

### HC SERIES ▪ HIGH RELIABILITY, AUTOMOTIVE 125°C TYPE

#### KEY FEATURES



- **DOUBLE-CRAMPING** ▪ Snap-In type
- Useful life: 125°C ▪ 4000 hours
- Low ESR and high ripple current
- High vibration (up to 30g) stability. Consult CapXon for test details
- AEC-Q200 version available



#### SPECIFICATIONS

Items		Performance Characteristics				
Operating Temperature Range		-55 ~ +125°C				
Rated Voltage Range	V <sub>R</sub>	25 ~ 63V DC				
Surge Voltage	V <sub>S</sub>	V <sub>S</sub> = 1.15·V <sub>R</sub>				
Capacitance Range	C <sub>R</sub>	600 ~ 3300µF				
Cap. Tolerance	ΔC	±20% (120Hz ▪ 20°C)				
Leakage Current (20°C ▪ V <sub>R</sub> applied)	I <sub>LEAK</sub>	$\leq 3 \cdot \sqrt{C_R \cdot V_R}$ ▪ After 5 minutes [ I <sub>LEAK</sub> (µA) ; C <sub>R</sub> (µF) ; V <sub>R</sub> (V) ]				
Dissipation Factor % (20°C ▪ 120Hz)	tanδ	Not to exceed the values shown in standard ratings				
Series-Resistance (20°C ▪ 100kHz)	ESR	Not to exceed the values shown in standard ratings				
Low Temperature Characteristics at 120Hz	Z ratio max.	V <sub>R</sub> (V DC)	25	35	50	63
		Z-25°C/Z+20°C	4	4	4	4
		Z-55°C/Z+20°C	10	8	6	6

Lifetime Test						
Useful Life 125°C (V <sub>R</sub> & I <sub>R</sub> applied)	Test	<b>4 000 hours</b>				
	ΔC/C <sub>R</sub>	≤ ±30% of initial measured value				
	tanδ	≤ 300% of initial specified value				
	I <sub>Leak</sub>	≤ the initial specified value				
	Deviation Rate @ Useful Life: 10 000 FIT = 1%/1000h with 60% confidence level ▪ parts show higher drift as test criteria					
Endurance 125°C (V <sub>R</sub> & I <sub>R</sub> applied)	Test	<b>3 000 hours</b>				
	ΔC/C <sub>R</sub>	≤ ±20% of initial measured value				
	tanδ	≤ 200% of initial specified value				
	I <sub>Leak</sub>	≤ the initial specified value				
Shelf Life 125°C (V <sub>R</sub> = 0)	Test	<b>1 000 hours</b>				
	ΔC/C <sub>R</sub>	≤ ±20% of initial measured value				
	tanδ	≤ 200% of initial specified value				
	I <sub>Leak</sub>	≤ the initial specified value				
Before measurement: Restore capacitor to 20°C, apply V <sub>R</sub> for 30 min according JIS-C-5101-4						
Vibration Resistance Test	Max. 30g force, f <sub>RANGE</sub> 10Hz ... 2kHz, amplitude max. 2mm; X/Y/Z-axis each 2h; capacitor rigidly clamped by body to surface ▪ JIS-C-5101-1 (2010)					

**STANDARD RATINGS**

$V_R$ (V)	$C_R$ ( $\mu F$ )	$\phi D$ (mm)	L (mm)	$I_{LEAK}$ ( $\mu A$ , 5min)	$\tan\delta$ +20°C • 120Hz (%)	Max. ESR +20°C • 100kHz (m $\Omega$ )	$I_R$ - Max. Ripple Current +125°C • 100kHz (mA rms)	CapXon Part Number
25	1800	20	30	637	20	28	4100	HC182M025L300A□□□□
	2200	20	35	704	20	22	4870	HC222M025L350A□□□□
	3300	20	40	862	20	16	5500	HC332M025L400A□□□□
35	1200	20	30	615	15	31	3900	HC122M035L300A□□□□
	1500	20	35	687	15	26	5000	HC152M035L350A□□□□
	2200	20	40	832	15	19	5900	HC222M035L400A□□□□
50	1200	20	35	735	10	36	4200	HC122M050L350A□□□□
	1500	20	40	822	10	33	4900	HC152M050L400A□□□□
63	600	20	30	583	10	50	3740	HC601M063L300A□□□□
	820	20	35	682	10	39	4300	HC821M063L350A□□□□
	1000	20	40	753	10	31	5250	HC102M063L400A□□□□

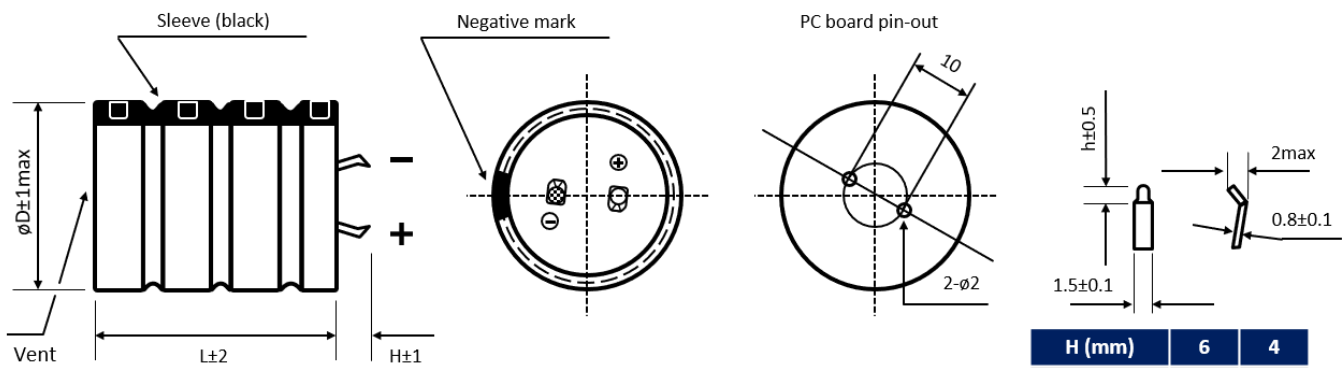
**POSSIBLE CAN SIZES** ▪ Please consult us to individual requirements

