

## *Data Sheet*

Customer: \_\_\_\_\_

Product: Aluminum Electrolytic Capacitors – AESG Series

AEC-Q200 version available

Size : 10x16mm ~ 22x41mm

Issued Date: 16-Oct-2023

Edition: Ver. 1

### Record of change

Date	Ver.	Description	Page
16-Oct-2023	1		

### **HITANO ENTERPRISE CORP.**

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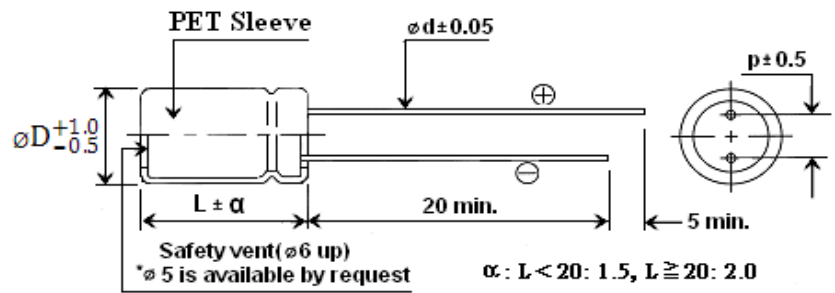
Prepared by	Checked by	Approved by	Accepted by (customer)
16-Oct-2023	16-Oct-2023	16-Oct-2023	
<i>Andy Hsu</i>	<i>Hwa Wu</i>	<i>Hwa Wu</i>	

- AESG series capacitors are suitable for electronic ballast and other long life equipment.
- Load life 105°C, 5000 hours assured.
- AEC-Q200 version available

**Characteristics**

<b>Voltage Range</b>	160 ~500V							
<b>Temperature Range</b>	-40 ~ + 105°C							
<b>Capacitance Range</b>	4.7 to 330 uF							
<b>Leakage Current</b>	$I \leq 0.04CV$ or 10uA, whichever is greater (After 2 minutes)							
<b>Capacitance Tolerance</b>	±20% at 120Hz, 20°C( 10% Tol. is available upon request)							
<b>Dissipation Factor</b> (at 20°C, 120Hz)	WV	160	200	250	350	400	450	500
	tanδ	0.12	0.12	0.12	0.15	0.15	0.17	0.20
<b>Stability at Low Temperature</b> (120Hz)	Rated Voltage (V)	160	200	250	350	400	450	500
	Z-25°C/Z +20°C	3	3	3	6	6	6	6
	Z-40°C/Z +20°C	6	6	6	6	6	-	-
<b>Load life after application of the rated voltage for 5000 hrs at 105°C</b>	Leakage current	Less than initial specified value						
	Capacitance change	Within ±20% of initial value						
	tanδ	200% or less of initial specified value						
<b>Shelf life (at 105°C)</b>	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**



**Drawing**

Dψ	10	13	16	18	22
p	5.0	5.0	7.5	7.5	10.0
dψ	0.6	0.6	0.8	0.8	0.8

**Ripple Current Coefficients**

Frequency (Hz)	120	1K	10K	100K
Multiplier	0.52	0.79	0.89	1.0

**Part Numbering System**

AESG □ □ □ □ □ □ □ □ □ □ **B** □ □ □ □ □ □  
Series Capacitance Tolerance Rated Voltage Package Extended Code

## Case size & Maximum Ripple Current (mA rms 105°C 100KHz)

Cap. WV uF	160V		200V		250V		350V	
	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.
10	10x16	115	10x16 10x20	195 210	10x16 10x20	195 200	10x20	150
22	10x16 10x20	175 195	10x16 10x20	250 255	13x20	300 350	13x20	250
33	10x20 13x20	200 250	10x20 13x20	300 350	13x20 13x25	350 400	13x25	360
47	10x20 13x20	255 300	13x20	490	13x25	500	16x25	430
68	13x20 13x25	350 390	13x25	530	16x25	600	16x31.5	450
100	13x25 16x25	530 560	16x20 16x25	730 810	16x31.5 18x31.5	600 660	18x31.5	700
150	16x25 16x31.5	690	16x31.5	840	18x32	690		
220	16x31.5	730	18x31.5	970	22x41	750		
330	18x36	920						

