



**UH SERIES** ▪ ULTRA LONG LIFE, AUTOMOTIVE 105°C TYPE

**KEY FEATURES**

ULTRA LONG LIFE   HIGH VOLTAGE   AEC-Q 200

- **ALUMINUM ELECTROLYTIC CAPACITOR** ▪ Snap-In type
- Endurance: 105°C ▪ 10 000 hours, Useful Life: 105°C ▪ 12 000 hours
- AEC-Q200 version available
- Especially for applications with demanding operating environment
- **Extremely stable dissipation factor and leakage current**



**SPECIFICATIONS**

| Items  | Performance Characteristics |   |           |           |
|--|-----------------------------|---|-----------|-----------|
| <b>Operating Temperature Range</b>                       | -40 ~ +105°C                |   |           |           |
| <b>Rated Voltage Range</b>                               | $V_R$                       | 200 ~ 450V DC   |           |           |
| <b>Surge Voltage</b>                                     | $V_S$                       | $(V_R \leq 315V) \cdot V_S = 1.15 \cdot V_R$ $(V_R > 315V) \cdot V_S = 1.10 \cdot V_R$                            |           |           |
| <b>Capacitance Range</b>                                 | $C_R$                       | 39 ~ 1500 $\mu$ F   |           |           |
| <b>Cap. Tolerance</b>                                    | $\Delta C$                  | ±20% (120Hz ▪ 20°C)   |           |           |
| <b>Leakage Current (20°C ▪ <math>V_R</math> applied)</b> | $I_{LEAK}$                  | $\leq 3 \cdot \sqrt{C_R \cdot V_R}$ ▪ After 5 minutes<br>[ $I_{LEAK}$ ( $\mu$ A) ; $C_R$ ( $\mu$ F) ; $V_R$ (V) ] |           |           |
| <b>Dissipation Factor % (20°C ▪ 120Hz)</b>               | $\tan\delta$                | $V_R$ (V DC)  | 200 ~ 400 | 450       |
|  |                             | $\tan\delta$  | 15        | 20        |
| <b>Self-Resistance (20°C ▪ 120Hz)</b>                    | <b>ESR</b>                  | Not to exceed the values shown in standard ratings  |           |           |
| <b>Low Temperature Characteristics at 120Hz</b>          | <b>Z ratio max.</b>         | $V_R$ (V DC)  | 200 ~ 250 | 400 ~ 450 |
|  |                             | Z-25°C/Z+20°C   | 3         | 8         |
|  |                             | Z-40°C/Z+20°C   | 8         | 10        |

| Lifetime Test  |   |   |  |
|--|---|---|--|
| <b>Useful Life</b><br>105°C<br>( $V_R$ & $I_R$ applied)                                      | Test  | <b>12000 hours</b>                        |  |
|  | $\Delta C/C_R$  | $\leq \pm 20\%$ of initial measured value |  |
|  | $\tan\delta$  | $\leq 200\%$ of initial specified value   |  |
|  | $I_{Leak}$  | $\leq$ the initial specified value        |  |
|  | Deviation Rate at Useful Life: 100 FIT = 0.01%/1000h with 60% confidence level ▪ parts show higher drift as test criteria                     |   |  |
| <b>Endurance</b><br>105°C<br>( $V_R$ & $I_R$ applied)  | Test  | <b>10000 hours</b>                        |  |
|  | $\Delta C/C_R$  | $\leq \pm 15\%$ of initial measured value |  |
|  | $\tan\delta$  | $\leq 175\%$ of initial specified value   |  |
|  | $I_{Leak}$  | $\leq$ the initial specified value        |  |
| <b>Shelf Life</b><br>105°C<br>( $V_R = 0$ )  | Test  | <b>1000 hours</b>                         |  |
|  | $\Delta C/C_R$  | $\leq \pm 15\%$ of initial measured value |  |
|  | $\tan\delta$  | $\leq 175\%$ of initial specified value   |  |
|  | $I_{Leak}$  | $\leq$ the initial specified value        |  |
| Before measurement: Restore capacitor to 20°C, apply $V_R$ for 30 min according JIS-C-5101-4 |   |   |  |
| <b>Vibration Resistance Test</b>   | Max. 10g force, $f_{RANGE}$ 10Hz ... 55Hz, amplitude 0.75mm; X/Y/Z-axis each 2h; capacitor rigidly clamped by body to surface ▪ IEC 60068-2-6 |   |  |



