

RV SERIES ▪ HIGH VOLTAGE, AUTOMOTIVE 105°C TYPE

KEY FEATURES



- ALUMINUM ELECTROLYTIC CAPACITOR ▪ SMD type
- Endurance: 105°C ▪ 2 000 hours up to 5 000 hours
- High voltage and low impedance
- 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 _R	6.3 ~ 100V DC							160 ~ 450V DC						
Surge Voltage	V _S	(V _R ≤ 315V): V _S = 1.15·V _R							(V _R > 315V): V _S = 1.10·V _R						
Capacitance Range	C _R	1 ~ 6800μF							2.2 ~ 68μF						
Cap. Tolerance	ΔC	±20% (120Hz ▪ 20°C)													
Leakage Current (20°C ▪ V _R applied)	I _{LEAK}	≤ 0.01·C _R ·V _R or 3μA							≤ 0.04·C _R ·V _R + 100μA						
		Whichever is greater ▪ After 2 minutes							After 1 minute						
		[I _{LEAK} (μA) ; C _R (μF) ; V _R (V)]													
Dissipation Factor % (20°C ▪ 120Hz)	tanδ	V _R (V DC)	6.3	10	16	25	35	50	63	80	100	160 ~ 250	>250		
		tanδ (%)	22	19	16	14	14	12	10	9	8	15	20		
Low Temperature Characteristics at 120Hz	Z ratio max.	V _R (V DC)	6.3	10	16	25	35	50	63	80	100	160 ~ 250	400	450	
		Z-25°C/Z+20°C	4	3	2	2	2	2	2	2	2	3	6	6	
		Z-40°C/Z+20°C	8	6	4	4	3	3	3	3	3	6	10	15	
		Z-55°C/Z+20°C	12	10	6	6	4	4	4	4	4	4	-	-	-

Lifetime Test			
Endurance 105°C (V _R applied)	Test	5 000 hours	> Ø 6.3mm
		2 000 hours	≤ Ø 6.3mm
	ΔC/C _R	≤ ±30% of initial measured value	
	tanδ	≤ 300% of initial specified value	
	I _{Leak}	≤ the initial specified value	
Shelf Life 105°C (V _R = 0)	Test	1 000 hours	
	ΔC/C _R	≤ ±30% of initial measured value	
	tanδ	≤ 300% of initial specified value	
	I _{Leak}	≤ the initial specified value	
	Before measurement: Restore capacitor to 20°C, apply V _R 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 _R	Within ±10% of initial value	
	tanδ	Less than specified value	
	I _{Leak}	Less than specified value	

