

**MXK** SERIES

**UPGRADE**

**105°C Ultra Miniaturized**

• Load Life : 105°C 3000 hours.

RoHS compliance



**◆SPECIFICATIONS**

| Items  | Characteristics   |                     |                                   |                    |  |                      |                                    |      |  |
|--|---|---------------------|-----------------------------------|--------------------|--|----------------------|------------------------------------|------|--|
| Category Temperature Range                     | -25~+105°C  |                     |                                   |                    |  |                      |                                    |      |  |
| Rated Voltage Range                            | 400~500Vdc  |                     |                                   |                    |  |                      |                                    |      |  |
| Capacitance Tolerance                          | ±20% (20°C, 120Hz)  |                     |                                   |                    |  |                      |                                    |      |  |
| Leakage Current(MAX)                           | $I = 3\sqrt{CV}$ or 5mA whichever is smaller (After 5 minutes application of rated voltage)<br>$I = \text{Leakage Current}(\mu A)$ $C = \text{Capacitance}(\mu F)$ $V = \text{Rated Voltage}(Vdc)$  |                     |                                   |                    |  |                      |                                    |      |  |
| Dissipation Factor(MAX)                        | <table border="1"> <tr> <td>Rated Voltage (Vdc)</td> <td>400~450</td> <td>475, 500</td> <td>(20°C, 120Hz)</td> </tr> <tr> <td>tanδ</td> <td>0.20</td> <td>0.25</td> <td></td> </tr> </table>  | Rated Voltage (Vdc) | 400~450                           | 475, 500           | (20°C, 120Hz)                              | tanδ                 | 0.20                               | 0.25 |  |
| Rated Voltage (Vdc)                            | 400~450   | 475, 500            | (20°C, 120Hz)                     |                    |  |                      |                                    |      |  |
| tanδ   | 0.20  | 0.25                |                                   |                    |  |                      |                                    |      |  |
| Endurance                                      | <p>After applying rated voltage with rated ripple current for 3000 hours at 105°C, the capacitors shall meet the following requirements.</p> <table border="1"> <tr> <td>Capacitance Change</td> <td>Within ±20% of the initial value.</td> </tr> <tr> <td>Dissipation Factor</td> <td>Not more than 200% of the specified value.</td> </tr> <tr> <td>Leakage Current</td> <td>Not more than the specified value.</td> </tr> </table> | Capacitance Change  | Within ±20% of the initial value. | Dissipation Factor | Not more than 200% of the specified value. | Leakage Current      | Not more than the specified value. |      |  |
| Capacitance Change                             | Within ±20% of the initial value.   |                     |                                   |                    |  |                      |                                    |      |  |
| Dissipation Factor                             | Not more than 200% of the specified value.  |                     |                                   |                    |  |                      |                                    |      |  |
| Leakage Current                                | Not more than the specified value.  |                     |                                   |                    |  |                      |                                    |      |  |
| Low Temperature Stability Impedance Ratio(MAX) | <table border="1"> <tr> <td>Rated Voltage (Vdc)</td> <td>400~450</td> <td>475, 500</td> <td>(120Hz)</td> </tr> <tr> <td><math>Z(-25°C) / Z(20°C)</math></td> <td>8</td> <td>12</td> <td></td> </tr> </table>  | Rated Voltage (Vdc) | 400~450                           | 475, 500           | (120Hz)                                    | $Z(-25°C) / Z(20°C)$ | 8                                  | 12   |  |
| Rated Voltage (Vdc)                            | 400~450   | 475, 500            | (120Hz)                           |                    |  |                      |                                    |      |  |
| $Z(-25°C) / Z(20°C)$                           | 8   | 12                  |                                   |                    |  |                      |                                    |      |  |

**◆MULTIPLIER FOR RIPPLE CURRENT**

| Frequency (Hz) | 60(50) | 120(100) | 300  | 500  | 1k   | 10k≤ |
|----------------|--------|----------|------|------|------|------|
| Coefficient    | 0.80   | 1.00     | 1.15 | 1.20 | 1.25 | 1.40 |

**◆OPTION**

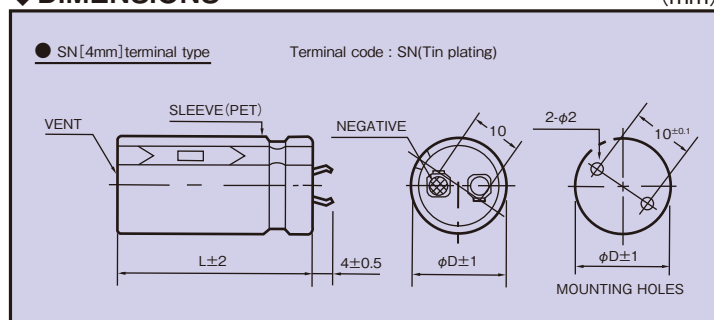
|                          | Code |
|--------------------------|------|
| PET Sleeve without plate | EFC  |

**◆PART NUMBER**

□□□
MXK
□□□□□
M
□□□
SN
DXL  
 Rated Voltage      Series      Capacitance      Capacitance Tolerance      Option      Terminal Code      Case Size

