

### HL SERIES ▪ ULTRA LONG LIFE 105°C TYPE

#### KEY FEATURES



- ALUMINUM ELECTROLYTIC CAPACITOR ▪ Snap-In type
- Useful life: 105°C ▪ 7000 hours up to 10000 hours
- Wide capacitance range
- Small dimensions
- Stable operating under steady state environment



#### SPECIFICATIONS

Items		Performance Characteristics										
Operating Temperature Range		-40 ~ +105°C					-25 ~ +105°C					
Rated Voltage Range	V <sub>R</sub>	10 ~ 350V DC					385 ~ 500V DC					
Surge Voltage	V <sub>S</sub>	(V <sub>R</sub> ≤ 315V): V <sub>S</sub> = 1.15·V <sub>R</sub>					(V <sub>R</sub> > 315V): V <sub>S</sub> = 1.10·V <sub>R</sub>					
Capacitance Range	C <sub>R</sub>	56 ~ 56000µF					39 ~ 1200µF					
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	µF / V DC	10	16	25	35	50	63	80	100	160 ~ 420	450 ~ 500
		≤ 8200	35	35	30	25	20	20	15	15	15	20
		10000 ~ 22000	40	40	35	30	30	25	20	-	-	-
		≥ 27000	50	40	35	35	30	25	-	-	-	-
Low Temperature Characteristics at 120Hz	Z ratio max.	V <sub>R</sub> (V DC)	10 ~ 16	25	35	50 ~ 100	160 ~ 250	315 ~ 350	400 ~ 500			
		Z-25°C/Z+20°C	4	3	3	3	4	8	8			
		Z-40°C/Z+20°C	15	10	8	6	8	12	-			
Lifetime Test			V <sub>R</sub> ≤ 100V					V <sub>R</sub> > 100V				
Useful Life 105°C (V <sub>R</sub> & I <sub>R</sub> applied)		Test	<b>7000 hours</b>					<b>10000 hours</b>				
		ΔC/C <sub>R</sub>	≤ ±30% of initial measured value					≤ ±20% of initial measured value				
		tanδ	≤ 300% of initial specified value					≤ 200% of initial specified value				
		I <sub>Leak</sub>	≤ the initial specified value					≤ 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 105°C (V <sub>R</sub> & I <sub>R</sub> applied)		Test	<b>5000 hours</b>									
		ΔC/C <sub>R</sub>	≤ ±20% of initial measured value					≤ ±15% of initial measured value				
		Tanδ	≤ 200% of initial specified value					≤ 175% of initial specified value				
		I <sub>Leak</sub>	≤ the initial specified value					≤ the initial specified value				
Shelf Life 105°C (V <sub>R</sub> = 0)		Test	<b>1000 hours</b>									
		ΔC/C <sub>R</sub>	≤ ±20% of initial measured value					≤ ±15% of initial measured value				
		tanδ	≤ 200% of initial specified value					≤ 175% of initial specified value				
		I <sub>Leak</sub>	≤ the initial specified value					≤ 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. 10g force, f <sub>RANGE</sub> 10Hz ... 55Hz, amplitude 0.75mm; X/Y/Z-axis each 2h; capacitor rigidly clamped by body to surface ▪ IEC 60068-2-6										

**STANDARD RATINGS**

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ = Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
10	5600	22	25	64	83	1100	HL562M010M250A
	6800	22	25	53	68	1300	HL682M010M250A
	6800	25	25	53	68	1340	HL682M010N250A
	8200	22	25	44	57	1360	HL822M010M250A
	8200	25	25	44	57	1560	HL822M010N250A
	10000	25	25	36	46	1600	HL103M010N250A
	12000	25	25	34	44	1820	HL123M010N250A
	12000	30	25	34	44	1890	HL123M010O250A
	15000	22	40	27	35	2100	HL153M010M400A
	15000	25	30	27	35	2110	HL153M010N300A
	15000	30	25	27	35	2140	HL153M010O250A
	18000	25	30	23	29	2200	HL183M010N300A
	18000	30	30	23	29	2370	HL183M010O300A
	22000	22	40	19	24	2750	HL223M010M400A
	22000	25	35	19	24	2780	HL223M010N350A
	22000	30	30	19	24	2800	HL223M010O300A
	27000	25	45	19	25	3010	HL273M010N450A
	27000	30	35	19	25	3130	HL273M010O350A
	27000	35	30	19	25	3160	HL273M010P300A
	33000	25	50	15	20	3430	HL333M010N500A
33000	30	40	15	20	3530	HL333M010O400A	
33000	35	35	15	20	3560	HL333M010P350A	
39000	30	45	13	17	3780	HL393M010O450A	
39000	35	40	13	17	3960	HL393M010P400A	
47000	30	50	11	14	4610	HL473M010O500A	
47000	35	45	11	14	4630	HL473M010P450A	
56000	35	50	9	12	5060	HL563M010P500A	
16	5600	22	25	64	83	1450	HL562M016M250A
	6800	22	30	53	68	1660	HL682M016M300A
	6800	25	25	53	68	1670	HL682M016N250A
	8200	22	30	44	57	1790	HL822M016M300A
	8200	25	25	44	57	1800	HL822M016N250A
	10000	22	35	36	46	2080	HL103M016M350A
	10000	25	30	36	46	2090	HL103M016N300A
	10000	30	25	36	46	2110	HL103M016O250A
	12000	22	40	34	44	2360	HL123M016M400A
	12000	25	35	34	44	2370	HL123M016N350A
	12000	30	25	34	44	2400	HL123M016O250A
	12000	35	25	34	44	2420	HL123M016P250A
	15000	22	45	27	35	2690	HL153M016M450A
	15000	25	35	27	35	2700	HL153M016N350A
	15000	25	40	27	35	2720	HL153M016N400A
	15000	30	30	27	35	2740	HL153M016O300A
18000	25	45	23	29	3060	HL183M016N450A	

