

### HV SERIES ▪ HIGH VOLTAGE, AUTOMOTIVE 105°C TYPE

#### KEY FEATURES



- ALUMINUM ELECTROLYTIC CAPACITOR ▪ SMD type
- Endurance: 105°C ▪ 2 000 hours
- Low ESR and high ripple current
- Vibration-proof (VP) version (up to 30g) available upon request
- AEC-Q200 version available



#### SPECIFICATIONS

Items		Performance Characteristics												
Operating Temperature Range		-55 ~ +105°C						-40 ~ +105°C						
Rated Voltage Range	V <sub>R</sub>	6.3 ~ 100V DC						160 ~ 450V 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>	1 ~ 6800μF						2.2 ~ 68μF						
Cap. Tolerance	ΔC	±20% (120Hz ▪ 20°C)												
Leakage Current (20°C ▪ V <sub>R</sub> applied)	I <sub>LEAK</sub>	≤ 0.01·C <sub>R</sub> ·V <sub>R</sub> or 3μA						≤ 0.04·C <sub>R</sub> ·V <sub>R</sub> + 100μA						
		Whichever is greater ▪ After 2 minutes						After 1 minute						
		[ I <sub>LEAK</sub> (μA) ; C <sub>R</sub> (μF) ; V <sub>R</sub> (V) ]												
Dissipation Factor % (20°C ▪ 120Hz)	tanδ	V <sub>R</sub> (V DC)	6.3	10	16	25	35	50	63	80	100	160 ~ 250	>250	
		∅ 4 ~ 6.3	30	24	20	16	14	14	12	10	10	-	-	
		∅ 8 ~ 10	35	26	24	18	14	14	12	10	10	15	20	
		≥ ∅ 12.5	37	34	24	18	14	14	12	10	10	15	20	
Low Temperature Characteristics at 120Hz	Z ratio max.	V <sub>R</sub> (V DC)	6.3	10	16	25	35	50	63	80	100	160 ~ 250	400	450
		Z-25°C/Z+20°C	6	4	4	3	2	2	2	3	3	3	6	6
		Z-40°C/Z+20°C	12	10	8	6	4	4	4	4	4	6	10	15
		Z-55°C/Z+20°C	14	12	10	6	4	4	4	4	4	6	10	15
Lifetime Test														
Endurance 105°C (V <sub>R</sub> applied)	Test	2 000 hours												
	ΔC/C <sub>R</sub>	≤ ±30% of initial measured value												
	tanδ	≤ 300% of initial specified value												
	I <sub>Leak</sub>	≤ the initial specified value												
Shelf Life 105°C (V <sub>R</sub> = 0)	Test	1 000 hours												
	ΔC/C <sub>R</sub>	≤ ±30% of initial measured value												
	tanδ	≤ 300% 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												
Resistance to Soldering Heat	The capacitors shall be kept on a hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature, they meet the characteristic requirements listed below													
	ΔC/C <sub>R</sub>	Within ±10% of initial value												
	tanδ	Less than specified value												
	I <sub>Leak</sub>	Less than specified value												

