

# Type SKA Axial Leaded Aluminum Electrolytic Capacitors

## 85 °C Extended Life General Purpose Capacitor



Type SKA is an axial leaded, 85 °C, 2000 hour extended life general purpose capacitor with a high CV per case size rating. It is suitable for consumer electronic products such as radio and TV applications.

### Highlights

- General purpose
- High CV per case size
- Miniature Size
- Available on T&R or Ammo Pack

### Specifications

**Capacitance Range:** 0.47 to 15,000  $\mu\text{F}$

**Voltage Range:** 6.3 to 450 WVdc

**Capacitance Tolerance:**  $\pm 20\%$

**Operating Temperature Range:**  $-40\text{ }^{\circ}\text{C}$  to  $85\text{ }^{\circ}\text{C}$

**Dissipation Factor:**

| Rated Voltage (V) | 6.3  | 10  | 16   | 25   | 35   | 50   | 63   | 100  | 160 - 350 | 400 - 450 |
|-------------------|------|-----|------|------|------|------|------|------|-----------|-----------|
| $\tan(\delta)$    | 0.24 | 0.2 | 0.17 | 0.15 | 0.12 | 0.10 | 0.10 | 0.10 | 0.20      | 0.25      |

For capacitance  $> 1,000\text{ }\mu\text{F}$ , add .002 for every increase of  $1,000\text{ }\mu\text{F}$  at 120 Hz,  $20\text{ }^{\circ}\text{C}$

**DC Leakage Current:** 6.3 to 100 Vdc;  $I = .01\text{CV}$  or  $3\text{ }\mu\text{A}$  @ 5 minutes  
 $> 100\text{ Vdc}$ ;  $I = .01\text{CV} + 100\text{ }\mu\text{A}$   
C = Capacitance in  $\mu\text{F}$   
V = Rated voltage  
I = Leakage current in  $\mu\text{A}$



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).

### Ripple Current Multipliers:

| Rated<br>WVdc | Ripple Multipliers |        |       |
|---------------|--------------------|--------|-------|
|               | 60 Hz              | 120 Hz | 1 kHz |
| 6 to 25       | 0.85               | 1.0    | 1.10  |
| 35 to 100     | 0.80               | 1.0    | 1.15  |
| 160 to 250    | 0.75               | 1.0    | 1.25  |

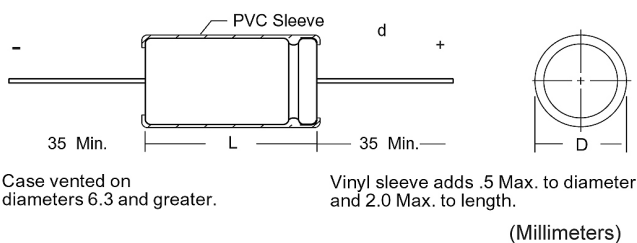
| Ambient Temperature | +65 °C | +75 °C | +85 °C |
|---------------------|--------|--------|--------|
| Ripple Multiplier   | 1.25   | 1.14   | 1.00   |

### QA Stability Test:

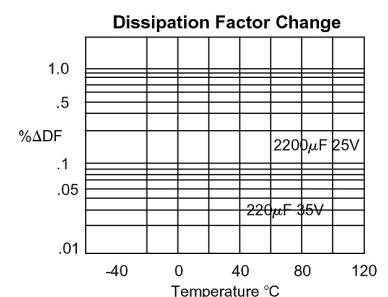
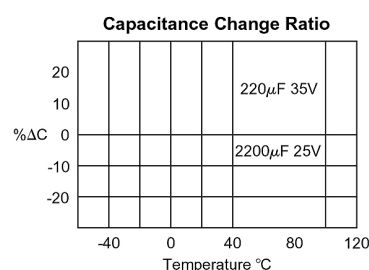
Apply WVdc for 2,000 h at  $85\text{ }^{\circ}\text{C}$

- Capacitance change  $\leq 20\%$  from initial limits
- DC leakage current meets initial limits
- ESR  $\leq 150\%$  of initial measured value