: See description at end of standard ratings

**STANDARD RATINGS**

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ = Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
16	18000	30	35	23	29	3080	HL183M016O350A □□
	18000	35	30	23	29	3090	HL183M016P300A □□
	22000	25	50	19	24	3390	HL223M016N500A □□
	22000	30	35	19	24	3400	HL223M016O350A □□
	22000	30	40	19	24	3460	HL223M016O400A □□
	22000	35	30	19	24	3480	HL223M016P300A □□
	27000	25	50	15	20	3600	HL273M016N500A □□
	27000	30	40	15	20	3620	HL273M016O400A □□
	27000	35	30	15	20	3650	HL273M016P300A □□
	27000	35	35	15	20	3850	HL273M016P350A □□
	33000	30	45	12	16	4000	HL333M016O450A □□
	33000	35	40	12	16	4330	HL333M016P400A □□
	39000	30	50	10	14	4320	HL393M016O500A □□
	39000	35	40	10	14	4320	HL393M016P400A □□
	39000	35	45	10	14	4960	HL393M016P450A □□
	47000	35	45	9	11	5100	HL473M016P450A □□
47000	35	50	9	11	5490	HL473M016P500A □□	
25	3900	22	25	77	100	1310	HL392M025M250A □□
	4700	22	30	65	85	1550	HL472M025M300A □□
	4700	25	25	65	85	1570	HL472M025N250A □□
	5600	22	30	55	71	1800	HL562M025M300A □□
	5600	25	25	55	71	1810	HL562M025N250A □□
	5800	22	35	53	69	1770	HL582M025M350A □□
	5800	25	25	53	69	1760	HL582M025N250A □□
	6800	22	30	45	59	1900	HL682M025M300A □□
	6800	22	40	45	59	1920	HL682M025M400A □□
	6800	25	25	45	59	1930	HL682M025N250A □□
	6800	25	30	45	59	1950	HL682M025N300A □□
	8200	22	35	37	49	2100	HL822M025M350A □□
	8200	25	30	37	49	2120	HL822M025N300A □□
	8200	30	25	37	49	2140	HL822M025O250A □□
	10000	22	40	31	40	2300	HL103M025M400A □□
	10000	25	35	31	40	2310	HL103M025N350A □□
	10000	30	30	31	40	2330	HL103M025O300A □□
	10000	35	30	31	40	2350	HL103M025P300A □□
	12000	25	40	30	39	2600	HL123M025N400A □□
	12000	30	35	30	39	2700	HL123M025O350A □□
	12000	35	30	30	39	2760	HL123M025P300A □□
	15000	25	45	24	31	2900	HL153M025N450A □□
	15000	30	40	24	31	3130	HL153M025O400A □□
	15000	35	35	24	31	3160	HL153M025P350A □□
18000	25	50	20	26	3170	HL183M025N500A □□	
18000	30	45	20	26	3520	HL183M025O450A □□	
18000	35	35	20	26	3560	HL183M025P350A □□	

□□: See description at end of standard ratings

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$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ = Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
25	18000	35	40	20	26	3600	HL183M025P400A
	22000	30	45	16	21	3620	HL223M025O450A
	22000	30	50	16	21	3920	HL223M025O500A
	22000	35	40	16	21	3940	HL223M025P400A
	22000	35	45	16	21	3950	HL223M025P450A
	27000	35	45	13	17	4100	HL273M025P450A
	27000	35	50	13	17	4700	HL273M025P500A
	33000	35	50	11	14	4800	HL333M025P500A
35	2200	22	25	120	150	1100	HL222M035M250A
	2700	22	25	92	120	1290	HL272M035M250A
	3300	22	30	77	100	1420	HL332M035M300A
	3300	25	25	77	100	1430	HL332M035N250A
	3900	22	30	65	85	1600	HL392M035M300A
	3900	25	25	65	85	1610	HL392M035N250A
	3900	25	30	65	85	1650	HL392M035N300A
	4700	22	35	54	71	1800	HL472M035M350A
	4700	22	40	54	71	1810	HL472M035M400A
	4700	25	30	54	71	1820	HL472M035N300A
	5600	22	45	46	59	2250	HL562M035M450A
	5600	25	30	46	59	2000	HL562M035N300A
	5600	25	35	46	59	2180	HL562M035N350A
	5600	30	30	46	59	2230	HL562M035O300A
	6800	25	35	38	49	2200	HL682M035N350A
	6800	25	40	38	49	2450	HL682M035N400A
	6800	30	30	38	49	2460	HL682M035O300A
	8200	25	40	31	40	2510	HL822M035N400A
	8200	25	45	31	40	2610	HL822M035N450A
	8200	30	35	31	40	2690	HL822M035O350A
	8200	35	30	31	40	2710	HL822M035P300A
	10000	30	40	26	33	3040	HL103M035O400A
	10000	35	35	26	33	3100	HL103M035P350A
	12000	30	40	26	33	3050	HL123M035O400A
	12000	30	45	26	33	3380	HL123M035O450A
	12000	35	40	26	33	3410	HL123M035P400A
	15000	30	45	20	27	3470	HL153M035O450A
	15000	35	40	20	27	3980	HL153M035P400A
	15000	35	45	20	27	4100	HL153M035P450A
	18000	35	45	17	22	4400	HL183M035P450A
18000	35	50	17	22	4460	HL183M035P500A	
50	1500	22	25	140	180	1210	HL152M050M250A
	1800	22	25	120	150	1300	HL182M050M250A
	1800	22	30	120	150	1340	HL182M050M300A
	1800	25	25	120	150	1350	HL182M050N250A
	2200	22	30	92	120	1520	HL222M050M300A

: See description at end of standard ratings

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$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ = Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
50	2200	25	25	92	120	1540	HL222M050N250A
	2700	22	35	76	98	1770	HL272M050M350A
	2700	25	30	76	98	1780	HL272M050N300A
	3300	22	35	62	80	1800	HL332M050M350A
	3300	25	30	62	80	1870	HL332M050N300A
	3300	30	25	62	80	1890	HL332M050O250A
	3900	22	40	52	68	1910	HL392M050M400A
	3900	25	30	52	68	1920	HL392M050N300A
	3900	25	35	52	68	2200	HL392M050N350A
	4700	22	45	43	56	2250	HL472M050M450A
	4700	25	35	43	56	2250	HL472M050N350A
	4700	25	40	43	56	2430	HL472M050N400A
	4700	30	30	43	56	2440	HL472M050O300A
	4700	35	30	43	56	2460	HL472M050P300A
	5600	22	50	36	47	2430	HL562M050M500A
	5600	25	40	36	47	2430	HL562M050N400A
	5600	30	35	36	47	2600	HL562M050O350A
	5600	35	30	36	47	2610	HL562M050P300A
	6800	25	45	30	39	2620	HL682M050N450A
	6800	30	35	30	39	2620	HL682M050O350A
	6800	30	40	30	39	3010	HL682M050O400A
	6800	35	40	30	39	3020	HL682M050P400A
	8200	30	45	25	32	3420	HL822M050O450A
	8200	30	50	25	32	3630	HL822M050O500A
	8200	35	40	25	32	3640	HL822M050P400A
	10000	30	50	20	27	3640	HL103M050O500A
	10000	35	45	20	27	3650	HL103M050P450A
	10000	35	50	20	27	3680	HL103M050P500A
12000	35	45	26	33	3700	HL123M050P450A	
15000	35	50	20	27	3990	HL153M050P500A	
63	1000	22	25	210	270	1100	HL102M063M250A
	1200	22	25	170	220	1300	HL122M063M250A
	1500	22	30	140	180	1310	HL152M063M300A
	1500	25	25	140	180	1380	HL152M063N250A
	1800	22	30	120	150	1600	HL182M063M300A
	1800	25	25	120	150	1620	HL182M063N250A
	1800	25	30	120	150	1630	HL182M063N300A
	1800	30	25	120	150	1650	HL182M063O250A
	2200	22	35	92	120	1800	HL222M063M350A
	2200	25	30	92	120	1810	HL222M063N300A
	2200	30	25	92	120	1820	HL222M063O250A
	2700	22	40	76	98	2000	HL272M063M400A
	2700	25	35	76	98	2010	HL272M063N350A
	2700	30	25	76	98	2030	HL272M063O250A

