Data Sheet

Customer:

Product: Aluminum Electrolytic Capacitors – AEUK Series 8000Hours
AEC-Q200 version available

Size : 22x30mm ~ 35x70mm

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	
Lori Wang	***Andy Hsu***	***Hwa Wu***	

HITANO ENTERPRISE CORP. ®

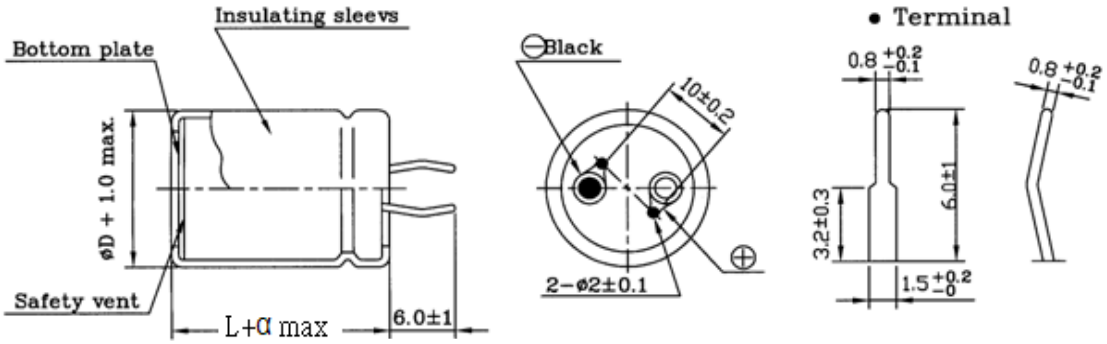
AEUK SERIES

- **ALUMINUM ELECTROLYTIC CAPACITOR** • Snap-In type
- Useful life: 105℃ 8000 hours.
- Extremely stable dissipation factor and leakage current.
- Especially for applications with demanding operating environment.
- AEC-Q200 version available

Characteristics

Items		Performance Characteristics		
Operating Temperature Range		-40 ~ +105℃		
Rated Voltage Range	V_R	200 ~ 450V		
Surge Voltage	V_s	(V_R ≤ 315V) ▪ VS = 1.15·V_R		
Capacitance Range	C_R	68 ~ 2200uF		
Capacitance Tolerance	△C	±20% at 120Hz ▪ 20℃		
Leakage Current	I_{LEAK}	≤ $3 \cdot \sqrt{C_R \cdot V_R}$ ▪ After 5 minutes [I_{LEAK} (μA) ; C_R (μF) ; V_R (V)]		
Dissipation Factor % (20℃ ▪ 120Hz)	**tanδ**	Rated voltage	200~400	450
		tanδ	15	20
Self-Resistance (20℃ ▪ 120Hz)	**ESR**	Not to exceed the values shown in standard ratings.		
Low Temperature Characteristics at 120Hz	**Z ratio max.**	Impedance ration at 120Hz between the -25℃ or -40℃ value and 20℃ value shall not exceed the values given below.		
		Rated Voltage (V)	200~250	315~450
		Z-25℃/Z 20℃	4	5
		Z-40℃/Z 20℃	7	10
Lifetime Test				
Useful Life 105℃ (V_R&I_R applied)		Test	8000hours	
		△C/CR	≤ ±20% of initial measured value	
		tanδ	≤ 175% of initial specified value	
		I_{LEAK}	≤ the initial specified value	
		Deviation Rate at Useful Life: 100 FIT = 0.01%/1000h with 60% confidence level ▪ parts show higher drift as test criteria		
Endurance **105℃** (V_R&I_R applied)		Test	3000hours	
		△C/CR	≤ ±15% of initial measured value	
		tanδ	≤ 175% of initial specified value	
		I_{LEAK}	≤ the initial specified value	
Shelf Life **105℃** (V_R= 0)		Test	1000hours	
		△C/CR	≤ ±15% of initial measured value	
		tanδ	≤ 175% of initial specified value	
		I_{LEAK}	≤ the initial specified value	
		Before measurement: Restore capacitor to 20℃, apply VR for 30 min according JIS-C-5101-4		
Vibration Resistance Test		Max. 10g force, FRANGE 10Hz … 55Hz, amplitude 0.75mm; X/Y/Z-axis each 2h; capacitor rigidly clamped by body to surface ▪ IEC 60068-2-6		

Diagram of dimensions



(mm)

Dia	22	25	30	35
α	2	2	3	3

HITANO ENTERPRISE CORP. ®

AEUK SERIES

Case size & Maximum Ripple Current (A rms 105°C 120Hz) & ESR. (Ω 20°C 120Hz) ψ DxL (mm)

