

Data Sheet

Customer: _____

Product: Aluminum Electrolytic Capacitors – AEHU Series

AEC-Q200 version available

Size : 22x25mm ~ 40x50mm

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

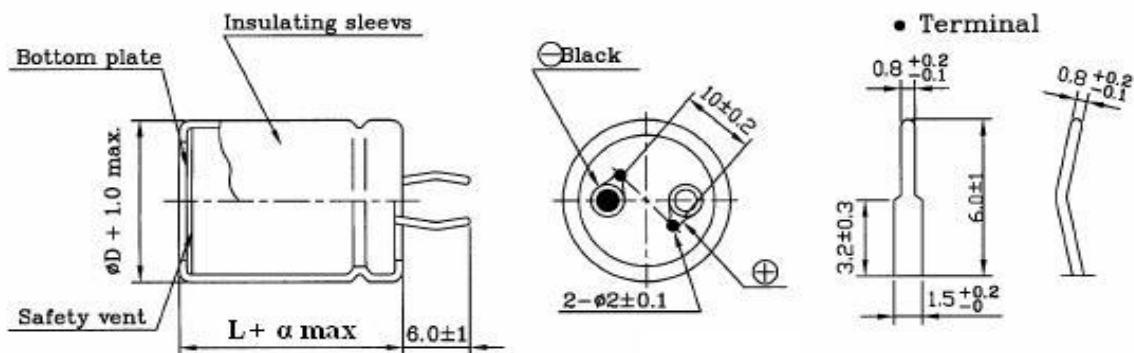
Prepared by	Checked by	Approved by	Accepted by (customer)
16-Oct-2023	16-Oct-2023	16-Oct-2023	
<i>Andy Hsu</i>	<i>Hwa Wu</i>	<i>Hwa Wu</i>	

- 105°C 3000 hours assured load life.
- Directly mountable on printed circuit board without holders.
- Rohs compliant
- Aluminum case designed explosion-proof vent.
- AEC-Q200 version available

Characteristics

Voltage Range	16 ~ 100V	160 ~ 450V					
Capacitance Range	470 ~ 6800uF	47 ~ 2200uF					
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) (at 20°C, 120Hz)	Less than the value under table (%)						
	uF \\ W.V.	16	25 ~ 35	50 ~ 63	80 ~ 100	160 ~ 250	315 ~ 450
	47 ~ 390	-	-	-	15	15	20
	470 ~ 3900		20	20	20	15	20
	4700~8200	35	30	30	25		
	10000~22000	40	35	30			
27000~47000	45	40	35				
Stability at Low Temperature	Impedance ration at 120Hz between the -25°C or -40°C value and 20°C value shall not exceed :						
	Rated Voltage (V)	16	25~100	160~250	315~450		
	Z-25°C/Z 20°C	5	4	4	8		
	Z-40°C/Z 20°C	20	20	-	-		
Load Life	The following specifications shall satisfied when the capacitors are restored to 20°C after rated working voltage applied for 3,000 hours at max. operating temperature with the rated ripple current.						
	Capacitance change	≤ ±20% of the initial value.					
	Dissipation factor	≤ ±200% 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. Pre-treatment for measurement shall be conducted after application of DC working voltage for 30 minutes.						

Diagram of Dimensions: unit(mm)



Multiplier for Ripple Current VS Frequency

Cap.(uF) \\ (Hz)	50(60)	120	1K	10K	50K - 100K
10 < Cap. ≤ 100	0.8	1	1.36	1.48	1.53
100 < Cap. ≤ 1000	0.8	1	1.25	1.35	1.38
1000 < Cap.	0.8	1	1.17	1.25	1.28

Dia	22 ~ 25	30 ~ 40
α	2	3

Standard Products Table

W.V.	100								160							
Dimension	A		B		C		D		A		B		C		D	
Cap. (uF)	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC
470	22x25	0.92							22x35	1.40	25x30	1.40	35x20	1.15		
560	22x25	1.10							22x40	1.50	25x30	1.50	30x25	1.50		
680	22x30	1.22	25x25	1.22					22x45	1.70	25x35	1.70	30x30	1.70		
820	22x30	1.40	25x25	1.40					22x45	2.00	25x35	2.00	30x30	2.00	35x25	2.00
1000	22x35	1.70	25x30	1.70			35x20	1.20	22x50	2.20	25x40	2.20	30x30	2.20	35x25	2.20
1200	22x40	1.80	25x35	1.80	30x25	1.80			25x45	2.49	30x35	2.49	35x30	2.49		
1500	22x45	2.10	25x40	2.10	30x30	2.10	35x25	2.10	30x40	2.84	35x30	2.84				
1800	25x45	2.30	30x35	2.30	35x30	2.30			30x45	3.32	35x35	3.00				
2200	25x50	2.60	30x40	2.60	35x30	2.60			35x45	3.50						
2700	30x45	2.90	35x35	2.90					35x50	4.00						
3300	30x50	3.20	35x40	3.20												
3900	35x45	3.60														
4700	35x50	3.80	40x40	3.60												
5600	40x45	4.20														
6800	40x50	4.57														

