



**THE DATASHEET OF  
SH222M050ST**



# Type SH 105 °C Radial Leaded Aluminum Electrolytic Capacitors

## 2000 Hour Long Life, Aluminum Electrolytic



Type SH is a radial leaded aluminum electrolytic capacitor with a +105 °C, 2000 hour long life rating. The SH is a high reliability product and is ideal for high quality applications that require long life in high temperatures environments.

### Highlights

- +105 °C
- 2000 hours - long life
- High reliability
- Available in T&R and ammo pack

### Specifications



Complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

**Capacitance Range:** 1.0 to 4700  $\mu\text{F}$   
**Voltage Range:** 6.3 to 450 Vdc  
**Capacitance Tolerance:**  $\pm 20\%$   
**Operating Temperature Range:**  $-40\text{ }^{\circ}\text{C}$  to  $+105\text{ }^{\circ}\text{C}$  ( $-25\text{ }^{\circ}\text{C}$  for 160 to 450 Vdc)  
**DC Leakage Current:** After 2 minutes,  $25\text{ }^{\circ}\text{C}$  at rated voltage  
 6.3 to 100 Vdc

$I = .01CV + 3\text{ }\mu\text{A Max}$   
 $\geq 160\text{ Vdc}$  after voltage applied for 3 minutes  
 $I = .03CV + 10\text{ }\mu\text{A Max}$   
 C = Capacitance in ( $\mu\text{F}$ )  
 V = Rated voltage  
 I = Leakage current in  $\mu\text{A}$

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

| WV (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160-250 | 400-450 |
|--------|-----|----|----|----|----|----|----|-----|---------|---------|
| DF(%)  | 26  | 22 | 18 | 16 | 14 | 12 | 10 | 10  | 15      | 20      |

Above 1000  $\mu\text{F}$ , the value of DF (%) is increased 2% for every additional 1000  $\mu\text{F}$

### Ripple Multipliers for Frequency and Temperature:

| Rated WVDC | Ripple Multipliers |       |      |       |
|------------|--------------------|-------|------|-------|
|            | 60Hz               | 120Hz | 1kHz | 10kHz |
| 6 to 25    | 0.80               | 1.0   | 1.1  | 1.2   |
| 35 to 100  | 0.75               | 1.0   | 1.3  | 1.4   |
| 160 to 450 | 0.70               | 1.0   | 1.4  | 1.6   |

| Ambient Temperature | Ripple Multiplier |
|---------------------|-------------------|
| +105 °C             | 1.00              |
| +85 °C              | 1.50              |
| +70 °C              | 1.80              |

**Load Life Test:** Apply Rated WVDC for 2000 hours at +105 °C  
 Capacitance change within 20% of initial value  
 DF not to exceed 200% of initial requirement  
 DC Leakage current meets initial limits

**Shelf Life:** 1000 hrs @105 °C with no voltage applied  
 Cap change within 20% of initial value  
 DF  $\leq$  200% of initial requirements  
 DC leakage current meets initial requirement

# Type SH 105 °C Radial Leaded Aluminum Electrolytic Capacitors

## Outline Drawing

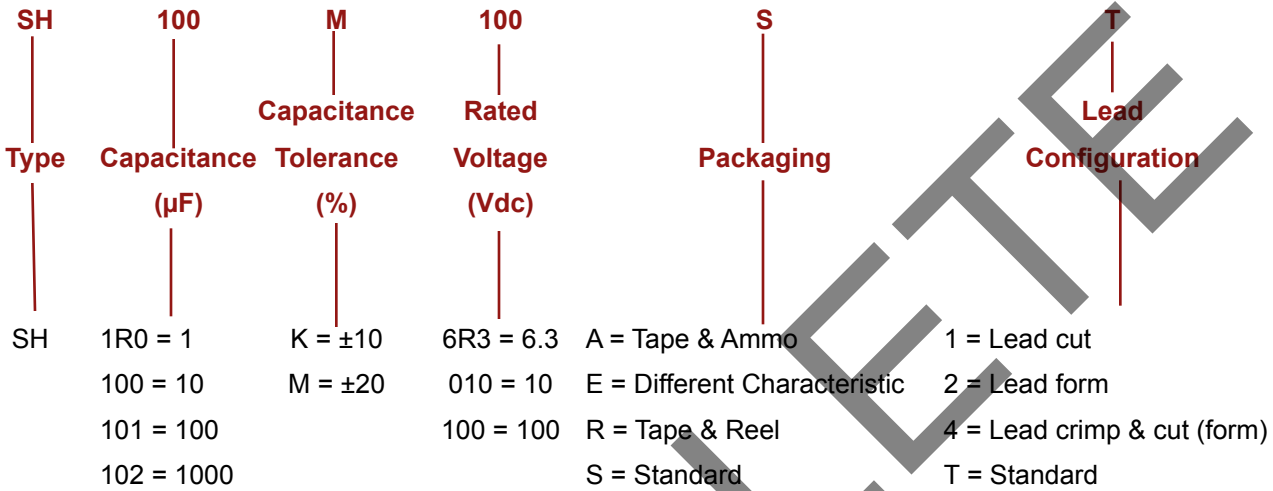
### Outline Dimensions (Millimeters)