V_R (V)	C_R (µF)	øD (mm)	L (mm)	Typ. ESR +20°C ▪ 120Hz (mΩ)	Max. ESR +20°C ▪ 120Hz (mΩ)	I_R▪ Max. Ripple Current +105°C ▪ 120Hz (mA rms)	HITANO Part Number
200	330	22	30	320	600	1380	AEUK331M2DBA
	390	22	35	280	510	1450	AEUK391M2DBA
	470	22	40	230	420	1680	AEUK471M2DBA
	470	25	35	230	420	1680	AEUK471M2DBB
	560	22	45	190	360	1810	AEUK561M2DBA
	560	25	40	190	360	1780	AEUK561M2DBB
	560	30	30	190	360	1960	AEUK561M2DBC
	680	22	45	160	290	2150	AEUK681M2DBA
	680	25	40	160	290	2060	AEUK681M2DBB
	680	30	30	130	290	2170	AEUK681M2DBC
	820	22	60	130	240	2420	AEUK821M2DBA
	820	25	50	130	240	2220	AEUK821M2DBB
	820	30	35	130	240	2340	AEUK821M2DBC
	1000	25	60	110	200	2720	AEUK102M2DBA
	1000	30	40	110	200	2910	AEUK102M2DBB
	1000	35	35	110	200	3140	AEUK102M2DBC
	1200	30	50	92	170	3420	AEUK122M2DBA
	1200	35	40	92	170	3380	AEUK122M2DBB
	1500	30	60	70	130	4120	AEUK152M2DBA
	1500	35	50	70	130	3910	AEUK152M2DBB
	1800	30	70	59	110	4330	AEUK182M2DBA
	1800	35	60	59	110	4460	AEUK182M2DBB
	2200	35	70	49	90	5110	AEUK222M2DBA
250	220	22	30	490	900	1150	AEUK221M2EBA
	270	22	30	490	900	1210	AEUK271M2EBA
	330	22	35	320	600	1520	AEUK331M2EBA
	330	25	30	320	600	1450	AEUK331M2EBB
	390	22	40	280	510	1720	AEUK391M2EBA
	390	22	40	280	510	1820	AEUK391M2EBB
	390	25	35	280	510	1580	AEUK391M2EBC
	390	30	25	280	510	1620	AEUK391M2EBD
	470	22	50	230	420	1960	AEUK471M2EBA
	470	25	40	230	420	1720	AEUK471M2EBB
	470	30	30	230	420	1880	AEUK471M2EBC
	560	25	45	190	360	1960	AEUK561M2EBA
	560	30	35	190	360	2220	AEUK561M2EBB
	560	35	30	190	360	2080	AEUK561M2EBC
	680	25	50	160	290	2210	AEUK681M2EBA
	680	30	35	160	290	2350	AEUK681M2EBB
	680	35	35	160	290	2500	AEUK681M2EBC
	820	30	45	130	240	2780	AEUK821M2EBA
	820	35	40	130	240	2900	AEUK821M2EBB
	1000	30	50	110	200	3300	AEUK102M2EBA
	1000	35	45	110	200	3360	AEUK102M2EBB

HITANO ENTERPRISE CORP. ®

AEUK SERIES

Case size & Maximum Ripple Current (A rms 105°C 120Hz) & ESR. (Ω 20°C 120Hz) ψ DxL (mm)