**STANDARD RATINGS**

Part number shows blister tape on paper reel

V <sub>R</sub> (V)			C <sub>R</sub> (μF)	ø D (mm)	L (mm)	I <sub>R</sub> • Max. Ripple Current +105°C • 120Hz (mA rms)	CapXon Part Number	
	Standard	Vibration-proof						
6.3	•		22	4	5.5	23	HV220M6R3B055ETR □□	
	•		33	4	5.5	28	HV330M6R3B055ETR □□	
	•		47	4	5.5	37	HV470M6R3B055ETR □□	
	•		47	5	5.5	40	HV470M6R3C055ETR □□	
	•		100	5	5.5	46	HV101M6R3C055ETR □□	
	•		100	6.3	5.5	57	HV101M6R3E055ETR □□	
	•		150	6.3	5.5	70	HV151M6R3E055ETR □□	
	•		150	8	6.5	90	HV151M6R3F065ETR □□	
	•	•	220	6.3	7.7	90	HV221M6R3E077ETR □□	
	•		220	8	6.5	130	HV221M6R3F065ETR □□	
	•	•	330	6.3	7.7	140	HV331M6R3E077ETR □□	
	•	•	330	8	10.5	170	HV331M6R3F105ETR □□	
	•	•	470	8	10.5	210	HV471M6R3F105ETR □□	
	•	•	560	8	10.5	310	HV561M6R3F105ETR □□	
	•	•	680	8	10.5	330	HV681M6R3F105ETR □□	
	•	•	680	10	10.5	370	HV681M6R3G105ETR □□	
	•	•	1000	8	10.5	420	HV102M6R3F105ETR □□	
	•	•	1000	10	10.5	480	HV102M6R3G105ETR □□	
	10	•		22	4	5.5	25	HV220M010B055ETR □□
		•		33	4	5.5	34	HV330M010B055ETR □□
•			47	5	5.5	42	HV470M010C055ETR □□	
•			100	6.3	5.5	55	HV101M010E055ETR □□	
•			100	8	6.5	60	HV101M010F065ETR □□	
•			150	6.3	5.5	90	HV151M010E055ETR □□	
•			150	8	6.5	110	HV151M010F065ETR □□	
•		•	220	6.3	7.7	140	HV221M010E077ETR □□	
•			220	8	6.5	160	HV221M010F065ETR □□	
•		•	330	8	10.5	195	HV331M010F105ETR □□	
•		•	470	8	10.5	350	HV471M010F105ETR □□	
•		•	470	10	10.5	420	HV471M010G105ETR □□	
•		•	560	10	10.5	450	HV561M010G105ETR □□	
•		•	680	10	10.5	480	HV681M010G105ETR □□	
•		•	1000	10	10.5	530	HV102M010G105ETR □□	
•		•	1200	12.5	14	570	HV122M010Z140ETR □□	
•		•	1500	12.5	14	750	HV152M010Z140ETR □□	
•		•	4700	16	17	880	HV472M010J170ETR □□	

□□ see description at end of standard ratings

 •<sup>1</sup>: Consult CapXon for availability

**STANDARD RATINGS**

Part number shows blister tape on paper reel

V <sub>R</sub> (V)	Standard	C <sub>R</sub> (μF)	ø D (mm)	L (mm)	I <sub>R</sub> - Max. Ripple Current +105°C - 120Hz (mA rms)	CapXon Part Number
	Vibration-proof					
16	•	10	4	5.5	20	HV100M016B055ETR □□
	•	22	4	5.5	31	HV220M016B055ETR □□
	•	22	5	5.5	35	HV220M016C055ETR □□
	•	33	5	5.5	36	HV330M016C055ETR □□
	•	33	6.3	5.5	40	HV330M016E055ETR □□
	•	•	47	5	5.5	HV470M016C055ETR □□
	•	•	47	6.3	5.5	HV470M016E055ETR □□
	•	•	100	6.3	7.7	HV101M016E077ETR □□
	•	•	100	8	6.5	HV101M016F065ETR □□
	•	•	150	6.3	7.7	HV151M016E077ETR □□
	•	•	150	8	6.5	HV151M016F065ETR □□
	•	•	220	6.3	7.7	HV221M016E077ETR □□
	•	•	220	8	10.5	HV221M016F105ETR □□
	•	•	330	8	10.5	HV331M016F105ETR □□
	•	•	470	8	10.5	HV471M016F105ETR □□
	•	•	470	10	10.5	HV471M016G105ETR □□
	•	•	560	10	10.5	HV561M016G105ETR □□
	•	•	680	10	10.5	HV681M016G105ETR □□
	•	•	1000	12.5	14	HV102M016Z140ETR □□
	•	•	1200	12.5	14	HV122M016Z140ETR □□
•	•	1500	12.5	14	HV152M016Z140ETR □□	
•	•	3300	16	17	HV332M016J170ETR □□	
25	•	4.7	4	5.5	12	HV4R7M025B055ETR □□
	•	10	4	5.5	22	HV100M025B055ETR □□
	•	22	5	5.5	38	HV220M025C055ETR □□
	•	33	6.3	5.5	48	HV330M025E055ETR □□
	•	•	47	6.3	7.7	HV470M025E077ETR □□
	•	•	47	8	6.5	HV470M025F065ETR □□
	•	•	100	6.3	7.7	HV101M025E077ETR □□
	•	•	100	8	10.5	HV101M025F105ETR □□
	•	•	150	8	10.5	HV151M025F105ETR □□
	•	•	220	8	10.5	HV221M025F105ETR □□
	•	•	220	10	10.5	HV221M025G105ETR □□
	•	•	330	8	10.5	HV331M025F105ETR □□
	•	•	470	10	10.5	HV471M025G105ETR □□
	•	•	560	12.5	14	HV561M025Z140ETR □□
	•	•	680	12.5	14	HV681M025Z140ETR □□
	•	•	1000	12.5	14	HV102M025Z140ETR □□
	•	•	2200	16	17	HV222M025J170ETR □□
	35	•	4.7	4	5.5	14
•		10	4	5.5	24	HV100M035B055ETR □□
•		22	5	5.5	40	HV220M035C055ETR □□
•		22	6.3	5.5	46	HV220M035E055ETR □□
•		•	33	6.3	7.7	HV330M035E077ETR □□

