 100 WVNP |
| Capacitance Tolerance: | ±20% |
| Operating Temperature Range: | -40 °C to +85 °C |
| DC Leakage Current: | 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:

| | | | | | | | |
|---------------|-----|----|----|----|----|----|-----|
| WV (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 100 |
| DF (%) | 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 (µF) | Catalog Part Number | Max ESR 120 Hz +25 °C (Ω) | Max Ripple 120 Hz +85 °C (mA) | Size in. (mm) | | | |
|-------------------------------|------------------------|------------------------------------|--|-----------------|---------------|-------------------|------------------|
| | | | | Diameter (D) | Length (L) | Lead Space (S) | Lead Dia. (d) |
| 6.3 WVNP (8 VNP Surge) | | | | | | | |
| 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) |
| 10 WVNP (13 VNP Surge) | | | | | | | |
| 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) |
| 16 WVNP (20 VNP Surge) | | | | | | | |
| 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 (μ F) | Catalog Part Number | Max ESR 120 Hz +25 °C (Ω) | Max Ripple 120 Hz +85 °C (mA) | Size in. (mm) | | | |
|-------------------------------|------------------------|---|--|-----------------|---------------|-------------------|------------------|
| | | | | Diameter (D) | Length (L) | Lead Space (S) | Lead Dia. (d) |
| 25 WVNP (32 VNP Surge) | | | | | | | |
| 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) |
| 35 WVNP (44 VNP Surge) | | | | | | | |
| 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) |
| 50 WVNP (63 VNP Surge) | | | | | | | |
| 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) |
| 63 WVNP (79 VNP Surge) | | | | | | | |
| 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 (μ F) | Catalog Part Number | Max ESR 120 Hz +25 °C (Ω) | Max Ripple 120 Hz +85 °C (mA) | Size in. (mm) | | | |
|---------------------------------|------------------------|---|--|-----------------|---------------|-------------------|------------------|
| | | | | Diameter (D) | Length (L) | Lead Space (S) | Lead Dia. (d) |
| 100 WVNP (125 VNP Surge) | | | | | | | |
| 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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