Conductive Polymer Aluminum Solid Capacitors
FEA Series Low Profile, 125°C

1. Features

- Low ESR & high ripple current capability
- Endurance: 1500/2000 hours at 125°C
- Low profile
- Compliant to the RoHS directive
- Suitable for industrial telecom, main board and consumer applications

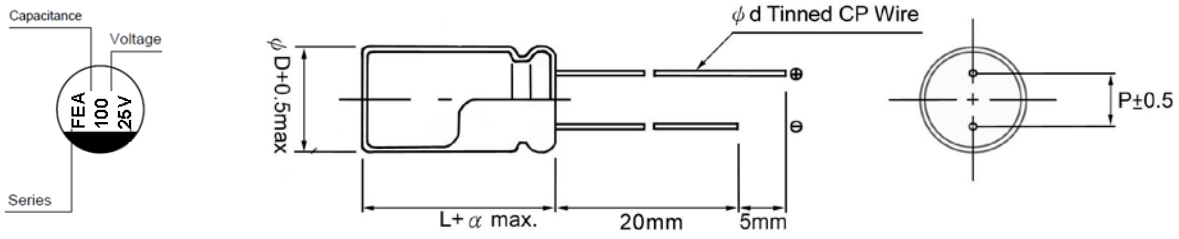
2. Specifications

<table>
<tr><th>Item</th><th colspan="2">Performance Characteristics</th></tr>
<tr><td>Operating Temperature range</td><td colspan="2">-55 + 125°C</td></tr>
<tr><td>Rated Voltage Range</td><td colspan="2">6.3V ~ 100V</td></tr>
<tr><td>Capacitance Tolerance</td><td colspan="2">± 20% (at 120 Hz / 20°C)</td></tr>
<tr><td>Surge Voltage</td><td colspan="2">Rated Voltage x 1.15</td></tr>
<tr><td>Leakage Current</td><td colspan="2">Within the specified value as in standard rating</td></tr>
<tr><td>Dissipation Factor (tan δ)</td><td colspan="2">Less than or equal to the specified value at 20°C, 120 Hz</td></tr>
<tr><td rowspan="2">Temperature Characteristics (Impedance ratio at 100 KHz)</td><td>Z (-25°C) / Z (+20°C)</td><td>≤ 1.15</td></tr>
<tr><td>Z (-55°C) / Z (+20°C)</td><td>≤ 1.25</td></tr>
<tr><td>Endurance</td><td colspan="2">The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 6.3V～25V 2,000 hours, ≥35V 1,500 hours at 125°C.
<table>
<tr><td>Capacitance change</td><td>≤ ± 30% of the initial value</td></tr>
<tr><td>D. F. (Tan δ)</td><td>≤300% of initial specified value</td></tr>
<tr><td>ESR</td><td>≤300% of initial specified value</td></tr>
<tr><td>Leakage current</td><td>Initial specified value or less</td></tr>
</table></td></tr>
<tr><td>Bias Humidity Test</td><td colspan="2">The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them at 60°C, 90 to 95% RH for 1,000 hours
<table>
<tr><td>Capacitance change</td><td>≤ ± 20% of the initial value</td></tr>
<tr><td>D. F. (Tan δ)</td><td>≤150% of initial specified value</td></tr>
<tr><td>ESR</td><td>≤150% of initial specified value</td></tr>
<tr><td>Leakage current</td><td>Initial specified value or less</td></tr>
</table></td></tr>
<tr><td>Surge Voltage Test</td><td colspan="2">The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltage specified at 125°C for 30 seconds through a protective resistor (R=1KΩ) and discharge for 5 minutes 30 seconds.
<table>
<tr><td>Capacitance change</td><td>≤ ± 20% of the initial value</td></tr>
<tr><td>D. F. (Tan δ)</td><td>≤150% of initial specified value</td></tr>
<tr><td>ESR</td><td>≤150% of initial specified value</td></tr>
<tr><td>Leakage current</td><td>Initial specified value or less</td></tr>
</table></td></tr>
<tr><td>Failure Rate</td><td colspan="2">0.5% per 1,000 hours maximum (Confidence level 60% at 125°C)</td></tr>
</table>

* In case of any doubt arises, measure the leakage current after voltage applied for 120 minutes at 125°C.

*Contents in this sheet are subject to change without prior notice.