STANDARD RATINGS

Part number shows blister tape on paper reel

V _R (V)	Standard	Vibration-proof	C _R (μF)	ø D (mm)	L (mm)	Z - Max. Impedance +20°C • 100kHz (mΩ)	I _R - Max. Ripple Current +105°C • 100kHz (mA rms)	CapXon Part Number
6.3	•		22	4.0	5.5	1350	80	RV220M6R3B055ETR □□
	•		33	4.0	5.5	1350	85	RV330M6R3B055ETR □□
	•		47	5.0	5.5	800	160	RV470M6R3C055ETR □□
	•		100	6.3	5.5	440	240	RV101M6R3E055ETR □□
	•		150	6.3	5.5	440	240	RV151M6R3E055ETR □□
	•	•	220	6.3	7.7	360	280	RV221M6R3E077ETR □□
	•	•	330	6.3	7.7	320	350	RV331M6R3E077ETR □□
	•	•	330	8.0	10.5	170	450	RV331M6R3F105ETR □□
	•	•	470	8.0	10.5	170	500	RV471M6R3F105ETR □□
	•	•	680	8.0	10.5	170	550	RV681M6R3F105ETR □□
	•	•	1000	8.0	10.5	170	550	RV102M6R3F105ETR □□
	•	•	1500	10.0	10.5	90	690	RV152M6R3G105ETR □□
	•	•	3300	12.5	14.0	66	1150	RV332M6R3Z140ETR □□
	•	•	6800	16.0	17.0	35	1800	RV682M6R3J170ETR □□
10	•		22	4.0	5.5	1350	90	RV220M010B055ETR □□
	•		33	5.0	5.5	800	160	RV330M010C055ETR □□
	•		47	6.3	5.5	440	230	RV470M010E055ETR □□
	•		100	6.3	5.5	440	240	RV101M010E055ETR □□
	•		150	6.3	5.5	440	250	RV151M010E055ETR □□
	•	•	220	6.3	7.7	360	280	RV221M010E077ETR □□
	•	•	330	8.0	10.5	170	500	RV331M010F105ETR □□
	•	•	470	8.0	10.5	170	550	RV471M010F105ETR □□
	•	•	680	10.0	10.5	90	690	RV681M010G105ETR □□
	•	•	1000	10.0	10.5	90	690	RV102M010G105ETR □□
	•	•	2200	12.5	14.0	66	1150	RV222M010Z140ETR □□
	•	•	4700	16.0	17.0	35	1800	RV472M010J170ETR □□
16	•		10	4.0	5.5	2100	90	RV100M016B055ETR □□
	•		22	5.0	5.5	800	150	RV220M016C055ETR □□
	•		33	6.3	5.5	440	230	RV330M016E055ETR □□
	•		47	6.3	5.5	440	230	RV470M016E055ETR □□
	•		100	6.3	5.5	440	255	RV101M016E055ETR □□
	•	•	150	6.3	7.7	360	280	RV151M016E077ETR □□
	•	•	220	6.3	7.7	360	280	RV221M016E077ETR □□
	•	•	330	8.0	10.5	170	550	RV331M016F105ETR □□
	•	•	470	8.0	10.5	170	600	RV471M016F105ETR □□
	•	•	470	10.0	10.5	90	670	RV471M016G105ETR □□
	•	•	680	10.0	10.5	90	750	RV681M016G105ETR □□
	•	•	1500	12.5	14.0	66	1150	RV152M016Z140ETR □□
	•	•	3300	16.0	17.0	35	1800	RV332M016J170ETR □□
25	•		10	4.0	5.5	2100	90	RV100M025B055ETR □□
	•		22	5.0	5.5	800	150	RV220M025C055ETR □□
	•		33	6.3	5.5	440	230	RV330M025E055ETR □□
	•		47	6.3	5.5	440	230	RV470M025E055ETR □□
	•	•	100	6.3	7.7	360	300	RV101M025E077ETR □□

