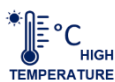


### TV SERIES ■ HIGH TEMP., AUTOMOTIVE 125°C TYPE

#### KEY FEATURES



- **ALUMINUM ELECTROLYTIC CAPACITOR** ■ SMD type
- Endurance: 125°C ■ 1 000 hours up to 2 000 hours
- Especially for applications with high ambient temperatures
- Vibration-proof (VP) version (up to 30g) available upon request
- AEC-Q200 version available



#### SPECIFICATIONS

Items		Performance Characteristics											
Operating Temperature Range		-40 ~ +125°C											
Rated Voltage Range	V <sub>R</sub>	10 ~ 50V 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>	10 ~ 330μF						1 ~ 18μF					
Cap. Tolerance	ΔC	±20% (120Hz ▪ 20°C)											
Leakage Current (20°C ▪ V <sub>R</sub> applied)	I <sub>LEAK</sub>	≤ 0.03·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 1 minute						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)	10	16	25	35	50	160	200	250	400	450	
		tanδ (%)	32	24	21	18	18	20	20	25	25	30	
Low Temperature Characteristics at 120Hz	Z ratio max.	V <sub>R</sub> (V DC)	10	16	25	35	50	160	200	250	400	450	
		Z-25°C/Z+20°C	12	8	6	4	4	8	8	8	12	15	
		Z-40°C/Z+20°C	14	8	6	4	4	-	-	-	-	-	
Lifetime Test													
Endurance 125°C (V <sub>R</sub> applied)	Test	2 000 hours						Ø 8 x 10.5mm & Ø 10 x 10.5mm					
		1 000 hours						Ø 6.3 x 7.7mm & Ø 8 x 6.5mm					
	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 125°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

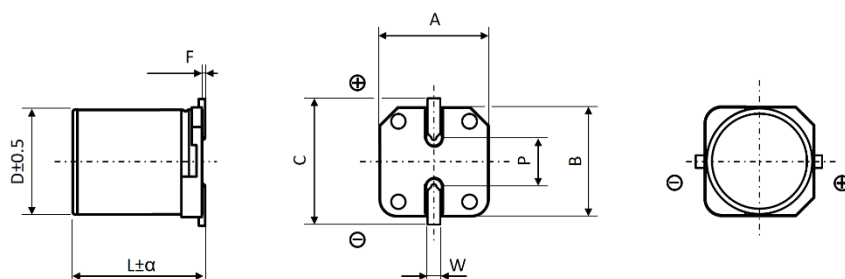
Part number shows blister tape on paper reel