□□ see description at end of standard ratings

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**STANDARD RATINGS**

Part number shows blister tape on paper reel

V <sub>R</sub> (V)	Standard	Vibration-proof	C <sub>R</sub> (μF)	ø D (mm)	L (mm)	I <sub>R</sub> - Max. Ripple Current +105°C - 120Hz (mA rms)	CapXon Part Number
35	●		33	8	6.5	50	HV330M035F065ETR □□
	●	●	47	6.3	7.7	60	HV470M035E077ETR □□
	●		47	8	6.5	65	HV470M035F065ETR □□
	●	●	100	6.3	7.7	130	HV101M035E077ETR □□
	●	●	100	8	10.5	180	HV101M035F105ETR □□
	●	●	150	8	10.5	190	HV151M035F105ETR □□
	●	●	220	8	10.5	250	HV221M035F105ETR □□
	●	●	220	10	10.5	280	HV221M035G105ETR □□
	●	●	330	10	10.5	360	HV331M035G105ETR □□
	●	●	470	12.5	14	460	HV471M035Z140ETR □□
	●	●	560	12.5	14	500	HV561M035Z140ETR □□
	●	●	1500	16	17	740	HV152M035J170ETR □□
50	●		1	4	5.5	8.4	HV010M050B055ETR □□
	●		2.2	4	5.5	11	HV2R2M050B055ETR □□
	●		3.3	4	5.5	13	HV3R3M050B055ETR □□
	●		4.7	4	5.5	18	HV4R7M050B055ETR □□
	●		10	6.3	5.5	28	HV100M050E055ETR □□
	●	●	22	6.3	7.7	50	HV220M050E077ETR □□
	●		22	8	6.5	55	HV220M050F065ETR □□
	●	●	33	6.3	7.7	95	HV330M050E077ETR □□
	●	●	33	8	10.5	135	HV330M050F105ETR □□
	●	●	47	6.3	7.7	115	HV470M050E077ETR □□
	●	●	47	8	10.5	155	HV470M050F105ETR □□
	●	●	100	10	10.5	315	HV101M050G105ETR □□
	●	●	150	10	10.5	330	HV151M050G105ETR □□
	●	●	220	10	10.5	350	HV221M050G105ETR □□
	●	●	330	12.5	14	400	HV331M050Z140ETR □□
	●	●	470	16	17	570	HV471M050J170ETR □□
●	●	1000	16	17	655	HV102M050J170ETR □□	
63	●		1	4	5.5	7	HV010M063B055ETR □□
	●		2.2	4	5.5	11	HV2R2M063B055ETR □□
	●		3.3	5	5.5	14	HV3R3M063C055ETR □□
	●		4.7	5	5.5	22	HV4R7M063C055ETR □□
	●		10	6.3	5.5	40	HV100M063E055ETR □□
	●	●	22	6.3	7.7	58	HV220M063E077ETR □□
	●	●	33	8	10.5	112	HV330M063F105ETR □□
	●	●	47	8	10.5	119	HV470M063F105ETR □□
	●	●	100	10	10.5	280	HV101M063G105ETR □□
	●	●	220	12.5	14	300	HV221M063Z140ETR □□
	●	●	470	16	17	630	HV471M063J170ETR □□