□□ see description at end of standard ratings

STANDARD RATINGS

Part number shows blister tape on paper reel

V _R (V)	Standard	Vibration-proof	C _R (μF)	ø D (mm)	L (mm)	Z • Max. Impedance +20°C • 100kHz (mΩ)	I _R • Max. Ripple Current +105°C • 100kHz (mA rms)	CapXon Part Number
25	•	•	150	8.0	10.5	170	500	RV151M025F105ETR □□
	•	•	220	8.0	10.5	170	550	RV221M025F105ETR □□
	•	•	330	8.0	10.5	170	600	RV331M025F105ETR □□
	•	•	470	10.0	10.5	90	670	RV471M025G105ETR □□
	•	•	1000	12.5	14.0	66	1150	RV102M025Z140ETR □□
	•	•	2200	16.0	17.0	35	1800	RV222M025J170ETR □□
35	•		4.7	4.0	5.5	1900	90	RV4R7M035B055ETR □□
	•		10	5.0	5.5	800	150	RV100M035C055ETR □□
	•		22	6.3	5.5	440	230	RV220M035E055ETR □□
	•		33	6.3	5.5	440	230	RV330M035E055ETR □□
	•		47	6.3	5.5	440	240	RV470M035E055ETR □□
	•	•	100	8.0	10.5	170	450	RV101M035F105ETR □□
	•	•	150	8.0	10.5	170	550	RV151M035F105ETR □□
	•	•	220	8.0	10.5	160	600	RV221M035F105ETR □□
	•	•	220	10.0	10.5	90	670	RV221M035G105ETR □□
	•	•	330	10.0	10.5	80	850	RV331M035G105ETR □□
	•	•	470	12.5	14.0	66	1150	RV471M035Z140ETR □□
	•	•	680	12.5	14.0	66	1150	RV681M035Z140ETR □□
	•	•	1000	16.0	17.0	48	1800	RV102M035J170ETR □□
	•	•	1500	16.0	17.0	48	1800	RV152M035J170ETR □□
50	•		1	4.0	5.5	4400	60	RV010M050B055ETR □□
	•		2.2	4.0	5.5	3900	60	RV2R2M050B055ETR □□
	•		3.3	4.0	5.5	3900	60	RV3R3M050B055ETR □□
	•		4.7	4.0	5.5	3900	75	RV4R7M050B055ETR □□
	•		4.7	5.0	5.5	1520	85	RV4R7M050C055ETR □□
	•		10	6.3	5.5	1400	165	RV100M050E055ETR □□
	•		22	6.3	5.5	1200	165	RV220M050E055ETR □□
	•	•	33	6.3	7.7	680	185	RV330M050E077ETR □□
	•	•	47	6.3	7.7	680	185	RV470M050E077ETR □□
	•	•	68	8.0	10.5	340	300	RV680M050F105ETR □□
	•	•	100	8.0	10.5	340	350	RV101M050F105ETR □□
	•	•	100	10.0	10.5	250	555	RV101M050G105ETR □□
	•	•	150	10.0	10.5	250	555	RV151M050G105ETR □□
	•	•	220	10.0	10.5	230	600	RV221M050G105ETR □□
	•	•	470	16.0	17.0	73	1610	RV471M050J170ETR □□
	•	•	680	16.0	17.0	73	1610	RV681M050J170ETR □□
	•	•	1000	16.0	17.0	73	1610	RV102M050J170ETR □□
63	•		4.7	5.0	5.5	2600	50	RV4R7M063C055ETR □□
	•		10	6.3	5.5	1500	80	RV100M063E055ETR □□
	•	•	22	6.3	7.7	1000	120	RV220M063E077ETR □□
	•	•	33	8.0	10.5	700	250	RV330M063F105ETR □□
	•	•	47	8.0	10.5	650	280	RV470M063F105ETR □□
	•	•	68	10.0	10.5	380	400	RV680M063G105ETR □□
	•	•	100	10.0	10.5	240	420	RV101M063G105ETR □□

