

# NM [ For Wide Temperature ]

Applicable for Large Power Source, Converter Circuit

## Screw Type Aluminum Electrolytic Capacitors

### ELECTRICAL CHARACTERISTICS

|                                    |   |               |
|------------------------------------|---|---------------|
| Operating Temperature Range        | -40 to +105°C   | -25 to +105°C |
| Rated Voltage Range                | 25 ~ 100V   | 160 ~ 450V    |
| Rated Capacitance Range            | 220 ~ 330000μF  |               |
| Capacitance Tolerance              | ±20% (120Hz, +20°C)   |               |
| Leakage Current                    | I = 0.02CV or 5mA whichever is smaller.<br>(After 5 Minutes Application of DC Rated Voltage at 20°C)  |               |
| Dissipation Factor at 120Hz, +20°C | Less than the Value Specified in the Standard Product Tables  |               |
| Endurance                          | After the rated voltage has been applied at 105°C for 2000 hours and then has resumed its original condition for 16 hours.<br>(a) Capacitance Change: ±20% Initial Measured Value<br>(b) Dissipation Factor: ≤ 2 Times Initial Specified Value<br>(c) Leakage Current: ≤ Initial Specified Value                                    |               |
| Shelf Life                         | After having been stored for 1000 hours at 105°C, the rated voltage has been applied for 30 minutes and then has resumed its original condition for 16 hours.<br>(a) Capacitance Change: ±20% Initial Measured Value<br>(b) Dissipation Factor: ≤ 2 Times Initial Specified Value<br>(c) Leakage Current: ≤ Initial Specified Value |               |



### DESCRIPTION

Endurance : 105°C 2000 Hours

High Ripple Current, Load Life of 2000 hours at 105°C

### MULTIPLIER FOR RIPPLE CURRENT

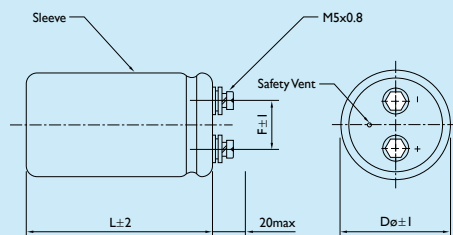
Frequency Coefficient

| FREQUENCY (Hz) | 50   | 60   | 100 (120) |
|----------------|------|------|-----------|
| FACTOR         | 0.80 | 0.80 | 1.00      |
| FREQUENCY (Hz) | 300  | 1K   | ≥10K      |
| FACTOR         | 1.10 | 1.30 | 1.40      |

### DIAGRAM OF DIMENSIONS

Unit: mm

| Dø   | F    |
|------|------|
| 35   | 12.7 |
| 51   | 22   |
| 63.5 | 28.6 |
| 76   | 32   |
| 89   | 32   |





## CASE SIZE & PERMISSIBLE RIPPLE CURRENT OF STANDARD PRODUCTS

D x L: mm

| CAP. (μF) | RATED VOLTAGE WV (SURGE VOLTAGE WV) |                |                    |            |                |                    |            |                |                    |
|-----------|-------------------------------------|----------------|--------------------|------------|----------------|--------------------|------------|----------------|--------------------|
|           | 25 (32)                             |                |                    | 35 (44)    |                |                    | 50 (63)    |                |                    |
|           | SIZE                                | RIPPLE CURRENT | DISSIPATION FACTOR | SIZE       | RIPPLE CURRENT | DISSIPATION FACTOR | SIZE       | RIPPLE CURRENT | DISSIPATION FACTOR |
| 3300      |                                     |                |                    |            |                |                    | 35 x 50    | 2.20           | 0.2                |
| 4700      |                                     |                |                    |            |                |                    | 35 x 50    | 3.30           | 0.25               |
| 6800      |                                     |                |                    | 35 x 50    | 2.60           | 0.30               | 35 x 80    | 3.40           | 0.25               |
| 10000     | 35 x 50                             | 2.90           | 0.35               | 35 x 80    | 3.70           | 0.30               | 35 x 80    | 4.10           | 0.25               |
| 15000     | 35 x 80                             | 4.20           | 0.35               | 35 x 80    | 4.50           | 0.30               | 35 x 100   | 4.90           | 0.30               |
| 22000     | 35 x 80                             | 5.10           | 0.35               | 35 x 100   | 5.50           | 0.35               | 51 x 75    | 5.90           | 0.35               |
| 33000     | 35 x 100                            | 6.30           | 0.40               | 51 x 75    | 6.70           | 0.40               | 51 x 115   | 7.80           | 0.40               |
| 47000     | 51 x 75                             | 8.00           | 0.40               | 51 x 95    | 8.10           | 0.45               | 63.5 x 95  | 9.50           | 0.40               |
| 68000     | 51 x 115                            | 10.00          | 0.50               | 51 x 115   | 10.00          | 0.50               | 63.5 x 115 | 11.60          | 0.45               |
| 100000    | 63.5 x 95                           | 11.30          | 0.60               | 63.5 x 115 | 12.10          | 0.60               | 76 x 115   | 14.10          | 0.50               |
| 150000    | 63.5 x 115                          | 12.90          | 0.80               | 76 x 115   | 13.80          | 0.70               | 89 x 130   | 18.90          | 0.50               |
| 220000    | 76 x 115                            | 14.80          | 1.00               | 89 x 130   | 17.60          | 0.70               |            |                |                    |
| 330000    | 89 x 130                            | 19.90          | 1.00               |            |                |                    |            |                |                    |