### Outline Drawing

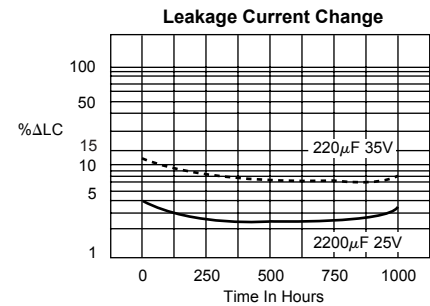
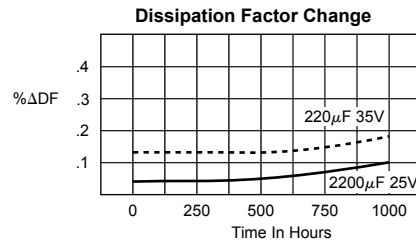
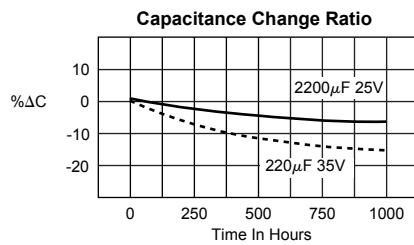


### Temperature Characteristics



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## Load Life Characteristics



## Ratings

| Cap                      | Catalog    | Max ESR | Max Ripple | Size   |          |        |      |
|--------------------------|------------|---------|------------|--------|----------|--------|------|
|                          |            | 120 Hz  | 120 Hz     | Max LC | Diameter | Length | Lead |
| Part Number              | 25 °C      | 85 °C   | 5 Min.     | D      | L        | Wire   |      |
| (μF)                     | (Ω)        | (mA)    | (μA)       | (mm)   | (mm)     | (d)    |      |
| 6.3 WVdc ( 8 Vdc Surge ) |            |         |            |        |          |        |      |
| 47                       | SKA470M6R3 | 10.60   | 65         | 3.0    | 5.0      | 12.5   | 0.6  |
| 100                      | SKA101M6R3 | 5.00    | 116        | 7.0    | 6.0      | 12.5   | 0.6  |
| 220                      | SKA221M6R3 | 1.33    | 204        | 13.9   | 6.3      | 16.0   | 0.6  |
| 330                      | SKA331M6R3 | 1.10    | 300        | 20.8   | 8.0      | 16.0   | 0.6  |
| 470                      | SKA471M6R3 | 0.62    | 396        | 29.3   | 8.0      | 16.0   | 0.6  |
| 1,000                    | SKA102M6R3 | 0.30    | 500        | 63.0   | 10.0     | 20.0   | 0.6  |
| 2,200                    | SKA222M6R3 | 0.14    | 826        | 138.6  | 13.0     | 25.0   | 0.6  |
| 3,300                    | SKA332M6R3 | 0.10    | 1020       | 207.9  | 13.0     | 30.0   | 0.6  |
| 10,000                   | SKA103M6R3 | 0.07    | 1450       | 630.0  | 18.0     | 45.0   | 0.8  |
| 15,000                   | SKA153M6R3 | 0.06    | 1800       | 945.0  | 22.0     | 40.0   | 0.8  |
| 10 WVdc ( 13 Vdc Surge ) |            |         |            |        |          |        |      |
| 47                       | SKA470M010 | 6.94    | 75         | 5      | 5        | 12.5   | 0.6  |
| 100                      | SKA101M010 | 3.26    | 180        | 10     | 6        | 16.0   | 0.6  |
| 220                      | SKA221M010 | 1.48    | 204        | 22     | 8        | 16.0   | 0.6  |
| 330                      | SKA331M010 | 0.99    | 249        | 33     | 8        | 16.0   | 0.6  |
| 470                      | SKA471M010 | 0.67    | 400        | 47     | 8        | 20.0   | 0.6  |
| 1,000                    | SKA102M010 | 0.33    | 585        | 100    | 10       | 21.0   | 0.6  |
