# SCM Series

## Series-Connected Super Capacitor Modules

HOW TO ORDER

SCM R

| Series | Diameter |
| --- | --- |
| SuperCap Module | Q = 6.3mm<br>R = 8mm / 9.<br>S = 10mm<br>T = 12.5mm<br>U = 16mm |

QUALITY INSPEC

Parts are tested for lif
characteristics, vibrati
See pages 2-5 for mor

# SCM Series

## 5.4V/5.0V Series-Connected SuperCapacitors Modules

| Part Number | Diameter (mm) | Length (mm) | Rated Capacitance (F) | Capacitance Tolerance | Rated Voltage (V) | Rated Temperature (°C) | DCL Max @ 72 Hrs (µA) | ESR Max @ 1000 Hz (mΩ) | ESR Max @ DC (mΩ) | Peak Current (A) | Power Density (W/kg) | Max Energy (Wh) | Energy Density (Wh/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Shrink Wrap / Radial Lead** | | | | | | | | | | | | | |
| SCMQ14C474MRBA0 | 6.3 | 14 | 0.47 | ±20% | 5.0/4.2* | 65/85* | 3 | 400 | 1000 | 0.80 | 2143 | 0.0016 | 1.17 |
| SCMQ14C474MRTA0 | 6.3 | 14 | 0.47 | ±20% | 5.0/4.2* | 65/85* | 3 | 400 | 1000 | 0.80 | 2143 | 0.0016 | 1.17 |
| SCMQ14D474MRBB0 | 6.3 | 14 | 0.47 | ±20% | 5.4/4.6* | 65/85* | 6 | 400 | 1000 | 0.86 | 2499 | 0.0019 | 1.36 |
| SCMQ14D474MRTB0 | 6.3 | 14 | 0.47 | ±20% | 5.4/4.6* | 65/85* | 6 | 400 | 1000 | 0.86 | 2499 | 0.0019 | 1.36 |
| SCMR14C474SRBA0 | 8 | 14 | 0.47 | +30%/-10% | 5.0/4.2* | 65/85* | 5 | 375 | 1720 | 0.80 | 1429 | 0.0016 | 0.78 |
| SCMR14D474SRBB0 | 8 | 14 | 0.47 | +30%/-10% | 5.4/4.6* | 65/85* | 6 | 375 | 1720 | 0.86 | 1666 | 0.0019 | 0.91 |
| SCMR18C105SRBA0 | 8 | 18 | 1 | +30%/-10% | 5.0/4.2* | 65/85* | 8 | 250 | 730 | 1.45 | 1667 | 0.0035 | 1.39 |
| SCMR18D105SRBB0 | 8 | 18 | 1 | +30%/-10% | 5.4/4.6* | 65/85* | 10 | 250 | 730 | 1.57 | 1944 | 0.0041 | 1.62 |
| SCMR22C155SRBA0 | 8 | 22 | 1.5 | +30%/-10% | 5.0/4.2* | 65/85* | 10 | 200 | 590 | 2.01 | 1669 | 0.0052 | 1.68 |
| SCMR22D155SRBB0 | 8 | 22 | 1.5 | +30%/-10% | 5.4/4.6* | 65/85* | 15 | 200 | 590 | 2.17 | 1946 | 0.0061 | 1.96 |
| SCMS22C255SRBA0 | 10 | 22 | 2.5 | +30%/-10% | 5.0/4.2* | 65/85* | 20 | 150 | 370 | 3.29 | 1852 | 0.0087 | 1.93 |
| SCMS22D255SRBB0 | 10 | 22 | 2.5 | +30%/-10% | 5.4/4.6* | 65/85* | 25 | 150 | 370 | 3.55 | 2113 | 0.0101 | 2.20 |
| SCMT22C505SRBA0 | 12.5 | 22 | 5 | +30%/-10% | 5.0/4.2* | 65/85* | 25 | 120 | 160 | 7.14 | 2740 | 0.0174 | 2.38 |
| SCMT22D505SRBB0 | 12.5 | 22 | 5 | +30%/-10% | 5.4/4.6* | 65/85* | 30 | 120 | 160 | 7.50 | 2916 | 0.0203 | 2.70 |
| SCMT32C755SRBA0 | 12.5 | 32 | 7.5 | +30%/-10% | 5.0/4.2* | 65/85* | 65 | 90 | 130 | 8.52 | 1953 | 0.0260 | 2.71 |
| SCMT32D755SRBB0 | 12.5 | 32 | 7.5 | +30%/-10% | 5.4/4.6* | 65/85* | 70 | 90 | 130 | 9.20 | 2209 | 0.0304 | 3.07 |

*with appropriate voltage derating operating temperature can be extended to 85°C

## OPERATING TEMPERATURE RANGE

-40°C to +65°C @ 5.4V Balanced, 5.0V Unbalanced
-40°C to +85°C @ 4.6V Balanced, 4.2V Unbalanced