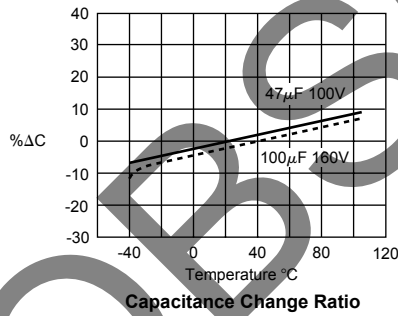
Case vented on diameters 6.3 and greater

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

## Part Numbering System



## Temperature Characteristics



## Load Life Characteristics



# Type SH 105 °C Radial Leaded Aluminum Electrolytic Capacitors

## Ratings

| Capacitance<br>(uF)            | Catalog<br>Part Number | ESR<br>120<br>Hz/+25°C<br>(ohms) | Max<br>Ripple Current<br>120 Hz/<br>+105°C<br>(ma) | Size in. (mm)   |        |               |        |                   |       |                  |       |
|--------------------------------|------------------------|----------------------------------|--|-----------------|--------|---------------|--------|-------------------|-------|------------------|-------|
|                                |                        |                                  |  | Diameter<br>(D) |        | Length<br>(L) |        | Lead Space<br>(S) |       | Lead dia.<br>(d) |       |
| <b>6.3 Vdc (8 Volts Surge)</b> |                        |                                  |  |                 |        |               |        |                   |       |                  |       |
| 47                             | SH470M6R3ST            | 7.34                             | 65   | 0.197           | (5.0)  | 0.433         | (11.0) | 0.079             | (2.0) | 0.020            | (0.5) |
| 100                            | SH101M6R3ST            | 3.45                             | 100  | 0.197           | (5.0)  | 0.433         | (11.0) | 0.079             | (2.0) | 0.020            | (0.5) |
| 220                            | SH221M6R3ST            | 1.57                             | 165  | 0.248           | (6.3)  | 0.433         | (11.0) | 0.098             | (2.5) | 0.020            | (0.5) |
| 330                            | SH331M6R3ST            | 1.04                             | 200  | 0.315           | (8.0)  | 0.433         | (11.0) | 0.138             | (3.5) | 0.024            | (0.6) |
| 470                            | SH471M6R3ST            | 0.73                             | 280  | 0.315           | (8.0)  | 0.433         | (11.0) | 0.138             | (3.5) | 0.024            | (0.6) |
| 1000                           | SH102M6R3ST            | 0.34                             | 470  | 0.394           | (10.0) | 0.492         | (12.5) | 0.197             | (5.0) | 0.024            | (0.6) |
| 2200                           | SH222M6R3ST            | 0.17                             | 930  | 0.512           | (13.0) | 0.787         | (20.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 3300                           | SH332M6R3ST            | 0.12                             | 1100   | 0.512           | (13.0) | 0.787         | (20.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 4700                           | SH472M6R3ST            | 0.09                             | 1320   | 0.630           | (16.0) | 0.984         | (25.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| <b>10 Vdc (13 Volts Surge)</b> |                        |                                  |  |                 |        |               |        |                   |       |                  |       |
| 47                             | SH470M010ST            | 6.21                             | 75   | 0.197           | (5.0)  | 0.433         | (11.0) | 0.079             | (2.0) | 0.020            | (0.5) |
| 100                            | SH101M010ST            | 2.92                             | 110  | 0.197           | (5.0)  | 0.433         | (11.0) | 0.079             | (2.0) | 0.020            | (0.5) |
| 220                            | SH221M010ST            | 1.33                             | 180  | 0.248           | (6.3)  | 0.433         | (11.0) | 0.098             | (2.5) | 0.020            | (0.5) |
| 330                            | SH331M010ST            | 0.88                             | 255  | 0.315           | (8.0)  | 0.433         | (11.0) | 0.138             | (3.5) | 0.024            | (0.6) |
| 470                            | SH471M010ST            | 0.62                             | 305  | 0.315           | (8.0)  | 0.433         | (11.0) | 0.138             | (3.5) | 0.024            | (0.6) |
| 1000                           | SH102M010ST            | 0.29                             | 570  | 0.394           | (10.0) | 0.630         | (16.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 2200                           | SH222M010ST            | 0.14                             | 1010   | 0.512           | (13.0) | 0.787         | (20.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 3300                           | SH332M010ST            | 0.10                             | 1220   | 0.512           | (13.0) | 0.984         | (25.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 4700                           | SH472M010ST            | 0.08                             | 1410   | 0.630           | (16.0) | 0.984         | (25.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| <b>16 Vdc (20 Volts Surge)</b> |                        |                                  |  |                 |        |               |        |                   |       |                  |       |