**◆DIMENSIONS**

(mm)



**◆ STANDARD SIZE**

| Vdc<br>Cap(μF) φD | 400   |      |       |      |       |      |       |      | 420   |      |       |      |       |      |       |      |
|-------------------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|
|                   | φ22   |      | φ25   |      | φ30   |      | φ35   |      | φ22   |      | φ25   |      | φ30   |      | φ35   |      |
| 120               |       |      |       |      |       |      |       |      | 22×25 | 0.95 |       |      |       |      |       |      |
| 150               | 22×25 | 1.03 |       |      |       |      |       |      | 22×25 | 1.02 |       |      |       |      |       |      |
|                   |       |      |       |      |       |      |       |      | 22×30 | 1.10 |       |      |       |      |       |      |
| 180               | 22×30 | 1.19 | 25×25 | 1.15 |       |      |       |      | 22×30 | 1.20 | 25×25 | 1.16 |       |      |       |      |
|                   | 22×30 | 1.26 | 25×25 | 1.20 |       |      |       |      | 22×35 | 1.38 | 25×30 | 1.35 |       |      |       |      |
|                   | 22×35 | 1.37 | 25×30 | 1.32 |       |      |       |      |       |      |       |      |       |      |       |      |
| 270               | 22×35 | 1.44 | 25×30 | 1.43 | 30×25 | 1.37 |       |      | 22×40 | 1.57 | 25×35 | 1.55 | 30×25 | 1.36 |       |      |
|                   | 22×40 | 1.56 |       |      |       |      |       |      |       |      |       |      |       |      |       |      |
| 330               | 22×45 | 1.77 | 25×35 | 1.65 | 30×25 | 1.39 |       |      | 22×45 | 1.72 | 25×35 | 1.61 | 30×30 | 1.59 | 35×25 | 1.45 |
|                   |       |      |       |      | 30×30 | 1.56 |       |      | 22×50 | 1.85 | 25×40 | 1.76 |       |      |       |      |
| 390               | 22×50 | 1.97 | 25×40 | 1.85 | 30×30 | 1.65 | 35×25 | 1.48 | 22×55 | 2.00 | 25×40 | 1.80 | 30×30 | 1.61 | 35×25 | 1.45 |
|                   |       |      |       |      |       |      |       |      |       |      | 25×45 | 1.96 | 30×35 | 1.82 | 35×30 | 1.66 |
| 470               | 22×55 | 2.11 | 25×45 | 2.07 | 30×35 | 1.89 | 35×30 | 1.69 | 22×60 | 2.19 | 25×50 | 2.18 | 30×35 | 1.85 | 35×30 | 1.72 |
|                   | 22×60 | 2.20 |       |      |       |      |       |      |       |      |       |      | 30×40 | 2.04 |       |      |
| 560               |       |      | 25×55 | 2.32 | 30×40 | 2.12 | 35×30 | 1.75 |       |      | 25×55 | 2.32 | 30×40 | 2.07 | 35×35 | 1.97 |
|                   |       |      |       |      |       |      |       |      |       |      | 25×60 | 2.43 | 30×45 | 2.27 |       |      |
| 680               |       |      | 25×60 | 2.56 | 30×45 | 2.35 | 35×35 | 2.00 |       |      |       |      | 30×45 | 2.29 | 35×40 | 2.22 |
|                   |       |      |       |      |       |      |       |      |       |      |       |      | 30×50 | 2.50 |       |      |
| 820               |       |      |       |      | 30×50 | 2.53 | 35×40 | 2.21 |       |      |       |      | 30×55 | 2.68 | 35×45 | 2.45 |
|                   |       |      |       |      | 30×55 | 2.66 | 35×45 | 2.48 |       |      |       |      | 30×60 | 2.79 |       |      |
| 1000              |       |      |       |      | 30×60 | 2.91 | 35×50 | 2.70 |       |      |       |      |       |      | 35×50 | 2.64 |
|                   |       |      |       |      |       |      |       |      |       |      |       |      |       |      | 35×55 | 2.76 |
| 1200              |       |      |       |      |       |      | 35×55 | 2.85 |       |      |       |      |       |      | 35×60 | 3.03 |
|                   |       |      |       |      |       |      | 35×60 | 2.99 |       |      |       |      |       |      |       |      |