STANDARD RATINGS

| V <sub>R</sub><br>(V) | C <sub>R</sub><br>(µF) | ø D<br>(mm) | L<br>(mm) | Typ. ESR<br>+20°C - 120Hz<br>(mΩ) | Max. ESR<br>+20°C - 120Hz<br>(mΩ) | I <sub>r</sub> - Max.<br>Ripple Current<br>+105°C - 120Hz<br>(mA rms) | CapXon Part Number |
|-----------------------|------------------------|-------------|-----------|-----------------------------------|-----------------------------------|---|--------------------|
| 200                   | 220                    | 22          | 25        | 380                               | 720                               | 1000  | UH221M200M250A□□□  |
|                       | 270                    | 22          | 30        | 310                               | 590                               | 1100  | UH271M200M300A□□□  |
|                       | 270                    | 25          | 25        | 310                               | 590                               | 1100  | UH271M200N250A□□□  |
|                       | 330                    | 22          | 30        | 250                               | 480                               | 1200  | UH331M200M300A□□□  |
|                       | 330                    | 25          | 25        | 250                               | 480                               | 1200  | UH331M200N250A□□□  |
|                       | 390                    | 22          | 35        | 220                               | 410                               | 1300  | UH391M200M350A□□□  |
|                       | 390                    | 25          | 30        | 220                               | 410                               | 1300  | UH391M200N300A□□□  |
|                       | 390                    | 30          | 25        | 220                               | 410                               | 1300  | UH391M200O250A□□□  |
|                       | 470                    | 22          | 40        | 180                               | 340                               | 1400  | UH471M200M400A□□□  |
|                       | 470                    | 25          | 35        | 180                               | 340                               | 1400  | UH471M200N350A□□□  |
|                       | 470                    | 30          | 30        | 180                               | 340                               | 1400  | UH471M200O300A□□□  |
|                       | 560                    | 22          | 45        | 150                               | 280                               | 1500  | UH561M200M450A□□□  |
|                       | 560                    | 25          | 35        | 150                               | 280                               | 1500  | UH561M200N350A□□□  |
|                       | 560                    | 30          | 30        | 150                               | 280                               | 1500  | UH561M200O300A□□□  |
|                       | 680                    | 25          | 40        | 120                               | 230                               | 1700  | UH681M200N400A□□□  |
|                       | 680                    | 30          | 35        | 120                               | 230                               | 1700  | UH681M200O350A□□□  |
|                       | 820                    | 25          | 50        | 100                               | 190                               | 2000  | UH821M200N500A□□□  |
|                       | 820                    | 30          | 40        | 100                               | 190                               | 2000  | UH821M200O400A□□□  |
|                       | 820                    | 35          | 30        | 100                               | 190                               | 2000  | UH821M200P300A□□□  |
|                       | 1000                   | 30          | 45        | 84                                | 160                               | 2200  | UH102M200O450A□□□  |
| 1000                  | 35                     | 35          | 84        | 160                               | 2200                              | UH102M200P350A□□□   |                    |
| 1200                  | 30                     | 50          | 68        | 130                               | 2300                              | UH122M200O500A□□□   |                    |
| 1200                  | 35                     | 40          | 68        | 130                               | 2300                              | UH122M200P400A□□□   |                    |
| 1500                  | 35                     | 50          | 58        | 110                               | 2500                              | UH152M200P500A□□□   |                    |
| 250                   | 180                    | 22          | 30        | 460                               | 880                               | 900   | UH181M250M300A□□□  |
|                       | 180                    | 25          | 25        | 460                               | 880                               | 900   | UH181M250N250A□□□  |
|                       | 220                    | 22          | 30        | 380                               | 720                               | 1000  | UH221M250M300A□□□  |
|                       | 220                    | 25          | 25        | 380                               | 720                               | 1000  | UH221M250N250A□□□  |
|                       | 270                    | 22          | 35        | 310                               | 590                               | 1100  | UH271M250M350A□□□  |
|                       | 270                    | 25          | 30        | 310                               | 590                               | 1100  | UH271M250N300A□□□  |
|                       | 270                    | 30          | 25        | 310                               | 590                               | 1100  | UH271M250O250A□□□  |
|                       | 330                    | 22          | 40        | 250                               | 480                               | 1200  | UH331M250M400A□□□  |
|                       | 330                    | 25          | 35        | 250                               | 480                               | 1200  | UH331M250N350A□□□  |
|                       | 330                    | 30          | 25        | 250                               | 480                               | 1200  | UH331M250O250A□□□  |
|                       | 390                    | 22          | 45        | 220                               | 410                               | 1300  | UH391M250M450A□□□  |
|                       | 390                    | 25          | 35        | 220                               | 410                               | 1300  | UH391M250N350A□□□  |
|                       | 390                    | 30          | 30        | 220                               | 410                               | 1030  | UH391M250O300A□□□  |
|                       | 470                    | 25          | 45        | 180                               | 340                               | 1400  | UH471M250N450A□□□  |
|                       | 470                    | 30          | 35        | 180                               | 340                               | 1400  | UH471M250O350A□□□  |
|                       | 470                    | 35          | 30        | 180                               | 340                               | 1400  | UH471M250P300A□□□  |
|                       | 560                    | 25          | 50        | 150                               | 280                               | 1500  | UH561M250N500A□□□  |
|                       | 560                    | 30          | 35        | 150                               | 280                               | 1500  | UH561M250O350A□□□  |