Size with $\phi D$ 20		Size with $\phi D$ 22		Size with $\phi D$ 25		Size with $\phi D$ 30		Size with $\phi D$ 35	
$\phi D$ (mm)	L (mm)	$\phi D$ (mm)	L (mm)	$\phi D$ (mm)	L (mm)	$\phi D$ (mm)	L (mm)	$\phi D$ (mm)	L (mm)
20	30	22	30	25	30	30	30	35	30
20	35	22	35	25	35	30	35	35	35
20	40	22	40	25	40	30	40	35	40
		22	45	25	45	30	45	35	45

- : 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

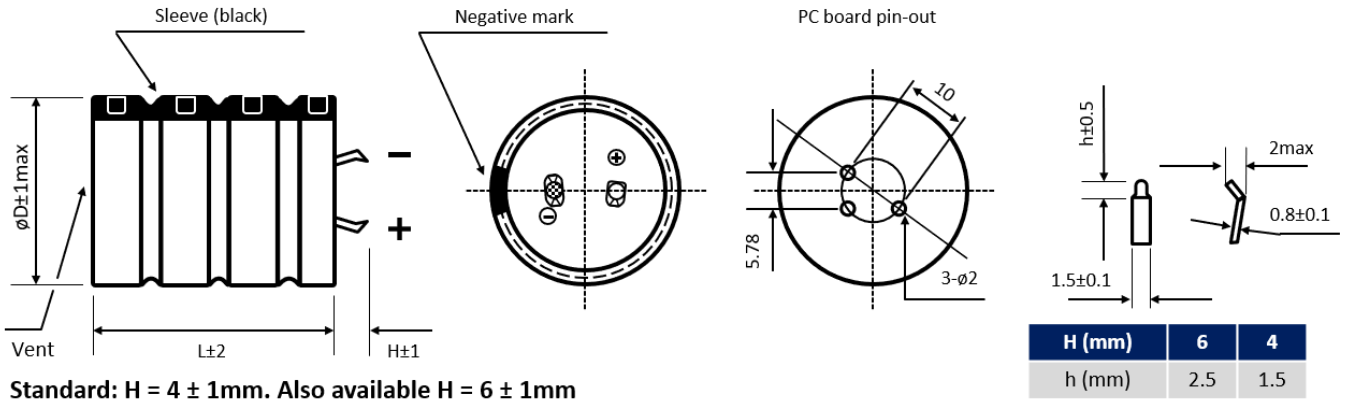
- : Enter **P4** for standard type ▪ 4mm pin length
- : Enter **P4X** for standard type ▪ 4mm pin length ▪ AEC-Q200
- : Enter **Z4** for 3-pin type ▪ 4mm pin length
- : Enter **Z4X** for 3-pin type ▪ 4mm pin length ▪ AEC-Q200
- : Enter **Y4** for multi-pin type ▪ 4mm pin length
- : Enter **Y4X** for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

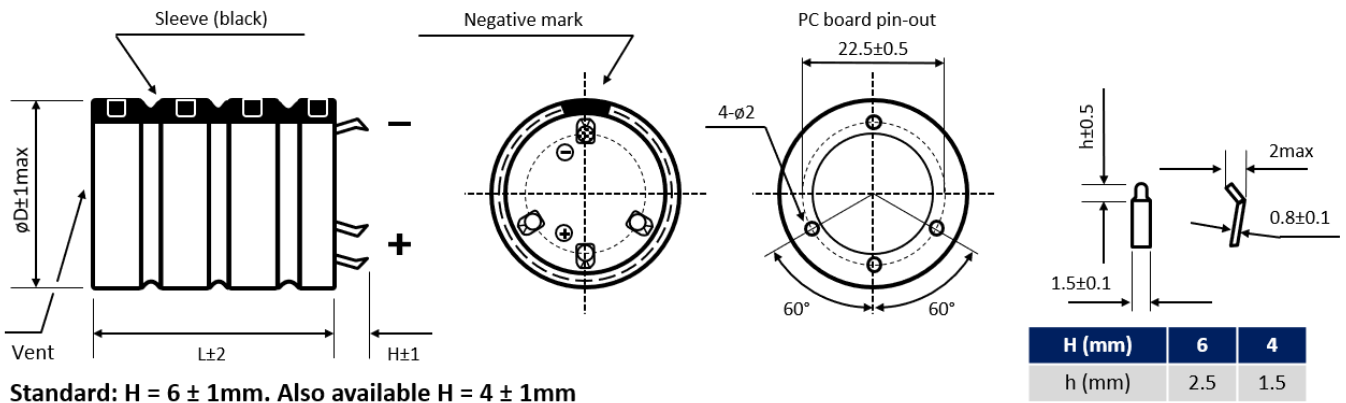
**DIMENSIONS** ▪ All dimensions in mm

 2-pin version ▪ Diameter  $\phi D$  20 mm to 25 mm ▪ 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 ▪ Diameter  $\phi$  D 20 mm to 25 mm

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

 Multipin version ▪ Diameter  $\phi$  D ≥ 30 mm

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

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	100/120	300	1k	10k
$25 \leq V_R \leq 63$	0.56	0.7	0.83	0.92	1

**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>



### 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.

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