| 2,200                    | SKA222M010 | 0.15    | 920        | 220    | 13       | 25.0   | 0.6  |
| 3,300                    | SKA332M010 | 0.10    | 1090       | 330    | 13       | 30.0   | 0.6  |
| 4,700                    | SKA472M010 | 0.08    | 1200       | 470    | 16       | 30.0   | 0.8  |
| 16 WVdc ( 20 Vdc Surge ) |            |         |            |        |          |        |      |
| 33                       | SKA330M016 | 6.84    | 60         | 5.3    | 6        | 12.5   | 0.6  |
| 47                       | SKA470M016 | 4.80    | 70         | 7.5    | 6        | 12.5   | 0.6  |
| 100                      | SKA101M016 | 2.76    | 125        | 16.0   | 6        | 16.0   | 0.6  |
| 220                      | SKA221M016 | 1.27    | 221        | 35.2   | 8        | 16.0   | 0.6  |
| 330                      | SKA331M016 | 0.85    | 350        | 52.8   | 8        | 20.0   | 0.6  |
| 470                      | SKA471M016 | 0.53    | 440        | 75.2   | 10       | 17.0   | 0.6  |
| 1,000                    | SKA102M016 | 0.21    | 680        | 180.0  | 10       | 26.0   | 0.6  |
| 2,200                    | SKA222M016 | 0.11    | 1000       | 352.0  | 13       | 30.0   | 0.6  |
| 3,300                    | SKA332M016 | 0.10    | 1200       | 528.0  | 16       | 30.0   | 0.8  |
| 4,700                    | SKA472M016 | 0.07    | 1360       | 752.0  | 16       | 40.0   | 0.8  |
| 25 WVdc ( 32 Vdc Surge ) |            |         |            |        |          |        |      |
| 22                       | SKA220M025 | 10.05   | 53         | 5.5    | 6        | 12.5   | 0.6  |
| 33                       | SKA330M025 | 6.70    | 77         | 8.3    | 6        | 12.5   | 0.6  |
| 47                       | SKA470M025 | 4.70    | 91         | 11.8   | 6        | 12.5   | 0.6  |
| 100                      | SKA101M025 | 2.21    | 158        | 25.0   | 8        | 16.0   | 0.6  |
| 220                      | SKA221M025 | 1.01    | 257        | 55.0   | 8        | 20.0   | 0.6  |
| 330                      | SKA331M025 | 0.76    | 367        | 82.5   | 10       | 16.0   | 0.6  |
| 470                      | SKA471M025 | 0.47    | 480        | 118.0  | 10       | 21.0   | 0.6  |
| 1,000                    | SKA102M025 | 0.22    | 850        | 250.0  | 13       | 24.0   | 0.6  |
| 2,200                    | SKA222M025 | 0.11    | 1200       | 550.0  | 16       | 30.0   | 0.8  |
| 3,300                    | SKA332M025 | 0.09    | 1300       | 825.0  | 16       | 40.0   | 0.8  |
| 4,700                    | SKA472M025 | 0.07    | 1500       | 1175.0 | 18       | 42.0   | 0.8  |