## QUALIFICATION TEST SUMMARY

| Test | Test Method | Parameter | Limits |
|---|---|---|---|
| **Life Cycle** | Capacitors are cycled between rated voltage and half-rated voltage under constant current at +25°C for 500,000 cycles | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |
| **High Temperature Load Life** | Temperature: +65°C<br>Voltage: Rated Voltage<br>Test Duration: 1,000 hours | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |
| **Storage Temperature Characteristics** | Storage Duration: 2 years<br>No Load<br>Temperature: +35°C | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |
| **Vibration Resistance** | Amplitude: 1.5mm<br>Frequency: 10 ~ 55Hz<br>Direction: X, Y, Z for 2 hours each | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |
| **Humidity** | Voltage: Rated Voltage<br>RH: 90%<br>Temperature: +60°C<br>Test Duration: 1,000 hours | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |

# SCM Series

## 6.0V/5.5V Series-Connected SuperCapacitors Modules

| Part Number | Diameter (mm) | Length (mm) | Rated Capacitance (F) | Capacitance Tolerance | Rated Voltage (V) | Rated Temperature (°C) | DCL Max @ 72 Hrs (µA) | ESR Max @ 1000 Hz (mΩ) | ESR Max @ DC (mΩ) | Peak Current (A) | Power Density (W/kg) | Max Energy (Wh) | Energy Density (Wh/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Shrink Wrap / Radial Lead** | | | | | | | | | | | | | |
| SCMQ14F474MRBA0 | 6.3 | 14 | 0.47 | ±20% | 5.5/4.6* | 65/85* | 6 | 500 | 3000 | 0.54 | 864 | 0.0020 | 1.41 |
| SCMQ14H474MRBB0 | 6.3 | 14 | 0.47 | ±20% | 6.0/5.0* | 65/85* | 7 | 500 | 3000 | 0.59 | 1029 | 0.0024 | 1.68 |
| SCMR14F474SRBA0 | 8 | 14 | 0.47 | +30%/-10% | 5.5/4.6* | 65/85* | 6 | 380 | 1720 | 0.71 | 1005 | 0.0020 | 0.94 |
| SCMR14H474SRBB0 | 8 | 14 | 0.47 | +30%/-10% | 6.0/5.0* | 65/85* | 7 | 380 | 1720 | 0.78 | 1196 | 0.0024 | 1.12 |
| SCMR18F105SRBA0 | 8 | 18 | 1 | +30%/-10% | 5.5/4.6* | 65/85* | 9 | 250 | 730 | 1.60 | 2017 | 0.0042 | 1.68 |
| SCMR18H105SRBB0 | 8 | 18 | 1 | +30%/-10% | 6.0/5.0* | 65/85* | 11 | 250 | 730 | 1.74 | 2400 | 0.0050 | 2.00 |
| SCMR22F155SRBA0 | 8 | 22 | 1.5 | +30%/-10% | 5.5/4.6* | 65/85* | 12 | 200 | 590 | 2.24 | 2091 | 0.0063 | 2.03 |
| SCMR22H155SRBB0 | 8 | 22 | 1.5 | +30%/-10% | 6.0/5.0* | 65/85* | 18 | 200 | 590 | 2.45 | 2488 | 0.0075 | 2.42 |
| SCMS22F255SRBA0 | 10 | 22 | 2.5 | +30%/-10% | 5.5/4.6* | 65/85* | 24 | 180 | 370 | 3.72 | 2373 | 0.0105 | 2.33 |
| SCMS22H255SRBB0 | 10 | 22 | 2.5 | +30%/-10% | 6.0/5.0* | 65/85* | 30 | 180 | 370 | 4.05 | 2762 | 0.0125 | 2.72 |
| SCMS32F505SRBA0 | 10 | 32 | 5 | +30%/-10% | 5.5/4.6* | 65/85* | 30 | 120 | 160 | 7.86 | 3580 | 0.0210 | 3.11 |
| SCMS32H505SRBB0 | 10 | 32 | 5 | +30%/-10% | 6.0/5.0* | 65/85* | 36 | 120 | 160 | 8.57 | 4235 | 0.0250 | 3.68 |
| SCMT22F505SRBA0 | 12.5 | 22 | 5 | +30%/-10% | 5.5/4.6* | 65/85* | 30 | 120 | 160 | 7.86 | 3176 | 0.0210 | 2.76 |
| SCMT32F755SRBA0 | 12.5 | 32 | 7.5 | +30%/-10% | 5.5/4.6* | 65/85* | 78 | 90 | 130 | 10.86 | 3151 | 0.0315 | 3.28 |
| SCMT32H755SRBB0 | 12.5 | 32 | 7.5 | +30%/-10% | 6.0/5.0* | 65/85* | 84 | 90 | 130 | 11.84 | 3600 | 0.0375 | 3.75 |
| SCMU33F156SRBA0 | 16 | 33 | 15 | +30%/-10% | 5.5/4.6* | 65/85* | 85 | 40 | 100 | 23.57 | 4033 | 0.0630 | 3.50 |
| SCMU33F156SRBB0 | 16 | 33 | 15 | +30%/-10% | 5.5/4.6* | 65/85* | 90 | 40 | 100 | 23.57 | 3946 | 0.0630 | 3.43 |
| **Plastic / Radial Lead** | | | | | | | | | | | | | |
| SCMR14F474SSBA0 | 9.5 | 16 | 0.47 | +30%/-10% | 5.5/4.6* | 65/85* | 6 | 380 | 1720 | 0.71 | 541 | 0.0020 | 0.51 |
| SCMR14H474SSBB0 | 9.5 | 16 | 0.47 | +30%/-10% | 6.0/5.0* | 65/85* | 7 | 380 | 1720 | 0.78 | 644 | 0.0024 | 0.60 |
| SCMR18F105SSBA0 | 9.5 | 20 | 1 | +30%/-10% | 5.5/4.6* | 65/85* | 9 | 250 | 730 | 1.60 | 1096 | 0.0042 | 0.91 |
| SCMR18H105SSBB0 | 9.5 | 20 | 1 | +30%/-10% | 6.0/5.0* | 65/85* | 11 | 250 | 730 | 1.74 | 1304 | 0.0050 | 1.09 |
| SCMR22F155SSBA0 | 9.5 | 24 | 1.5 | +30%/-10% | 5.5/4.6* | 65/85* | 12 | 200 | 590 | 2.24 | 1179 | 0.0063 | 1.15 |
| SCMR22H155SSBB0 | 9.5 | 24 | 1.5 | +30%/-10% | 6.0/5.0* | 65/85* | 18 | 200 | 590 | 2.45 | 1403 | 0.0075 | 1.36 |