V <sub>R</sub> (V)	Standard	Vibration-proof	C <sub>R</sub> (μF)	ø D (mm)	L (mm)	I <sub>R</sub> • Max. Ripple Current +125°C • 120Hz (mA rms)	CapXon Part Number
10	•	•	100	6.3	7.7	53	TV101M010E077ETR □□
	•		100	8.0	6.5	58	TV101M010F065ETR □□
	•	•	220	8.0	10.5	90	TV221M010F105ETR □□
	•	•	330	10.0	10.5	112	TV331M010G105ETR □□
16	•	•	100	8.0	10.5	66	TV101M016F105ETR □□
	•	•	220	10.0	10.5	102	TV221M016G105ETR □□
25	•	•	47	6.3	7.7	45	TV470M025E077ETR □□
	•		47	8.0	6.5	48	TV470M025F065ETR □□
	•	•	100	8.0	10.5	74	TV101M025F105ETR □□
	•	•	220	10.0	10.5	116	TV221M025G105ETR □□
35	•	•	33	6.3	7.7	40	TV330M035E077ETR □□
	•		33	8.0	6.5	44	TV330M035F065ETR □□
	•	•	47	8.0	10.5	52	TV470M035F105ETR □□
	•	•	100	10.0	10.5	80	TV101M035G105ETR □□
50	•	•	10	6.3	7.7	22	TV100M050E077ETR □□
	•		10	8.0	6.5	24	TV100M050F065ETR □□
	•	•	22	6.3	7.7	35	TV220M050E077ETR □□
	•		22	8.0	6.5	38	TV220M050F065ETR □□
	•	•	33	8.0	10.5	46	TV330M050F105ETR □□
	•	•	47	10.0	10.5	58	TV470M050G105ETR □□
160	•	•	6.8	8.0	10.5	42	TV6R8M160F105ETR □□
	•	•	10	10.0	10.5	59	TV100M160G105ETR □□
	•	•	18	10.0	10.5	65	TV180M160G105ETR □□
200	•	•	4.7	8.0	10.5	36	TV4R7M200F105ETR □□
	•	•	6.8	10.0	10.5	59	TV6R8M200G105ETR □□
	•	•	10	10.0	10.5	59	TV100M200G105ETR □□
250	•	•	3.3	8.0	10.5	28	TV3R3M250F105ETR □□
	•	•	4.7	10.0	10.5	59	TV4R7M250G105ETR □□
400	•	•	1	8.0	10.5	27	TV010M400F105ETR □□
	•	•	1.8	8.0	10.5	30	TV1R8M400F105ETR □□
	•	•	2.2	8.0	10.5	33	TV2R2M400F105ETR □□
	•	•	2.2	10.0	10.5	37	TV2R2M400G105ETR □□
	•	•	3.3	8.0	10.5	36	TV3R3M400F105ETR □□
	•	•	3.3	10.0	10.5	39	TV3R3M400G105ETR □□
	•	•	4.7	10.0	10.5	46	TV4R7M400G105ETR □□
	•	•	5.6	10.0	10.5	50	TV5R6M400G105ETR □□
450	•	•	2.2	8.0	10.5	28	TV2R2M450F105ETR □□
	•	•	3.3	10.0	10.5	32	TV3R3M450G105ETR □□
	•	•	3.9	10.0	10.5	38	TV3R9M450G105ETR □□

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

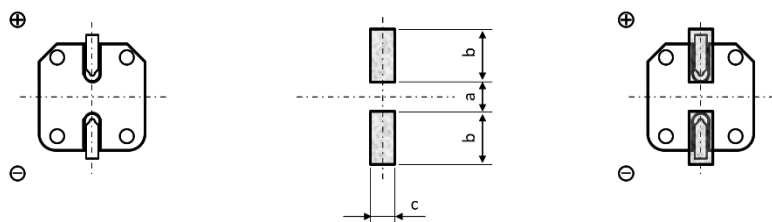
□□: Enter **X** for AEC-Q200  
 □□: Enter **XW** for AEC-Q200 and Vibration proof version

### DIMENSIONS STANDARD PACKAGE ▀ All dimensions in mm



∅ D	L	α	A ± 0.2	B ± 0.2	C ± 0.2	F	P ± 0.2	W
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

### PAD LAYOUT STANDARD PACKAGE ▀ All dimensions in mm



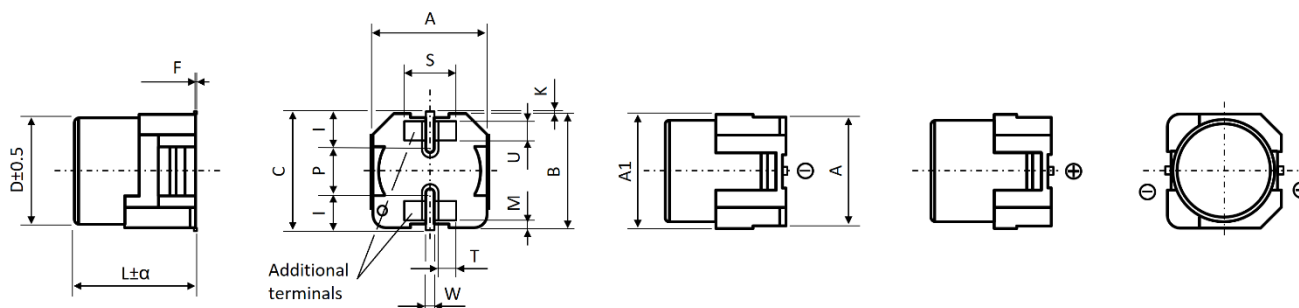
Bottom view

Recommended land patterns

Capacitor mounted on pads

∅ D	L	a	b	c
6.3	7.7	2.1	3.5	1.6
8.0	6.5	2.1	4.5	1.6
8.0	10.5	2.8	4.2	1.9
10.0	10.5	4.3	4.4	1.9