: See description at end of standard ratings

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$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ = Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
63	3300	22	45	62	80	2200	HL332M063M450A
	3300	25	35	62	80	2230	HL332M063N350A
	3300	30	30	62	80	2250	HL332M063O300A
	3900	25	40	52	68	2400	HL392M063N400A
	3900	30	35	52	68	2410	HL392M063O350A
	3900	35	30	52	68	2460	HL392M063P300A
	4700	25	50	43	56	2600	HL472M063N500A
	4700	30	40	43	56	2820	HL472M063O400A
	4700	35	30	43	56	2750	HL472M063P300A
	5600	30	45	36	47	3120	HL562M063O450A
	5600	35	35	36	47	3150	HL562M063P350A
	5600	35	40	36	47	3200	HL562M063P400A
	6800	30	50	30	39	3210	HL682M063O500A
	6800	35	40	30	39	3210	HL682M063P400A
	8200	35	45	25	32	3400	HL822M063P450A
	10000	30	50	20	27	3600	HL103M063O500A
10000	35	50	20	27	3800	HL103M063P500A	
80	820	22	25	180	240	1090	HL821M080M250A
	1000	22	30	150	200	1290	HL102M080M300A
	1000	25	25	150	200	1310	HL102M080N250A
	1200	22	35	130	170	1480	HL122M080M350A
	1200	25	25	130	170	1500	HL122M080N250A
	1200	30	25	130	170	1510	HL122M080O250A
	1500	22	35	100	130	1600	HL152M080M350A
	1500	25	25	100	130	1790	HL152M080N250A
	1500	25	30	100	130	1800	HL152M080N300A
	1500	30	25	100	130	1810	HL152M080O250A
	1800	22	45	85	110	1910	HL182M080M450A
	1800	25	35	85	110	1910	HL182M080N350A
	2200	22	45	70	90	2000	HL222M080M450A
	2200	25	35	70	90	2030	HL222M080N350A
	2200	30	30	70	90	2050	HL222M080O300A
	2200	35	30	70	90	2090	HL222M080P300A
	2700	25	40	57	74	2200	HL272M080N400A
	2700	30	30	57	74	2230	HL272M080O300A
	2700	35	30	57	74	2440	HL272M080P300A
	3300	25	45	46	60	2450	HL332M080N450A
	3300	30	35	46	60	2450	HL332M080O350A
	3300	35	30	46	60	2450	HL332M080P300A
	3900	30	40	39	51	2600	HL392M080O400A
	3900	35	30	39	51	2620	HL392M080P300A
	3900	35	40	39	51	3000	HL392M080P400A
	4700	30	45	33	42	3120	HL472M080O450A
	4700	35	40	33	42	3150	HL472M080P400A

: See description at end of standard ratings

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$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
80	5600	35	40	27	36	3290	HL562M080P400A
	6800	35	45	23	29	3500	HL682M080P450A
100	390	22	25	390	510	780	HL391M100M250A
	560	22	25	280	360	1100	HL561M100M250A
	560	22	30	280	360	1110	HL561M100M300A
	560	25	25	280	360	1120	HL561M100N250A
	680	22	30	220	290	1200	HL681M100M300A
	680	25	30	220	290	1210	HL681M100N300A
	820	22	35	180	240	1330	HL821M100M350A
	820	25	30	180	240	1400	HL821M100N300A
	1000	22	35	150	200	1500	HL102M100M350A
	1000	22	40	150	200	1560	HL102M100M400A
	1000	25	30	150	200	1560	HL102M100N300A
	1000	30	25	150	200	1570	HL102M100O250A
	1000	35	25	150	200	1580	HL102M100P250A
	1200	22	40	130	170	1600	HL122M100M400A
	1200	25	35	130	170	1620	HL122M100N350A
	1200	30	25	130	170	1640	HL122M100O250A
	1200	30	30	130	170	1760	HL122M100O300A
	1200	35	30	130	170	1780	HL122M100P300A
	1500	22	45	100	130	1800	HL152M100M450A
	1500	25	40	100	130	1820	HL152M100N400A
	1500	30	30	100	130	1830	HL152M100O300A
	1500	35	30	100	130	1850	HL152M100P300A
	1800	25	45	85	110	2000	HL182M100N450A
	1800	30	35	85	110	2010	HL182M100O350A
	1800	35	30	85	110	2090	HL182M100P300A
	1800	35	35	85	110	2100	HL182M100P350A
	2200	25	50	70	90	2200	HL222M100N500A
	2200	30	40	70	90	2230	HL222M100O400A
	2200	35	35	70	90	2480	HL222M100P350A
	2200	35	40	70	90	2500	HL222M100P400A
	2700	30	45	57	74	2650	HL272M100O450A
	2700	35	35	57	74	2690	HL272M100P350A
	2700	35	40	57	74	2870	HL272M100P400A
	3300	30	50	46	60	2990	HL332M100O500A
3300	35	40	46	60	3090	HL332M100P400A	
3300	35	45	46	60	3250	HL332M100P450A	
3900	35	50	39	51	3560	HL392M100P500A	
4700	35	50	33	42	3600	HL472M100P500A	
160	270	22	25	380	740	1090	HL271M160M250A
	330	22	25	310	600	1200	HL331M160M250A
	390	22	25	260	510	1330	HL391M160M250A
	470	22	25	220	420	1480	HL471M160M250A