| Cap                      | Catalog<br>Part Number | Max ESR | Max Ripple | Size   |          |        |      |
|--------------------------|------------------------|---------|------------|--------|----------|--------|------|
|                          |                        | 120 Hz  | 120 Hz     | Max LC | Diameter | Length | Lead |
|                          |                        | 25 °C   | 85 °C      | 5 Min. | D        | L      | Wire |
| (μF)                     |                        | (Ω)     | (mA)       | (μA)   | (mm)     | (mm)   | (d)  |
| 35 WVdc ( 44 Vdc Surge ) |                        |         |            |        |          |        |      |
| 10                       | SKA100M035             | 17.68   | 35         | 3.5    | 5        | 12.5   | 0.6  |
| 22                       | SKA220M035             | 8.08    | 53         | 7.7    | 6        | 12.5   | 0.6  |
| 33                       | SKA330M035             | 5.54    | 70         | 11.6   | 6        | 16.0   | 0.6  |
| 47                       | SKA470M035             | 3.76    | 121        | 16.5   | 6        | 16.0   | 0.6  |
| 100                      | SKA101M035             | 1.77    | 194        | 35.0   | 8        | 16.0   | 0.6  |
| 220                      | SKA221M035             | 0.80    | 335        | 77.0   | 10       | 16.0   | 0.6  |
| 330                      | SKA331M035             | 0.54    | 440        | 115.5  | 10       | 21.0   | 0.6  |
| 470                      | SKA471M035             | 0.38    | 550        | 164.5  | 10       | 26.0   | 0.6  |
| 1,000                    | SKA102M035             | 0.18    | 992        | 350.0  | 13       | 32.0   | 0.6  |
| 2,200                    | SKA222M035             | 0.09    | 1250       | 770.0  | 16       | 40.0   | 0.8  |
| 3,300                    | SKA332M035             | 0.07    | 1400       | 1155.0 | 18       | 42.0   | 0.8  |
| 4,700                    | SKA472M035             | 0.06    | 1600       | 1645.0 | 22       | 40.0   | 0.8  |
| 50 WVdc ( 63 Vdc Surge ) |                        |         |            |        |          |        |      |
| 10                       | SKA100M050             | 14.74   | 36         | 5.0    | 6        | 12.5   | 0.6  |
| 22                       | SKA220M050             | 6.70    | 58         | 11.0   | 6        | 16.0   | 0.6  |
| 33                       | SKA330M050             | 4.47    | 111        | 16.5   | 6        | 16.0   | 0.6  |
| 47                       | SKA470M050             | 3.14    | 130        | 23.5   | 8        | 16     | 0.6  |
| 100                      | SKA101M050             | 1.47    | 250        | 50.0   | 8        | 20     | 0.6  |
| 220                      | SKA221M050             | 0.67    | 388        | 110.0  | 10       | 20     | 0.6  |
| 330                      | SKA331M050             | 0.45    | 433        | 165.0  | 10       | 25     | 0.6  |
| 470                      | SKA471M050             | 0.31    | 650        | 235.0  | 13       | 27     | 0.6  |
| 1,000                    | SKA102M050             | 0.15    | 1050       | 500.0  | 16       | 30     | 0.8  |
| 2,200                    | SKA222M050             | 0.08    | 1300       | 1100.0 | 18       | 40     | 0.8  |
| 3,300                    | SKA332M050             | 0.06    | 1500       | 1650.0 | 22       | 40     | 0.8  |
| 4,700                    | SKA472M050             | 0.06    | 3305       | 2350.0 | 22       | 40     | 0.8  |
| 63 WVdc ( 79 Vdc Surge ) |                        |         |            |        |          |        |      |
| 4.7                      | SKA4R7M063             | 31.4    | 32         | 3.0    | 6        | 12.5   | 0.6  |
| 10                       | SKA100M063             | 14.7    | 51         | 6.3    | 6        | 12.5   | 0.6  |
| 22                       | SKA220M063             | 6.7     | 91         | 13.9   | 6        | 16.0   | 0.6  |
| 33                       | SKA330M063             | 4.47    | 111        | 20.8   | 8        | 16.0   | 0.6  |
| 47                       | SKA470M063             | 3.14    | 133        | 29.6   | 8        | 16.0   | 0.6  |
| 100                      | SKA101M063             | 1.47    | 247        | 63.0   | 10       | 17.0   | 0.6  |
| 220                      | SKA221M063             | 0.67    | 450        | 138.6  | 10       | 25.0   | 0.6  |
| 330                      | SKA331M063             | 0.45    | 550        | 207.9  | 13       | 27.0   | 0.6  |
| 470                      | SKA471M063             | 0.31    | 750        | 296.1  | 13       | 32.0   | 0.6  |
| 1,000                    | SKA102M063             | 0.15    | 1100       | 630.0  | 16       | 40.0   | 0.8  |
| 2,200                    | SKA222M063             | 0.08    | 1400       | 1386.0 | 22       | 40.0   | 0.8  |