| 33                             | SH330M016ST            | 7.23                             | 70   | 0.197           | (5.0)  | 0.433         | (11.0) | 0.079             | (2.0) | 0.020            | (0.5) |
| 47                             | SH470M016ST            | 5.08                             | 85   | 0.197           | (5.0)  | 0.433         | (11.0) | 0.079             | (2.0) | 0.020            | (0.5) |
| 100                            | SH101M016ST            | 2.39                             | 135  | 0.248           | (6.3)  | 0.433         | (11.0) | 0.098             | (2.5) | 0.020            | (0.5) |
| 220                            | SH221M016ST            | 1.09                             | 235  | 0.315           | (8.0)  | 0.433         | (11.0) | 0.138             | (3.5) | 0.024            | (0.6) |
| 330                            | SH331M016ST            | 0.72                             | 285  | 0.315           | (8.0)  | 0.433         | (11.0) | 0.138             | (3.5) | 0.024            | (0.6) |
| 470                            | SH471M016ST            | 0.51                             | 395  | 0.394           | (10.0) | 0.492         | (12.5) | 0.197             | (5.0) | 0.024            | (0.6) |
| 1000                           | SH102M016ST            | 0.24                             | 700  | 0.394           | (10.0) | 0.787         | (20.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 2200                           | SH222M016ST            | 0.12                             | 1150   | 0.512           | (13.0) | 0.984         | (25.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 3300                           | SH332M016ST            | 0.09                             | 1350   | 0.630           | (16.0) | 0.984         | (25.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| 4700                           | SH472M016ST            | 0.07                             | 1560   | 0.630           | (16.0) | 1.26          | (32.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| <b>25 Vdc (32 Volts Surge)</b> |                        |                                  |  |                 |        |               |        |                   |       |                  |       |
| 10                             | SH100M025ST            | 21.22                            | 39   | 0.197           | (5.0)  | 0.433         | (11.0) | 0.079             | (2.0) | 0.020            | (0.5) |
| 22                             | SH220M025ST            | 9.65                             | 60   | 0.197           | (5.0)  | 0.433         | (11.0) | 0.079             | (2.0) | 0.020            | (0.5) |
| 33                             | SH330M025ST            | 6.43                             | 75   | 0.197           | (5.0)  | 0.433         | (11.0) | 0.079             | (2.0) | 0.020            | (0.5) |
| 47                             | SH470M025ST            | 4.52                             | 90   | 0.197           | (5.0)  | 0.433         | (11.0) | 0.079             | (2.0) | 0.020            | (0.5) |
| 100                            | SH101M025ST            | 2.12                             | 145  | 0.248           | (6.3)  | 0.433         | (11.0) | 0.098             | (2.5) | 0.020            | (0.5) |
| 220                            | SH221M025ST            | 0.96                             | 250  | 0.394           | (10.0) | 0.492         | (12.5) | 0.197             | (5.0) | 0.024            | (0.6) |
| 330                            | SH331M025ST            | 0.64                             | 355  | 0.394           | (10.0) | 0.492         | (12.5) | 0.197             | (5.0) | 0.024            | (0.6) |
| 470                            | SH471M025ST            | 0.45                             | 470  | 0.394           | (10.0) | 0.630         | (16.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 1000                           | SH102M025ST            | 0.21                             | 855  | 0.512           | (13.0) | 0.787         | (20.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 2200                           | SH222M025ST            | 0.11                             | 1230   | 0.630           | (16.0) | 0.984         | (25.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| 3300                           | SH332M025ST            | 0.08                             | 1450   | 0.630           | (16.0) | 1.26          | (32.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| 4700                           | SH472M025ST            | 0.06                             | 1690   | 0.709           | (18.0) | 1.40          | (36.0) | 0.295             | (7.5) | 0.031            | (0.8) |