: See description at end of standard ratings



**STANDARD RATINGS**

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
160	560	22	30	180	360	1680	HL561M160M300A
	560	25	25	180	360	1690	HL561M160N250A
	680	22	30	150	290	1960	HL681M160M300A
	680	25	25	150	290	1970	HL681M160N250A
	680	30	25	150	290	1980	HL681M160O250A
	820	22	35	120	240	2110	HL821M160M350A
	820	25	30	120	240	2120	HL821M160N300A
	820	30	40	120	240	2130	HL821M160O400A
	820	35	30	120	240	2140	HL821M160P300A
	1000	22	40	100	200	2400	HL102M160M400A
	1000	25	35	100	200	2430	HL102M160N350A
	1000	30	25	100	200	2550	HL102M160O250A
	1000	35	25	100	200	2590	HL102M160P250A
	1200	22	50	87	170	2810	HL122M160M500A
	1200	25	40	87	170	2850	HL122M160N400A
	1200	30	30	87	170	2910	HL122M160O300A
	1200	35	25	87	170	2950	HL122M160P250A
	1500	25	45	67	130	3170	HL152M160N450A
	1500	30	35	67	130	3230	HL152M160O350A
	1500	35	35	67	130	3310	HL152M160P350A
	1800	25	50	56	110	3520	HL182M160N500A
	1800	30	40	56	110	3630	HL182M160O400A
	1800	35	30	56	110	3660	HL182M160P300A
	2200	30	45	46	90	4140	HL222M160O450A
2200	35	35	46	90	4150	HL222M160P350A	
2700	35	40	38	74	4780	HL272M160P400A	
3300	35	50	31	60	5420	HL332M160P500A	
180	220	22	25	460	900	630	HL221M180M250A
	270	22	30	380	740	1100	HL271M180M300A
	270	25	25	380	740	1110	HL271M180N250A
	330	22	35	310	600	1210	HL331M180M350A
	330	25	30	310	600	1220	HL331M180N300A
	390	22	40	260	510	1340	HL391M180M400A
	390	25	35	260	510	1350	HL391M180N350A
	390	30	25	260	510	1360	HL391M180O250A
	470	22	45	220	420	1490	HL471M180M450A
	470	30	30	220	420	1500	HL471M180O300A
	560	22	50	180	360	1700	HL561M180M500A
	560	25	40	180	360	1710	HL561M180N400A
	560	30	35	180	360	1720	HL561M180O350A
	680	25	45	150	290	2010	HL681M180N450A
	680	35	30	150	290	2020	HL681M180P300A
	820	25	50	120	240	2150	HL821M180N500A
820	30	40	120	240	2160	HL821M180O400A	

: See description at end of standard ratings



**STANDARD RATINGS**

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ = Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
180	820	35	35	120	240	2170	HL821M180P350A
	1000	30	45	100	200	2180	HL102M180O450A
	1000	35	40	100	200	2200	HL102M180P400A
	1200	30	50	87	170	2250	HL122M180O500A
	1200	35	45	87	170	2280	HL122M180P450A
	1500	35	50	67	130	3320	HL152M180P500A
200	180	22	20	570	1110	990	HL181M200M200A
	220	22	25	460	900	1010	HL221M200M250A
	270	22	25	380	740	1120	HL271M200M250A
	330	22	25	310	600	1250	HL331M200M250A
	390	22	25	260	510	1530	HL391M200M250A
	390	25	25	260	510	1540	HL391M200N250A
	470	22	30	220	420	1630	HL471M200M300A
	470	25	25	220	420	1640	HL471M200N250A
	560	22	35	180	360	1820	HL561M200M350A
	560	25	25	180	360	1840	HL561M200N250A
	560	30	25	180	360	1850	HL561M200O250A
	680	22	40	150	290	2090	HL681M200M400A
	680	25	30	150	290	2100	HL681M200N300A
	680	30	25	150	290	2110	HL681M200O250A
	680	35	25	150	290	2110	HL681M200P250A
	820	22	45	120	240	2220	HL821M200M450A
	820	25	35	120	240	2230	HL821M200N350A
	820	30	35	120	240	2310	HL821M200O350A
	1000	22	50	100	200	2610	HL102M200M500A
	1000	25	40	100	200	2620	HL102M200N400A
	1000	30	30	100	200	2660	HL102M200O300A
	1000	35	25	100	200	2680	HL102M200P250A
	1200	25	45	87	170	2880	HL122M200N450A
	1200	30	35	87	170	2920	HL122M200O350A
	1200	35	30	87	170	2990	HL122M200P300A
	1500	30	40	67	130	3360	HL152M200O400A
	1500	35	35	67	130	3380	HL152M200P350A
1800	30	50	56	110	3820	HL182M200O500A	
1800	35	40	56	110	3860	HL182M200P400A	
2200	35	45	46	90	4350	HL222M200P450A	
2700	35	50	38	74	4890	HL272M200P500A	
220	270	22	25	380	740	1130	HL271M220M250A
	330	22	30	310	600	1290	HL331M220M300A
	390	22	30	260	510	1640	HL391M220M300A
	390	25	25	260	510	1650	HL391M220N250A
	470	22	35	220	420	1680	HL471M220M350A
	470	25	30	220	420	1690	HL471M220N300A
560	22	40	180	360	1880	HL561M220M400A	

: See description at end of standard ratings

**STANDARD RATINGS**

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ = Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
220	560	25	35	180	360	1900	HL561M220N350A
	560	30	30	180	360	1910	HL561M220O300A
	680	22	45	150	290	1950	HL681M220M450A
	680	25	35	150	290	2180	HL681M220N350A
	680	30	35	150	290	2190	HL681M220O350A
	680	35	25	150	290	2200	HL681M220P250A
	820	25	40	120	240	2350	HL821M220N400A
	820	25	45	120	240	2480	HL821M220N450A
	820	30	40	120	240	2500	HL821M220O400A
	820	35	30	120	240	2510	HL821M220P300A
	1000	25	50	100	200	2700	HL102M220N500A
	1000	30	45	100	200	2710	HL102M220O450A
	1000	35	35	100	200	2750	HL102M220P350A
	1200	30	50	87	170	2890	HL122M220O500A
	1200	35	40	87	170	2990	HL122M220P400A
	1500	35	45	67	130	3420	HL152M220P450A
	1800	35	50	56	110	3830	HL182M220P500A
2200	35	60	46	90	3900	HL222M220P600A	
250	180	22	30	570	1110	1010	HL181M250M300A
	180	25	25	570	1110	1030	HL181M250N250A
	220	22	25	460	900	1300	HL221M250M250A
	220	25	25	460	900	1320	HL221M250N250A
	330	22	30	310	600	1320	HL331M250M300A
	330	25	25	310	600	1330	HL331M250N250A
	390	22	35	260	510	1550	HL391M250M350A
	390	25	30	260	510	1560	HL391M250N300A
	390	30	25	260	510	1570	HL391M250O250A
	470	22	40	220	420	1690	HL471M250M400A
	470	25	30	220	420	1710	HL471M250N300A
	560	22	45	180	360	1920	HL561M250M450A
	560	25	35	180	360	1920	HL561M250N350A
	560	30	25	180	360	1930	HL561M250O250A
	560	30	30	180	360	2000	HL561M250O300A
	560	35	25	180	360	2200	HL561M250P250A
	680	22	50	150	290	2230	HL681M250M500A
	680	25	40	150	290	2250	HL681M250N400A
	680	30	30	150	290	2270	HL681M250O300A
	680	30	35	150	290	2300	HL681M250O350A
	680	35	25	150	290	2310	HL681M250P250A
	820	25	45	120	240	2320	HL821M250N450A
	820	25	50	120	240	2400	HL821M250N500A
820	30	35	120	240	2410	HL821M250O350A	
820	35	30	120	240	2460	HL821M250P300A	
1000	30	40	100	200	2660	HL102M250O400A	