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| Cap                        | Catalog<br>Part Number | Max ESR | Max Ripple | Size   |          |        |      |
|----------------------------|------------------------|---------|------------|--------|----------|--------|------|
|                            |                        | 120 Hz  | 120 Hz     | Max LC | Diameter | Length | Lead |
|                            |                        | 25 °C   | 85 °C      | 5 Min. | D        | L      | Wire |
| (μF)                       |                        | (Ω)     | (mA)       | (μA)   | (mm)     | (mm)   | (d)  |
| 100 WVdc ( 125 Vdc Surge ) |                        |         |            |        |          |        |      |
| 0.47                       | SKAR47M100             | 250.80  | 5          | 3.0    | 5        | 12.5   | 0.6  |
| 1.0                        | SKA010M100             | 117.90  | 12         | 3.0    | 5        | 12.5   | 0.6  |
| 2.2                        | SKA2R2M100             | 53.59   | 21         | 3.0    | 6        | 12.5   | 0.6  |
| 3.3                        | SKA3R3M100             | 35.73   | 30         | 3.3    | 6        | 12.5   | 0.6  |
| 4.7                        | SKA4R7M100             | 25.08   | 39         | 4.7    | 6        | 12.5   | 0.6  |
| 10                         | SKA100M100             | 11.79   | 68         | 10.0   | 6        | 16.0   | 0.6  |
| 22                         | SKA220M100             | 5.36    | 111        | 22.0   | 8        | 16.0   | 0.6  |
| 33                         | SKA330M100             | 3.57    | 136        | 33.0   | 8        | 20.0   | 0.6  |
| 47                         | SKA470M100             | 2.51    | 189        | 47.0   | 10       | 21.0   | 0.6  |
| 68                         | SKA680M100             | 1.98    | 1260       | 68.0   | 10       | 21.0   | 0.6  |
| 100                        | SKA101M100             | 1.18    | 350        | 100.0  | 10       | 26.0   | 0.6  |
| 220                        | SKA221M100             | 0.54    | 550        | 220.0  | 13       | 32.0   | 0.6  |
| 330                        | SKA331M100             | 0.36    | 700        | 330.0  | 16       | 30.0   | 0.8  |
| 470                        | SKA471M100             | 0.25    | 1031       | 470.0  | 25       | 43.0   | 0.8  |
| 1,000                      | SKA102M100             | 0.12    | 1447       | 1000.0 | 22       | 40.0   | 0.8  |
| 160 WVdc ( 200 Vdc Surge ) |                        |         |            |        |          |        |      |
| 1.0                        | SKA010M160             | 266.00  | 13         | 101.6  | 6        | 16     | 0.6  |
| 2.2                        | SKA2R2M160             | 121.00  | 22         | 103.5  | 6        | 16     | 0.6  |
| 3.3                        | SKA3R3M160             | 80.40   | 31         | 105.3  | 8        | 16     | 0.6  |
| 4.7                        | SKA4R7M160             | 56.50   | 40         | 107.5  | 8        | 16     | 0.6  |
| 10                         | SKA100M160             | 26.60   | 63         | 116.0  | 8        | 20     | 0.6  |
| 22                         | SKA220M160             | 12.10   | 108        | 135.2  | 10       | 20     | 0.6  |
| 33                         | SKA330M160             | 8.04    | 144        | 152.8  | 10       | 25     | 0.6  |
| 47                         | SKA470M160             | 5.65    | 180        | 175.2  | 13       | 30     | 0.6  |
| 100                        | SKA101M160             | 2.66    | 270        | 260.0  | 13       | 22     | 0.6  |
| 150                        | SKA151M160             | 1.21    | 400        | 340.0  | 16       | 33     | 0.8  |
| 200 WVdc ( 250 Vdc Surge ) |                        |         |            |        |          |        |      |
| 1.0                        | SKA010M200             | 332.0   | 17         | 102.5  | 6        | 16     | 0.6  |
| 2.2                        | SKA2R2M200             | 151.0   | 30         | 105.5  | 8        | 16     | 0.6  |
| 3.3                        | SKA3R3M200             | 101.0   | 40         | 108.3  | 8        | 16     | 0.6  |
| 4.7                        | SKA4R7M200             | 70.6    | 50         | 111.7  | 8        | 16     | 0.6  |
| 10                         | SKA100M200             | 33.2    | 80         | 125.0  | 8        | 20     | 0.6  |
| 15                         | SKA150M200             | 25.6    | 105        | 137.5  | 10       | 17     | 0.6  |
| 22                         | SKA220M200             | 15.1    | 140        | 155.0  | 10       | 20     | 0.6  |
| 33                         | SKA330M200             | 10.1    | 175        | 182.5  | 10       | 25     | 0.6  |
| 47                         | SKA470M200             | 7.06    | 215        | 217.5  | 13       | 22     | 0.6  |
| 68                         | SKA680M200             | 5.58    | 265        | 270.0  | 13       | 32     | 0.6  |
| 100                        | SKA101M200             | 3.32    | 340        | 350.0  | 16       | 33     | 0.8  |
| 150                        | SKA151M200             | 1.34    | 403        | 475.0  | 16       | 33     | 0.8  |