# Type SH 105 °C Radial Leaded Aluminum Electrolytic Capacitors

## Ratings

| Capacitance (uF)                 | Catalog Part Number | ESR 120 Hz/+25°C (ohms) | Max Ripple Current 120 Hz/+105°C (ma) | Size in. (mm) |        |            |        |                |       |               |       |
|----------------------------------|---------------------|-------------------------|---------------------------------------|---------------|--------|------------|--------|----------------|-------|---------------|-------|
|                                  |                     |                         |                                       | Diameter (D)  |        | Length (L) |        | Lead Space (S) |       | Lead dia. (d) |       |
| <b>35 Vdc (44 Volts Surge)</b>   |                     |                         |                                       |               |        |            |        |                |       |               |       |
| 10                               | SH100M035ST         | 18.57                   | 40                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 22                               | SH220M035ST         | 8.44                    | 65                                    | 0.248         | (6.3)  | 0.433      | (11.0) | 0.098          | (2.5) | 0.020         | (0.5) |
| 33                               | SH330M035ST         | 5.63                    | 85                                    | 0.248         | (6.3)  | 0.433      | (11.0) | 0.098          | (2.5) | 0.020         | (0.5) |
| 47                               | SH470M035ST         | 3.95                    | 115                                   | 0.248         | (6.3)  | 0.433      | (11.0) | 0.098          | (2.5) | 0.020         | (0.5) |
| 100                              | SH101M035ST         | 1.86                    | 190                                   | 0.315         | (8.0)  | 0.433      | (11.0) | 0.138          | (3.5) | 0.024         | (0.6) |
| 220                              | SH221M035ST         | 0.84                    | 315                                   | 0.394         | (10.0) | 0.492      | (12.5) | 0.197          | (5.0) | 0.024         | (0.6) |
| 330                              | SH331M035ST         | 0.56                    | 440                                   | 0.394         | (10.0) | 0.630      | (16.0) | 0.197          | (5.0) | 0.024         | (0.6) |
| 470                              | SH471M035ST         | 0.40                    | 580                                   | 0.512         | (13.0) | 0.787      | (20.0) | 0.197          | (5.0) | 0.024         | (0.6) |
| 1000                             | SH102M035ST         | 0.19                    | 995                                   | 0.512         | (13.0) | 0.984      | (25.0) | 0.197          | (5.0) | 0.024         | (0.6) |
| 2200                             | SH222M035ST         | 0.10                    | 1450                                  | 0.630         | (16.0) | 1.26       | (32.0) | 0.295          | (7.5) | 0.031         | (0.8) |
| 3300                             | SH332M035ST         | 0.07                    | 1660                                  | 0.709         | (18.0) | 1.40       | (36.0) | 0.295          | (7.5) | 0.031         | (0.8) |
| <b>50 Vdc (63 Volts Surge)</b>   |                     |                         |                                       |               |        |            |        |                |       |               |       |
| 1                                | SH010M050ST         | 159.15                  | 12                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 2.2                              | SH2R2M050ST         | 72.34                   | 18                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 3.3                              | SH3R3M050ST         | 48.23                   | 25                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 4.7                              | SH4R7M050ST         | 33.86                   | 30                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 10                               | SH100M050ST         | 15.92                   | 50                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 22                               | SH220M050ST         | 7.23                    | 75                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 33                               | SH330M050ST         | 4.82                    | 105                                   | 0.248         | (6.3)  | 0.433      | (11.0) | 0.098          | (2.5) | 0.020         | (0.5) |
| 47                               | SH470M050ST         | 3.39                    | 125                                   | 0.315         | (8.0)  | 0.433      | (11.0) | 0.138          | (3.5) | 0.024         | (0.6) |