□□ see description at end of standard ratings

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63	•	•	100	12.5	14.0	220	540	RV101M063Z140ETR □□
	•	•	150	12.5	14.0	180	800	RV151M063Z140ETR □□
	•	•	220	12.5	14.0	160	830	RV221M063Z140ETR □□
	•	•	470	16.0	17.0	82	1410	RV471M063J170ETR □□
80	•	•	10	6.3	7.7	2600	60	RV100M080E077ETR □□
	•	•	22	8.0	10.5	1700	130	RV220M080F105ETR □□
	•	•	33	8.0	10.5	1600	140	RV330M080F105ETR □□
	•	•	47	10.0	10.5	700	210	RV470M080G105ETR □□
	•	•	68	12.5	14.0	500	500	RV680M080Z140ETR □□
	•	•	100	12.5	14.0	450	550	RV101M080Z140ETR □□
	•	•	150	12.5	14.0	420	600	RV151M080Z140ETR □□
	•	•	220	16.0	17.0	380	700	RV221M080J170ETR □□
	•	•	330	16.0	17.0	320	800	RV331M080J170ETR □□
	•	•	10	6.3	7.7	3900	65	RV100M100E077ETR □□
	•	•	22	8.0	10.5	1900	130	RV220M100F105ETR □□
	•	•	33	10.0	10.5	1250	200	RV330M100G105ETR □□
100	•	•	47	10.0	10.5	950	390	RV470M100G105ETR □□
	•	•	47	12.5	14.0	900	500	RV470M100Z140ETR □□
	•	•	68	12.5	14.0	570	600	RV680M100Z140ETR □□
	•	•	100	12.5	14.0	480	640	RV101M100Z140ETR □□
	•	•	100	16.0	17.0	450	800	RV101M100J170ETR □□
	•	•	10	8.0	10.5	-	88	RV100M160F105ETR □□
	•	•	18	10.0	10.5	-	104	RV180M160G105ETR □□
	•	•	22	10.0	10.5	-	112	RV220M160G105ETR □□
160	•	•	27	12.5	14.0	-	136	RV270M160Z140ETR □□
	•	•	33	12.5	14.0	-	152	RV330M160Z140ETR □□
	•	•	47	16.0	17.0	-	416	RV470M160J170ETR □□
	•	•	68	16.0	17.0	-	480	RV680M160J170ETR □□
	•	•	10	12.5	14.0	-	128	RV100M200Z140ETR □□
	•	•	22	12.5	14.0	-	168	RV220M200Z140ETR □□
200	•	•	27	12.5	14.0	-	184	RV270M200Z140ETR □□
	•	•	33	16.0	17.0	-	352	RV330M200J170ETR □□
	•	•	47	16.0	17.0	-	416	RV470M200J170ETR □□
	•	•	4.7	8.0	10.5	-	80	RV47M250F105ETR □□
	•	•	4.7	12.5	14.0	-	104	RV47M250Z140ETR □□
250	•	•	6.8	10.0	10.5	-	96	RV68M250G105ETR □□
	•	•	6.8	12.5	14.0	-	125	RV68M250Z140ETR □□
	•	•	10	10.0	10.5	-	120	RV100M250G105ETR □□
	•	•	15	12.5	14.0	-	192	RV150M250Z140ETR □□
	•	•	22	16.0	17.0	-	288	RV220M250J170ETR □□
	•	•	2.2	8.0	10.5	-	40	RV2R2M400F105ETR □□
	•	•	3.3	8.0	10.5	-	48	RV3R3M400F105ETR □□
400	•	•	3.9	10.0	10.5	-	56	RV3R9M400G105ETR □□
	•	•	4.7	10.0	10.5	-	64	RV47M400G105ETR □□

□□ see description at end of standard ratings

STANDARD RATINGS

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400	•	•	6.8	12.5	14.0	-	96	RV6R8M400Z140ETR □□
	•	•	8.2	12.5	14.0	-	104	RV8R2M400Z140ETR □□
	•	•	10	12.5	14.0	-	112	RV100M400Z140ETR □□
	•	•	12	16.0	17.0	-	152	RV120M400J170ETR □□
	•	•	22	16.0	17.0	-	192	RV220M400J170ETR □□
450	•	•	3.3	10.0	10.5	-	64	RV3R3M450G105ETR □□
	•	•	3.9	10.0	10.5	-	64	RV3R9M450G105ETR □□
	•	•	4.7	12.5	14.0	-	80	RV4R7M450Z140ETR □□
	•	•	6.8	12.5	14.0	-	96	RV6R8M450Z140ETR □□
	•	•	8.2	12.5	14.0	-	104	RV8R2M450Z140ETR □□
	•	•	10	12.5	14.0	-	112	RV100M450Z140ETR □□
	•	•	12	16.0	17.0	-	144	RV120M450J170ETR □□
	•	•	15	16.0	17.0	-	160	RV150M450J170ETR □□

□□: 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

MULTIPLIER K_f for RIPPLE CURRENT vs. FREQUENCY

< 160V

C _R (μF) / Frequency (Hz)	50/60	100/120	500	1k	10k	50k ~ 100k
1 ≤ C _R ≤ 10	0.47	0.59	0.76	0.85	0.97	1
10 < C _R ≤ 6800	0.52	0.65	0.8	0.89	0.97	1