□□□ see description at end of standard ratings



STANDARD RATINGS

| V <sub>R</sub><br>(V) | C <sub>R</sub><br>(μF) | ø D<br>(mm) | L<br>(mm) | Typ. ESR<br>+20°C - 120Hz<br>(mΩ) | Max. ESR<br>+20°C - 120Hz<br>(mΩ) | I <sub>r</sub> - Max.<br>Ripple Current<br>+105°C - 120Hz<br>(mA rms) | CapXon Part Number |
|-----------------------|------------------------|-------------|-----------|-----------------------------------|-----------------------------------|---|--------------------|
| 250                   | 560                    | 35          | 30        | 190                               | 280                               | 1500  | UH561M250P300A□□□  |
|                       | 680                    | 30          | 45        | 150                               | 230                               | 1700  | UH681M250O450A□□□  |
|                       | 680                    | 35          | 35        | 150                               | 230                               | 1700  | UH681M250P350A□□□  |
|                       | 820                    | 30          | 50        | 130                               | 190                               | 2000  | UH821M250O500A□□□  |
|                       | 820                    | 35          | 40        | 130                               | 190                               | 2000  | UH821M250P400A□□□  |
|                       | 1000                   | 35          | 45        | 110                               | 160                               | 2200  | UH102M250P450A□□□  |
|                       | 1200                   | 35          | 50        | 87                                | 130                               | 2300  | UH122M250P500A□□□  |
| 400                   | 56                     | 22          | 25        | 1890                              | 2840                              | 510   | UH560M400M250A□□□  |
|                       | 68                     | 22          | 30        | 1560                              | 2340                              | 560   | UH680M400M300A□□□  |
|                       | 68                     | 25          | 25        | 1560                              | 2340                              | 560   | UH680M400N250A□□□  |
|                       | 82                     | 22          | 35        | 1290                              | 1940                              | 640   | UH820M400M350A□□□  |
|                       | 82                     | 25          | 25        | 1290                              | 1940                              | 640   | UH820M400N250A□□□  |
|                       | 100                    | 22          | 35        | 1060                              | 1590                              | 690   | UH101M400M350A□□□  |
|                       | 100                    | 25          | 30        | 1060                              | 1590                              | 690   | UH101M400N300A□□□  |
|                       | 120                    | 22          | 40        | 890                               | 1330                              | 750   | UH121M400M400A□□□  |
|                       | 120                    | 25          | 35        | 890                               | 1330                              | 750   | UH121M400N350A□□□  |
|                       | 120                    | 30          | 25        | 890                               | 1330                              | 750   | UH121M400O250A□□□  |
|                       | 150                    | 22          | 50        | 710                               | 1060                              | 820   | UH151M400M500A□□□  |
|                       | 150                    | 25          | 40        | 710                               | 1060                              | 820   | UH151M400N400A□□□  |
|                       | 150                    | 30          | 30        | 710                               | 1060                              | 820   | UH151M400O300A□□□  |
|                       | 180                    | 25          | 45        | 590                               | 880                               | 900   | UH181M400N450A□□□  |
