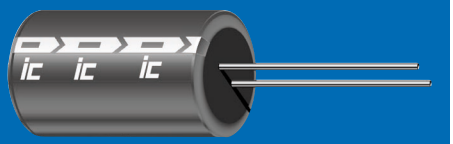
AFX

+ 105°C Organic Semiconductor Aluminum Electrolytic Capacitors



Switching power supplies and high frequency applications

FEATURES

- ***Extremely Low ESR***
- ***Stable with temperature***
- ***High Ripple Current (up to 9.75A)***
- ***High Frequency (Up to 300kHz)***

SPECIFICATIONS

Capacitance Tolerance		**±20% at 120Hz, 20°C**				
Operating Temperature Range		**-55°C to +105°C**				
Dissipation Factor 120Hz, 20°C (Max)	**WVDC**	6.3	10	16	20	25
	tan δ	See Standard Part Listing				
Impedance Ratio at Low Temperature (120Hz)	**105°C/20°C**	0.75 to 1.25				
	-55°C/20°C	0.75 to 1.25				
Leakage current	**WVDC**	≤30 WVDC				
	Time	2 Minutes				
		See Standard Part Listing				
Reverse Voltage		<20% of rated voltage				
Load Life		2,000 hours at +105°C with rated WVDC Capacitors will meet the requirements listed below.				
	Capacitance change Dissipation factor Leakage current	≤ 25% of initial measured values ≤ 150% initial specified value ≤100% Initial specified value				
Moisture Resistance		1,000 Hours under no load at 60°C, 90-95%R.H. Capacitors will meet the requirements listed below.				
	Capacitance change Dissipation factor Leakage current	≤ 20% of initial measured values ≤ 150% initial specified value ≤100% Initial specified value				
Voltage Derating		The working voltage must be derated when used at temperatures exceeding 85°C. The voltage should be reduced by .25V for every 1°C above 85°C.				
Ripple Current Multipliers		Temperature(°C)				
		<45	45	65	85	95
		1.0	.85	.7	.4	.25

SPECIAL ORDER OPTIONS

• *Ammo Pack* • *Special tolerances: ±10% (K)* • *Cut, form, cut and formed leads*

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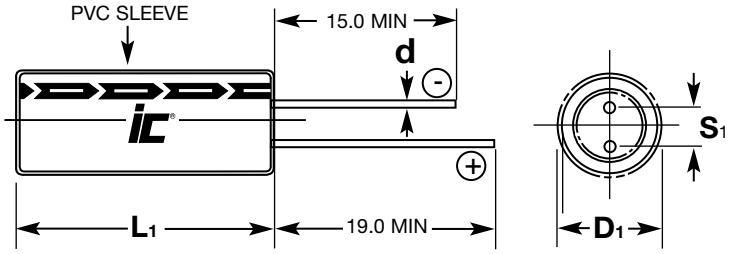
PHYSICAL DIMENSIONS

WVDC (SV) / (µF)	6.3 (8.2)	10 (11.5)	16 (18.4)	20 (23)	25 (32)
1.0					5x6.8
1.5					5x6.8
2.2					5x6.8
3.3					5x6.8
4.7			5x6.8		6.3x9.8
6.8			5x6.8		6.3x9.8
10		5x6.8			6.3x9.8
15	5x6.8			6.3x6.8	6.3x9.8
22				6.3x6.8	8x10.5
33			6.3x9.8	6.3x9.8	10x10.5
47	6.3x6.8		6.3x9.8	8x10.5	10x10.5
68		6.3x9.8		8x10.5	
100			8x10.5	10x10.5	
150	8x10.5		10x10.5		
220		10x10.5			
330	10x10.5				
470			12.5x22		
1000	10x10.5		16x25		
2200	16x25				
3300	16x25				



D	5.0	6.3	8.0	10	12.5	16
d	0.5	0.5	0.6	0.6	0.8	0.8
S	2.0	2.5	3.5	5.0	5.0	7.5

D=D+0.5 mm Max.
L=L+1 mm Max.
S_1=S±0.5 mm Max.(1.0 for D=12.5, 16mm)