| Cap                        | Catalog<br>Part Number | Max ESR |        | Max Ripple |          | Size   |      |
|----------------------------|------------------------|---------|--------|------------|----------|--------|------|
|                            |                        | 120 Hz  | 120 Hz | Max LC     | Diameter | Length | Lead |
|                            |                        | 25 °C   | 85 °C  | 5 Min.     | D        | L      | Wire |
| (μF)                       |                        | (Ω)     | (mA)   | (μA)       | (mm)     | (mm)   | (d)  |
| 250 WVdc ( 300 Vdc Surge ) |                        |         |        |            |          |        |      |
| 1.0                        | SKA010M250             | 332.0   | 13     | 102.5      | 6        | 16     | 0.6  |
| 2.2                        | SKA2R2M250             | 151.0   | 23     | 105.5      | 8        | 16     | 0.6  |
| 3.3                        | SKA3R3M250             | 101.0   | 31     | 108.3      | 8        | 16     | 0.6  |
| 4.7                        | SKA4R7M250             | 70.6    | 37     | 111.7      | 8        | 20     | 0.6  |
| 10                         | SKA100M250             | 33.2    | 67     | 125.0      | 10       | 17     | 0.6  |
| 22                         | SKA220M250             | 15.1    | 118    | 155.0      | 10       | 25     | 0.6  |
| 33                         | SKA330M250             | 10.1    | 161    | 182.5      | 13       | 21     | 0.6  |
| 47                         | SKA470M250             | 7.06    | 211    | 217.5      | 13       | 32     | 0.6  |
| 100                        | SKA101M250             | 3.32    | 419    | 350.0      | 16       | 33     | 0.8  |
| 150                        | SKA151M250             | 1.34    | 764    | 475.0      | 18       | 42     | 0.8  |
| 350 WVdc ( 400 Vdc Surge ) |                        |         |        |            |          |        |      |
| 0.47                       | SKAR47M350             | 881.84  | 25     | 101.6      | 8        | 16.5   | 0.6  |
| 1.0                        | SKA010M350             | 332.00  | 16     | 104.0      | 8        | 16.0   | 0.6  |
| 2.2                        | SKA2R2M350             | 151.00  | 25     | 108.0      | 8        | 16.0   | 0.6  |
| 3.3                        | SKA3R3M350             | 101.00  | 31     | 112.0      | 8        | 20.0   | 0.6  |
| 4.7                        | SKA4R7M350             | 70.60   | 60     | 117.0      | 10       | 21.0   | 0.6  |
| 10                         | SKA100M350             | 33.20   | 75     | 135.0      | 10       | 21.0   | 0.6  |
| 22                         | SKA220M350             | 15.10   | 177    | 177.0      | 13       | 21.0   | 0.6  |
| 33                         | SKA330M350             | 10.10   | 200    | 216.0      | 13       | 32.0   | 0.6  |
| 47                         | SKA470M350             | 7.06    | 240    | 365.0      | 16       | 33.0   | 0.6  |
| 100                        | SKA101M350             | 3.32    | 350    | 450.0      | 18       | 42.0   | 0.8  |
| 150                        | SKA151M350             | 1.34    | 823    | 625.0      | 20       | 42.0   | 0.8  |
| 400 WVdc ( 450 Vdc Surge ) |                        |         |        |            |          |        |      |
| 2.2                        | SKA2R2M400             | 151     | 55     | 108.8      | 8        | 20     | 0.6  |
| 3.3                        | SKA3R3M400             | 101     | 70     | 113.2      | 10       | 21     | 0.6  |
| 4.7                        | SKA4R7M400             | 70.6    | 90     | 118.8      | 10       | 26     | 0.6  |
| 10                         | SKA100M400             | 33.2    | 150    | 140.0      | 10       | 26     | 0.6  |
| 22                         | SKA220M400             | 15.1    | 230    | 188.0      | 13       | 25     | 0.6  |
| 33                         | SKA330M400             | 10.1    | 300    | 232.0      | 16       | 28     | 0.6  |
| 47                         | SKA470M400             | 7.06    | 318    | 288.0      | 16       | 33     | 0.8  |
| 100                        | SKA101M400             | 3.32    | 555    | 500.0      | 20       | 42     | 0.8  |
| 450 WVdc ( 500 Vdc Surge ) |                        |         |        |            |          |        |      |
| 1.0                        | SKA010M450             | 332     | 17     | 104.5      | 8        | 16     | 0.6  |
| 2.2                        | SKA2R2M450             | 151     | 30     | 109.9      | 8        | 20     | 0.6  |
| 3.3                        | SKA3R3M450             | 101     | 39     | 114.9      | 10       | 21     | 0.6  |
| 4.7                        | SKA4R7M450             | 70.6    | 51     | 121.2      | 10       | 26     | 0.6  |
| 10                         | SKA100M450             | 33.2    | 89     | 145.0      | 13       | 22     | 0.6  |
| 15                         | SKA150M450             | 25.6    | 183    | 167.5      | 13       | 27     | 0.6  |
| 22                         | SKA220M450             | 15.1    | 175    | 199.0      | 13       | 30     | 0.6  |
| 33                         | SKA330M450             | 10.1    | 241    | 248.5      | 16       | 30     | 0.8  |
| 47                         | SKA470M450             | 7.06    | 318    | 311.5      | 18       | 40     | 0.6  |
| 68                         | SKA680M450             | 5.58    | 412    | 406.0      | 18       | 40     | 0.8  |
| 100                        | SKA101M450             | 3.32    | 555    | 550.0      | 22       | 43     | 0.8  |

## Type SKA Axial Leaded Aluminum Electrolytic Capacitors

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