□□ see description at end of standard ratings

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**STANDARD RATINGS**

Part number shows blister tape on paper reel

V <sub>R</sub> (V)	Standard		C <sub>R</sub> (μF)	ø D (mm)	L (mm)	I <sub>R</sub> - Max. Ripple Current +105°C - 120Hz (mA rms)	CapXon Part Number
	Standard	Vibration-proof					
80	•		1	4	5.5	7	HV010M080B055ETR □□
	•		2.2	5	5.5	12	HV2R2M080C055ETR □□
	•		3.3	6.3	5.5	17	HV3R3M080E055ETR □□
	•		4.7	6.3	5.5	25	HV4R7M080E055ETR □□
	•	•	10	6.3	7.7	35	HV100M080E077ETR □□
	•	•	22	6.3	7.7	58	HV220M080E077ETR □□
	•	•	33	8	10.5	112	HV330M080F105ETR □□
	•	•	47	10	10.5	160	HV470M080G105ETR □□
	•	•	100	12.5	14	380	HV101M080Z140ETR □□
	•	•	150	16	17	500	HV151M080J170ETR □□
	•	•	220	16	17	600	HV221M080J170ETR □□
100	•		1	4	5.5	7	HV010M100B055ETR □□
	•	• <sup>1</sup>	2.2	6.3	6.1	15	HV2R2M100E061ETR □□
	•		2.2	6.3	5.5	13	HV2R2M100E055ETR □□
	•	• <sup>1</sup>	3.3	6.3	6.1	20	HV3R3M100E061ETR □□
	•	•	4.7	6.3	7.7	28	HV4R7M100E077ETR □□
	•	•	10	6.3	7.7	35	HV100M100E077ETR □□
	•	•	22	8	10.5	85	HV220M100F105ETR □□
	•	•	33	10	10.5	135	HV330M100G105ETR □□
	•	•	47	12.5	14	240	HV470M100Z140ETR □□
	•	•	150	16	17	500	HV151M100J170ETR □□
	160	•	•	10	8	10.5	57
•		•	12	8	10.5	60	HV120M160F105ETR □□
•		•	18	10	10.5	65	HV180M160G105ETR □□
•		•	22	10	10.5	70	HV220M160G105ETR □□
•		•	27	12.5	14	85	HV270M160Z140ETR □□
•		•	33	12.5	14	95	HV330M160Z140ETR □□
•		•	39	12.5	14	105	HV390M160Z140ETR □□
•		•	47	16	17	260	HV470M160J170ETR □□
•		•	68	16	17	300	HV680M160J170ETR □□
200	•	•	10	10	10.5	64	HV100M200G105ETR □□
	•	•	10	12.5	14	80	HV100M200Z140ETR □□
	•	•	22	12.5	14	105	HV220M200Z140ETR □□
	•	•	27	12.5	14	115	HV270M200Z140ETR □□
	•	•	33	12.5	14	170	HV330M200Z140ETR □□
	•	•	33	16	17	220	HV330M200J170ETR □□
	•	•	47	16	17	260	HV470M200J170ETR □□