| 100                              | SH101M050ST         | 1.59                    | 210                                   | 0.394         | (10.0) | 0.492      | (12.5) | 0.197          | (5.0) | 0.024         | (0.6) |
| 220                              | SH221M050ST         | 0.72                    | 400                                   | 0.394         | (10.0) | 0.630      | (16.0) | 0.197          | (5.0) | 0.024         | (0.6) |
| 330                              | SH331M050ST         | 0.48                    | 535                                   | 0.394         | (10.0) | 0.787      | (20.0) | 0.197          | (5.0) | 0.024         | (0.6) |
| 470                              | SH471M050ST         | 0.34                    | 730                                   | 0.512         | (13.0) | 0.787      | (20.0) | 0.197          | (5.0) | 0.024         | (0.6) |
| 1000                             | SH102M050ST         | 0.16                    | 1110                                  | 0.630         | (16.0) | 0.984      | (25.0) | 0.295          | (7.5) | 0.031         | (0.8) |
| 2200                             | SH222M050ST         | 0.08                    | 1530                                  | 0.709         | (18.0) | 1.40       | (36.0) | 0.295          | (7.5) | 0.031         | (0.8) |
| <b>63 Vdc (79 Volts Surge)</b>   |                     |                         |                                       |               |        |            |        |                |       |               |       |
| 4.7                              | SH4R7M063ST         | 28.22                   | 34                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 10                               | SH100M063ST         | 13.26                   | 55                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 22                               | SH220M063ST         | 6.03                    | 90                                    | 0.248         | (6.3)  | 0.433      | (11.0) | 0.098          | (2.5) | 0.020         | (0.5) |
| 33                               | SH330M063ST         | 4.02                    | 110                                   | 0.315         | (8.0)  | 0.433      | (11.0) | 0.138          | (3.5) | 0.024         | (0.6) |
| 47                               | SH470M063ST         | 2.82                    | 155                                   | 0.315         | (8.0)  | 0.433      | (11.0) | 0.138          | (3.5) | 0.024         | (0.6) |
| 100                              | SH101M063ST         | 1.33                    | 260                                   | 0.394         | (10.0) | 0.492      | (12.5) | 0.197          | (5.0) | 0.024         | (0.6) |
| 220                              | SH221M063ST         | 0.60                    | 460                                   | 0.394         | (10.0) | 0.787      | (20.0) | 0.197          | (5.0) | 0.024         | (0.6) |
| 330                              | SH331M063ST         | 0.40                    | 650                                   | 0.512         | (13.0) | 0.787      | (20.0) | 0.197          | (5.0) | 0.024         | (0.6) |
| 470                              | SH471M063ST         | 0.28                    | 800                                   | 0.512         | (13.0) | 0.984      | (25.0) | 0.197          | (5.0) | 0.024         | (0.6) |
| 1000                             | SH102M063ST         | 0.13                    | 1200                                  | 0.630         | (16.0) | 1.26       | (32.0) | 0.295          | (7.5) | 0.031         | (0.8) |
| <b>100 Vdc (125 Volts Surge)</b> |                     |                         |                                       |               |        |            |        |                |       |               |       |
| 1                                | SH010M100ST         | 132.63                  | 15                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 2.2                              | SH2R2M100ST         | 60.29                   | 22                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 3.3                              | SH3R3M100ST         | 40.19                   | 29                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 4.7                              | SH4R7M100ST         | 28.22                   | 37                                    | 0.197         | (5.0)  | 0.433      | (11.0) | 0.079          | (2.0) | 0.020         | (0.5) |
| 10                               | SH100M100ST         | 13.26                   | 65                                    | 0.248         | (6.3)  | 0.433      | (11.0) | 0.098          | (2.5) | 0.020         | (0.5) |
| 22                               | SH220M100ST         | 6.03                    | 115                                   | 0.315         | (8.0)  | 0.433      | (11.0) | 0.138          | (3.5) | 0.024         | (0.6) |