|                       | 180                    | 30          | 35        | 590                               | 880                               | 900   | UH181M400O350A□□□  |
|                       | 180                    | 35          | 25        | 590                               | 880                               | 900   | UH181M400P250A□□□  |
|                       | 220                    | 25          | 50        | 480                               | 720                               | 1000  | UH221M400N500A□□□  |
|                       | 220                    | 30          | 40        | 480                               | 720                               | 1000  | UH221M400O400A□□□  |
|                       | 220                    | 35          | 30        | 480                               | 720                               | 1000  | UH221M400P300A□□□  |
|                       | 270                    | 30          | 45        | 390                               | 590                               | 1100  | UH271M400O450A□□□  |
| 270                   | 35                     | 35          | 390       | 590                               | 1100                              | UH271M400P350A□□□   |                    |
| 330                   | 30                     | 50          | 320       | 480                               | 1200                              | UH331M400O500A□□□   |                    |
| 330                   | 35                     | 40          | 320       | 480                               | 1200                              | UH331M400P400A□□□   |                    |
| 390                   | 35                     | 45          | 270       | 410                               | 1300                              | UH391M400P450A□□□   |                    |
| 470                   | 35                     | 50          | 230       | 340                               | 1400                              | UH471M400P500A□□□   |                    |
| 450                   | 39                     | 22          | 25        | 3400                              | 5100                              | 370   | UH390M450M250A□□□  |
|                       | 47                     | 22          | 30        | 2820                              | 4230                              | 400   | UH470M450M300A□□□  |
|                       | 56                     | 22          | 35        | 2370                              | 3550                              | 470   | UH560M450M350A□□□  |
|                       | 56                     | 25          | 25        | 2370                              | 3550                              | 470   | UH560M450N250A□□□  |
|                       | 68                     | 22          | 40        | 1950                              | 2930                              | 530   | UH680M450M400A□□□  |
|                       | 68                     | 25          | 30        | 1950                              | 2930                              | 530   | UH680M450N300A□□□  |
|                       | 82                     | 22          | 45        | 1620                              | 2430                              | 560   | UH820M450M450A□□□  |
|                       | 82                     | 25          | 35        | 1620                              | 2430                              | 560   | UH820M450N350A□□□  |
|                       | 82                     | 30          | 25        | 1620                              | 2430                              | 560   | UH820M450O250A□□□  |
|                       | 100                    | 22          | 50        | 1330                              | 1990                              | 640   | UH101M450M500A□□□  |
|                       | 100                    | 25          | 40        | 1330                              | 1990                              | 640   | UH101M450N400A□□□  |
|                       | 100                    | 30          | 30        | 1330                              | 1990                              | 640   | UH101M450O300A□□□  |
| 120                   | 25                     | 45          | 1110      | 1660                              | 720                               | UH121M450N450A□□□   |                    |

