Data Sheet

Customer:

Product: Hybrid Conductive Polymer Capacitors SMD Type
Endurance 105℃ 5,000Hours – AEMSS Series
AEC-Q200 version available
Size : 6.3x5.8mm ~ 10x12.7mm

Issued Date: 16-Oct-2023

Edition: Ver. 1

Record of change

Date	Ver.	Description	Page
16-Oct-2023	1		

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16-Oct-2023	16-Oct-2023	16-Oct-2023	
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AEMSS SERIES

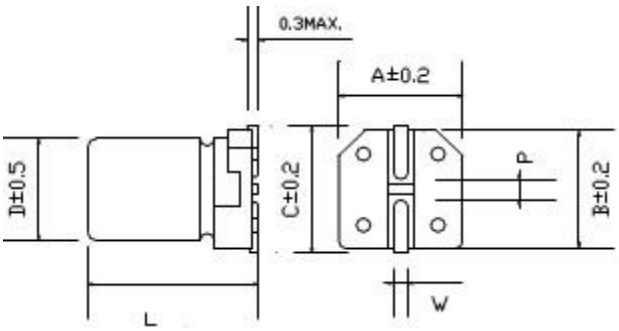
Features

- SMD TYPE. **Hybrid** Conductive Polymer Aluminum Solid Capacitors
- This type has lowest ESR level and excellent performance at high frequency through low profile.
- Ideal capacitor for digital and high frequency devices.
- Load life 105℃ **5,000** hours assured.
- AEC-Q200 version available

Characteristics

Voltage Range	16 ~100VDC	
Capacitance Range	10uF ~ 1000uF	
Temperature Range	-55 ~ +105℃	
Capacitance Tolerance	M=+20%/-20% , K=+10%/-10% (at 20**⁰C** , 120Hz)	
Leakage Current	Capacitance(μF) x Rated Voltage(Vdc) After 2minutes, see standard rating	
Dissipation Factor (tanδ) 20℃ 120Hz	See standard rating	
ESR (at 100K~300K Hz, 20℃)	See standard rating	
Endurance (Rated Voltage at 105℃ 5,000h, restored to 20℃)	Appearance	≦No significant damage
	Capacitance Change (μF)	Within ±20% of initial measured value
	Dissipation Factor (tanδ)	≦150% of an initial specified value
	ESR (mΩ)	≦150% of an initial specified value
	Leakage Current (μA)	≦Initial specified value
Moisture Resistance (Test at 60℃, 90~95RH for 1000hrs, L.C. should be tested after voltage treatment)	Capacitance Change (μF)	Within ±20% of initial measured value
	Dissipation Factor (tanδ)	≦150% of an initial specified value
	ESR (mΩ)	≦150% of an initial specified value
	Leakage Current (μA)	≦Initial specified value
Resistance to Soldering Heat	Capacitance Change (μF)	Within ±10% of initial measured value
	Dissipation Factor (tanδ)	≦130% of an initial specified value
	ESR (mΩ)	≦130% of an initial specified value
	Leakage Current (μA)	≦Initial specified value

Diagram of dimensions



Lead Spacing And Diameter

Case Size	ϕD	L	A	B	C	W	P±0.2
C6	6.3	5.8±0.5	6.5	6.5	7.2	0.5 ~ 0.8	2.1
C8	6.3	7.7±0.5	6.5	6.5	7.2	0.5 ~ 0.8	2.1
C10	6.3	9.2±0.5	6.5	6.5	7.2	0.5 ~ 0.8	2.1
C12	6.3	11.5±0.5	6.5	6.5	7.2	0.5 ~ 0.8	2.1
D8	8	7.7±0.5	8.3	8.3	9.0	0.8 ~ 1.1	3.2
D10	8	9.4±0.5	8.3	8.3	9.0	0.8 ~ 1.1	3.2
D12	8	11.7±0.5	8.3	8.3	9.0	0.8 ~ 1.1	3.2
F11	10	10.7+0.5	10.3	10.3	11.0	0.8 ~ 1.1	4.6
F13	10	12.7±0.5	10.3	10.3	11.0	0.8 ~ 1.1	4.6