## OPERATING TEMPERATURE RANGE

-40°C to +65°C @ 6.0V Balanced, 5.5V Unbalanced
-40°C to +85°C @ 5.0V Balanced, 4.6V Unbalanced

## QUALIFICATION TEST SUMMARY

| Test | Test Method | Parameter | Limits |
|---|---|---|---|
| **Life Cycle** | Capacitors are cycled between rated voltage and half-rated voltage under constant current at +25°C for 500,000 cycles | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |
| **High Temperature Load Life** | Temperature: +65°C<br>Voltage: Rated Voltage<br>Test Duration: 1,000 hours | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |
| **Storage Temperature Characteristics** | Storage Duration: 2 years<br>No Load<br>Temperature: +35°C | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |
| **Vibration Resistance** | Amplitude: 1.5mm<br>Frequency: 10 ~ 55Hz<br>Direction: X, Y, Z for 2 hours each | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |
| **Humidity** | Voltage: Rated Voltage<br>RH: 90%<br>Temperature: +60°C<br>Test Duration: 1,000 hours | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |

# SCM Series

## 7.5V Series-Connected Super Capacitor Modules

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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# SCM Series

## 9.0V/8.1V Series-Connected Super Capacitor Modules

| Part Number | Diameter (mm) | Length (mm) | Rated Capacitance (F) | Capacitance Tolerance | Rated Voltage (V) | Rated Temperature (°C) | DCL Max @ 72 Hrs (µA) | ESR Max @ 1000 Hz (mΩ) | ESR Max @ DC (mΩ) | Peak Current (A) | Power Density (W/kg) | Max Energy (Wh) | Energy Density (Wh/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Shrink Wrap / Radial Lead** | | | | | | | | | | | | | |
| SCMR14J334SRBA0 | 8 | 14 | 0.33 | +30%/-10% | 8.1/6.9* | 65/85* | 6 | 540 | 1500 | 0.69 | 897 | 0.0030 | 0.98 |