≥ 160V

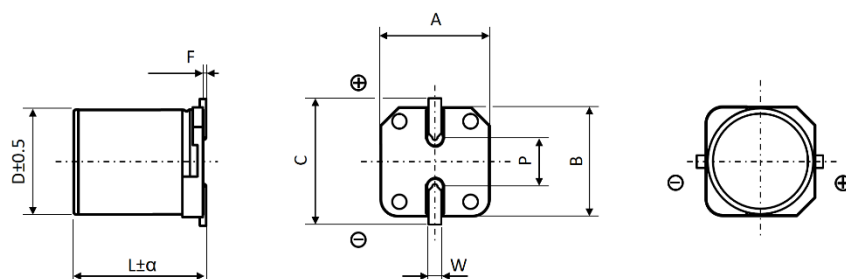
C _R (μF) / Frequency (Hz)	50/60	100/120	400	1k	10k	50k ~ 100k
2.2 ≤ C _R ≤ 68	0.5	0.63	0.78	0.88	0.97	1

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.

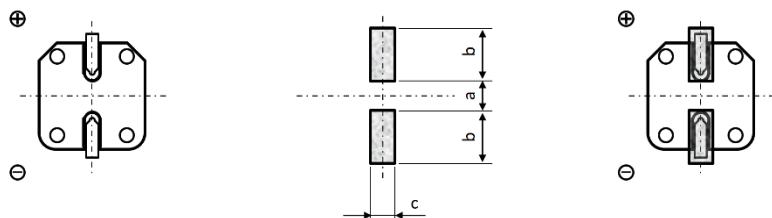
				
General Precautions & Guidelines	Packaging Information	Vibration Test Profiles	3D Models	Reliability Tests

DIMENSIONS STANDARD PACKAGE ▀ All dimensions in mm



∅ D	L	α	A ± 0.2	B ± 0.2	C ± 0.2	F	P ± 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	7.7	Max	6.6	6.6	7.2	0.3 max.	2.2	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

PAD LAYOUT STANDARD PACKAGE ▀ All dimensions in mm



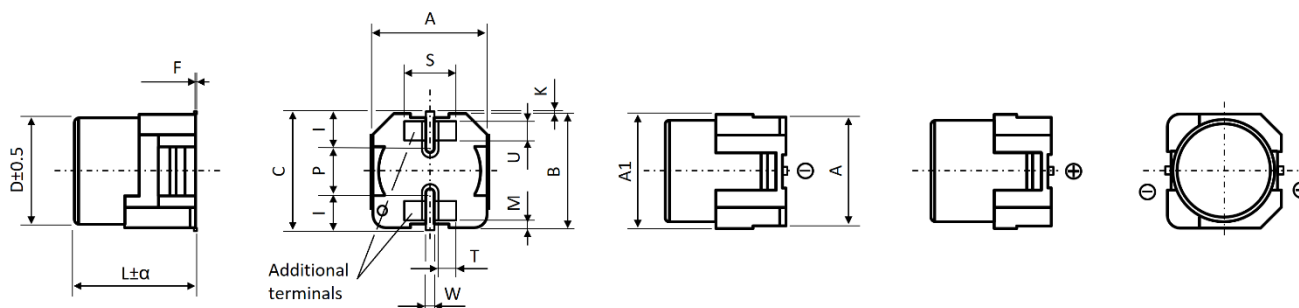
Bottom view

Recommended land patterns

Capacitor mounted on pads

∅ D	L	a	b	c
4.0	5.5	1.0	2.6	1.6
5.0	5.5	1.4	3.0	1.6
6.3	5.5	2.1	3.5	1.6
6.3	7.7	2.1	3.5	1.6
8.0	10.5	2.8	4.2	1.9
10.0	10.5	4.3	4.4	1.9
12.5	14.0	4.3	5.8	2.5
16.0	17.0	6.0	6.5	3.5