# Type SH 105 °C Radial Leaded Aluminum Electrolytic Capacitors

## Ratings

| Capacitance<br>(uF)               | Catalog<br>Part Number | ESR<br>120<br>Hz/+25°C<br>(ohms) | Max<br>Ripple Current<br>120 Hz/<br>+105°C<br>(ma) | Size in. (mm)   |        |               |        |                   |       |                  |       |
|-----------------------------------|------------------------|----------------------------------|--|-----------------|--------|---------------|--------|-------------------|-------|------------------|-------|
|                                   |                        |                                  |  | Diameter<br>(D) |        | Length<br>(L) |        | Lead Space<br>(S) |       | Lead dia.<br>(d) |       |
| <b>100 Vdc (125 Volts Surge)</b>  |                        |                                  |  |                 |        |               |        |                   |       |                  |       |
| 33                                | SH330M100ST            | 4.02                             | 160  | 0.394           | (10.0) | 0.492         | (12.5) | 0.197             | (5.0) | 0.024            | (0.6) |
| 47                                | SH470M100ST            | 2.82                             | 210  | 0.394           | (10.0) | 0.630         | (16.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 100                               | SH101M100ST            | 1.33                             | 385  | 0.512           | (13.0) | 0.787         | (20.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 220                               | SH221M100ST            | 0.60                             | 590  | 0.630           | (16.0) | 0.984         | (25.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| 330                               | SH331M100ST            | 0.40                             | 720  | 0.630           | (16.0) | 0.984         | (25.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| 470                               | SH471M100ST            | 0.28                             | 875  | 0.630           | (16.0) | 1.26          | (32.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| <b>*160 Vdc (200 Volts Surge)</b> |                        |                                  |  |                 |        |               |        |                   |       |                  |       |
| 1                                 | SH010M160ST            | 198.94                           | 17   | 0.197           | (5.0)  | 0.433         | (11.0) | 0.079             | (2.0) | 0.020            | (0.5) |
| 2.2                               | SH2R2M160ST            | 90.43                            | 25   | 0.248           | (6.3)  | 0.433         | (11.0) | 0.098             | (2.5) | 0.020            | (0.5) |
| 3.3                               | SH3R3M160ST            | 60.29                            | 36   | 0.315           | (8.0)  | 0.433         | (11.0) | 0.138             | (3.5) | 0.024            | (0.6) |
| 4.7                               | SH4R7M160ST            | 42.33                            | 43   | 0.315           | (8.0)  | 0.433         | (11.0) | 0.138             | (3.5) | 0.024            | (0.6) |
| 10                                | SH100M160ST            | 19.89                            | 70   | 0.394           | (10.0) | 0.492         | (12.5) | 0.197             | (5.0) | 0.024            | (0.6) |
| 22                                | SH220M160ST            | 9.04                             | 130  | 0.394           | (10.0) | 0.787         | (20.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 33                                | SH330M160ST            | 6.03                             | 180  | 0.512           | (13.0) | 0.787         | (20.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 47                                | SH470M160ST            | 4.23                             | 270  | 0.512           | (13.0) | 0.984         | (25.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 100                               | SH101M160ST            | 1.99                             | 330  | 0.630           | (16.0) | 0.984         | (25.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| <b>*200 Vdc (250 Volts Surge)</b> |                        |                                  |  |                 |        |               |        |                   |       |                  |       |
| 1                                 | SH010M200ST            | 198.94                           | 17   | 0.248           | (6.3)  | 0.433         | (11.0) | 0.098             | (2.5) | 0.020            | (0.5) |