□□ see description at end of standard ratings

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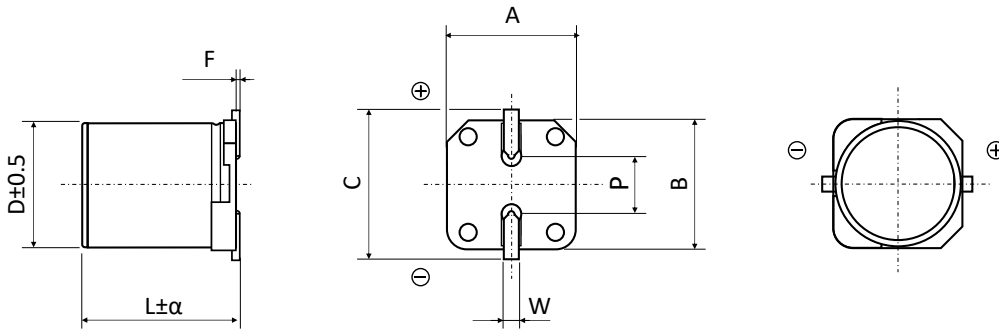
## STANDARD RATINGS

Part number shows blister tape on paper reel

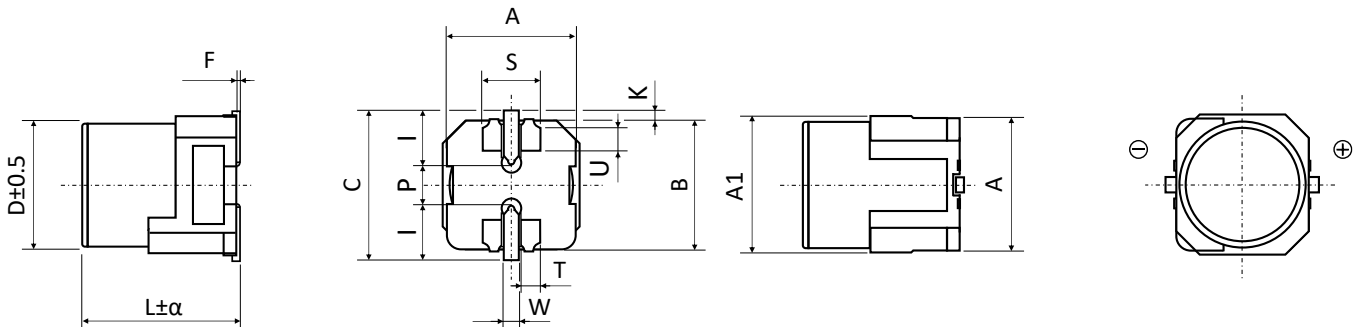
V <sub>R</sub> (V)	Standard	Vibration-proof	C <sub>R</sub> (μF)	ø D (mm)	L (mm)	I <sub>R</sub> - Max. Ripple Current +105°C - 120Hz (mA rms)	CapXon Part Number
250	•	•	4.7	8	10.5	50	HV4R7M250F105ETR □□
	•	•	6.8	10	10.5	60	HV6R8M250G105ETR □□
	•	•	10	10	10.5	75	HV100M250G105ETR □□
	•	•	15	12.5	14	120	HV150M250Z140ETR □□
	•	•	22	16	17	180	HV220M250J170ETR □□
	•	•	27	16	17	200	HV270M250J170ETR □□
	•	•	33	16	17	230	HV330M250J170ETR □□
	•	•	39	16	17	260	HV390M250J170ETR □□
400	•	•	47	16	17	285	HV470M250J170ETR □□
	•	•	2.2	8	10.5	27	HV2R2M400F105ETR □□
	•	•	3.3	8	10.5	34	HV3R3M400F105ETR □□
	•	•	3.9	10	10.5	40	HV3R9M400G105ETR □□
	•	•	4.7	10	10.5	40	HV4R7M400G105ETR □□
	•	•	4.7	12.5	14	50	HV4R7M400Z140ETR □□
	•	•	6.8	12.5	14	60	HV6R8M400Z140ETR □□
	•	•	8.2	12.5	14	65	HV8R2M400Z140ETR □□
	•	•	10	12.5	14	70	HV100M400Z140ETR □□
	•	•	10	16	17	85	HV100M400J170ETR □□
	•	•	12	16	17	95	HV120M400J170ETR □□
	•	•	22	16	17	120	HV220M400J170ETR □□
450	•	•	3.3	10	10.5	40	HV3R3M450G105ETR □□
	•	•	3.9	10	10.5	40	HV3R9M450G105ETR □□
	•	•	4.7	12.5	14	50	HV4R7M450Z140ETR □□
	•	•	6.8	12.5	14	60	HV6R8M450Z140ETR □□
	•	•	8.2	12.5	14	65	HV8R2M450Z140ETR □□
	•	•	10	12.5	14	70	HV100M450Z140ETR □□
	•	•	10	16	17	85	HV100M450J170ETR □□
	•	•	12	16	17	95	HV120M450J170ETR □□
	•	•	15	16	17	100	HV150M450J170ETR □□
	•	•	22	16	17	120	HV220M450J170ETR □□