: See description at end of standard ratings

**STANDARD RATINGS**

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
250	1000	35	35	100	200	2800	HL102M250P350A
	1000	35	40	100	200	3000	HL102M250P400A
	1200	30	45	87	170	3000	HL122M250O450A
	1200	35	40	87	170	3110	HL122M250P400A
	1500	35	45	67	130	3560	HL152M250P450A
	1800	35	50	56	110	3980	HL182M250P500A
315	68	22	25	1500	2930	320	HL680M315M250A
	82	22	30	1250	2430	380	HL820M315M300A
	100	25	25	1020	1990	410	HL101M315N250A
	150	22	25	680	1330	850	HL151M315M250A
	180	22	30	570	1110	1010	HL181M315M300A
	180	25	25	570	1110	1040	HL181M315N250A
	220	22	35	460	900	1100	HL221M315M350A
	220	25	25	460	900	1200	HL221M315N250A
	220	30	25	460	900	1250	HL221M315O250A
	270	22	40	380	740	1250	HL271M315M400A
	270	25	30	380	740	1260	HL271M315N300A
	270	30	30	380	740	1270	HL271M315O300A
	330	22	45	310	600	1320	HL331M315M450A
	330	25	35	310	600	1320	HL331M315N350A
	330	30	25	310	600	1320	HL331M315O250A
	330	30	30	310	600	1340	HL331M315O300A
	330	35	25	310	600	1380	HL331M315P250A
	390	22	50	260	510	1590	HL391M315M500A
	390	25	40	260	510	1610	HL391M315N400A
	390	30	40	260	510	1620	HL391M315O400A
	390	35	30	260	510	1630	HL391M315P300A
	470	22	60	220	420	1710	HL471M315M600A
	470	25	45	220	420	1750	HL471M315N450A
	470	30	35	220	420	1780	HL471M315O350A
	470	35	30	220	420	1790	HL471M315P300A
	560	25	50	180	360	2220	HL561M315N500A
	560	30	40	180	360	2250	HL561M315O400A
	560	35	30	180	360	2320	HL561M315P300A
	560	35	35	180	360	2350	HL561M315P350A
	680	25	60	150	290	2530	HL681M315N600A
	680	30	45	150	290	2530	HL681M315O450A
	680	35	35	150	290	2550	HL681M315P350A
	680	35	40	150	290	2560	HL681M315P400A
	820	30	50	120	240	2790	HL821M315O500A
	820	35	40	120	240	2880	HL821M315P400A
	820	35	45	120	240	3000	HL821M315P450A
1000	30	60	100	200	3200	HL102M315O600A	
1000	35	50	100	200	3300	HL102M315P500A	
1200	35	55	87	170	3310	HL122M315P550A	

: See description at end of standard ratings

**STANDARD RATINGS**

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C - 120Hz (m $\Omega$ )	Max. ESR +20°C - 120Hz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C - 120Hz (mA rms)	CapXon Part Number
350	56	22	20	1820	3550	330	HL560M350M200A
	68	22	25	1500	2930	340	HL680M350M250A
	82	22	30	1250	2430	400	HL820M350M300A
	100	25	25	1020	1990	470	HL101M350N250A
	120	22	25	850	1660	720	HL121M350M250A
	150	22	30	680	1330	870	HL151M350M300A
	150	25	25	680	1330	890	HL151M350N250A
	180	22	40	570	1110	1060	HL181M350M400A
	180	25	25	570	1110	1070	HL181M350N250A
	180	25	30	570	1110	1080	HL181M350N300A
	220	22	40	460	900	1350	HL221M350M400A
	220	25	30	460	900	1360	HL221M350N300A
	220	30	25	460	900	1380	HL221M350O250A
	270	22	45	380	740	1390	HL271M350M450A
	270	25	35	380	740	1400	HL271M350N350A
	270	30	30	380	740	1410	HL271M350O300A
	270	35	25	380	740	1420	HL271M350P250A
	330	22	50	310	600	1430	HL331M350M500A
	330	25	40	310	600	1440	HL331M350N400A
	330	30	35	310	600	1440	HL331M350O350A
	330	35	30	310	600	1450	HL331M350P300A
	390	25	45	260	510	1600	HL391M350N450A
	390	30	40	260	510	1630	HL391M350O400A
	390	35	30	260	510	1640	HL391M350P300A
	470	25	50	220	420	1770	HL471M350N500A
	470	30	45	220	420	1810	HL471M350O450A
	470	35	35	220	420	1820	HL471M350P350A
	560	30	50	180	360	2360	HL561M350O500A
560	35	40	180	360	2370	HL561M350P400A	
680	35	45	150	290	2600	HL681M350P450A	
820	35	50	120	240	2870	HL821M350P500A	
385	100	22	25	1020	1990	680	HL101M385M250A
	120	22	25	850	1660	760	HL121M385M250A
	120	22	30	850	1660	860	HL121M385M300A
	150	22	30	680	1330	880	HL151M385M300A
	150	25	25	680	1330	890	HL151M385N250A
	180	22	30	570	1110	1060	HL181M385M300A
	180	22	40	570	1110	1070	HL181M385M400A
	180	25	25	570	1110	1090	HL181M385N250A
	180	25	30	570	1110	1100	HL181M385N300A
	180	30	25	570	1110	1120	HL181M385O250A
	220	22	35	460	900	1340	HL221M385M350A
	220	22	45	460	900	1450	HL221M385M450A
220	25	30	460	900	1390	HL221M385N300A	

: See description at end of standard ratings

**STANDARD RATINGS**

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
385	220	25	35	460	900	1450	HL221M385N350A □□
	220	30	30	460	900	1400	HL221M385O300A □□
	220	35	25	460	900	1410	HL221M385P250A □□
	270	22	45	380	740	1450	HL271M385M450A □□
	270	22	50	380	740	1500	HL271M385M500A □□
	270	25	35	380	740	1450	HL271M385N350A □□
	270	25	40	380	740	1500	HL271M385N400A □□
	270	30	30	380	740	1500	HL271M385O300A □□
	270	35	30	380	740	1580	HL271M385P300A □□
	330	22	50	310	600	1550	HL331M385M500A □□
	330	22	55	310	600	1610	HL331M385M550A □□
	330	25	40	310	600	1560	HL331M385N400A □□
	330	25	45	310	600	1640	HL331M385N450A □□
	330	30	30	310	600	1610	HL331M385O300A □□
	330	30	35	310	600	1650	HL331M385O350A □□
	330	35	25	310	600	1660	HL331M385P250A □□
	330	35	30	310	600	1700	HL331M385P300A □□
	390	25	45	260	510	1700	HL391M385N450A □□
	390	25	50	260	510	1780	HL391M385N500A □□
	390	30	35	260	510	1700	HL391M385O350A □□
	390	30	40	260	510	1800	HL391M385O400A □□
	390	35	30	260	510	1720	HL391M385P300A □□
	390	35	35	260	510	1820	HL391M385P350A □□
	470	25	55	220	420	1900	HL471M385N550A □□
	470	30	40	220	420	1860	HL471M385O400A □□
	470	30	45	220	420	1900	HL471M385O450A □□
	470	35	35	220	420	1920	HL471M385P350A □□
	470	35	40	220	420	2100	HL471M385P400A □□
	560	25	60	180	360	2450	HL561M385N600A □□
	560	30	45	180	360	2390	HL561M385O450A □□
	560	30	50	180	360	2450	HL561M385O500A □□
	560	35	35	180	360	2430	HL561M385P350A □□
	560	35	45	180	360	2520	HL561M385P450A □□
	680	30	50	150	290	2640	HL681M385O500A □□
	680	30	55	150	290	2770	HL681M385O550A □□
	680	35	40	150	290	2720	HL681M385P400A □□
	680	35	50	150	290	2800	HL681M385P500A □□
	820	30	60	120	240	2850	HL821M385O600A □□
	820	35	50	120	240	2880	HL821M385P500A □□
	820	35	55	120	240	2980	HL821M385P550A □□
1000	35	55	100	200	3180	HL102M385P550A □□	
1000	35	60	100	200	3280	HL102M385P600A □□	