Note: 1. Ripple Current: (A/rms) 105°C, 120Hz

2. Dissipation Factor: 120Hz / 20°C

**CASE SIZE & PERMISSIBLE RIPPLE CURRENT OF STANDARD PRODUCTS**

D x L: mm

| CAP. (μF) | RATED VOLTAGE WV (SURGE VOLTAGE WV) |                |                    |           |                |                    |           |                |                    |
|-----------|-------------------------------------|----------------|--------------------|-----------|----------------|--------------------|-----------|----------------|--------------------|
|           | 63 (79)                             |                |                    | 80 (100)  |                |                    | 100 (125) |                |                    |
|           | SIZE                                | RIPPLE CURRENT | DISSIPATION FACTOR | SIZE      | RIPPLE CURRENT | DISSIPATION FACTOR | SIZE      | RIPPLE CURRENT | DISSIPATION FACTOR |
| 1000      |                                     |                |                    |           |                |                    | 35 x 50   | 1.40           | 0.15               |
| 1500      |                                     |                |                    |           |                |                    | 35 x 50   | 1.70           | 0.15               |
| 2200      | 35 x 50                             | 2.10           | 0.15               | 35 x 50   | 2.10           | 0.15               | 35 x 80   | 2.50           | 0.15               |
| 3300      | 35 x 50                             | 2.20           | 0.20               | 35 x 80   | 3.00           | 0.15               | 35 x 80   | 3.00           | 0.15               |
| 4700      | 35 x 80                             | 3.10           | 0.20               | 35 x 80   | 3.60           | 0.15               | 35 x 100  | 3.90           | 0.15               |
| 6800      | 35 x 80                             | 3.70           | 0.20               | 35 x 100  | 4.00           | 0.20               | 51 x 75   | 5.00           | 0.15               |
| 10000     | 35 x 100                            | 4.40           | 0.25               | 51 x 75   | 5.20           | 0.20               | 51 x 95   | 6.50           | 0.15               |
| 15000     | 51 x 75                             | 5.70           | 0.25               | 51 x 95   | 6.20           | 0.25               | 63.5 x 95 | 7.60           | 0.20               |
| 22000     | 51 x 95                             | 6.80           | 0.30               | 63.5 x 95 | 8.20           | 0.25               | 76 x 95   | 9.70           | 0.20               |
| 33000     | 63.5 x 95                           | 9.20           | 0.30               | 76 x 95   | 9.70           | 0.30               | 76 x 130  | 11.80          | 0.25               |
| 47000     | 63.5 x 115                          | 10.90          | 0.35               | 76 x 115  | 12.50          | 0.30               | 89 x 130  | 15.00          | 0.25               |
| 68000     | 76 x 115                            | 13.00          | 0.40               | 89 x 130  | 16.40          | 0.30               |           |                |                    |
| 100000    | 89 x 130                            | 17.20          | 0.40               |           |                |                    |           |                |                    |