| SCMR14J334SRBB0 | 8 | 14 | 0.33 | +30%/-10% | 8.1/6.9* | 65/85* | 7 | 540 | 1500 | 0.69 | 869 | 0.0030 | 0.95 |
| SCMR14L334SRBB0 | 8 | 14 | 0.33 | +30%/-10% | 9.0/7.6* | 65/85* | 7 | 540 | 1500 | 0.77 | 1072 | 0.0037 | 1.17 |
| SCMR18J604SRBA0 | 8 | 18 | 0.6 | +30%/-10% | 8.1/6.9* | 65/85* | 9 | 400 | 1200 | 1.47 | 1934 | 0.0055 | 1.45 |
| SCMR18J604SRBB0 | 8 | 18 | 0.6 | +30%/-10% | 8.1/6.9* | 65/85* | 12 | 400 | 1200 | 1.47 | 1869 | 0.0055 | 1.40 |
| SCMR18L604SRBB0 | 8 | 18 | 0.6 | +30%/-10% | 9.0/7.6* | 65/85* | 12 | 400 | 1200 | 1.64 | 2308 | 0.0068 | 1.73 |
| SCMR22J105SRBA0 | 8 | 22 | 1 | +30%/-10% | 8.1/6.9* | 65/85* | 12 | 350 | 1050 | 2.20 | 1986 | 0.0091 | 1.93 |
| SCMR22J105SRBB0 | 8 | 22 | 1 | +30%/-10% | 8.1/6.9* | 65/85* | 15 | 350 | 1050 | 2.20 | 1894 | 0.0091 | 1.84 |
| SCMR22L105SRBB0 | 8 | 22 | 1 | +30%/-10% | 9.0/7.6* | 65/85* | 18 | 350 | 1050 | 2.45 | 2338 | 0.0113 | 2.27 |
| **Plastic / Radial Lead** | | | | | | | | | | | | | |
| SCMR14J334SSBA0 | 9.5 | 16 | 0.33 | +30%/-10% | 8.1/6.9* | 65/85* | 6 | 540 | 1500 | 0.69 | 498 | 0.0030 | 0.54 |
| SCMR14L334SSBB0 | 9.5 | 16 | 0.33 | +30%/-10% | 9.0/7.6* | 65/85* | 7 | 540 | 1500 | 0.77 | 598 | 0.0037 | 0.65 |
| SCMR18J604SSBA0 | 9.5 | 20 | 0.6 | +30%/-10% | 8.1/6.9* | 65/85* | 9 | 400 | 1200 | 1.47 | 1063 | 0.0055 | 0.80 |
| SCMR18L604SSBB0 | 9.5 | 20 | 0.6 | +30%/-10% | 9.0/7.6* | 65/85* | 12 | 400 | 1200 | 1.64 | 1286 | 0.0068 | 0.96 |
| SCMR22J105SSBA0 | 9.5 | 24 | 1 | +30%/-10% | 8.1/6.9* | 65/85* | 12 | 350 | 1050 | 2.20 | 1129 | 0.0091 | 1.10 |
| SCMR22L105SSBB0 | 9.5 | 24 | 1 | +30%/-10% | 9.0/7.6* | 65/85* | 18 | 350 | 1050 | 2.45 | 1361 | 0.0113 | 1.32 |

## OPERATING TEMPERATURE RANGE

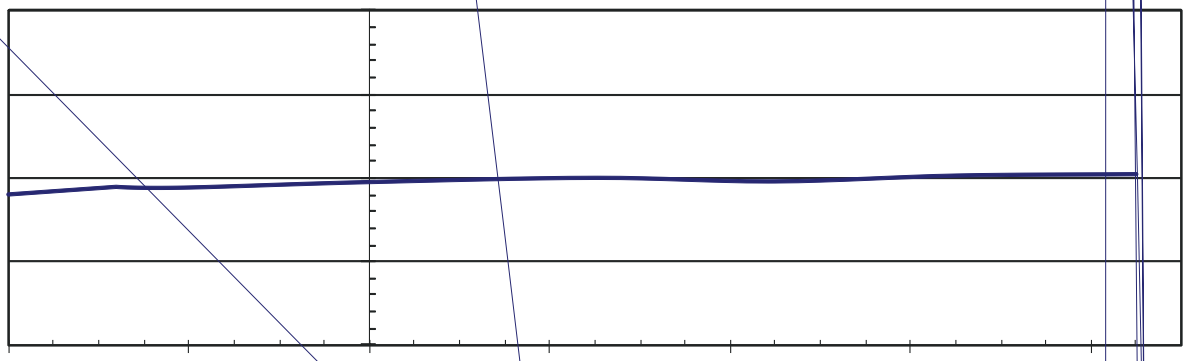
-40°C to +65°C @ 9.0V Balanced, 8.1V Unbalanced
-40°C to +85°C @ 7.6V Balanced, 6.9V Unbalanced