□□: See description at end of standard ratings

**STANDARD RATINGS**

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C - 120Hz (m $\Omega$ )	Max. ESR +20°C - 120Hz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C - 120Hz (mA rms)	CapXon Part Number
400	56	22	25	1820	3550	380	HL560M400M250A □□
	68	22	25	1500	2930	510	HL680M400M250A □□
	68	25	20	1500	2930	520	HL680M400N200A □□
	82	22	25	1250	2430	560	HL820M400M250A □□
	82	25	25	1250	2430	610	HL820M400N250A □□
	100	22	25	1020	1990	620	HL101M400M250A □□
	100	22	30	1020	1990	670	HL101M400M300A □□
	100	25	25	1020	1990	680	HL101M400N250A □□
	120	22	30	850	1660	730	HL121M400M300A □□
	120	25	25	850	1660	740	HL121M400N250A □□
	120	30	25	850	1660	800	HL121M400O250A □□
	150	22	30	680	1330	800	HL151M400M300A □□
	150	25	30	680	1330	880	HL151M400N300A □□
	150	30	25	680	1330	920	HL151M400O250A □□
	180	22	35	570	1110	960	HL181M400M350A □□
	180	25	30	570	1110	970	HL181M400N300A □□
	180	30	25	570	1110	1000	HL181M400O250A □□
	220	25	30	460	900	1020	HL221M400N300A □□
	220	30	25	460	900	1020	HL221M400O250A □□
	220	30	30	460	900	1050	HL221M400O300A □□
	270	22	45	380	740	1160	HL271M400M450A □□
	270	22	50	380	740	1210	HL271M400M500A □□
	270	25	35	380	740	1160	HL271M400N350A □□
	270	30	30	380	740	1210	HL271M400O300A □□
	270	30	35	380	740	1240	HL271M400O350A □□
	270	35	25	380	740	1230	HL271M400P250A □□
	330	25	40	310	600	1310	HL331M400N400A □□
	330	30	30	310	600	1310	HL331M400O300A □□
	330	35	25	310	600	1310	HL331M400P250A □□
	470	30	45	220	420	1820	HL471M400O450A □□
	470	35	35	220	420	1820	HL471M400P350A □□
	470	35	40	220	420	1890	HL471M400P400A □□
	560	30	45	180	360	1990	HL561M400O450A □□
	560	30	50	180	360	2080	HL561M400O500A □□
	560	35	40	180	360	2080	HL561M400P400A □□
	560	35	45	180	360	2170	HL561M400P450A □□
680	35	45	150	290	2390	HL681M400P450A □□	
680	35	50	150	290	2500	HL681M400P500A □□	
820	35	50	120	240	2500	HL821M400P500A □□	
820	35	55	120	240	2860	HL821M400P550A □□	
1200	35	60	87	170	3160	HL122M400P600A □□	

□□: See description at end of standard ratings

**STANDARD RATINGS**

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C - 120Hz (m $\Omega$ )	Max. ESR +20°C - 120Hz (m $\Omega$ )	$I_R$ - Max. Ripple Current +105°C - 120Hz (mA rms)	CapXon Part Number
420	39	22	25	3490	6800	340	HL390M420M250A
	68	25	25	2000	3900	550	HL680M420N250A
	82	22	25	1660	3230	560	HL820M420M250A
	100	22	25	1360	2650	620	HL101M420M250A
	100	22	30	1360	2650	670	HL101M420M300A
	100	25	25	1360	2650	670	HL101M420N250A
	120	22	30	1130	2210	730	HL121M420M300A
	120	25	25	1130	2210	740	HL121M420N250A
	150	22	35	910	1770	880	HL151M420M350A
	150	25	30	910	1770	890	HL151M420N300A
	150	30	25	910	1770	920	HL151M420O250A
	180	22	35	750	1470	960	HL181M420M350A
	180	22	40	750	1470	1020	HL181M420M400A
	180	25	30	750	1470	1010	HL181M420N300A
	180	30	25	750	1470	1020	HL181M420O250A
	220	22	45	620	1210	1050	HL221M420M450A
	220	25	35	620	1210	1050	HL221M420N350A
	220	30	30	620	1210	1050	HL221M420O300A
	220	35	25	620	1210	1050	HL221M420P250A
	270	22	50	500	980	1210	HL271M420M500A
	270	25	40	500	980	1210	HL271M420N400A
	270	30	30	500	980	1210	HL271M420O300A
	270	30	35	500	980	1240	HL271M420O350A
	270	35	25	500	980	1210	HL271M420P250A
	270	35	30	500	980	1280	HL271M420P300A
	330	25	50	410	800	1440	HL331M420N500A
	330	30	35	410	800	1370	HL331M420O350A
	330	35	30	410	800	1440	HL331M420P300A
	470	30	45	290	560	1820	HL471M420O450A
	470	35	40	290	560	1890	HL471M420P400A
	560	30	55	240	470	2170	HL561M420O550A
	560	35	45	240	470	2170	HL561M420P450A
680	30	60	200	390	2480	HL681M420O600A	
680	35	50	200	390	2500	HL681M420P500A	
820	35	55	160	320	2910	HL821M420P550A	
820	35	60	160	320	2970	HL821M420P600A	
1000	35	60	140	270	3280	HL102M420P600A	
450	39	22	25	3490	6800	370	HL390M450M250A
	47	22	25	2890	5640	380	HL470M450M250A
	56	22	25	2430	4740	450	HL560M450M250A
	68	22	30	2000	3900	550	HL680M450M300A
	68	25	25	2000	3900	550	HL680M450N250A
	82	22	25	1660	3230	560	HL820M450M250A
	82	22	30	1660	3230	610	HL820M450M300A