STANDARD PART LISTING

Capacitance (µF)	WVDC	IC PART NUMBER	Maximum (tan δ) 120Hz, +20°C	Maximum ESR mΩ 100-300kHz, +20°C	L.C. µA 2 min.	Maximum RMS Ripple Current (mA) +45°C 100KHz	Dimensions DxL (mm)
1	25	**105AFX025M**	.07	350	0.5	430	5x6.8
1.5	25	**155AFX025M**	.07	300	0.75	435	5x6.8
2.2	25	**225AFX025M**	.07	200	1.1	695	5x6.8
3.3	25	**335AFX025M**	.07	200	1.65	700	5x6.8
4.7	16	**475AFX016M**	.07	180	1.5	720	5x6.8
4.7	25	**475AFX025M**	.07	100	2.35	1130	6.3x6.8
6.8	16	**685AFX016M**	.07	150	2.18	745	5x6.8
6.8	25	**685AFX025M**	.07	100	3.4	1140	6.3x6.8
10	10	**106AFX010M**	.07	150	2	780	5x6.8
10	25	**106AFX025M**	.07	90	5	1150	6.3x6.8
15	6.3	**156AFX6R3M**	.07	120	1.89	815	5x6.8
15	20	**156AFX020M**	.07	90	6	1200	6.3x6.8
15	25	**156AFX025M**	.07	70	7.5	1650	6.3x9.8
22	20	**226AFX020M**	.07	70	8.8	1300	6.3x6.8
22	25	**226AFX025M**	.07	40	11	2330	8x10.5
33	16	**336AFX016M**	.07	70	10.6	1370	6.3x6.8
33	20	**336AFX020M**	.07	70	13.2	1710	6.3x9.8
33	25	**336AFX025M**	.07	35	16.5	2900	10x10.5

Capacitance (µF)	WVDC	IC PART NUMBER	Maximum (tan δ) 120Hz, +20°C	Maximum ESR mΩ 100-300kHz, +20°C	L.C. µA 2 min.	Maximum RMS Ripple Current (mA) +45°C 100KHz	Dimensions DxL (mm)
47	6.3	**476AFX6R3M**	.07	60	5.92	1430	6.3x6.8
47	16	**476AFX016M**	.07	60	15	1830	6.3x9.8
47	20	**476AFX020M**	.07	40	18.8	2450	8x10.5
47	25	**476AFX025M**	.07	35	23.5	2980	10x10.5
68	10	**686AFX010M**	.07	50	13.6	2000	6.3x9.8
68	20	**686AFX020M**	.07	36	27.2	2600	8x10.5
100	16	**107AFX016M**	.07	30	32	2740	8x10.5
100	20	**107AFX020M**	.07	30	40	3210	10x10.5
150	6.3	**157AFX6R3M**	.07	30	18.9	2780	8x10.5
150	16	**157AFX016M**	.07	28	48	3260	10x10.5
220	10	**227AFX010M**	.07	27	44	3370	10x10.5
330	6.3	**337AFX016M**	.07	25	41.6	3500	10x10.5
470	16	**477AFX016M**	.09	15	640	9750	12.5x22
1000	6.3	**108AFX6R3M**	.08	13	315	4935	10x10.5
1000	16	**108AFX016M**	.09	15	640	9750	16x25
2200	6.3	**228AFX6R3M**	.13	15	554.4	9750	16x25
3300	6.3	**338AFX6R3M**	.13	15	831.6	10100	16x25

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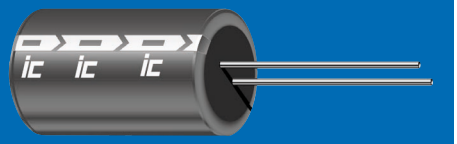
+ 105°C High Capacitance Organic Semiconductor Solid Aluminum Electrolytic Capacitors



Switching power supplies and high frequency applications

FEATURES

- ***Extremely Low ESR***
- *Stable with temperature*
- *High Ripple Current (up to 7.1A)*
- *High Frequency (Up to 300kHz)*

SPECIFICATIONS

Capacitance Tolerance		**±20% at 120Hz, 20°C**					
Operating Temperature Range		**-55°C to +105°C**					
Dissipation Factor 120Hz, 20°C (Max)	**WVDC**	2	4	6.3	10	16	25
	tan δ	See Standard Part Listing					
Impedance Ratio at Low Temperature (120Hz)	**105°C/20°C**	0.75 to 1.25					
	-55°C/20°C	0.75 to 1.25					
Leakage current	**WVDC**	<25 WVDC					
	Time	2 Minutes					
		See Standard Part Listing					
Reverse Voltage		<20% of rated voltage					
Load Life	2,000 hours at +105°C with rated WVDC Capacitors will meet the requirements listed below.						
	Capacitance change Dissipation factor Leakage current	≤ 20% of initial measured values ≤ 150% initial specified value ≤100% Initial specified value					
Moisture Resistance	1,000 Hours under no load at 60°C, 90-95%R.H. Capacitors will meet the requirements listed below.						
	Capacitance change Dissipation factor Leakage current	≤ 20% of initial measured values ≤ 150% initial specified value ≤100% Initial specified value					
Voltage Derating	For 25V capacitors the working voltage must be derated when used at temperatures exceeding 85°C. The voltage should be reduced by .25V for every 1°C above 85°C.						
Ripple Current Multipliers	Temperature(°C)						
	<45	45	65	85	95		
	1.0	.85	.7	.4	.25		

SPECIAL ORDER OPTIONS

- *Ammo Pack*
- *Special tolerances: ±10% (K)*
- *Cut, form, cut and formed leads*

