

Data Sheet

Customer: _____

Product: Aluminum Electrolytic Capacitors – AEFK Series

Load life 6000~8000 hrs at 105°C AEC-Q200 version available

Size : 8x11.5mm ~ 18x41mm

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

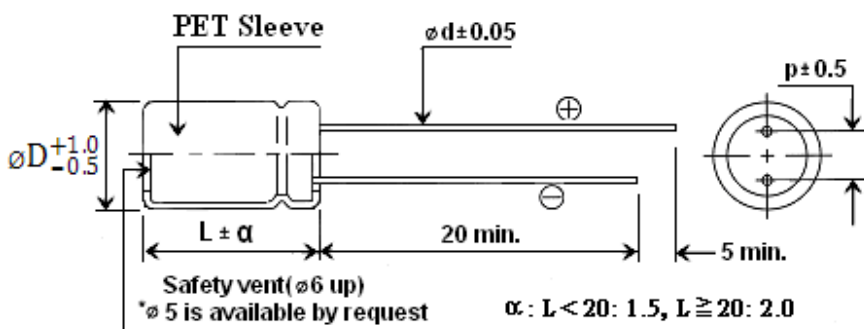
Prepared by	Checked by	Approved by	Accepted by (customer)
16-Oct-2023	16-Oct-2023	16-Oct-2023	
<i>Andy Hsu</i>	<i>Hwa Wu</i>	<i>Hwa Wu</i>	

- EFK series capacitors are suitable for electronic ballast and energy saving lamp..
- Load life 105°C, 6000 ~ 8000 hours assured.
- AEC-Q200 version available

Characteristics

Voltage Range	160 ~450V												
Temperature Range	-40 ~ + 105°C												
Capacitance Range	1 to 330 uF												
Leakage Current	I ≤ 0.04CV+100uA, After 1 minute with rated working voltage applied.												
Capacitance Tolerance	±20% at 120Hz, 20°C(10% Tol. is available upon request)												
Dissipation Factor	W.V.	160	200	250	350	400	450						
	tanδ	0.10	0.10	0.10	0.12	0.12	0.12						
Low Temperature Characteristics (120Hz)	W.V.	160	200	250	350	400	450						
	Z-25°C / Z+20°C	3	3	3	5	5	6						
	Z-40°C / Z+20°C	6	6	6	6	6	-						
Load life	Test condition Duration time :As right Ambient temperature :+105°C Applied voltage :Rated DC working voltage After test requirement at +20°C Capacitance change: ≤ ±20% of the initial measured value Dissipation factor: ≤ 200% of the initial specified value Leakage current : ≤ The initial specified value												
							<table border="1"> <tr> <th>φ (mm)</th> <th>Life(hrs)</th> </tr> <tr> <td>8</td> <td>6000</td> </tr> <tr> <td>≥ 10</td> <td>8000</td> </tr> </table> For standard size	φ (mm)	Life(hrs)	8	6000	≥ 10	8000
φ (mm)	Life(hrs)												
8	6000												
≥ 10	8000												
Shelf life (at 105°C)	Test conditions Duration time : 1000Hrs Ambient temperature : +105°C Applied voltage : None After test requirement at +20°C: Same limits as Load life. Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.												

Drawing



Dφ	5	6.3	8	10	13	16	18
p	2.0	2.5	3.5	5.0	5.0	7.5	7.5
dφ	0.5	0.5	0.5	0.6	0.6	0.8	0.8

Ripple Current Coefficients

Frequency(Hz)	120	1K	10K	≥ 100K
Multiplier	1.0	1.5	1.7	1.9

Multiplier for R.C. vs Temperature

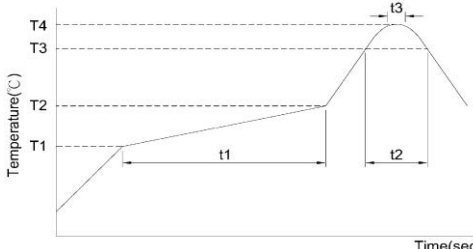
Temp.(°C)	45	60	70	85	95	105
Multiplier.	2.10	1.90	1.65	1.40	1.25	1.00

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 $\pm 30\%$ of initial value	MIL-STD-202 Method 108	
			Tan δ	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 Method1 08	
			Tan δ	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 δ	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 δ	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 δ	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 $\pm 10\%$ 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	<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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	Time (t3,secs)			5																																							
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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 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	<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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