: See description at end of standard ratings



**STANDARD RATINGS**

$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi$ D (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ = Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
450	82	25	30	1660	3230	650	HL820M450N300A ☐☐
	100	22	30	1360	2650	670	HL101M450M300A ☐☐
	100	25	25	1360	2650	670	HL101M450N250A ☐☐
	100	30	25	1360	2650	750	HL101M450O250A ☐☐
	120	22	35	1130	2210	750	HL121M450M350A ☐☐
	120	25	30	1130	2210	750	HL121M450N300A ☐☐
	120	30	30	1130	2210	880	HL121M450O300A ☐☐
	150	22	40	910	1770	930	HL151M450M400A ☐☐
	150	25	25	910	1770	880	HL151M450N250A ☐☐
	150	30	30	910	1770	990	HL151M450O300A ☐☐
	150	35	30	910	1770	1080	HL151M450P300A ☐☐
	180	22	45	750	1470	1100	HL181M450M450A ☐☐
	180	25	35	750	1470	1100	HL181M450N350A ☐☐
	180	30	30	750	1470	1100	HL181M450O300A ☐☐
	180	35	25	750	1470	1110	HL181M450P250A ☐☐
	220	25	35	620	1210	1130	HL221M450N350A ☐☐
	220	30	30	620	1210	1130	HL221M450O300A ☐☐
	220	30	35	620	1210	1150	HL221M450O350A ☐☐
	220	35	30	620	1210	1160	HL221M450P300A ☐☐
	270	25	45	500	980	1240	HL271M450N450A ☐☐
	270	25	50	500	980	1300	HL271M450N500A ☐☐
	270	30	40	500	980	1300	HL271M450O400A ☐☐
	270	35	30	500	980	1300	HL271M450P300A ☐☐
	330	25	50	410	800	1440	HL331M450N500A ☐☐
	330	30	40	410	800	1450	HL331M450O400A ☐☐
	330	35	35	410	800	1500	HL331M450P350A ☐☐
390	30	45	350	680	1660	HL391M450O450A ☐☐	
390	35	35	350	680	1630	HL391M450P350A ☐☐	
470	35	40	290	560	1890	HL471M450P400A ☐☐	
560	35	50	240	470	2270	HL561M450P500A ☐☐	
680	35	55	200	390	2610	HL681M450P550A ☐☐	
500	47	22	25	2890	5640	380	HL470M500M250A ☐☐
	56	25	25	2430	4740	440	HL560M500N250A ☐☐
	68	22	30	2000	3900	490	HL680M500M300A ☐☐
	68	25	25	2000	3900	490	HL680M500N250A ☐☐
	82	22	35	1660	3230	570	HL820M500M350A ☐☐
	82	25	30	1660	3230	580	HL820M500N300A ☐☐
	82	30	25	1660	3230	600	HL820M500O250A ☐☐
	100	22	40	1360	2650	670	HL101M500M400A ☐☐
	100	25	35	1360	2650	680	HL101M500N350A ☐☐
	100	30	25	1360	2650	670	HL101M500O250A ☐☐
	120	25	40	1130	2210	790	HL121M500N400A ☐☐
	120	30	25	1130	2210	720	HL121M500O250A ☐☐
150	22	50	910	1770	910	HL151M500M500A ☐☐	

☐☐: See description at end of standard ratings

### STANDARD RATINGS

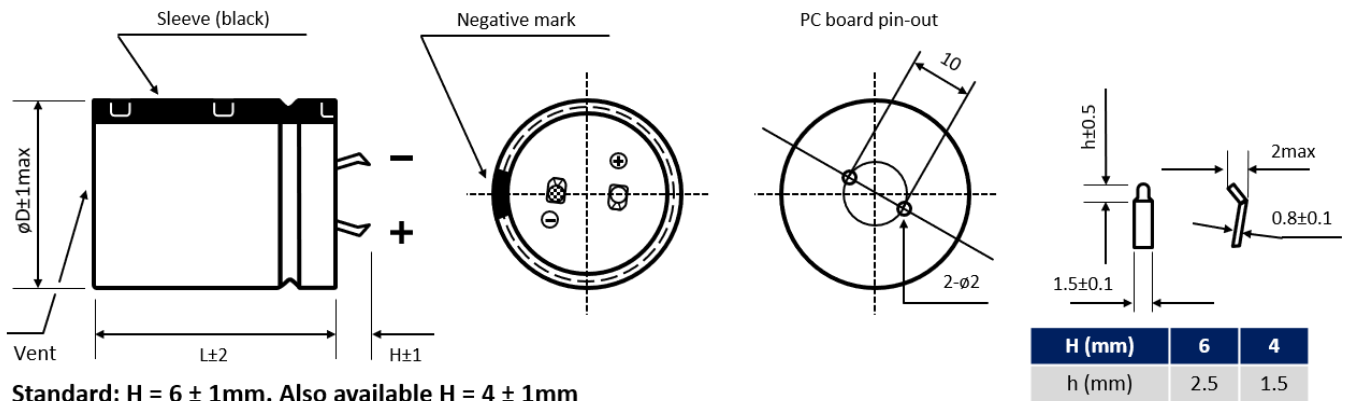
$V_R$ (V)	$C_R$ ( $\mu$ F)	$\phi D$ (mm)	L (mm)	Typ. ESR +20°C • 120Hz (m $\Omega$ )	Max. ESR +20°C • 120Hz (m $\Omega$ )	$I_R$ = Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number
500	150	25	45	910	1770	930	HL151M500N450A □□
	150	30	30	910	1770	910	HL151M500O300A □□
	180	25	50	750	1470	1060	HL181M500N500A □□
	180	30	35	750	1470	1010	HL181M500O350A □□
	180	35	30	750	1470	1050	HL181M500P300A □□
	220	25	50	620	1210	1180	HL221M500N500A □□
	220	30	45	620	1210	1250	HL221M500O450A □□
	220	35	30	620	1210	1160	HL221M500P300A □□
	270	30	50	500	980	1440	HL271M500O500A □□
	270	35	35	500	980	1360	HL271M500P350A □□
	330	35	40	410	800	1620	HL331M500P400A □□
	390	35	50	350	680	1830	HL391M500P500A □□
	470	35	55	290	560	2150	HL471M500P550A □□

□□: Enter **P6** for standard type • 6mm pin length  
 □□□: Enter **Z6** for 3-pin type • 6mm pin length  
 □□□: Enter **Y6** for multipin-type • 6mm pin length

□□: Enter **P4** for standard type • 4mm pin length  
 □□□: Enter **Z4** for 3-pin type • 4mm pin length  
 □□□: Enter **Y4** for multipin type • 4mm pin length