□□□ see description at end of standard ratings

STANDARD RATINGS

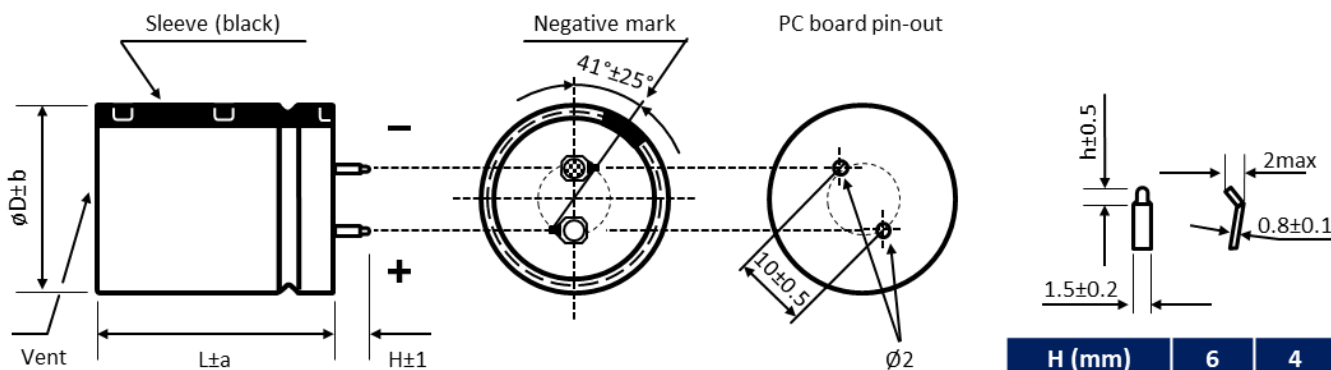
| V <sub>R</sub> (V) | C <sub>R</sub> (μF) | ∅ D (mm) | L (mm) | Typ. ESR +20°C ▪ 120Hz (mΩ) | Max. ESR +20°C ▪ 120Hz (mΩ) | I <sub>R</sub> ▪ Max. Ripple Current +105°C ▪ 120Hz (mA rms) | CapXon Part Number |
|--------------------|---------------------|----------|--------|-----------------------------|-----------------------------|--|--------------------|
| 450                | 120                 | 30       | 30     | 870                         | 1660                        | 720  | UH121M450O300A□□□□ |
|                    | 150                 | 25       | 50     | 700                         | 1330                        | 790  | UH151M450N500A□□□□ |
|                    | 150                 | 30       | 40     | 700                         | 1330                        | 790  | UH151M450O400A□□□□ |
|                    | 150                 | 35       | 30     | 700                         | 1330                        | 790  | UH151M450P300A□□□□ |
|                    | 180                 | 30       | 45     | 580                         | 1110                        | 870  | UH181M450O450A□□□□ |
|                    | 180                 | 35       | 35     | 580                         | 1110                        | 870  | UH181M450P350A□□□□ |
|                    | 220                 | 30       | 50     | 470                         | 900                         | 1000   | UH221M450O500A□□□□ |
|                    | 220                 | 35       | 40     | 470                         | 900                         | 1000   | UH221M450P400A□□□□ |
|                    | 270                 | 35       | 45     | 390                         | 740                         | 1190   | UH271M450P450A□□□□ |
| 330                | 35                  | 50       | 320    | 600                         | 1380                        | UH331M450P500A□□□□   |                    |

□□□□: Enter **P6** for standard type ▪ 6mm pin length  
 □□□□: Enter **P6X** for standard type ▪ 6mm pin length ▪ AEC-Q200  
 □□□□: Enter **Z6** for 3-pin type ▪ 6mm pin length  
 □□□□: Enter **Z6X** for 3-pin type ▪ 6mm pin length ▪ AEC-Q200  
 □□□□: Enter **Y6** for multi-pin type ▪ 6mm pin length  
 □□□□: Enter **Y6X** for multi-pin type ▪ 6mm pin length ▪ AEC-Q200

□□□□: Enter **P4** for standard type ▪ 4mm pin length  
 □□□□: Enter **P4X** for standard type ▪ 4mm pin length ▪ AEC-Q200  
 □□□□: Enter **Z4** for 3-pin type ▪ 4mm pin length  
 □□□□: Enter **Z4X** for 3-pin type ▪ 4mm pin length ▪ AEC-Q200  
 □□□□: Enter **Y4** for multi-pin type ▪ 4mm pin length  
 □□□□: Enter **Y4X** for multi-pin type ▪ 4mm pin length ▪ AEC-Q200