| 2.2                               | SH2R2M200ST            | 90.43                            | 25   | 0.248           | (6.3)  | 0.433         | (11.0) | 0.098             | (2.5) | 0.020            | (0.5) |
| 3.3                               | SH3R3M200ST            | 60.29                            | 36   | 0.315           | (8.0)  | 0.433         | (11.0) | 0.138             | (3.5) | 0.024            | (0.6) |
| 4.7                               | SH4R7M200ST            | 42.33                            | 50   | 0.394           | (10.0) | 0.492         | (12.5) | 0.197             | (5.0) | 0.024            | (0.6) |
| 10                                | SH100M200ST            | 19.89                            | 80   | 0.394           | (10.0) | 0.630         | (16.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 22                                | SH220M200ST            | 9.04                             | 140  | 0.394           | (10.0) | 0.787         | (20.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 33                                | SH330M200ST            | 6.03                             | 190  | 0.512           | (13.0) | 0.984         | (25.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 47                                | SH470M200ST            | 4.23                             | 220  | 0.512           | (13.0) | 0.984         | (25.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 100                               | SH101M200ST            | 1.99                             | 335  | 0.630           | (16.0) | 1.26          | (32.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| <b>*250 Vdc (300 Volts Surge)</b> |                        |                                  |  |                 |        |               |        |                   |       |                  |       |
| 1                                 | SH010M250ST            | 198.94                           | 17   | 0.248           | (6.3)  | 0.433         | (11.0) | 0.098             | (2.5) | 0.020            | (0.5) |
| 2.2                               | SH2R2M250ST            | 90.43                            | 29   | 0.315           | (8.0)  | 0.433         | (11.0) | 0.138             | (3.5) | 0.024            | (0.6) |
| 3.3                               | SH3R3M250ST            | 60.29                            | 42   | 0.394           | (10.0) | 0.492         | (12.5) | 0.197             | (5.0) | 0.024            | (0.6) |
| 4.7                               | SH4R7M250ST            | 42.33                            | 50   | 0.394           | (10.0) | 0.492         | (12.5) | 0.197             | (5.0) | 0.024            | (0.6) |
| 10                                | SH100M250ST            | 19.89                            | 88   | 0.394           | (10.0) | 0.787         | (20.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 22                                | SH220M250ST            | 9.04                             | 155  | 0.512           | (13.0) | 0.984         | (25.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 33                                | SH330M250ST            | 6.03                             | 190  | 0.512           | (13.0) | 0.984         | (25.0) | 0.197             | (5.0) | 0.024            | (0.6) |
| 47                                | SH470M250ST            | 4.23                             | 230  | 0.630           | (16.0) | 0.984         | (25.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| 100                               | SH101M250ST            | 1.99                             | 340  | 0.709           | (18.0) | 1.40          | (36.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| <b>*400 Vdc (450 Volts Surge)</b> |                        |                                  |  |                 |        |               |        |                   |       |                  |       |
| 22                                | SH220M400ST            | 12.06                            | 110  | 0.630           | (16.0) | 0.984         | (25.0) | 0.295             | (7.5) | 0.031            | (0.8) |
| <b>*450 Vdc (500 Volts Surge)</b> |                        |                                  |  |                 |        |               |        |                   |       |                  |       |
| 10                                | SH100M450ST            | 26.53                            | 80   | 0.512           | (13.0) | 0.984         | (25.0) | 0.197             | (5.0) | 0.024            | (0.6) |