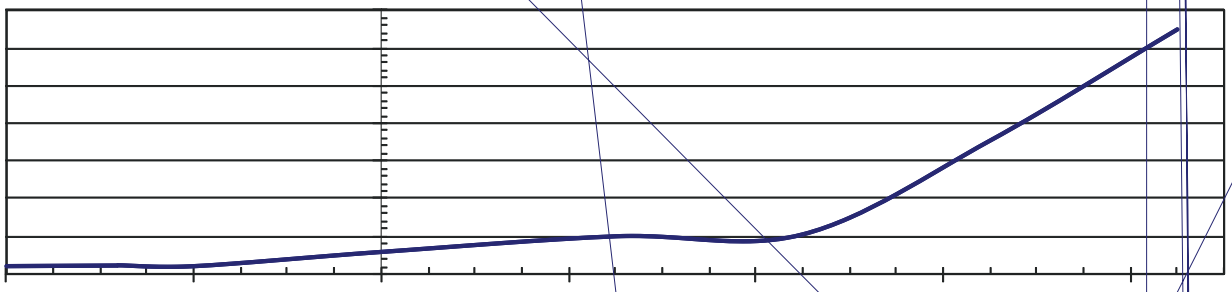
## QUALIFICATION TEST SUMMARY

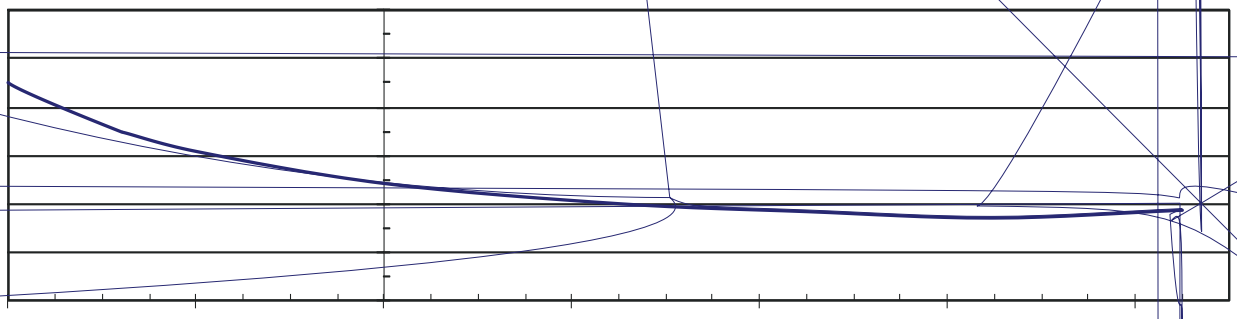
| Test | Test Method | Parameter | Limits |
|---|---|---|---|
| **Life Cycle** | Capacitors are cycled between rated voltage and half-rated voltage under constant current at +25°C for 500,000 cycles | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |
| **High Temperature Load Life** | Temperature: +65°C<br>Voltage: Rated Voltage<br>Test Duration: 1,000 hours | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |
| **Storage Temperature Characteristics** | Storage Duration: 2 years<br>No Load<br>Temperature: +35°C | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |
| **Vibration Resistance** | Amplitude: 1.5mm<br>Frequency: 10 ~ 55Hz<br>Direction: X, Y, Z for 2 hours each | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |
| **Humidity** | Voltage: Rated Voltage<br>RH: 90%<br>Temperature: +60°C<br>Test Duration: 1,000 hours | Capacitance<br>ESR<br>Appearance | ≥70% of spec value<br>≤200% of spec value<br>No remarkable defects |