□□: Enter **blank** for Standard package  
 □□: Enter **W** for Vibration proof version

□□: Enter **X** for AEC-Q200  
 □□: Enter **XW** for AEC-Q200 and Vibration proof version

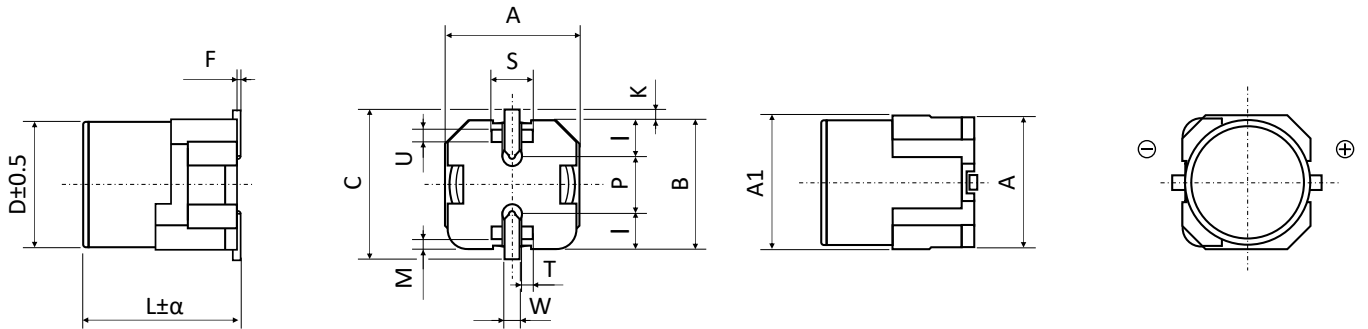
**DIMENSIONS STANDARD PACKAGE** ▪ All dimensions in mm


$\phi D$	L	$\alpha$	$A \pm 0.2$	$B \pm 0.2$	$C \pm 0.2$	F	$P \pm 0.2$	W
4.0	5.5	Max	4.3	4.3	4.9	0.3 max.	1.0	0.5 to 0.8
5.0	5.5	Max	5.3	5.3	5.9	0.3 max.	1.4	0.5 to 0.8
6.3	5.5	0.2	6.6	6.6	7.2	0.3 max.	2.2	0.5 to 0.8
6.3	6.1	Max	6.6	6.6	7.2	0.3 max.	2.2	0.5 to 0.8
6.3	7.7	Max	6.6	6.6	7.2	0.3 max.	2.2	0.5 to 0.8
8.0	6.5	Max	8.3	8.3	9.0	0.3 max.	2.3	0.5 to 0.8
8.0	10.5	Max	8.3	8.3	9.0	0.3 max.	3.1	0.7 to 1.1
10.0	10.5	Max	10.3	10.3	11.0	0.3 max.	4.5	0.7 to 1.1
12.5	14.0	Max	13.0	13.0	13.9	0.3 max.	4.5	1 to 1.4
16.0	17.0	0.5	17.0	17.0	18.0	0.3 max.	6.6	1 to 1.4