V_R (V)	C_R (µF)	øD (mm)	L (mm)	Typ. ESR +20°C ▪ 120Hz (mΩ)	Max. ESR +20°C ▪ 120Hz (mΩ)	I_R▪ Max. Ripple Current +105°C ▪ 120Hz (mA rms)	HITANO Part Number
250	1200	30	60	92	170	3850	AEUK122M2EBA
	1200	35	50	92	170	3820	AEUK122M2EBB
	1500	30	70	70	130	4330	AEUK152M2EBA
	1500	35	60	70	130	4340	AEUK152M2EBB
	1800	35	70	59	110	4700	AEUK182M2EBA
	2200	35	80	49	90	5580	AEUK222M2EBA
315	150	22	35	720	1330	1000	AEUK151M2FBA
	180	22	35	600	1110	1150	AEUK181M2FBA
	220	22	40	490	900	1300	AEUK221M2FBA
	220	25	30	490	900	1300	AEUK221M2FBB
	270	22	50	400	740	1410	AEUK271M2FBA
	270	25	35	400	740	1420	AEUK271M2FBB
	330	22	60	320	600	1740	AEUK331M2FBA
	330	25	40	320	600	1580	AEUK331M2FBB
	330	30	35	320	600	1620	AEUK331M2FBC
	390	22	60	280	510	1940	AEUK391M2FBA
	390	25	45	280	510	1700	AEUK391M2FBB
	390	30	35	280	510	1780	AEUK391M2FBC
	390	35	30	280	510	1800	AEUK391M2FBD
	470	22	70	230	420	2050	AEUK471M2FBA
	470	25	55	230	420	2040	AEUK471M2FBB
	470	30	40	230	420	2030	AEUK471M2FBC
	470	35	35	230	420	2070	AEUK471M2FBD
	560	25	60	190	360	2280	AEUK561M2FBA
	560	30	45	190	360	2230	AEUK561M2FBB
	560	35	40	190	360	2250	AEUK561M2FBC
	680	30	55	160	290	2660	AEUK681M2FBA
	680	35	45	160	290	2700	AEUK681M2FBB
	820	30	60	130	240	3120	AEUK821M2FBA
	820	35	50	130	240	3100	AEUK821M2FBB
	1000	30	80	110	200	3640	AEUK102M2FBA
	1000	35	60	110	200	3560	AEUK102M2FBB
	1200	35	70	92	170	4050	AEUK122M2FBA
	1500	35	80	70	130	4350	AEUK152M2FBA

HITANO ENTERPRISE CORP. ®

AEUK SERIES

Case size & Maximum Ripple Current (A rms 105°C 120Hz) & ESR. (Ω 20°C 120Hz) ψ DxL (mm)

V_R (V)	C_R (µF)	øD (mm)	L (mm)	Typ. ESR +20°C ▪ 120Hz (mΩ)	Max. ESR +20°C ▪ 120Hz (mΩ)	I_R▪ Max. Ripple Current +105°C ▪ 120Hz (mA rms)	HITANO Part Number
350	100	22	30	1080	1990	740	AEUK101M2VBA
	100	25	25	1080	1990	520	AEUK101M2VBB
	120	22	30	900	1660	920	AEUK121M2VBA
	150	22	35	720	1330	1060	AEUK151M2VBA
	180	22	40	600	1110	1170	AEUK181M2VBA
	180	25	30	600	1110	1170	AEUK181M2VBB
	220	22	45	490	900	1400	AEUK221M2VBA
	220	25	35	490	900	1330	AEUK221M2VBB
	220	30	30	490	900	1350	AEUK221M2VBC
	270	22	50	400	740	1550	AEUK271M2VBA
	270	25	40	400	740	1470	AEUK271M2VBB
	270	30	35	400	740	1370	AEUK271M2VBC
	330	25	50	320	600	1680	AEUK331M2VBA
	330	30	35	320	600	1640	AEUK331M2VBB
	330	35	30	320	600	1690	AEUK331M2VBC
	390	25	55	280	510	1860	AEUK391M2VBA
	390	30	40	280	510	1840	AEUK391M2VBB
	390	35	35	280	510	1870	AEUK391M2VBC
	470	25	60	230	420	2090	AEUK471M2VBA
	470	30	45	230	420	2090	AEUK471M2VBB
	470	35	40	230	420	2080	AEUK471M2VBC
	560	30	50	190	360	2240	AEUK561M2VBA
	560	35	45	190	360	2260	AEUK561M2VBB
	680	30	60	160	290	2670	AEUK681M2VBA
	680	35	50	160	290	2710	AEUK681M2VBB
	820	35	60	130	240	3250	AEUK821M2VBA
	1000	35	65	110	200	3580	AEUK102M2VBA
	1200	35	80	92	170	4100	AEUK122M2VBA

HITANO ENTERPRISE CORP. ®

AEUK SERIES

Case size & Maximum Ripple Current (A rms 105℃ 120Hz) & ESR. (Ω 20℃ 120Hz) **ψ DxL (mm)**