# SCM Series

## Series-Connected Super Capacitor Modules



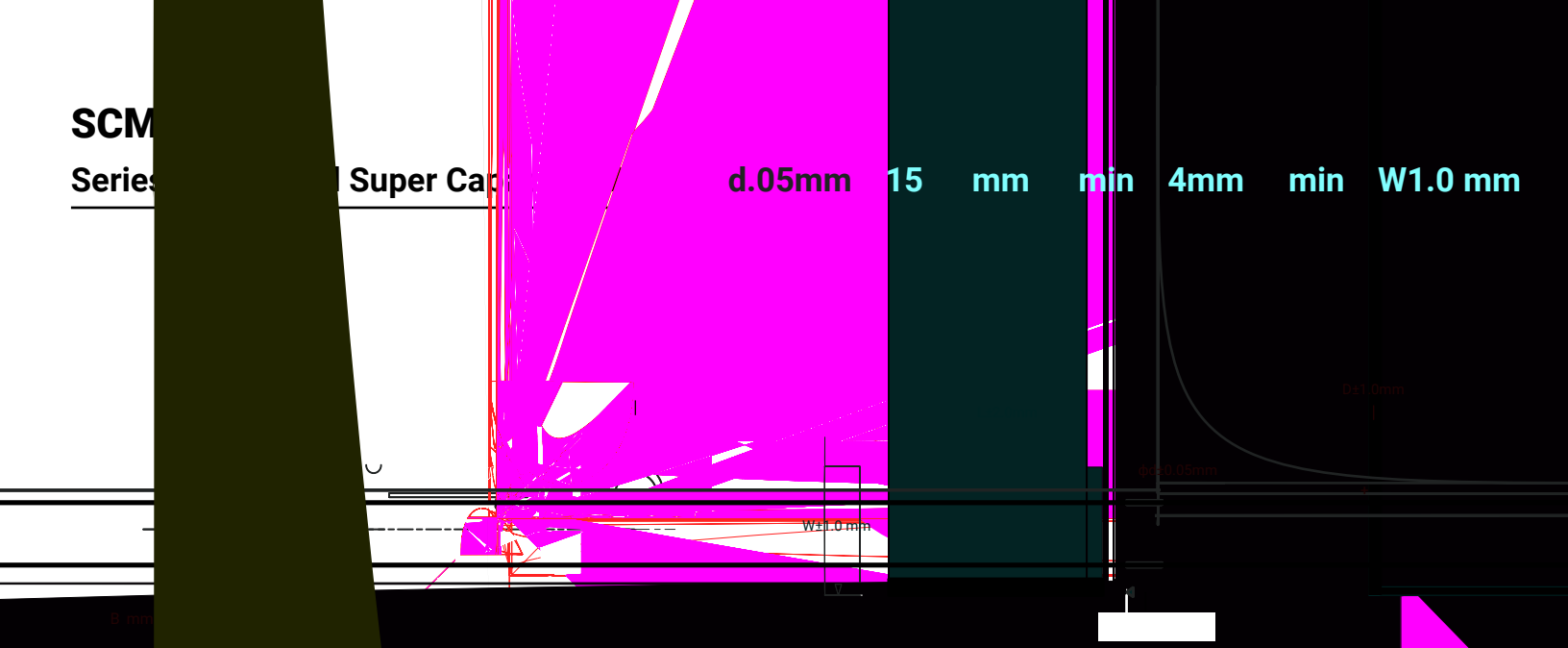




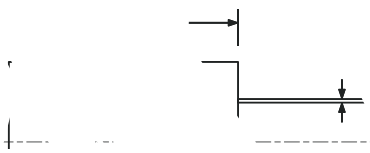
**SCM**

**Series** **Super Cap**

**d.05mm** **15** **mm** **min** **4mm** **min** **W1.0 mm**



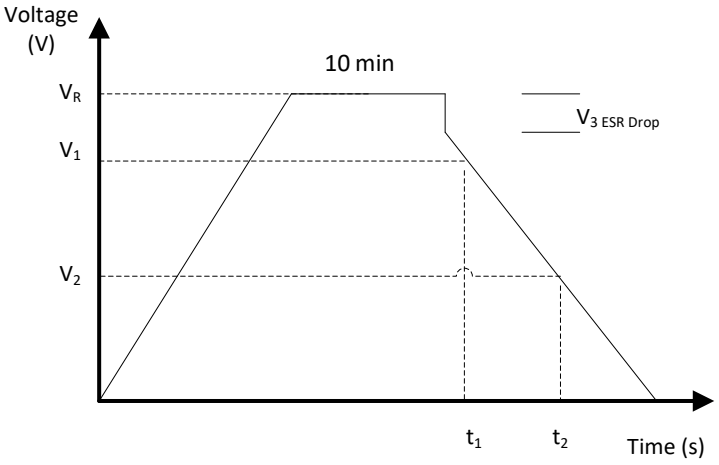

| Cap (F) | D (mm) | W (mm) | L (mm) | P (mm) | d (mm) |
|---|---|---|---|---|---|
| 0.47 | 8.0 | 16.0 | 14.0 | 11.5 | 0.6 |
| 5 | 10.0 | 20.0 | 32.0 | 15.5 | 0.6 |
| 7.5 | 12.5 | 25.0 | 32.0 | 18.0 | 0.6 |



## TEST METHODS

### IEC CAPACITANCE TEST METHOD

Procedure: Charge module under constant current to rated voltage at room temperature, then hold 10 minutes on charge under constant voltage. After 10 minutes, discharge under constant current (as shown in chart below), recording voltage at $V_1$, $V_2$, and time intervals at $t_1$ and $t_2$. Use the capacitance formula to determine cap value.




I – Discharge Current, 4 × C × $V_R$ (mA)

$V_R$ – Rated Voltage (V)

$V_1$ – Initial Test Voltage, 80% Of $V_R$ (V)

$V_2$ – Final Test Voltage, 40% Of $V_R$ (V)

$t_1$ – Initial Test Time (s)

$T_2$ – Final Test Time (s)

$$C = \frac{I \times (t_2 - t_1)}{V1 - V2}$$

### DC ESR MEASUREMENT

A six-step $ESR_{DC}$ test method is illustrated to the right and carried out as follows:

$V_R$

- Rest 10 Seconds
- Charge under constant current ($I_1$) to rated voltage ($V_R$)
- Rest 5 seconds
- Rest 10 seconds, record $V_3$ and $t_4$
- Discharge under constant current ($I_2$) to half rated voltage, Record $I_2$, $V_4$, And $t_5$

50% $V_R$

- Rest 2 seconds, record $V_5$ And $t_6$

Repeat steps 1-6 recording I, V, And t accordingly, finally discharging to below 0.1V under constant current ($I_2$).