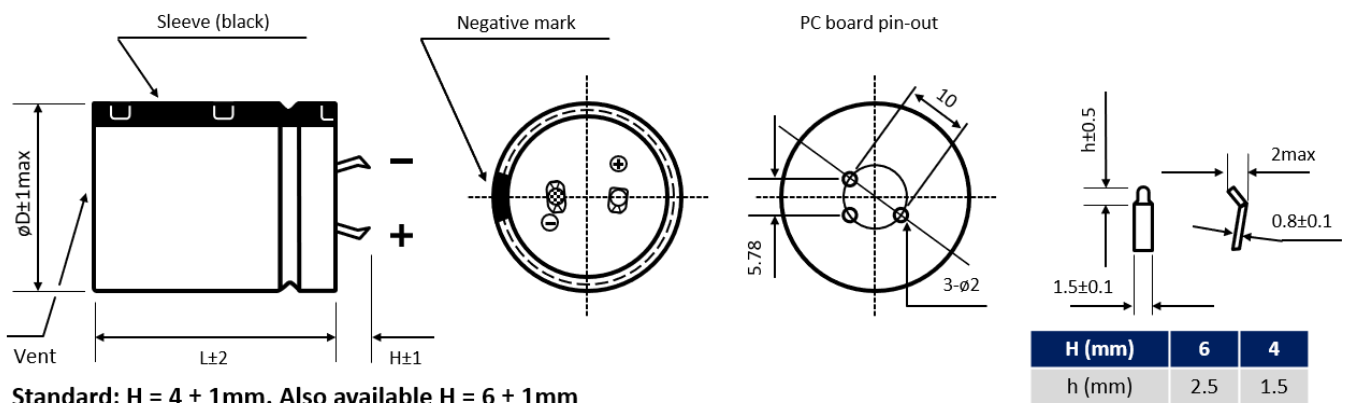
### DIMENSIONS • All dimensions in mm

#### 2-pin version • Standard type



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

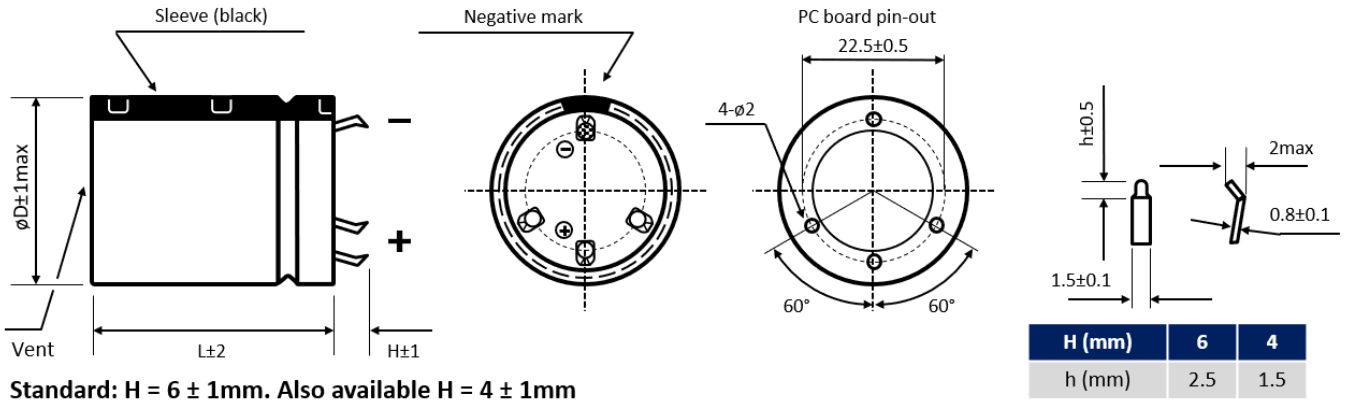
#### 3-pin version • Polarity protection



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

## DIMENSIONS ▪ All dimensions in mm

Multipin version ▪ Diameter  $\phi D \geq 30$  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	100/120	300	1k	10k	50k - 100k
$10 \leq V_R \leq 100$	0.88	1	1.07	1.15	1.15	1.15
$160 \leq V_R \leq 250$	0.81	1	1.17	1.32	1.45	1.5
$315 \leq V_R \leq 500$	0.77	1	1.16	1.3	1.41	1.43

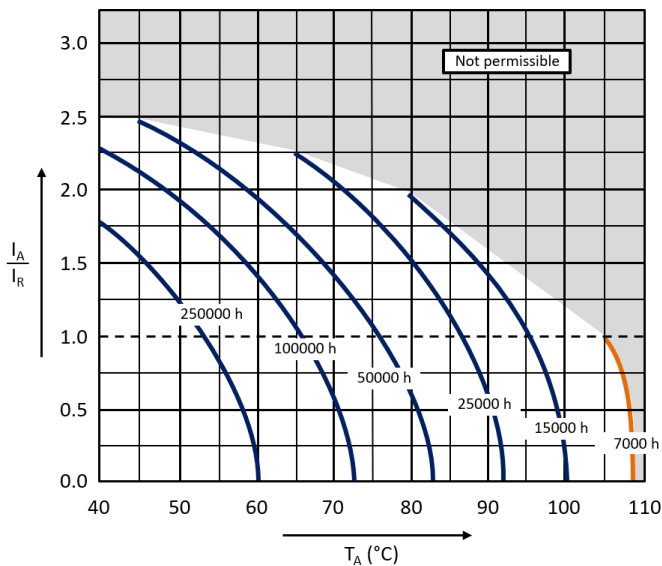
## PRECAUTIONS, GUIDELINES AND PACKAGING INFORMATION

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.

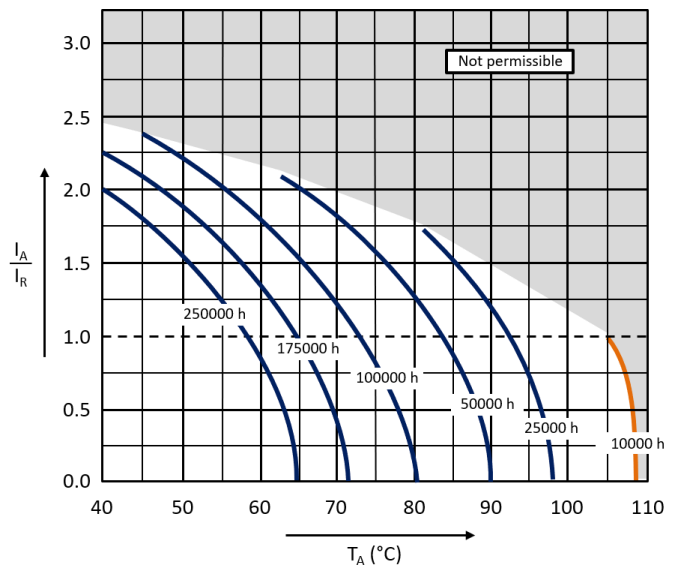
<a href="#">General Precautions &amp; Guidelines</a>	<a href="#">Packaging Information</a>	<a href="#">Vibration Test Profiles</a>	<a href="#">3D Models</a>

## USEFUL LIFE

$V_R \leq 100V$



$V_R \geq 160V$



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

### 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.

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