

Data Sheet

Customer: _____

Product: SMD Aluminum Electrolytic Capacitors – AEHV Series
AEC-Q200 version available

Size : 4x5.5mm ~ 18x21.5mm

Issued Date: 20-Dec.-2023

Edition: Ver. 1

Record of change

Date	Ver.	Description	Page
20-Dec.-2023	1		

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Prepared by	Checked by	Approved by	Accepted by (customer)
20-Dec-2023	20-Dec-2023	20-Dec-2023	
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- SMD TYPE Reflow Soldering is available
- Life 2000 hours at 105°C
- Available For High Density Mounting
- AEC-Q200 version available

Characteristics

Temperature Range	6.3 ~ 100V			160 ~ 400V				450V				
	-55°C ~ +105°C			-40°C ~ +105°C				-25°C ~ +105°C				
Capacitance Tolerance	±20% (at 20°C, 120Hz)											
Leakage Current	SIZE A~F: I≤0.01CV or 3uA, whichever is greater 2 minutes after Rated Voltage applied SIZE G~L(6.3V~100V): I≤0.03CV whichever is greater 2 minutes after Rated Voltage applied SIZE G~L(160V~450V): I≤0.04CV +100uA whichever is greater 5 minutes after rated voltage applied											
Dissipation Factor (tanδ)Max (at 20°C, 120Hz)	Voltage (V)	6.3	10	16	25	35	50	63	100	160~250	400~450	
	SIZE A~C	0.30	0.24	0.20	0.16	0.14	0.14	0.12	0.10	-	-	
	SIZE D~F	0.35	0.26	0.24	0.18	0.14	0.14	0.12	0.10	0.20	0.25	
	SIZE G~L	0.40	0.38	0.34	0.26	0.22	0.18	0.14	0.10	0.20	0.25	
When the capacitance exceeds 1,000uF, 0.02 shall be added every 1,000uF increase.												
Stability at Low Temperature (at 120Hz)	Voltage (V)	6.3	10	16	25	35	50	63	100	160~250	400~450	
	Z -25°C	SIZE A~F	4	4	3	2	2	2	2	3	-	-
	/Z +20°C	SIZE G~L	5	4	3	2	2	2	2	2	3	6
	Z -40°C	SIZE A~F	12	8	6	4	3	3	3	4		
/Z 20°C	SIZE G~L	10	8	6	4	3	3	3	3	6	10	
Load Life	After the rated voltage has been applied for 2000 hours at 105°C		Capacitance change	Within ±25% of initial value								
			D.F. tanδ	Less than ±300% of specified value								
			Leakage current	Less than Initial specified value								
Shelf Life	After storage for 1000 hours at 105°C, with no voltage applied and being stabilized at +20°C, Capacitor shall meet the limit specified in load life.(Refer to JIS C5101-4 4.1)											

Diagram of dimensions

SIZE	Dφ	L	A	B	C	W	P±0.2
A	4	5.5±0.3	4.3	4.3	5.1	0.5~0.8	1.0
B	5	5.5±0.3	5.3	5.3	5.9	0.5~0.8	1.5
C	6.3	5.5±0.3	6.6	6.6	7.2	0.5~0.8	2.0
C8	6.3	7.7±0.3	6.6	6.6	7.2	0.5~0.8	2.0
D	8	6.5±0.3	8.4	8.4	9.0	0.5~0.8	2.3
E	8	10.5±0.3	8.4	8.4	9.0	0.7~1.1	3.1
F	10	10.5±0.3	10.4	10.4	11.0	0.7~1.3	4.5
G	12.5	14±0.5	13.5	13.5	15.0	1.1~1.4	4.5
H	12.5	16±0.5	13.0	13.0	15.0	1.1~1.4	4.5
I	16	17±0.5	17.0	17.0	18.0	1.1~1.4	6.6
J	16	21.5±0.5	17.0	17.0	18.0	1.1~1.4	6.4
K	18	16.5±0.5	19.0	19.0	20.0	1.1~1.4	6.4
L	18	21.5±0.5	19.0	19.0	20.0	1.1~1.4	6.4