| Vdc<br>Cap(μF) φD | 450   |      |       |      |       |      |       |      | 475   |      |       |      |       |      |       |      |
|-------------------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|
|                   | φ22   |      | φ25   |      | φ30   |      | φ35   |      | φ22   |      | φ25   |      | φ30   |      | φ35   |      |
| 82                |       |      |       |      |       |      |       |      | 22×25 | 0.79 |       |      |       |      |       |      |
| 100               |       |      |       |      |       |      |       |      | 22×30 | 0.90 | 25×25 | 0.90 |       |      |       |      |
| 120               | 22×25 | 0.95 |       |      |       |      |       |      | 22×30 | 0.97 | 25×30 | 1.02 |       |      |       |      |
| 150               | 22×30 | 1.12 | 25×25 | 1.08 |       |      |       |      | 22×35 | 1.13 | 25×30 | 1.12 | 30×25 | 1.11 |       |      |
|                   | 22×30 | 1.17 | 25×25 | 1.14 |       |      |       |      | 22×40 | 1.27 | 25×35 | 1.27 | 30×30 | 1.27 |       |      |
|                   | 22×35 | 1.27 | 25×30 | 1.24 |       |      |       |      |       |      |       |      |       |      |       |      |
| 220               | 22×35 | 1.34 | 25×30 | 1.34 | 30×25 | 1.29 |       |      | 22×45 | 1.44 | 25×40 | 1.44 | 30×30 | 1.37 | 35×25 | 1.27 |
|                   | 22×40 | 1.45 |       |      |       |      |       |      |       |      |       |      |       |      |       |      |
| 270               | 22×40 | 1.53 | 25×35 | 1.54 | 30×25 | 1.34 |       |      | 22×55 | 1.68 | 25×45 | 1.63 | 30×35 | 1.56 | 35×30 | 1.51 |
|                   | 22×45 | 1.65 |       |      | 30×30 | 1.49 |       |      |       |      |       |      |       |      |       |      |
| 330               | 22×50 | 1.81 | 25×40 | 1.72 | 30×30 | 1.58 | 35×25 | 1.42 |       |      | 25×50 | 1.83 | 30×40 | 1.77 | 35×30 | 1.57 |
|                   | 22×55 | 1.88 | 25×45 | 1.85 |       |      |       |      |       |      |       |      |       |      |       |      |
| 390               | 22×55 | 1.98 | 25×45 | 1.91 | 30×35 | 1.80 | 35×30 | 1.68 |       |      | 25×60 | 2.08 | 30×40 | 1.85 | 35×35 | 1.79 |
|                   | 22×60 | 2.07 | 25×50 | 2.04 |       |      |       |      |       |      |       |      |       |      |       |      |
| 470               |       |      | 25×55 | 2.21 | 30×40 | 2.02 | 35×30 | 1.69 |       |      |       |      | 30×50 | 2.17 | 35×40 | 2.00 |
|                   |       |      |       |      |       |      | 35×35 | 1.92 |       |      |       |      |       |      |       |      |
| 560               |       |      | 25×60 | 2.41 | 30×45 | 2.24 | 35×35 | 1.92 |       |      |       |      | 30×55 | 2.38 | 35×45 | 2.22 |
|                   |       |      |       |      |       |      | 35×40 | 2.15 |       |      |       |      |       |      |       |      |
| 680               |       |      |       |      | 30×50 | 2.41 | 35×40 | 2.16 |       |      |       |      |       |      | 35×50 | 2.45 |
|                   |       |      |       |      | 30×55 | 2.54 | 35×45 | 2.38 |       |      |       |      |       |      |       |      |
| 820               |       |      |       |      | 30×60 | 2.77 | 35×45 | 2.36 |       |      |       |      |       |      | 35×60 | 2.80 |
|                   |       |      |       |      |       |      | 35×50 | 2.59 |       |      |       |      |       |      |       |      |
| 1000              |       |      |       |      |       |      | 35×55 | 2.78 |       |      |       |      |       |      |       |      |
|                   |       |      |       |      |       |      | 35×60 | 2.90 |       |      |       |      |       |      |       |      |

| Vdc<br>Cap(μF) φD | 500   |      |       |      |       |      |       |      |
|-------------------|-------|------|-------|------|-------|------|-------|------|
|                   | φ22   |      | φ25   |      | φ30   |      | φ35   |      |
| 68                | 22×25 | 0.73 |       |      |       |      |       |      |
| 82                | 22×30 | 0.83 |       |      |       |      |       |      |
| 100               | 22×30 | 0.91 |       |      |       |      |       |      |
| 120               | 22×35 | 1.03 | 25×30 | 1.03 |       |      |       |      |
| 150               | 22×40 | 1.18 | 25×30 | 1.12 |       |      |       |      |
| 180               | 22×45 | 1.33 | 25×35 | 1.28 | 30×30 | 1.28 | 35×25 | 1.20 |
| 220               | 22×50 | 1.50 | 25×40 | 1.45 | 30×30 | 1.36 | 35×30 | 1.42 |
| 270               | 22×60 | 1.73 | 25×50 | 1.70 | 30×35 | 1.56 | 35×30 | 1.50 |
| 330               |       |      | 25×55 | 1.90 | 30×40 | 1.76 | 35×35 | 1.71 |
| 390               |       |      |       |      | 30×45 | 1.95 | 35×40 | 1.91 |
| 470               |       |      |       |      | 30×55 | 2.26 | 35×45 | 2.13 |
| 560               |       |      |       |      | 30×60 | 2.47 | 35×50 | 2.33 |
| 680               |       |      |       |      |       |      | 35×55 | 2.56 |

↑ Ripple Current (A r.m.s./120Hz, 105°C)  
 Case Size φD×L(mm)

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