**DIMENSIONS** ▪ All dimensions in mm

2-pin version ▪ Standard type

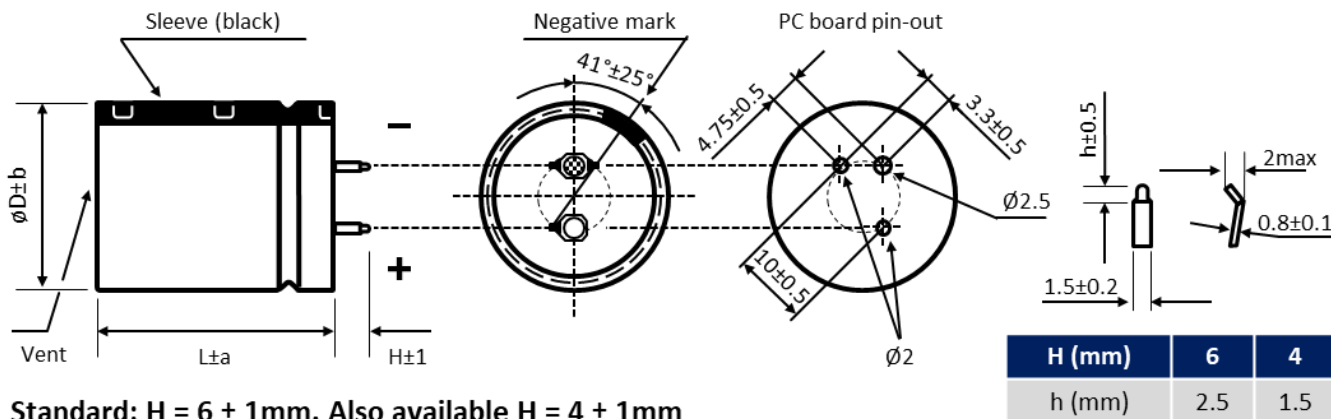


Standard: H = 6 ± 1mm. Also available H = 4 ± 1mm

| H (mm) | 6   | 4   |
|--------|-----|-----|
| h (mm) | 2.5 | 1.5 |

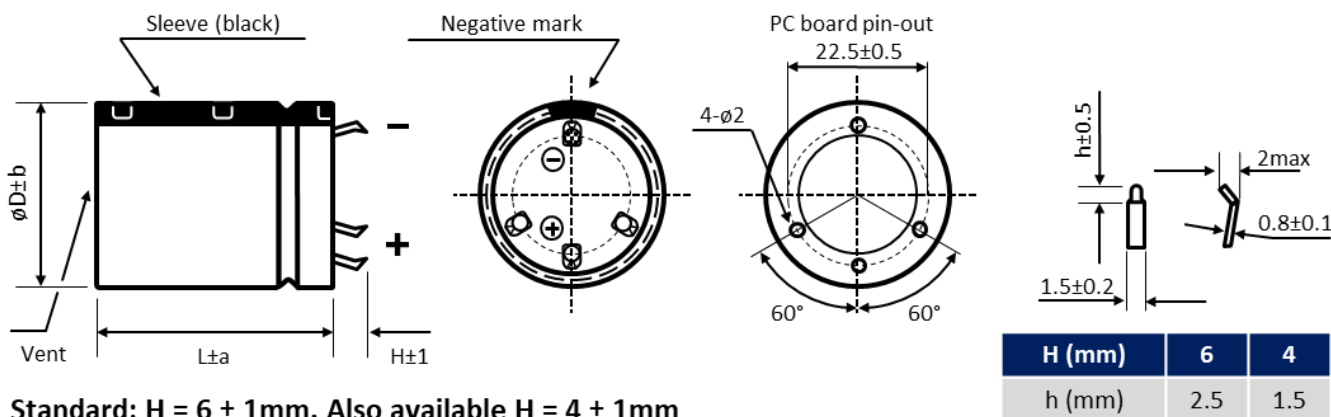
**DIMENSIONS** ▪ All dimensions in mm

3-pin version ▪ Polarity protection



Standard:  $H = 6 \pm 1 \text{ mm}$ . Also available  $H = 4 \pm 1 \text{ mm}$

Multipin version ▪ Diameter  $\varnothing D \geq 30 \text{ mm}$



Standard:  $H = 6 \pm 1 \text{ mm}$ . Also available  $H = 4 \pm 1 \text{ mm}$

Further possible terminal styles can be found in our packaging information liquid snap-in.