DIMENSIONS VP PACKAGE (VIBRATION-PROOF) Ø D6.3 ▀ All dimensions in mm

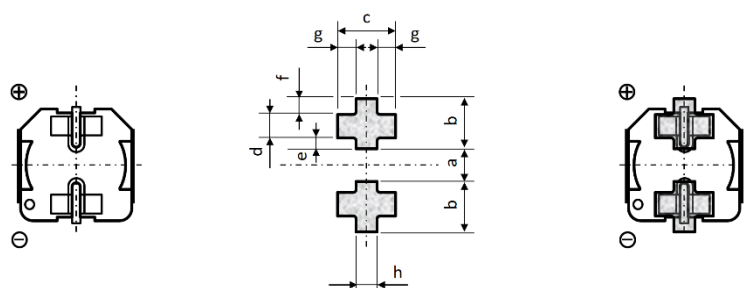


Note: Additional terminals electrical connected to anode or cathode terminal.

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

ϕD	L	$I \pm 0.1$	$M \pm 0.1$	$P \pm 0.2$	$S \pm 0.1$	$T \pm 0.1$	$U \pm 0.1$	$W \pm 0.1$
6.3	8.0	2.5	0.35	2.2	3.2	1.1	0.7	0.65

PAD LAYOUT VP PACKAGE (VIBRATION-PROOF) Ø D6.3 ▀ All dimensions in mm



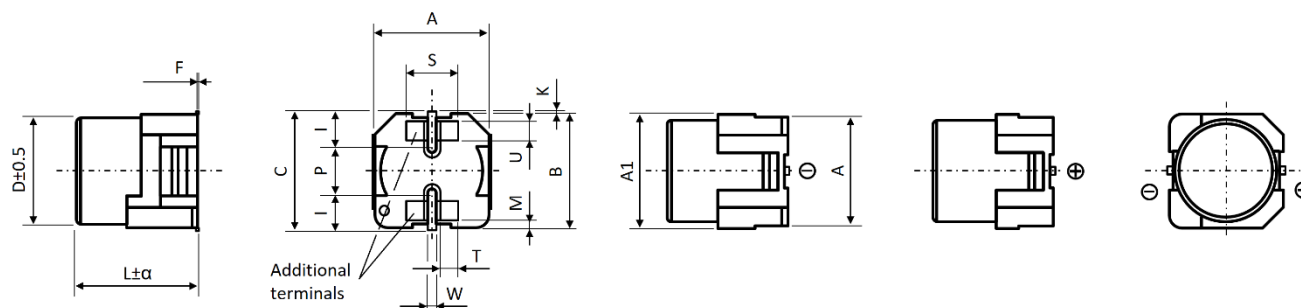
Bottom view

Recommended land patterns

Capacitor mounted on pads

ϕD	L	a	b	c	d	e	f	g	h
6.3	8.0	1.2	3.6	3.2	2.0	0.95	0.65	1.0	1.2

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

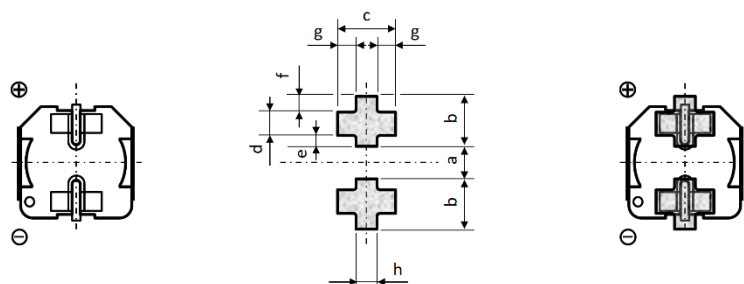


Note: Additional terminals electrical connected to anode or cathode terminal.