Formulas to calculate:

- Two cycle discharge capacitances: $C_{dch1} = I_2 \times \frac{(t_5 - t_4)}{V_3 - V_4}$; $C_{dch2} = I_2 \times \frac{(t_{11} - t_{10})}{(V_9 - V_{10})}$
- Discharge capacitance: $C_{dch} = \frac{(C_{dch1} + C_{dch2})}{2}$
- Two cycle discharge DC ESR: $ESR_{dch1} = \frac{(V_5 - V_4)}{I_2}$; $ESR_{dch2} = \frac{(V_{11} - V_{10})}{I_2}$
- Discharge DC ESR: $ESR_{dch} = \frac{(ESR_{dch1} + ESR_{dch2})}{2}$

Note: $I_1 = I_2$ = 75mA/F, the rated capacitance in the chart means discharge capacitance, and DC ESR ($ESR_{DC}$) means discharge DC resistance.

## TEST METHODS (continued)

### MAXIMUM CONTINUOUS CURRENT

- This is the maximum current when temperature rise of the supercapacitor during its operation is less than 15°C

### MAXIMUM PEAK CURRENT

- This is the maximum current during 1 second time interval (dt)

### WATT DENSITY

- Watt Density = $(0.12*V^2 / R_{DC}) / mass$

### ENERGY DENSITY

- Energy Density = $(½ CV^2) / (3600*mass)$

## POLARITY AND REVERSE VOLTAGE

For product consistency and optimum performance, it is recommended that the capacitor be connected with polarity indicated. Reversing polarity could result in permanent damage to the circuit including much higher leakage current for a short duration of time and the life time of the supercapacitors will be reduced.

## LIFE TIME AND TEMPERATURE PERFORMANCE

The life of a supercapacitor is impacted by a combination of operating voltage and the operating temperature according to the following Time to Failure equation:

$$t \propto V^n \times e^{\left(\frac{-Q}{kT}\right)}$$

where V is the operating voltage, Q is the activation energy in electron volts (eV), k is the Boltzmann constant in eV, and T is the operating temperature in Kelvin (K). Typical values for the voltage exponent, n, is between 2.5-3.5, and Q is between 1.0-1.2 eV in the normal operating temperature range of -40° to 65°C.

The industry standard for supercapacitor end of life is when the equivalent series resistance, ESR, increases to 200% of the specified value and the capacitance drops by 30% from specified value. Typically a supercapacitor shows an initial “jump” in the ESR value and then levels off. If the supercapacitors are exposed to excessive temperatures the ESR will show a continuous degradation (increase). In the extreme case, if the temperature or voltage are substantially higher than the rated specifications, this could result in the part venting and the product showing a faster degradation of capacitance and ESR, which may be many times the specified value.

## SOLDERING RECOMMENDATIONS

When soldering SuperCapacitors to a PCB, the temperature & time that the body of the SuperCapacitor sees during soldering can have a negative effect on performance. We advise following these guidelines:

- Do not immerse the SuperCapacitors in solder. Only the leads should come in contact with the solder.
- Ensure that the body of the SuperCapacitor is never in contact with the molten solder, the PCB or other components during soldering.
- Excessive temperatures or excessive temperature cycling during soldering may cause the safety vent to burst or the case to shrink or crack, potentially damaging the PCB or other components, and significantly reduce the life of the capacitor.

**PRECAUTION:** For all products with shrink wrap sleeves, washing in any type of cleaning agent is prohibited. During all soldering processes, it's recommended to protect the shrink wrap from any kind of liquid (including but not limited to: water, strong acid, strong alkali, strong oxidizing solutions, and strong solvents) to avoid the risk of damage, cracking, and fading of the outer shrink wrap.

### HAND SOLDERING

Keep some distance between the SuperCapacitor body and the tip of the soldering iron; contact between SuperCapacitor body and soldering iron will cause extensive damage to the SuperCapacitor. It is recommended that the soldering iron temperature should be less than 350°C, and contact time should be limited to no more than 4 seconds. Too much exposure to terminal heat during soldering can cause heat to transfer to the body of the SuperCapacitor, potentially damaging the SuperCapacitor.