Note: 1. Ripple Current: (A/rms) 105°C, 120Hz

2. Dissipation Factor: 120Hz / 20°C



## CASE SIZE & PERMISSIBLE RIPPLE CURRENT OF STANDARD PRODUCTS

D × L: mm

| CAP. (μF) | RATED VOLTAGE WV (SURGE VOLTAGE WV) |                |                    |            |                |                    |            |                |                    |
|-----------|-------------------------------------|----------------|--------------------|------------|----------------|--------------------|------------|----------------|--------------------|
|           | 160 (200)                           |                |                    | 200 (250)  |                |                    | 250 (300)  |                |                    |
|           | SIZE                                | RIPPLE CURRENT | DISSIPATION FACTOR | SIZE       | RIPPLE CURRENT | DISSIPATION FACTOR | SIZE       | RIPPLE CURRENT | DISSIPATION FACTOR |
| 330       |                                     |                |                    | 35 × 50    | 0.80           | 0.15               | 35 × 50    | 0.80           | 0.15               |
| 470       | 35 × 50                             | 1.00           | 0.15               | 35 × 50    | 1.00           | 0.15               | 35 × 50    | 1.00           | 0.15               |
| 680       | 35 × 50                             | 1.10           | 0.15               | 35 × 50    | 1.10           | 0.15               | 35 × 80    | 1.40           | 0.15               |
| 1000      | 35 × 80                             | 1.70           | 0.15               | 35 × 80    | 1.70           | 0.15               | 35 × 100   | 1.90           | 0.15               |
| 1500      | 35 × 80                             | 2.00           | 0.15               | 35 × 100   | 2.20           | 0.15               | 51 × 75    | 2.30           | 0.15               |
| 2200      | 35 × 100                            | 2.70           | 0.15               | 51 × 75    | 2.80           | 0.15               | 51 × 95    | 3.10           | 0.15               |
| 3300      | 51 × 80                             | 3.50           | 0.15               | 51 × 95    | 3.70           | 0.15               | 63.5 × 95  | 4.20           | 0.15               |
| 4700      | 51 × 95                             | 4.40           | 0.15               | 63.5 × 95  | 4.90           | 0.15               | 63.5 × 115 | 5.40           | 0.15               |
| 6800      | 63.5 × 95                           | 5.90           | 0.15               | 63.5 × 115 | 6.30           | 0.15               | 76 × 115   | 6.90           | 0.15               |
| 10000     | 76 × 95                             | 7.60           | 0.15               | 76 × 115   | 8.10           | 0.15               | 76 × 155   | 9.30           | 0.15               |
| 15000     | 76 × 130                            | 10.30          | 0.15               | 89 × 130   | 10.90          | 0.15               | 89 × 155   | 12.20          | 0.15               |
| 22000     | 89 × 130                            | 13.20          | 0.15               |            |                |                    |            |                |                    |

Note: 1. Ripple Current: (A/rms) 105°C, 120Hz

2. Dissipation Factor: 120Hz / 20°C

**CASE SIZE & PERMISSIBLE RIPPLE CURRENT OF STANDARD PRODUCTS**

D x L: mm

| CAP. (μF) | RATED VOLTAGE WV (SURGE VOLTAGE WV) |                   |                       |                   |                   |                        |
|-----------|-------------------------------------|-------------------|-----------------------|-------------------|-------------------|------------------------|
|           | 400 (450)<br>SIZE                   |                   |                       | 450 (500)<br>SIZE |                   |                        |
|           |                                     | RIPPLE<br>CURRENT | DISSIPATION<br>FACTOR |                   | RIPPLE<br>CURRENT | DISSIPATION<br>CURRENT |
| 220       |                                     |                   |                       | 35 x 50           | 1.10              | 0.15                   |
| 330       |                                     |                   |                       | 35 x 100          | 1.50              | 0.15                   |
| 470       |                                     |                   |                       | 51 x 80           | 2.10              | 0.15                   |
| 680       |                                     |                   |                       | 51 x 95           | 2.70              | 0.15                   |
| 1000      | 51 x 75                             | 2.50              | 0.15                  | 51 x 100          | 4.20              | 0.15                   |
| 1200      | 51 x 95                             | 3.00              | 0.15                  |                   |                   |                        |
| 1500      | 51 x 115                            | 3.60              | 0.15                  | 51 x 130          | 5.70              | 0.15                   |
| 1800      | 51 x 130                            | 4.10              | 0.15                  |                   |                   |                        |
| 2200      | 63.5 x 95                           | 4.50              | 0.15                  | 63.5 x 115        | 7.30              | 0.15                   |
| 2700      | 63.5 x 115                          | 5.30              | 0.15                  |                   |                   |                        |
| 3300      | 63.5 x 130                          | 6.20              | 0.15                  | 76 x 130          | 10.10             | 0.15                   |
| 3900      | 63.5 x 155                          | 7.20              | 0.15                  |                   |                   |                        |
|           | 76 x 115                            | 6.80              | 0.15                  |                   |                   |                        |
| 4700      | 63.5 x 195                          | 8.70              | 0.15                  | 76 x 155          | 12.60             | 0.15                   |
|           | 76 x 130                            | 7.80              | 0.15                  |                   |                   |                        |
| 5600      | 63.5 x 195                          | 9.60              | 0.15                  | 89 x 155          | 15.80             | 0.15                   |
|           | 76 x 155                            | 9.20              | 0.15                  |                   |                   |                        |
| 6800      | 89 x 155                            | 10.70             | 0.15                  |                   |                   |                        |
| 8200      | 89 x 155                            | 11.80             | 0.15                  |                   |                   |                        |
| 10000     | 89 x 195                            | 14.10             | 0.15                  |                   |                   |                        |

Note: 1. Ripple Current: (A/rms) 105°C, 120Hz

2. Dissipation Factor: 120Hz / 20°C