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

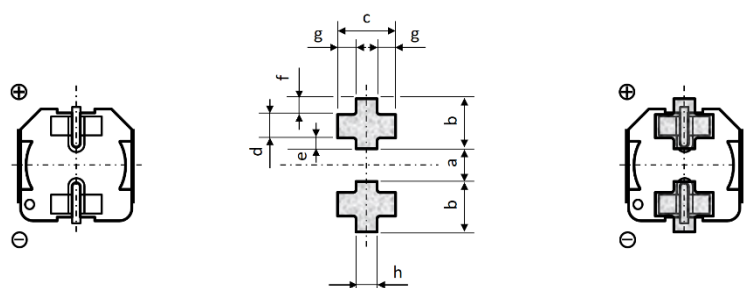


**Note:** Additional terminals electrical connected to anode or cathode terminal.

$\phi D$	L	$\alpha$	$A \pm 0.2$	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

$\phi D$	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



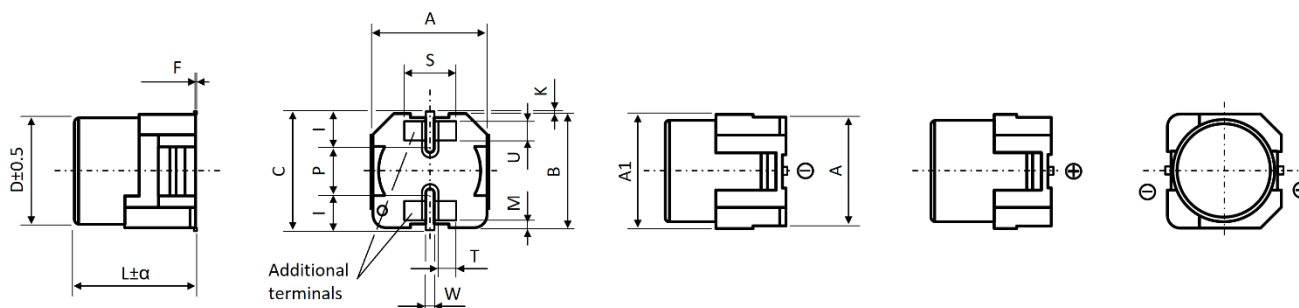
Bottom view

Recommended land patterns

Capacitor mounted on pads

$\phi D$	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

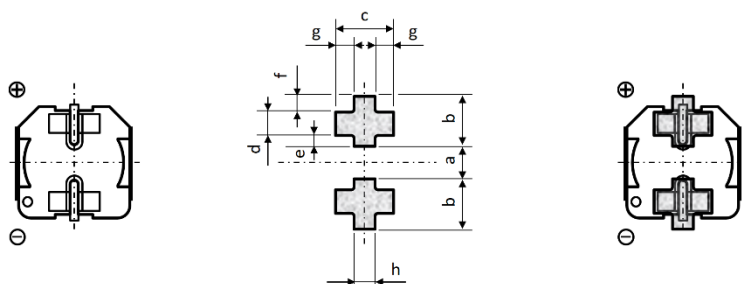


**Note:** Additional terminals electrical connected to anode or cathode terminal.

$\phi D$	L	$\alpha$	$A \pm 0.2$	$A1 \text{ (max.)}$	$B \pm 0.2$	$C \text{ (max.)}$	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

$\phi D$	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




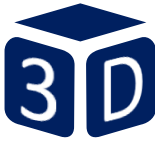

$\phi D$	L	a	b	c	d	e	f	g	h
8.0	10.5	2.7	4.0	4.7	1.3	1.0	1.7	1.1	2.5
10.0	10.5	3.9	4.4	4.7	1.3	1.2	1.9	1.1	2.5

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

$C_R$ ( $\mu F$ ) / Frequency (Hz)	50/60	100/120	500	1k	10k ~ 100k
$1 \leq C_R \leq 47$	0.8	1	1.2	1.3	1.5
$100 < C_R \leq 330$	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>

### 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.

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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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### GROUP CHART