### WAVE SOLDERING

Only use wave soldering on Radial type SuperCapacitors. The PCB should be preheated only from the bottom and for less than 60 seconds, with temperature at, or below, 100°C on the top side of the board for PCBs equal to or greater than 0.8 mm thick.

| Solder Temperature (°C) | Suggested Solder Time (s) | Maximum Solder Time (s) |
|---|---|---|
| 220 | 7 | 9 |
| 240 | 7 | 9 |
| 250 | 5 | 7 |
| 260 | 3 | 5 |

## SAFETY RECOMMENDATIONS

### WARNINGS

- To avoid short circuit, after usage or test, SuperCapacitor voltage needs to discharge to ≤ 0.1V
- Do not apply over-voltage, reverse charge, burn or heat higher than 150°C, explosion-proof valve may break open
- Do not press, damage or disassemble the SuperCapacitor, housing could heat to high temperature causing burns
- If you observe overheating or burning smell from the capacitor disconnect power immediately, and do not touch

### EMERGENCY APPLICATIONS

If housing is leaking:

- Skin contact: use soap and water thoroughly to wash the area of the skin
- Eye contact: flush with flowing water or saline, and immediately seek medical treatment
- Ingestion: immediately wash with water and seek medical treatment

### TRANSPORTATION

Not subjected to US DOT or IATA regulations UN3499, <10Wh, Non-Hazardous Goods International shipping description –

"Electronic Products – Capacitor"

### REGULATORY

- UL 810A
- RoHS Compliant
- REACH Compliant
- Halogen free according to IEC 61249-2-21: 2003 and IPC/JEDEC-J-STD-709

### STORAGE

Capacitors may be stored within the temperature range of -40°C to +70°C with humidity < 60%. Lower storage temperature is preferred as it extends the shelf life of the capacitor. Product over one year and within two years of the date code, we recommend recharging the product at the beginning of use for at least 24 hours.

Optimum storage conditions are as follows:

- 25°C and RH ≤ 60% without voltage applied
- Not in direct sunlight
- Not in direct contact with water, salt oil or other chemicals
- Not in direct contact with corrosive materials, acids, alkalis, or toxic gases
- Not in dusty environments
- Not in environments with shock and vibration conditions

# Mouser Electronics

Authorized Distributor

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KYOCERA AVX:

SCMR22C155MSBA0 SCMR14C474MRBA0 SCMS22C255MRBA0 SCMR14C474MSBA0 SCMT32C755MRBA0
SCMR22C155MRBA0 SCMR18C105MRBA0 SCMR18C105MSBA0 SCMT22C505MRBA0 SCMQ14C474MRBA0
SCMR14L334MRBB0 SCMR18L604MRBB0 SCMR14G334MRBA0 SCMQ14F474MRBA0 SCMQ14H474SRBB0
SCMT32F755MRBA0 SCMR18F105MRBA0 SCMS32H505MRBB0 SCMS22H255MRBB0 SCMR18G604MRBA0
SCMR14H474MRBB0 SCMR18H105MRBB0 SCMR22F155MRBA0 SCMR22G105MRBA0 SCMR22H155MRBB0
SCMS22F255MRBA0 SCMT22F505MRBA0 SCMS32F505MRBA0 SCMR22L105MRBB0 SCMR14F474MRBA0
SCMR18D105MRBB0 SCMR22D155MRBB0 SCMR14D474MRBB0 SCMT22D505MRBB0 SCMT32D755MRBB0
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SCMR22F155MSBA0 SCMR18F105MSBA0 SCMR14F474MSBA0 SCMR18H105MSBB0 SCMR22H155MSBB0
SCMR14H474MSBB0 SCMR14J334MSBA0 SCMR18J604MSBA0 SCMR22L105MSBB0 SCMR18L604MSBB0
SCMR14J334MRBB0 SCMR22J105MRBB0 SCMR22J105MRBA0 SCMR18J604MRBB0 SCMR14J334MRBA0
SCMR18J604MRBA0 SCMR22J105MSBA0 SCMR14L334MSBB0 SCMS22C255PRBA0 SCMQ14C474PRBA0
SCMR18D105PRBB0 SCMR18J604SRBB0 SCMR18J604SRBA0 SCMR22G105SRBA0 SCMR14L334SRBB0
SCMR18C105PRBA0 SCMR18L604SSBB0 SCMS32H505PRBB0 SCMR14L334SSBB0 SCMS32F505PRBA0
SCMR14H474PSBB0 SCMR18J604SSBA0 SCMR22L105SRBB0 SCMT22F505PRBA0 SCMQ14D474PRBB0
SCMQ14D474PRTB0 SCMR14H474PRBB0 SCMR18F105PRBA0 SCMQ14C474PRTA0 SCMR14C474PRBA0
SCMR14J334SRBB0 SCMR14D474PRBB0 SCMR22J105SRBB0 SCMT32D755SRBB0 SCMR14J334SRBA0
SCMR18L604SRBB0 SCMR22J105SSBA0 SCMT22D505PRBB0 SCMS22F255PRBA0 SCMS22H255PRBB0
SCMR14F474PSBA0 SCMR18G604SRBA0 SCMR18H105PSBB0 SCMT22C505PRBA0 SCMQ14F474PRBA0
SCMQ14H474PRBB0 SCMR14J334SSBA0 SCMR22C155PRBA0 SCMR22D155PRBB0 SCMR22J105SRBA0