V_R (V)	C_R (µF)	øD (mm)	L (mm)	Typ. ESR +20°C ▪ 120Hz (mΩ)	Max. ESR +20°C ▪ 120Hz (mΩ)	I_R▪ Max. Ripple Current +105°C ▪ 120Hz (mA rms)	HITANO Part Number
400	82	22	30	1310	2430	610	AEUK820M2GBA
	100	22	30	1080	1990	670	AEUK101M2GBA
	120	22	35	900	1660	790	AEUK121M2GBA
	120	25	30	900	1660	790	AEUK121M2GBB
	150	22	40	720	1330	950	AEUK151M2GBA
	150	25	35	720	1330	960	AEUK151M2GBB
	150	30	25	720	1330	990	AEUK151M2GBC
	180	22	40	600	1110	1100	AEUK181M2GBA
	180	25	35	600	1110	1120	AEUK181M2GBB
	180	30	30	600	1110	1170	AEUK181M2GBC
	220	22	50	490	900	1200	AEUK221M2GBA
	220	25	40	490	900	1200	AEUK221M2GBB
	220	30	30	490	900	1240	AEUK221M2GBC
	220	35	25	490	900	1240	AEUK221M2GBD
	270	25	50	400	740	1420	AEUK271M2GBA
	270	30	35	400	740	1350	AEUK271M2GBB
	270	35	30	400	740	1390	AEUK271M2GBC
	330	25	60	320	600	1570	AEUK331M2GBA
	330	30	40	320	600	1580	AEUK331M2GBB
	330	35	35	320	600	1640	AEUK331M2GBC
	390	25	60	280	510	1700	AEUK391M2GBA
	390	30	45	280	510	1800	AEUK391M2GBB
	390	35	40	280	510	1780	AEUK391M2GBC
	470	30	50	230	420	2070	AEUK471M2GBA
	470	35	45	230	420	2160	AEUK471M2GBB
	560	30	60	190	360	2260	AEUK561M2GBA
	560	35	50	190	360	2360	AEUK561M2GBB
	680	30	70	160	290	2490	AEUK681M2GBA
	680	35	60	160	290	2720	AEUK681M2GBB
	820	35	70	130	240	3230	AEUK821M2GBA
	1000	35	80	110	200	3570	AEUK102M2GBA
	1200	35	95	92	170	3910	AEUK122M2GBA

HITANO ENTERPRISE CORP. ®

AEUK SERIES

Case size & Maximum Ripple Current (A rms 105℃ 120Hz) & ESR. (Ω 20℃ 120Hz) **ψ DxL (mm)**

V_R (V)	C_R (µF)	øD (mm)	L (mm)	Typ. ESR +20°C ▪ 120Hz (mΩ)	Max. ESR +20°C ▪ 120Hz (mΩ)	I_R▪ Max. Ripple Current +105°C ▪ 120Hz (mA rms)	HITANO Part Number
450	68	22	25	2110	3900	550	AEUK680M2WBA
	82	22	30	1750	3230	610	AEUK820M2WBA
	100	22	35	1430	2650	720	AEUK101M2WBA
	100	25	25	1430	2650	720	AEUK101M2WBB
	120	22	35	1190	2210	850	AEUK121M2WBA
	120	25	30	1190	2210	850	AEUK121M2WBC
	120	25	35	1190	2210	910	AEUK121M2WBD
	120	30	25	1190	2210	850	AEUK121M2WBE
	150	22	45	960	1770	1000	AEUK151M2WBA
	150	25	35	960	1770	1020	AEUK151M2WBB
	150	30	30	960	1770	1060	AEUK151M2WBC
	180	22	50	790	1470	1210	AEUK181M2WBA
	180	25	35	790	1470	1120	AEUK181M2WBB
	180	30	30	790	1470	1210	AEUK181M2WBC
	180	35	25	790	1470	1210	AEUK181M2WBD
	220	25	45	650	1210	1280	AEUK221M2WBA
	220	30	35	650	1210	1280	AEUK221M2WBB
	220	35	30	650	1210	1280	AEUK221M2WBC
	270	25	50	530	980	1420	AEUK271M2WBA
	270	30	35	530	980	1350	AEUK271M2WBB
	270	35	30	530	980	1390	AEUK271M2WBC
	330	30	45	430	800	1660	AEUK331M2WBA
	330	35	35	430	800	1660	AEUK331M2WBB
	390	30	50	370	680	1890	AEUK391M2WBA
	390	35	40	370	680	1890	AEUK391M2WBB
	390	35	45	370	680	1970	AEUK391M2WBC
	470	30	55	300	560	2080	AEUK471M2WBA
	470	35	45	300	560	2160	AEUK471M2WBB
	560	35	50	250	470	2470	AEUK561M2WBA
	680	35	60	210	390	2940	AEUK681M2WBA
	820	35	70	170	320	3350	AEUK821M2WBA

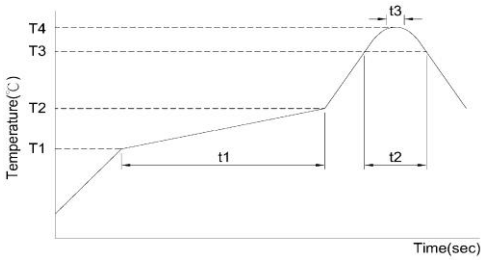
Reliability for Car- Tronics AEC Q-200_REV D