Size A~F refer to Fig. 1,

Size G~L refer to Fig. 2

Fig. 1

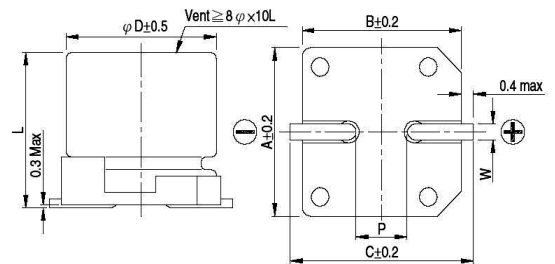
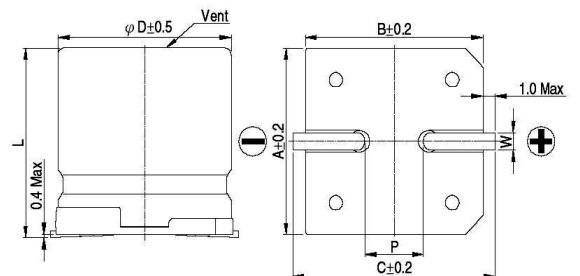


Fig. 2



Multiplier for Ripple Current vs Frequency

CAP(uF)\Freq(Hz)	60(50)	120	500	1K	≥10K
0.1 ≤ CAP ≤ 100	0.8	1.0	1.20	1.30	1.50
100 < CAP	0.8	1.0	1.10	1.15	1.20

Case size & Maximum Ripple Current (mA rms 105°C 120Hz)

Cap. WV	6.3		10		16		25		35		50	
uF	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC
1											A	7
2.2											A	11
3.3											A	14
4.7							A	13	A	15	A,B	16/19
10					A	18	A,B	20/28	A, B	24/25	B,C	27/30
22	A	22	A	28	A,B	22/30	B	30	B,C	40/42	C,D	45/55
33	A,B	22/34	A,B	22/35	B	34	B,C	42/48	C,D	52/59	C8,D	60/90
47	A,B	25/36	B	38	B,C	31/50	C,D	56/79	C,C8,D	60/60/65	C8,E	63/155
100	B,C	46/60	B,C	50/60	C,D	60/62	C8,D,E	91/100/160	C8,E	84/180	E,F	140/315
220	C,C8	74/105	C,C8,D	70/105/160	C8,D	105/160	E	155	E,F	190/270	F	220
330	C8,D,E	105/190/190	C8,E	125/195	E	195	E,F	250/340	F	300	G	490
470	C8,E	124/210	C8,E,F	120/210/420	E,F	230/380	F	300	G	460	I	550
1000	E,F	350/230	F	310	F,G	360/580	G,H	580/550	I	800	K	990
2200	G	650	G	680	I	900	I	900	K	1050		
3300	G/H	700/850	I	950	I	950	J, K	1200/1150				
4700	I	1000	I	1000	J, K	1275/1225						
6800	J, K	1350/1290	J, K	1350/1290								

Cap. WV	63		100		160		200		250		400		450	
uF	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC
1	A	7	A	7										
2.2	A	12	B,C	9/13										
3.3	B	17	C	20					G	60			G	40
4.7	B, C	22	C,C8	21/28					G	65	E,G	28/45	G	45
10	C	32	C,C8	25/35			G	80	G	70	G	50	G,H	75/80
22	C8	58	E	100			H	110	G	105	I	85	I	85
33	E	140	F	150	G	95	H	120	I	180	K	100	K	100
47	E	170	F,G	150/250	I	240	I	220	I	220	L	130		
100	F	310	G	380	I	250	K	280	K	260				
220	G	470	I	450										
330	I	650	J, K	750/590										
470	I	700	L	980										

Part Numbering System

AEHV □ □ □ **M** □ □ **R** □
 Series Capacitance Tolerance Rated Voltage Package Case Size

Reliability for Car- Tronics

AEC Q-200_REV D

Endurance Characteristic:

No.	Item	Conditions	Specification		Reference	
1	High Temperature Load Life Test	Capacitor is placed in the highest temperature with rated voltage for 5000+72/-0Hrs.	Capacitance change	Within ±30% of initial value	MIL-STD-202 Method 108	
			Tanδ	Less than 300% of specified value		
			Leakage Current	Within specified value		
			Appearance	No abnormality		
2	High Temperature Exposure (Storage)	Capacitor is placed in the highest temperature for 1000+48/-0Hrs.	Capacitance change	Within ±30% of initial value	MIL-STD-202 Method108	
			Tanδ	Less than 300% of specified value		
			Leakage Current	Within specified value		
			Appearance	No abnormality		
3	Temperature Cycling	Step1: Max. rated temperature±3/-3°C(30±3mins) Step2: Min. rated temperature±3/-3°C(30±3mins) Max.transfer time: 1min According to the step1 to step2, and do 1000cycles	Capacitance change	Within ±10% of initial value	JESD22 Method JA-104	
			Tan δ	Within specified value		
			Leakage Current	Within specified value		
			Appearance	No abnormality		
4	Biased Humidity	Capacitor is placed at the temperature of 85±3°C, and humidity of 85% with rated voltage for 1000Hrs	Capacitance change	Within ±20% of initial value	MIL-STD-202 Method 103	
			Tanδ	Less than 150% of specified value		
			Leakage Current	Within specified value		
			Appearance	No abnormality		
5	Physical Dimension		Appearance	No abnormality	JESD22 Method JB-100	
6	Resistance To Solvent	1.The capacitor shall be immersed into the isopropyl. 2.Immersion time: 3 +0.5/-0 minutes at 25±5°C. 3.Use wool brush to brush capacitor for 10 times. Conduct the steps 1~3 for 3 cycles.	Print cannot fall off or ambiguous		MIL-STD-202 Method 215	
7	Mechanical Shock	Capacitor is placed on the PCB and fixed.Conditions as below:		Capacitance change	Within ±10% of initial value	MIL-STD-202 Method 213
		Test items	For automobile	Tanδ	Within specified value	
		Acceleration speed	100g(1000 m/s²)	Leakage Current	Within specified value	
		Shocking direction	X-Y-Z three axles (6 planes)	Appearance	No abnormality	
		Duration(D)(ms)	6			
		Velocity(m/s)	3.75			
		Wave	Half sine			
		Test times	18times (3*6=18)			
8	Vibration	Capacitor is placed in the PCB and fixed. Setting the acceleration (5g)and frequency (10-2000Hz) according to the test condition ,vibration 4Hrs from three directions (X-Y-Z).	Capacitance change	Within ±10% of initial value	MIL-STD-202 Method 204	
			Tan δ	Within specified value		
			Leakage Current	Within specified value		
			Appearance	No abnormality		

No.	Item	Conditions	Specification	Reference																																										
9	Resistance to Soldering Heat	According to the Control standard operating of Jarson, test twice.	Capacitance change	Within ±10% of initial value	MIL-STD-202 Method 210																																									
			Tanδ	Within specified value																																										
			Leakage Current	Within specified value																																										
		Appearance	No abnormality																																											
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10	Solderability test (SMD)	Solderability test 1: Solder bath temperature: 235±5°C Duration:5±0/-0.5s Solderability test 2:Solder bath temperature:260±5°C Duration:7±0.5s	Sn is more than 95% in the surface of terminal	J-STD-002B																																										
11	Electrical Characterization	Whether there is abnormality about electrical characterization in the test that under the ensurance temperature(the lowest ,the highest, atmospheric temperature).	Appearance: No abnormality	User Spec.																																										
12	Board Flex	Capacitor is placed in the PCB and pressed to deviate from Original fulcrum more than 2mm for 60 (+5) s.	Capacitance change	Within ±10% of initial value	AEC-Q 200-005																																									
			Tanδ	Within specified value																																										
			Leakage Current	Within specified value																																										
			Appearance	No abnormality																																										
13	Terminal Strength (SMD)	Test condition: Capacitor is placed in the PCB by solder paste and do high temperature test (Reflow) to endurance the power of 1.8kg for 60S,no dropping condition.	Capacitance change	Within ±10% of initial value	AEC-Q 200-006																																									
			Tanδ	Within specified value																																										
			Leakage Current	Within specified value																																										
			Appearance	No abnormality																																										
14	Surge Voltage	Capacitor is placed at 15°C~35°C with surge voltage for 30±5(charging) and 330s(discharging),do surge voltage test continuity for 1000 times. Applying voltage:	Capacitance change	Within ±20% of initial value	AEC-Q 200-007																																									
			Tanδ	Less than 175% of specified value																																										
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