**MULTIPLIER  $K_f$  for RIPPLE CURRENT vs. FREQUENCY**

| $V_R$ (V) / Frequency (Hz) | 50   | 60   | 120 | 300  | 1k   | 10k  | 50k - 100k |
|----------------------------|------|------|-----|------|------|------|------------|
| $200 \leq V_R \leq 250$    | 0.81 | 0.82 | 1   | 1.17 | 1.32 | 1.45 | 1.5        |
| $400 \leq V_R \leq 450$    | 0.77 | 0.82 | 1   | 1.16 | 1.3  | 1.41 | 1.43       |

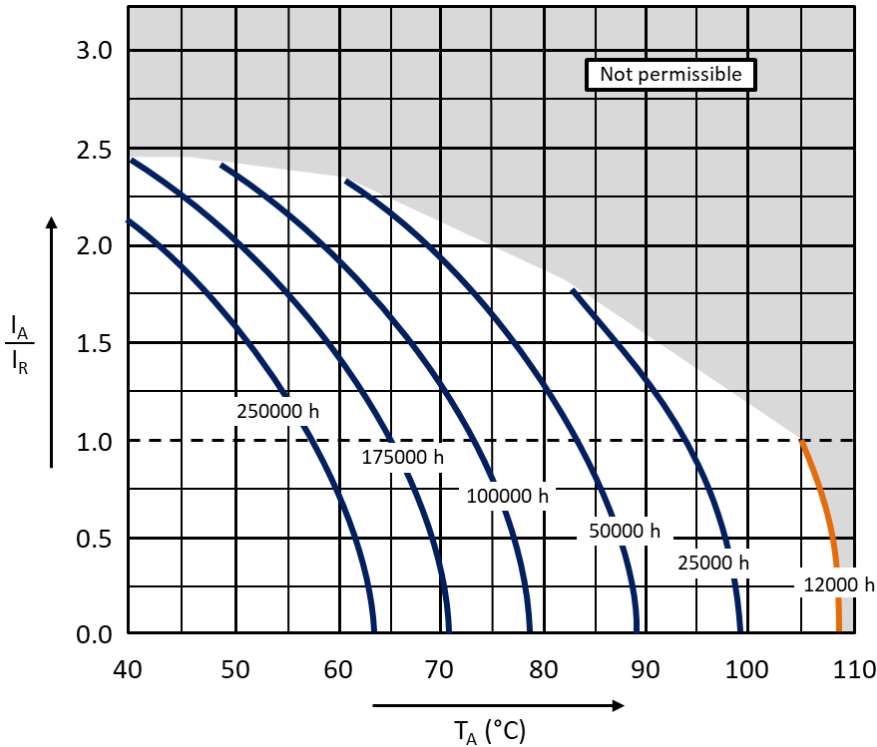
**PRECAUTIONS, GUIDELINES AND PACKAGING INFORMATION**

Unless otherwise agreed in individual specifications, all products are subject to our “General Precautions and Guidelines” as well as our “Packaging Information”. Please refer to the following links in the table.

|  |                                       |   |                           |                                   |
|--|---------------------------------------|---|---------------------------|-----------------------------------|
|  |                                       |   |                           |                                   |
| <a href="#">General Precautions &amp; Guidelines</a> | <a href="#">Packaging Information</a> | <a href="#">Vibration Test Profiles</a> | <a href="#">3D Models</a> | <a href="#">Reliability Tests</a> |