3. Outline and Dimension



Unit : mm

ϕD +0.5max	6.3	8	10
ϕd ± 0.05	0.50	0.60	0.60
P	2.5	3.5	5.0
α (max)	1.0	1.5	1.5

4. Part Number Coding Rule

FEA	101	M	16V	68	TB2.5	□□
Series	**Capacitance**	**Tolerance**	**Rated voltage**	**Size**	**Packaging**	**Reserved**

125°C, Low profile

Capacitance	Code
1μF	1R0
4.7μF	4R7
47μF	470
470μF	471
4,700μF	472

Tolerance	Code
± 20%	M
± 10%	K

Voltage	Code
6.3V	6.3V
10V	10V
16V	16V
50V	50V

Size	Code
6.3 x 8	68
8 x 7	87
10 x 7	107

Style	Code
Lead Cut (length mm)	C(L)
Tape/Ammo (pitch mm)	TB(P)

5. Frequency coefficient of allowable ripple current

Frequency	Coefficient
120Hz ≤ f < 1KHz	0.05
1KHz ≤ f < 10KHz	0.30
10KHz ≤ f < 100KHz	0.70
100KHz ≤ f < 300KHz	1.00

6. Standard Products Table

(φD×Lmm)

Capacitance (μF)	Rated Voltage						
	6.3	10	16	25	35	50	100
22							10 x 7
47					6.3 x 8		
56						8 x 7	
100			6.3 x 8	6.3 x 8			
150							
180			8 x 7				
220	8 x 7	8 x 7	8 x 7				
270			6.3 x 8				
330							
390							
470	6.3 x 8						
560	6.3 x 8						
680	6.3 x 8						
820							
1000							

* Please contact our sales representative for the product availability in cells.

7. Standard Ratings

Rated voltage (V.DC)	Rated Capacitance (μF)	Case Size D x L (mm)	Tan δ	Leakage Current (μA)	ESR (mΩ max./ 20°C 100KHz to 300KHz)	Rated ripple current □Arms, 100 KHz		Part Number
						Tx ≤105°C	105°C < Tx ≤125°C	
6.3V	220	8 x 7	0.12	277	28	3,060	1,060	FEA221M6.3V87
	470	6.3 x 8	0.12	592	8	4,700	1,180	FEA471M6.3V68
	560	6.3 x 8	0.12	705	8	4,700	1,250	FEA561M6.3V68
	680	6.3 x 8	0.12	857	10	4,700	1,250	FEA681M6.3V68
10V	220	8 x 7	0.12	440	22	3,680	1,120	FEA221M10V87
16V	100	6.3 x 8	0.12	500	25	2,700	1,020	FEA101M16V68
	220	8 x 7	0.12	704	20	3,680	1,020	FEA221M16V87
	270	6.3 x 8	0.12	865	15	3,500	1,020	FEA271M16V68
25V	100	6.3 x 8	0.12	500	25	3,050	1,880	FEA101M25V68
35V	47	6.3 x 8	0.12	300	34	3,100	1,180	FEA470M35V68
50V	56	8 x 7	0.12	560	38	2,020	1,025	FEA560M50V87
100V	22	10 x 7	0.12	440	40	1,460	680	FEA220M100V107

* Please contact us if the rating data of request item did not show in above.

8. Precaution for using capacitors

a. Polymer Solid capacitors for D.C. application require polarization confirm the polarity before use. If used in reversed polarity, the circuit life may be shortened and the capacitor or other components may be damaged. To avoid capacitors exploding informally, we have developed "Case vent and Rubber vent" whenever the diameter is 8x11mm or over.

b. Use the Polymer Solid capacitors according to the specified operating temperature range, and do not apply voltage exceeding the specified capacitor voltage rating.

c. The capacitance tolerance and D.F. should be tested at 120Hz, 25°C, the value of the leakage current should be measured at 25°C, with rated working voltage applied in specified time.

d. For methods of testing the strength of lead wire and terminals, refer to the specified value of JIS-C5102 and IEC384 to avoid the inner or capacitors damaged.

e. Do not place a soldering iron near or on the body of capacitor to avoid the sleeves of the capacitors deforming and cracking under high temperature.

f. Do not use halogenated hydrocarbon solvent whenever soldering capacitors or cleaning the circuit board to avoid the inner of capacitors damaged. Please refer to following table when using.

Safe	Unsafe
Xylene	1.1.1-Trichloro-1.1.2-Trifuoroethane
Ethyl alcohol	Carbon tetrachloride
Buthyl alcohol	Chloroform
Methyl alcohol	Trichloroethane
Propyl alcohol	Trichloroethylene
Calgonito(detergent)	Methylene Chloride

g. Be careful of temperature and time when soldering. Dipping must be performed at the soldering temperature or less than 260°C for less than 10 seconds otherwise the capacitors may be damaged.

h. Capacitors should be stored at low temperature and low humidity to have longer storage time. If the storage period is too long, the capacitors should be charged before use.

i. The specifications of products are according to characteristic (w) established JIS-C5141, IEC384. For methods of processing and testing refer to JIS-C5102 and IEC384.