Data Sheet

Customer:

Product: Aluminum Electrolytic Capacitors – AEMR Series

AEC-Q200 version available

Size : 4x7mm ~ 8x7mm

Issued Date: 16-Oct-2023

Edition: Ver. 1

Record of change

Date	Ver.	Description	Page
16-Oct-2023	1		

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Prepared by	Checked by	Approved by	Accepted by (customer)
16-Oct-2023	16-Oct-2023	16-Oct-2023	
Andy Hsu	***Hwa Wu***	***Hwa Wu***	

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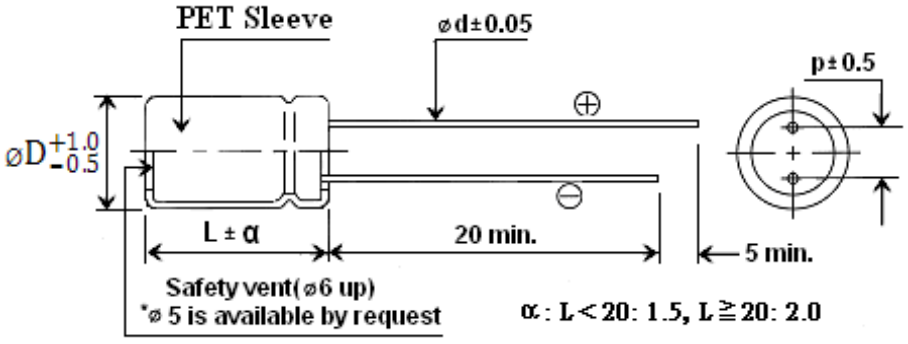
AEMR SERIES

- Super miniature size.
- Designed for use in VTRs, car radios, Car stereos. Micro-cassette tape recorders, pocket calculators and watches.
- AEC-Q200 version available

Characteristics

Voltage Range	4 ~ 63V							
Capacitance Range	0.47 ~ 470uF							
Temperature Range	-40 ~ + 105℃							
Capacitance Tolerance	±20% at 120Hz , 20℃(10% Tol. is available upon request)							
Leakage Current	I≤0.01CV or 3uA, whichever is greater (After 2 minutes)							
Dissipation Factor	Rated Voltage (V)	4V	6.3V	10V	16V	25V	35V	50V	63V
	Dissipation Factor(tanδ)max	0.35	0.24	0.20	0.16	0.14	0.12	0.10	0.10
	(at 20℃, 120Hz)								
Stability at Low Temperature	Impedance ration at 120Hz								
	Rated Voltage (V)	4V	6.3V	10V	16V	25V	35V	50V	63V
	Z-25℃/Z 20℃	7	4	3	2	2	2	2	2
	Z-40℃/Z 20℃	15	8	6	4	4	3	3	3
Load Life	After the rated voltage has been applied for 1000 hours at 105℃	Capacitance change	Within ±20% of initial value						
		D.F. tanδ	200% or less of initial specified value						
		Leakage current	Less than Initial specified value						
Shelf Life	After storage for 1000 hours at 105℃ 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



D §	4	5	6.3	8
p	1.5	2.0	2.5	3.5
d §	0.45			

Ripple Current Coefficients

Frequency (Hz)	50(60)	120	400	1K	10K	100K
Cap.(uF) / Hz	Multiplier					
Cap. ≦ 10	0.8	1	1.30	1.45	1.65	1.70
10＜Cap.≦100	0.8	1	1.23	1.36	1.48	1.53
100＜Cap.≦1000	0.8	1	1.16	1.25	1.35	1.38

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AEMR SERIES

Case Size of Standard Products & Maximum Ripple Current (mA rms 105℃ 120Hz)

Cap. \ WV	4V		6.3V		10V		16V		25V		35V		50V		63V	
uF	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.	Size	R.C.
0.47												→	4x7	5	4x7	6.3
1		ALL BLANK VOLTAGE ON SLEEVE MARKING IS SAME VOLTAGE "→" POINT TO										→	4x7	10	4x7	12
2.2												→	4x7	17	4x7	18
3.3												→	4x7	23	4x7	25
4.7												→	4x7	24	4x7	26
10						→	4x7	28	4x7	30	4x7	31	5x7	35	6.3x7	42
22						→	4x7	37	5x7	50	5x7	47	6.3x7	59	8x7	65
33				→	4x7	43	4x7	45	5x7	52	6.3x7	65	8x7	75		
47				→	4x7	50	5x7	65	6.3x7	71	6.3x7	80				
100	5x7	58	5x7	65	5x7	82	6.3x7	92	8x7	113						
220	6.3x7	65	6.3x7	90	6.3x7	120	8x7	145								
330	6.3x7	90	8x7	120	8x7	165										
470		→	8x7	165	8x7	217										

*Size 8x7 for 1000 hours at 85℃

Unit: mm

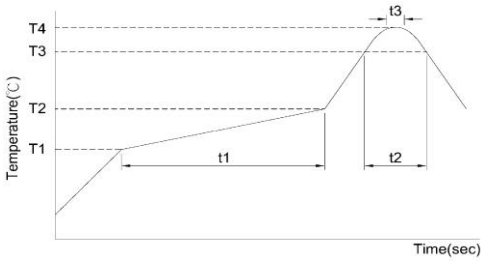
Part Numbering System

AEMR	101	M	25	A	–	T1
SERIES	CAPACITANCE	TOL.	W.V.	PACKAGE	SIZE	LEAD SPACE
	IN 3DIGITS	K= ± 10%	0G= 4V	B= Bulk	Omit if only	Omit if Bulk
	010= 1.0uF	M= ± 20%	0J= 6.3V	C5= Cut 5mm	one size	T1= L/S 2.5mm Taped
	4R7= 4.7 uF		10= 10V	A= Ammo Pack	A=Smaller	TA= Lead forming space 5mm Taped
	101= 100uF		25= 25V	R= Tape&Reel	size	
	331=330uF		63= 63V			T35= L/S 3.5mm Taped
				F5= Lead formed & cut 5mm		T2=L/S 5mm Taped

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: 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)	Capacitance change	Within ±10% of initial value	MIL-STD-202 Method 213
			Tanδ	Within specified value	
			Leakage Current	Within specified value	
			Appearance	No abnormality	
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>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>
<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-Q200-005</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>
<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-Q200-006</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>
<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.
<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>
Applying voltage:</td><td>Capacitance change</td><td>Within ±20% of initial value</td><td rowspan="4">AEC-Q200-007</td></tr>
<tr><td>Tanδ</td><td>Less than 175% of 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>