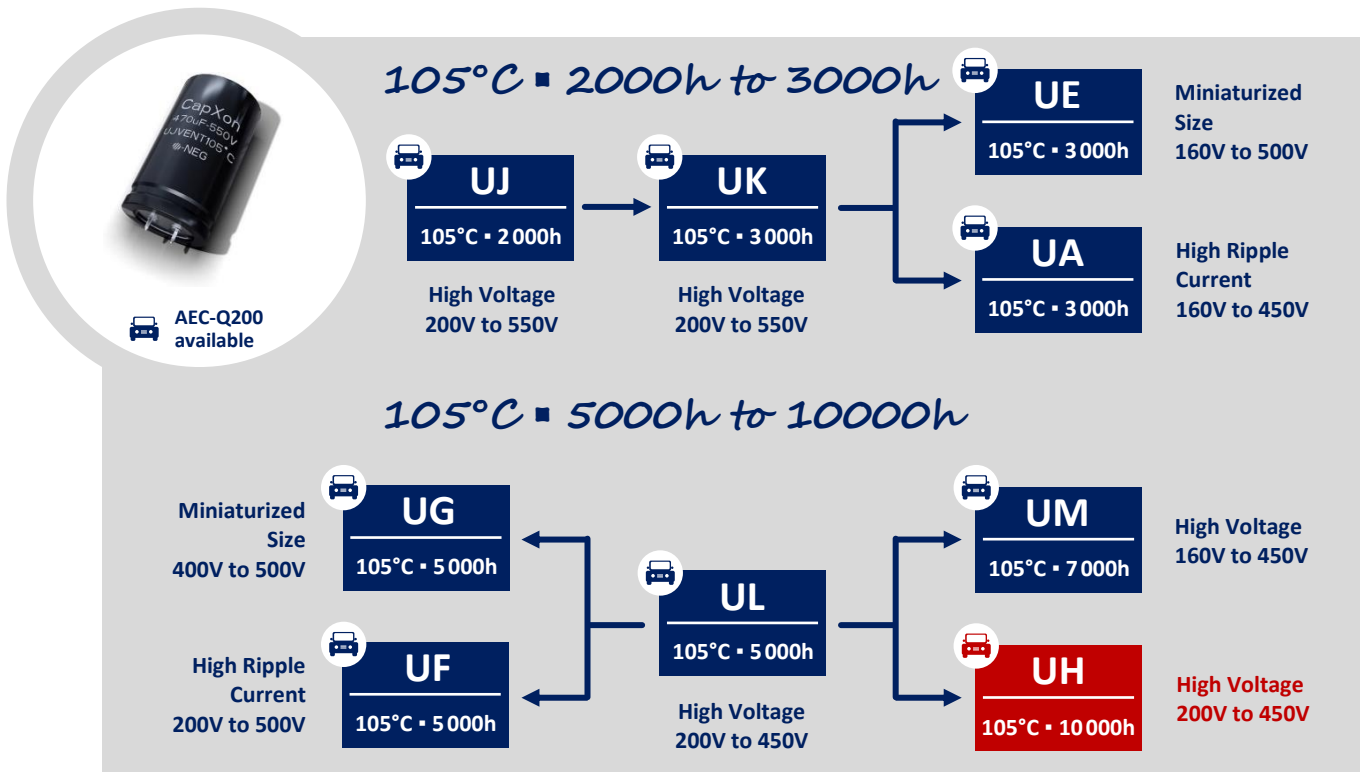


USEFUL LIFE



With:  $I_A$ : Application current  
 $I_R$ : Rated ripple current (A RMS)  
 $T_A$ : Application temperature of the capacitor

GROUP CHART





### DISCLAIMER

All product related data (e.g. specification, statements and general information) are subject to change without any notice. It is necessary that the customer observes all product related technical / application information and handling instructions.

CapXon products are designed and manufactured according to severe quality and safety standards. Under no circumstance, CapXon warrants that any CapXon product is suitable for the purposes intended for your application, even CapXon knows the application. It is customer's duty and obligation to check and make sure that CapXon products are suitable for the purposes intended and select the correct and proper CapXon product. Customers are requested to perform a sufficient validation and reliability evaluation to assure needed safety level and reliability performance by suitable designs and to apply proper safeguards (e.g. redundancies, protective circuits).

Particular operating conditions (ambient temperature, ripple current, voltage, thermal resistance, etc.) as well as storage, production or assembly may affect the performance and the lifetime of the capacitor. Please consult CapXon for lifetime estimation, failure mode considerations or worst-case scenarios according to the product technology, product tolerances / deviations or change of the characteristics of the capacitor due to shipment, storage, handling, production and usage.

For aerospace or military application, life-saving, life-sustaining, safety critical applications or any application where failure may cause severe personal injury or death, please consult us before design-in the capacitor in your application.

Except for the written expressed warranties, CapXon does not impliedly, by assumption or whatever else, warrant, undertake, promise any other warranty or guaranty for any CapXon product.

For further information, please visit our website [www.capxongroup.com](http://www.capxongroup.com) or contact CapXon.