W.V.	200								250							
Dimension	A		B		C		D		A		B		C		D	
Cap. (uF)	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC
220	22x25	1.05			30x20	0.87			22x30	1.10	25x25	1.10	35x20	0.87		
270	22x30	1.10	25x25	1.10					22x35	1.18	25x30	1.18	30x25	1.18		
330	22x30	1.25	25x25	1.25	35x20	1.10			22x40	1.30	25x35	1.30	30x25	1.20		
390	22x30	1.35	25x25	1.35	30x25	1.30			22x45	1.49	25x35	1.49	30x30	1.49		
470	22x35	1.50	25x30	1.50	30x25	1.50			22x50	1.65	25x40	1.65	30x30	1.65	35x25	1.65
560	22x40	1.67	25x30	1.67	30x25	1.67			25x45	1.80	30x35	1.80	35x25	1.80		
680	22x45	1.78	25x35	1.78	30x30	1.78	35x25	1.78	25x50	2.00	30x40	2.00	35x30	2.00		
820	22x50	2.04	25x45	2.04	30x30	2.04	35x25	2.04	30x45	2.30	35x35	2.30				
1000	25x50	2.30	30x35	2.30	35x30	2.30			30x50	2.47	35x40	2.47				
1200	30x40	2.65	35x30	2.65					35x45	2.60						
1500	30x50	3.08	35x40	3.08					35x50	3.00						
1800	35x45	3.48														
2200	35x50	3.78														

W.V.	350								385							
Dimension	A		B		C		D		A		B		C		D	
Cap. (uF)	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC
68									22x30	0.56	25x25	0.56				
82									22x35	0.64	25x25	0.64				
100	22x25	0.52	25x20	0.52					22x35	0.69	25x30	0.69	35x20	0.47		
120	22x30	0.62	25x25	0.62					22x35	0.75	25x30	0.75				
150	22x35	0.74							22x50	0.82	25x40	0.82	30x30	0.82		
180	22x40	0.81	25x30	0.77	30x25	0.80			25x45	0.95	30x35	0.95	35x25	0.95		
220	22x45	0.94	25x35	0.91					25x50	1.10	30x40	1.10	35x30	1.10		
270	22x50	1.09	25x40	1.06	30x30	1.05	35x25	1.08	30x45	1.20	35x35	1.20				
330	25x45	1.24	30x35	1.24	35x30	1.33			30x50	1.35	35x40	1.35				
390	30x40	1.42	35x30	1.39					35x45	1.55						
470	30x45	1.56	35x35	1.53					35x50	1.75						

Standard Products Table

W.V.	400								450							
Dimension	A		B		C		D		A		B		C		D	
Cap. (uF)	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC	Size	RC
47	22x25	0.43	25x20	0.25					22x25	0.35						
56	22x25	0.51							22x25	0.40						
68	22x25	0.56	25x25	0.56	30x20	0.35			22x25	0.52						
82	22x30	0.64	25x25	0.64					22x30	0.64	25x25	0.64				
100	22x30	0.70	25x25	0.70	35x20	0.47			22x35	0.69	25x30	0.69	30x25	0.69		
120	22x35	0.75	25x30	0.75	30x25	0.75			22x40	0.80	25x30	0.80	30x25	0.80		
150	22x40	0.88	25x30	0.88	30x25	0.88			22x45	0.88	25x35	0.88	30x30	0.88		
180	22x45	0.98	25x35	0.98	30x30	0.98	35x25	0.98	22x50	1.00	25x40	1.00	30x30	1.00		
220	22x50	1.10	25x40	1.10	30x30	1.10	35x25	1.10	22x50	1.00	25x45	1.12	30x35	1.12	35x30	1.12
270	22x50	1.19	25x45	1.20	30x35	1.20	35x35	1.20	30x40	1.28	35x35	1.28				
330	25x50	1.44	30x40	1.44	35x30	1.44			30x50	1.45	35x40	1.45				
390	30x45	1.60	35x35	1.60					35x40	1.50						
470	30x50	1.90	35x40	1.90	35x45	2.10			35x50	1.85						
560	35x45	2.12							35x55	2.15						
680	35x55	2.35							35x60	2.30	40x40	2.30				
820	35x55	2.50														
1000	35x65	2.65														

Unit : (mm)

Ripple Current (A, rms) at 105°C 120Hz

Part Numbering Designation

<u>AEHU</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		
			2T= 385V		
			2G= 400V		
			2W= 450V		

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-ST D- 202 Method 210								
			Tanδ	Within specified value									
			Leakage Current	Within specified value									
		Appearance	No abnormality										
		Rated voltage (V)		4~50		63 up	4~100						
		Case size (φ)		4~6.3		4~6.3	8~12.5						
		Preheat	Temp.(T1~T2,°C)	150-180									
			Time (t1)(Max,secs)	100									
		Duration	Temp.(T3,°C)	217		230	217	217	230				
			Time (t2)(Max,secs)	90		60	60	60	40				
Peak	Temp.(T4,°C)	260		250	250								
	Time (t3,secs)	5											
Reflow cycles		2 or less											
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									
			W.V.	6.3		10	16	25	35	50	63	Leakage Current	Within specified value
			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	Appearance	No abnormality
			S.V.	92		115	184	230	288	440	495		