Frequency coefficient for ripple current

Frequency	120Hz≦f<1KHz	1KHz≦f<10KHz	10KHz≦f<100KHz	100KHz≦f<500KHz
Coefficient	0.05	0.3	0.7	1

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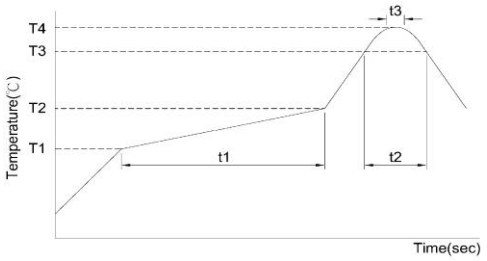
Ripple Current: mA /rms at 100kHz, 105^{0}C

W.V.(V)	Capacitance (μF)	Size ϕDxL(mm)	Size Code	Tanδ (120Hz,20C)	L.C. (μA)	E.S.R. (100k-300kHz,mΩ,20^{0}C MAX)	Rated R.C (mArms at 100kHz, 105^{0}C)
16 V	100	6.3x5.8	C6	0.1	16	28	2300
	100	6.3x7.7	C8	0.1	16	24	2300
	270	6.3x9.2	C10	0.1	43.2	18	3000
	330	6.3x9.2	C10	0.1	53	18	3100
	470	8x9.4	D10	0.1	75.2	14	3500
	560	8x9.4	D10	0.1	89.6	14	3500
	680	8x11.7	D12	0.1	109	15	4500
	820	8x11.7	D12	0.1	131.2	12	4500
	1000	10x12.7	F13	0.1	160	14	4800
25V	100	6.3x5.8	C6	0.1	25	26	2000
	100	6.3x9.2	C10	0.1	25	24	2000
	220	6.3x9.2	C10	0.1	55	22	2200
	330	8x9.2	D10	0.1	82	20	3200
	470	8x11.7	D12	0.1	117.5	16	4200
	560	8x11.7	D12	0.1	140	16	4500
	680	10x12.7	F13	0.1	170	14	5000
35V	100	6.3x9.2	C10	0.1	35	30	2000
	220	8x11.7	D12	0.1	77	24	2500
	330	10x12.7	F13	0.1	115.5	18	3200
	470	10x12.7	F13	0.1	164.5	16	3500
50V	22	6.3x5.8	C6	0.1	11	40	1800
	33	6.3x9.2	C10	0.1	17	36	2000
	47	6.3x9.2	C10	0.1	24	35	2200
	56	6.3x11.5	C12	0.1	28	25	2400
	68	6.3x11.5	C12	0.1	34	22	2500
	68	8x9.4	D10	0.1	34	22	3300
	82	8x11.5	D12	0.1	41	20	3800
	100	8x11.7	D12	0.1	50	20	4000
	150	10x12.7	F13	0.1	75	20	3200
	220	10x12.7	F13	0.1	110	20	3200
63v	10	6.3x5.8	C6	0.1	10	45	1800
	10	6.3x9.2	C10	0.1	10	35	2000
	22	6.3x9.2	C10	0.1	13.86	35	2200
	33	6.3x11.5	C12	0.1	20.79	30	2500
	47	8x9.4	D10	0.1	29.61	22	2400
	56	8x11.7	D12	0.1	35.28	22	2700
	82	10x12.7	F13	0.1	51.66	18	3000
	100	10x12.7	F13	0.1	63	16	3500
80v	22	8x9.4	D10	0.1	17.6	28	2400
	47	8x11.7	D12	0.1	37.6	24	2800
	56	10x12.7	F13	0.1	44.8	25	2500
	68	10x12.7	F13	0.1	54	23	3300
100v (2A)	12	6.3x9.2	C10	0.1	12	35	2000
	15	8x9.4	D10	0.1	15	32	2200
	22	8x11.7	D12	0.1	22	28	2400
	33	8x11.7	D12	0.1	33	26	2400
	47	10x12.7	F13	0.1	47	25	3000
	56	10x12.7	F13	0.1	56	23	3200

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-Q 200-005</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-Q 200-006</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.
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>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>