\* Over 160 Vdc the ripple is measured at 85 °C

# Type SH 105 °C Radial Led Aluminum Electrolytic Capacitors

## Taping & Packaging

Fig. 1 - Formed Taping



Fig. 2 - Straight Taping (5φ, 6.3φ, 8φ)



Fig. 3- Straight Taping (Under 10φ, 12φ, 13φ)



Fig. 4- Straight Taping (16φ, 18φ)



Standard Lead Spacing of Taped Components is 5mm  
Other Lead Spacing is Available by Special Order

| Code             | D          | A          | d            | P           | P <sub>0</sub> | P <sub>1</sub> | P <sub>2</sub> | F                    | W           | W <sub>0</sub> | H            | H <sub>0</sub> | D <sub>0</sub> | t           | ih          | Fig. |
|------------------|------------|------------|--------------|-------------|----------------|----------------|----------------|----------------------|-------------|----------------|--------------|----------------|----------------|-------------|-------------|------|
| <b>Tolerance</b> | <b>0.5</b> | <b>1.0</b> | <b>±0.05</b> | <b>±1.0</b> | <b>±0.2</b>    | <b>±0.7</b>    | <b>±1.3</b>    | <b>+0.8<br/>-0.2</b> | <b>±0.5</b> | <b>Min.</b>    | <b>±0.75</b> | <b>±0.5</b>    | <b>±0.2</b>    | <b>±0.2</b> | <b>Max.</b> |      |
| <b>Item</b>      | 4 ~ 6.3    | 7.0        | 0.45         | 12.7        | 12.7           | 3.85           | 6.35           | 5.0                  | 18.0        | 12.5           | 18.5         | 16.0           | 4.0            | 0.7         | 2.0         | 1    |
|                  | 5 ~ 8      | 12.5       | 0.5          | 12.7        | 12.7           | 3.85           | 6.35           | 5.0                  | 18.0        | 12.5           | 18.5         | 16.0           | 4.0            | 0.7         | 2.0         |      |
|                  | 5, 6.3     | 12.5       | 0.5          | 12.7        | 12.7           | 5.1            | 6.35           | 2.5                  | 18.0        | 12.5           | 18.5         | —              | 4.0            | 0.7         | 2.0         | 2    |
|                  | 8          | 12.5       | 0.5          | 12.7        | 12.7           | 4.6            | 6.35           | 3.5                  | 18.0        | 12.5           | 18.5         | —              | 4.0            | 0.7         | 2.0         |      |
|                  | 10         | 21.0       | 0.6          | 12.7        | 12.7           | 3.85           | 6.35           | 5.0                  | 18.0        | 12.5           | 18.5         | —              | 4.0            | 0.7         | 2.0         | 3    |
| 12, 13           | 26.0       | 0.6        | 15.0         | 15.0        | 5.0            | 7.5            | 5.0            | 18.0                 | 12.5        | 18.5           | —            | 4.0            | 0.7            | 2.0         |             |      |
| 16, 18           | 26.0       | 0.8        | 30.0         | 15.0        | 3.75           | 7.5            | 7.5            | 7.5                  | 18.0        | 12.5           | 18.0         | —              | 4.0            | 0.7         | 2.0         | 4    |

| Capacitor Diameter D (mm) | Ammo Pack Box Dimensions (mm) |       |     | Quantity Per Ammo Pack Box |
|---------------------------|-------------------------------|-------|-----|----------------------------|
|                           | A±5                           | B Max | C±3 |                            |
| 4                         | 250                           | 340   | 54  | 3000                       |
| 5                         | 250                           | 340   | 54  | 2,000                      |
| 6.3                       | 290                           | 340   | 54  | 2,000                      |
| 8                         | 250                           | 340   | 54  | 1,000                      |
| 10 (12L)                  | 290                           | 340   | 54  | 600                        |
| 10 (16L)                  | 350                           | 340   | 59  | 600                        |
| 10 (20L)                  | 340                           | 340   | 71  | 600                        |
| 12, 13                    | 340                           | 340   | 71  | 400                        |
| 16                        | 340                           | 340   | 71  | 300                        |



Tape And Reel Quantities

| Case Diameter D (mm) | Reel Width | Reel Qty. (Pcs.) |
|----------------------|------------|------------------|
| 4                    | 44         | 1500             |
| 5                    | 44         | 1200             |
| 6                    | 44         | 1000             |
| 8                    | 44         | 800              |
| 10 (12L)             | 44         | 600              |
| 10 (16L)             | 50         | 600              |
| 12, 13               | -          | -                |
| 16                   | -          | -                |

## Type SH 105 °C Radial Leaded Aluminum Electrolytic Capacitors



---

**Notice and Disclaimer:** All product drawings, descriptions, specifications, statements, information and data (collectively, the "Information") in this datasheet or other publication are subject to change. The customer is responsible for checking, confirming and verifying the extent to which the Information contained in this datasheet or other publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without any guarantee, warranty, representation or responsibility of any kind, expressed or implied. Statements of suitability for certain applications are based on the knowledge that the Cornell Dubilier company providing such statements ("Cornell Dubilier") has of operating conditions that such Cornell Dubilier company regards as typical for such applications, but are not intended to constitute any guarantee, warranty or representation regarding any such matter – and Cornell Dubilier specifically and expressly disclaims any guarantee, warranty or representation concerning the suitability for a specific customer application, use, storage, transportation, or operating environment. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by Cornell Dubilier with reference to the use of any Cornell Dubilier products is given gratis (unless otherwise specified by Cornell Dubilier), and Cornell Dubilier assumes no obligation or liability for the advice given or results obtained. Although Cornell Dubilier strives to apply the most stringent quality and safety standards regarding the design and manufacturing of its products, in light of the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies or other appropriate protective measures) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage. Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated in such warnings, cautions and notes, or that other safety measures may not be required.

OBSOLETE

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View SH222M050ST on WIN SOURCE](#)
-  [Cornell Dubilier Electronics \(CDE\) Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management