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℃(30±3mins) Step2: Min. rated temperature±3/-3℃(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℃, 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℃. 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
			Tanδ	Within specified value	
			Leakage Current	Within specified value	
			Appearance	No abnormality	

Test items	For automobile
Acceleration speed	100g(1000 m/s²)
Shocking direction	X-Y-Z three axles (6 planes)
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	

<table>
<tr><th>No.</th><th>Item</th><th>Conditions</th><th colspan="2">Specification</th><th>Reference</th></tr>
<tr><td>9</td><td>Resistance to Soldering Heat</td><td>According to the Control standard operating of Jarson, test twice.
 

<table>
<tr><td colspan="2">Rated voltage (V)</td><td colspan="2">4~50</td><td>63 up</td><td colspan="2">4~100</td></tr>
<tr><td colspan="2">Case size (φ)</td><td colspan="2">4~6.3</td><td>4~6.3</td><td colspan="2">8~12.5</td></tr>
<tr><td rowspan="2">Preheat</td><td>Temp.(T1~T2,℃)</td><td colspan="5">150-180</td></tr>
<tr><td>Time (t1)(Max,secs)</td><td colspan="5">100</td></tr>
<tr><td rowspan="2">Duration</td><td>Temp.(T3,℃)</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,℃)</td><td colspan="2">260</td><td>250</td><td colspan="2">250</td></tr>
<tr><td>Time (t3,secs)</td><td colspan="5">5</td></tr>
<tr><td colspan="2">Reflow cycles</td><td colspan="5">2 or less</td></tr>
</table></td><td>Capacitance change</td><td>Within ±10% of initial value</td><td rowspan="4">MIL-STD- 202 Method 210</td></tr>
<tr><td></td><td></td><td>Tanδ</td><td>Within specified value</td></tr>
<tr><td></td><td></td><td>Leakage Current</td><td>Within specified value</td></tr>
<tr><td></td><td></td><td>Appearance</td><td>No abnormality</td></tr>
<tr><td>10</td><td>Solderability test (SMD)</td><td>Solderability test 1: Solder bath temperature: 235±5℃ Duration:5±0/-0.5s
Solderability test 2:Solder bath temperature:260±5℃ Duration:7±0.5s</td><td colspan="2">Sn is more than 95% in the surface of terminal</td><td>J-STD-002B</td></tr>
<tr><td>11</td><td>Electrical Characterization</td><td>Whether there is abnormality about electrical characterization in the test that under the ensurance temperature(the lowest ,the highest, atmospheric temperature).</td><td colspan="2">Appearance: No abnormality</td><td>User Spec.</td></tr>
<tr><td>12</td><td>Board Flex</td><td rowspan="4">Capacitor is placed in the PCB and pressed to deviate from Original fulcrum more than 2mm for 60（+5）s.</td><td>Capacitance change</td><td>Within ±10% of initial value</td><td rowspan="4">AEC-Q 200-005</td></tr>
<tr><td></td><td></td><td>Tanδ</td><td>Within specified value</td></tr>
<tr><td></td><td></td><td>Leakage Current</td><td>Within specified value</td></tr>
<tr><td></td><td></td><td>Appearance</td><td>No abnormality</td></tr>
<tr><td>13</td><td>Terminal Strength (SMD)</td><td rowspan="4">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.</td><td>Capacitance change</td><td>Within ±10% of initial value</td><td rowspan="4">AEC-Q 200-006</td></tr>
<tr><td></td><td></td><td>Tanδ</td><td>Within specified value</td></tr>
<tr><td></td><td></td><td>Leakage Current</td><td>Within specified value</td></tr>
<tr><td></td><td></td><td>Appearance</td><td>No abnormality</td></tr>
<tr><td>14</td><td>Surge Voltage</td><td>Capacitor is placed at 15℃~35℃ with surge voltage for 30±5(charging) and 330s(discharging),do surge voltage test continuity for 1000 times.
Applying voltage:
<table>
<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></td><td>Capacitance change</td><td>Within ±20% of initial value</td><td rowspan="4">AEC-Q 200-007</td></tr>
<tr><td></td><td></td><td>Tanδ</td><td>Less than 175% of specified value</td></tr>
<tr><td></td><td></td><td>Leakage Current</td><td>Within specified value</td></tr>
<tr><td></td><td></td><td>Appearance</td><td>No abnormality</td></tr>
</table>