ϕD	L	α	$A \pm 0.2$	A1 (max.)	$B \pm 0.2$	C (max.)	F	$K \pm 0.2$
8.0	10.5	0.5	8.3	8.8	8.3	10.0	0 to 0.15	0.7
10.0	10.5	0.5	10.3	10.8	10.3	12.0	0 to 0.15	0.7

ϕD	L	$I \pm 0.1$	$M \pm 0.1$	$P \pm 0.2$	$S \pm 0.1$	$T \pm 0.1$	$U \pm 0.1$	$W \pm 0.1$
8.0	10.5	3.3	0.75	3.1	3.3	0.9	0.8	1.2
10.0	10.5	3.5	0.9	4.6	3.3	0.9	0.8	1.2

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



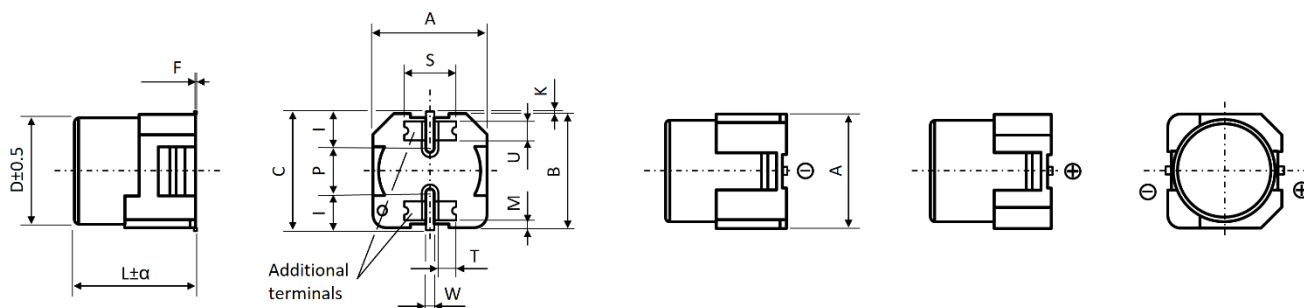
Bottom view

Recommended land patterns

Capacitor mounted on pads

ϕD	L	a	b	c	d	e	f	g	h
8.0	10.5	2.7	4.0	4.7	1.3	1.0	1.7	1.1	2.5
10.0	10.5	3.9	4.4	4.7	1.3	1.2	1.9	1.1	2.5

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

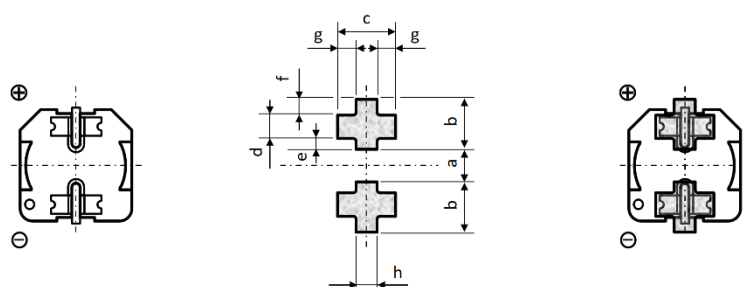


Note: Additional terminals electrical connected to anode or cathode terminal.

ϕD	L	α	$A \pm 0.2$	$B \pm 0.2$	C (max.)	F	$K \pm 0.3$
12.5	14.0	1.0	13.0	13.0	14.5	0 to 0.15	0.7
16.0	17.0	1.0	17.0	17.0	19.0	0 to 0.15	0.7

ϕD	L	$I \pm 0.1$	$M \pm 0.1$	$P \pm 0.2$	$S \pm 0.1$	$T \pm 0.1$	$U \pm 0.1$	$W \pm 0.1$
12.5	14.0	5.0	0.7	4.4	6.0	2.15	2.2	1.2
16.0	17.0	5.8	1.0	6.7	5.8	1.9	3.0	1.4

