

Data Sheet

Customer: _____

Product: Aluminum Electrolytic Capacitors – AEHL Series

AEC-Q200 version available

Size : 22x25mm ~ 35x60mm _____

Issued Date: 16-Oct-2023 _____

Edition: Ver. 1 _____

Record of change

Date	Ver.	Description	Page
16-Oct-2023	1		

HITANO ENTERPRISE CORP.

7F-7, No. 3, Wu Chuan 1st Road, New Taipei Industrial Park,

New Taipei City, TAIWAN, R.O.C.

Tel: +886 2 2299 1331 (Rep.)

Fax: +886 2 2298 2466, 2298 2969

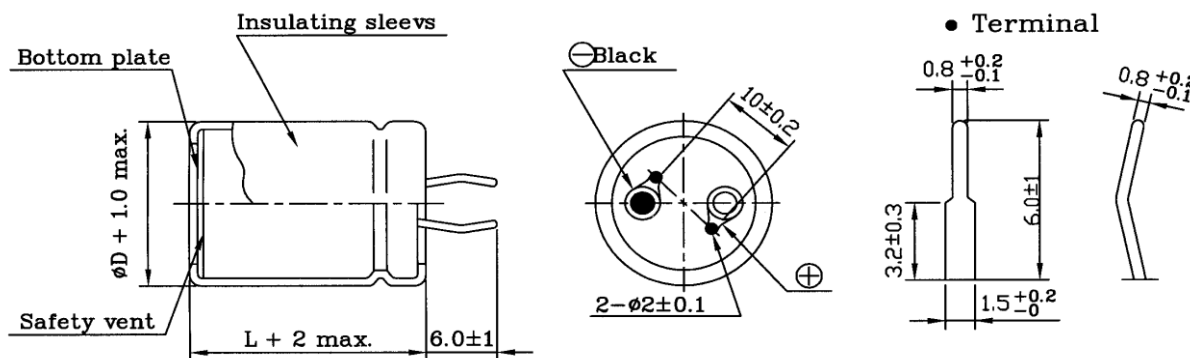
Prepared by	Checked by	Approved by	Accepted by (customer)
16-Oct-2023	16-Oct-2023	16-Oct-2023	
<i>Andy Hsu</i>	<i>Hwa Wu</i>	<i>Hwa Wu</i>	

- 105°C 5000 hours assured life.
- Directly mountable on printed circuit board without holders.
- Low ESR and long life.
- Terminal spacing fixed at 10mm for PC board plug in.
- Aluminum case designed explosion-proof vent.
- AEC-Q200 version available

Characteristics

Voltage Range	10 ~ 100V				160 ~ 500V				
Capacitance Range	560 ~ 47000uF				47 ~ 1500uF				
Temperature Range	-40 ~ +105°C				-25 ~ +105°C				
Capacitance Tolerance	±20% at 120Hz, 20°C(10% Tol. is available upon request)								
Leakage Current	$I = 3\sqrt{CV}$ (uA) max C: Capacitance, V:W.V. (After 5 minutes)								
Dissipation Factor (tanδ)	Rated voltage	10	16	25	35	50	63 ~ 400	450	500
	tanδ	0.55	0.40	0.30	0.25	0.20	0.15	0.20	0.25
at 20°C, 120Hz									
Stability at Low Temperature	Impedance ration at 120Hz between the -25°C or -40°C value and 20°C value shall not exceed the values given below.								
	Rated Voltage (V)	10, 16	25	35	50, 63	80, 100	160~400	450~500	
	Z-25°C/Z 20°C	4	3	3	2	2	4	6	
Z-40°C/Z 20°C	15	10	8	6	5	-	-		
Load Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after rated working voltage applied for 5,000 hours at max. Operating temperature.								
	Capacitance change	≤ ±25% of the initial value.							
	Dissipation factor	≤ ±250% of the initial specified value							
	Leakage current	≤ The initial specified value.							
Shelf Life	After storage for 1000 hours at 105°C with no voltage applied, the capacitor shall meet the specified limit in load life.								

Diagram of dimensions



Multiplier for Ripple Current VS Frequency

W.V.(Vdc)\ (Hz)	50/60	120	300	1K	10K	50K
10 ~ 50	0.95	1	1.03	1.05	1.08	1.08
63 ~ 100	0.93	1	1.07	1.13	1.19	1.20
160 ~ 250	0.81	1	1.17	1.32	1.45	1.50
350 ~ 500	0.71	1	1.16	1.30	1.41	1.43

(mm)

Dia	22	25	30	35
α	2	2	3	3

Part Numbering Designation

<u>AEHL</u>	<u>101</u>	<u>M</u>	<u>2G</u>	<u>B</u>	<u>A</u>
SERIES	CAPACITANCE	TOL.	W.V.	PACKAGE	SIZE
	IN 3DIGITS	M= ± 20%	16= 16V	B= Bulk	A= A Size
	101= 100uF	K= ± 10%	25= 25V		B= B Size
	102= 1000uF		35= 35V		C= C Size
	103= 10,000uF		50= 50V		D=D Size
			63= 63V		
			80= 80V		
			2A= 100V		
			2C= 160V		
			2D= 200V		
			2E= 250V		
			2V= 350V		
			2G= 400V		
			2W= 450V		
			2H= 500V		

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 Method 108	
			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/s ²)	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 endurance 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																																										
			<table border="1"> <tr> <td>W.V.</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <td>S.V.</td> <td>7.3</td> <td>11.5</td> <td>18.4</td> <td>28.8</td> <td>40.3</td> <td>57.5</td> <td>72.5</td> </tr> <tr> <td>W.V.</td> <td>80</td> <td>100</td> <td>160</td> <td>200</td> <td>250</td> <td>400</td> <td>450</td> </tr> <tr> <td>S.V.</td> <td>92</td> <td>115</td> <td>184</td> <td>230</td> <td>288</td> <td>440</td> <td>495</td> </tr> </table>			W.V.	6.3	10	16	25	35	50	63	S.V.	7.3	11.5	18.4	28.8	40.3	57.5	72.5	W.V.	80	100	160	200	250	400	450	S.V.	92	115	184	230	288	440	495	Leakage Current	Within specified value							
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