**DIMENSIONS VP PACKAGE (VIBRATION-PROOF)  $\phi D6.3$**  ▪ All dimensions in mm


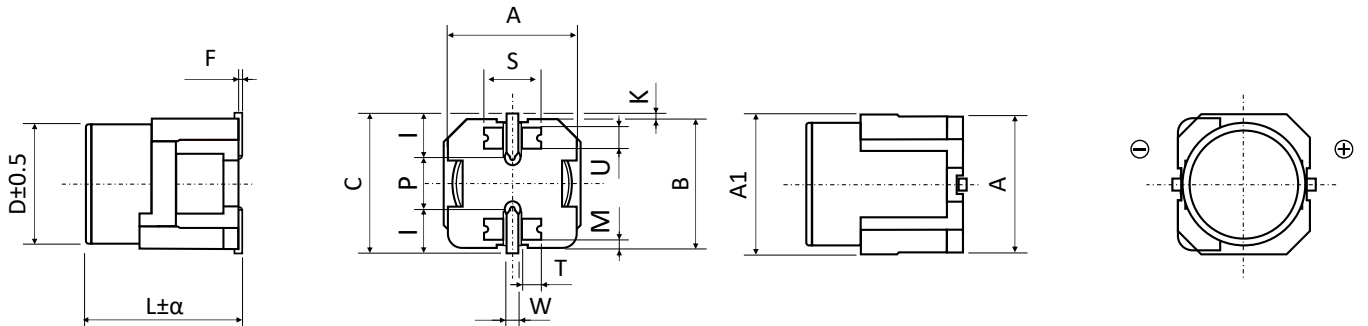
$\phi D$	L	$\alpha$	$A \pm 0.2$	A1 (max.)	$B \pm 0.2$	C (max.)	F	K
6.3	6.1	0.3	6.6	7.1	6.6	7.8	0 to 0.15	0.35 +0.15/-0.2
6.3	8.0	0.3	6.6	7.1	6.6	7.8	0 to 0.15	0.35 +0.15/-0.2

$\phi D$	L	$P \pm 0.2$	$S \pm 0.1$	$I \pm 0.1$	$T \pm 0.1$	$U \pm 0.1$	$W \pm 0.1$
6.3	6.1	2.2	2.9	2.4	1.1	1.55	0.65
6.3	8.0	2.2	2.9	2.4	1.1	1.55	0.65

**DIMENSIONS VP PACKAGE (VIBRATION-PROOF) Ø D8 and D10** ▪ All dimensions in mm


ø D	L	α	A ± 0.2	A1 (max.)	B ± 0.2	C (max.)	F	K ± 0.2
8	10.5	0.5	8.3	8.8	8.3	10.0	0 to 0.15	0.7
10	10.5	0.5	10.3	10.8	10.3	12.0	0 to 0.15	0.7

ø D	L	P ± 0.2	S ± 0.1	I ± 0.1	T ± 0.1	U ± 0.1	W ± 0.1	M ± 0.1
8	10.5	3.1	3	3.4	1.4	0.7	1.2	0.7
10	10.5	4.6	3.3	3.5	1.5	0.8	1.2	0.9

**DIMENSIONS VP PACKAGE (VIBRATION-PROOF) Ø D12.5 and D16** ▪ All dimensions in mm


ø D	L	α	A ± 0.2	A1 (max.)	B ± 0.2	C (max.)	F	K ± 0.3
12.5	14.0	1.0	13.5	13.5	13.5	15.0	0 to 0.15	0.7
16.0	17.0	1.0	17.0	17.0	17.0	19.0	0 to 0.15	0.7

ø D	L	P ± 0.2	S ± 0.1	I ± 0.1	T ± 0.1	U ± 0.1	W ± 0.1	M ± 0.1
12.5	14.0	4.4	6.0	4.7	2.0	2.2	1.2	0.95
16.0	17.0	6.7	5.8	5.5	2.0	3.0	1.4	1.0








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

$C_R$ ( $\mu$ F) / Frequency (Hz)	50/60	100/120	500	1k	$\geq 10k$
$1 \leq C_R \leq 100$	0.8	1	1.2	1.3	1.5
$100 < C_R \leq 6800$	0.8	1	1.1	1.15	1.2

**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>

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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.

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