PAD LAYOUT VP PACKAGE (VIBRATION-PROOF) Ø D12.5 and D16 ▀ All dimensions in mm



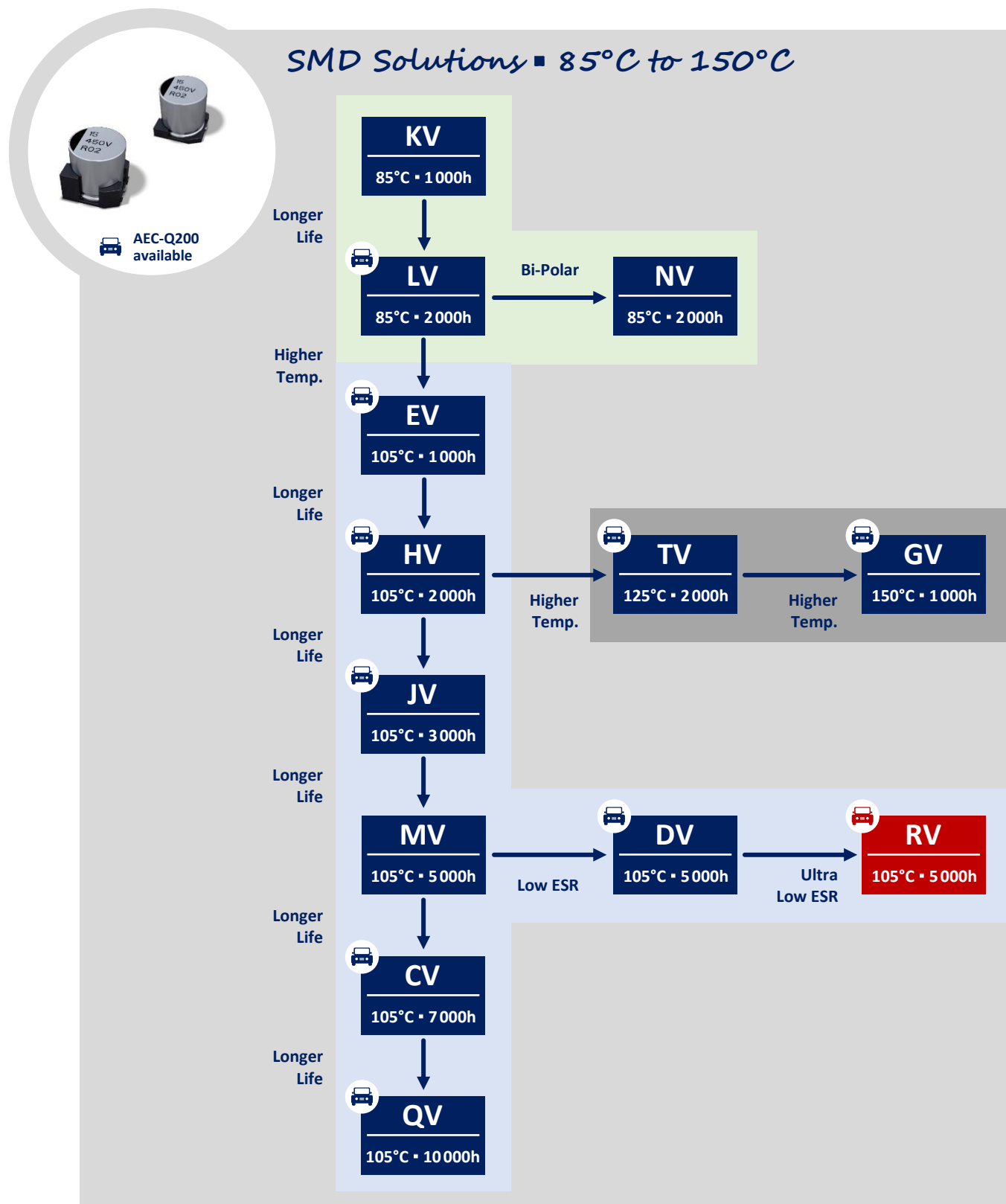
Bottom view

Recommended land patterns

Capacitor mounted on pads

ϕD	L	a	b	c	d	e	f	g	h
12.5	14.0	3.9	6.0	6.9	2.8	1.3	1.9	2.2	2.5
16.0	17.0	5.8	6.8	6.2	3.6	1.3	1.9	1.7	2.8

GROUP CHART



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