Cap. WV uF	400V		450V		500V	
	Size	R.C.	Size	R.C.	Size	R.C.
4.7	10x16	115	10x16	115	10x16	60
	10x20	115	10x20	115	13x20	82
6.8	10x16	125	10x20	125	13x20	96
10	10x20 13x20	175 200	13x20 13x25	175 185	13x25	130
	13x25	320	16x25	290	16x25	170
33	16x25	350	16x31.5	390	16x31.5	210
47	16x31.5 16x25	450	16x35.5	480	16x35.5	360
68	18x31.5	580	18x41 18x36	630 430	18x35.5	460
100	18x41 18x35.5	790	22x41	570		
150	25x41	1000				

**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 $\pm 30\%$ of initial value	MIL-STD-202 Method 108	
			Tan $\delta$	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 $\pm 30\%$ of initial value	MIL-STD-202 Method108	
			Tan $\delta$	Less than 300% of specified value		
			Leakage Current	Within specified value		
			Appearance	No abnormality		
3	Temperature Cycling	Step1: Max. rated temperature $\pm 3/-3^{\circ}\text{C}$ (30 $\pm$ 3mins) Step2: Min. rated temperature $\pm 3/-3^{\circ}\text{C}$ (30 $\pm$ 3mins) Max.transfer time: 1min According to the step1 to step2, and do 1000cycles	Capacitance change	Within $\pm 10\%$ of initial value	JESD22 Method JA-104	
			Tan $\delta$	Within specified value		
			Leakage Current	Within specified value		
			Appearance	No abnormality		
4	Biased Humidity	Capacitor is placed at the temperature of 85 $\pm 3^{\circ}\text{C}$ , and humidity of 85% with rated voltage for 1000Hrs	Capacitance change	Within $\pm 20\%$ of initial value	MIL-STD-202 Method 103	
			Tan $\delta$	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 $\pm 5^{\circ}\text{C}$ . 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 $\pm 10\%$ of initial value	MIL-STD-202 Method 213
		Test items	For automobile	Tan $\delta$	Within specified value	
		Acceleration speed	100g(1000 m/s <sup>2</sup> )	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 $\pm 10\%$ of initial value	MIL-STD-202 Method 204	
			Tan $\delta$	Within specified value		
			Leakage Current	Within specified value		
			Appearance	No abnormality		

No.	Item	Conditions	Specification	Reference																																					
9	Resistance to Soldering Heat	<p>According to the Control standard operating of Jarson, test twice.</p>	<table border="1"> <tr> <td>Capacitance change</td> <td>Within ±10% of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Within specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> <tr> <td>Appearance</td> <td>No abnormality</td> </tr> </table>	Capacitance change	Within ±10% of initial value	Tanδ	Within specified value	Leakage Current	Within specified value	Appearance	No abnormality	MIL-STD-202 Method 210																													
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			Appearance	No abnormality																																					
			<table border="1"> <tr> <td>Rated voltage (V)</td> <td>4~50</td> <td>63 up</td> <td>4~100</td> </tr> <tr> <td>Case size (φ)</td> <td>4~6.3</td> <td>4~6.3</td> <td>8~12.5</td> </tr> <tr> <td rowspan="2">Preheat</td> <td>Temp.(T1~T2,°C)</td> <td colspan="2">150-180</td> </tr> <tr> <td>Time (t1)(Max,secs)</td> <td colspan="2">100</td> </tr> <tr> <td rowspan="2">Duration</td> <td>Temp.(T3,°C)</td> <td>217</td> <td>230</td> <td>217</td> <td>217</td> <td>230</td> </tr> <tr> <td>Time (t2)(Max,secs)</td> <td>90</td> <td>60</td> <td>60</td> <td>60</td> <td>40</td> </tr> <tr> <td rowspan="2">Peak</td> <td>Temp.(T4,°C)</td> <td>260</td> <td>250</td> <td>250</td> </tr> <tr> <td>Time (t3,secs)</td> <td colspan="3">5</td> </tr> <tr> <td>Reflow cycles</td> <td colspan="3">2 or less</td> </tr> </table>	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		
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Peak	Temp.(T4,°C)	260	250	250																																					
	Time (t3,secs)	5																																							
Reflow cycles	2 or less																																								
10	Solderability test (SMD)	<p>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</p>	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	<p>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:</p> <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	Capacitance change	Within ±20% of initial value	AEC-Q 200-007				
			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																															
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