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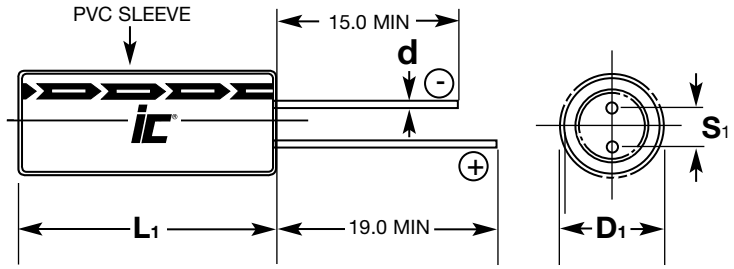
+ 105°C High Capacitance Organic Semiconductor Solid Aluminum Electrolytic Capacitors

PHYSICAL DIMENSIONS

WVDC (SV) / (µF)	2 (2.5)	4 (5)	6.3 (7.9)	10 (13)	16 (20)	20 (25)	25 (32)
33	→	→	→	→	→	→	8x10.5
56	→	→	→	→	→	→	10x10.5
68	→	→	→	→	→	6.3x9.8	
100	→	→	→	→	6.3x9.8		
120	→	→	→	→	→	8x10.5	
150	→	→	→	6.3x9.8			
180	→	→	→	→	8x10.5	10x10.5	
220	→	→	8x10.5				
270	→	6.3x9.8	→	8x10.5	10x10.5		
470	→	→	→	10x10.5			
560	→	8x10.5					
680	→	→	10x10.5				
820	→	10x10.5					
1000	10x10.5						
1500	→	10x20					
1800	10x20						
2200	→	12.5x22					



D	6.3	8.0	10	12.5
S	2.5	3.5	5.0	5.0
d	0.5	0.6	0.6	0.8

D_1=D+0.5 mm Max.
L_1=L+1 mm Max.
S_1=S±0.5 mm

STANDARD PART LISTING

Capacitance (µF)	WVDC	IC® PART NUMBER	Maximum (tan δ) 120Hz, +20°C	Maximum ESR mΩ 100-300kHz, +20°C	L.C. µA 2 min.	Maximum RMS Ripple Current (mA) +45°C 100KHz	Dimensions DxL (mm)
33	25	**336AFD025M**	.08	30	82.5	2780	8x10.5
56	25	**566AFD025M**	.08	25	140	3260	10x10.5
68	20	**686AFD020M**	.08	30	136	2580	6.3x9.8
100	16	**107AFD016M**	.08	25	160	2820	6.3x9.8
120	20	**127AFD020M**	.08	24	240	3110	8x10.5
150	10	**157AFD010M**	.08	25	150	2820	6.3x9.8
180	16	**187AFD016M**	.08	20	288	3410	8x10.5
180	20	**187AFD020M**	.08	20	360	4280	10x10.5
220	6.3	**227AFD6R3M**	.08	30	69.3	3000	8x10.5
270	4	**277AFD004M**	.08	20	108	3160	6.3x9.8

Capacitance (µF)	WVDC	IC® PART NUMBER	Maximum (tan δ) 120Hz, +20°C	Maximum ESR mΩ 100-300kHz, +20°C	L.C. µA 2 min.	Maximum RMS Ripple Current (mA) +45°C 100KHz	Dimensions DxL (mm)
270	10	**277AFD010M**	.08	18	270	3600	8x10.5
270	16	**277AFD016M**	.08	18	432	4400	10x10.5
470	10	**477AFD010M**	.08	15	470	4510	10x10.5
560	4	**567AFD004M**	.08	14	224	4080	8x10.5
680	6.3	**687AFD6R3M**	.08	13	428	4840	10x10.5
820	4	**827AFD004M**	.08	12	328	5040	10x10.5
1000	2	**108AFD002M**	.08	11	400	5260	10x10.5
1500	4	**158AFD004M**	.1	10	600	6500	10x20
1800	2	**188AFD002M**	.1	10	720	6500	10x20
2200	4	**228AFD004M**	.13	10	880	7100	12.5x22

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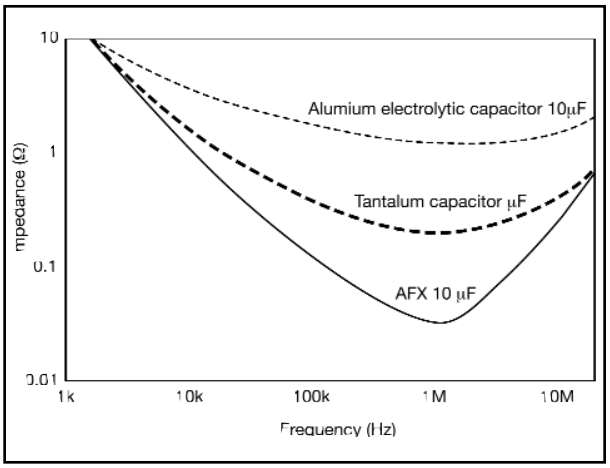
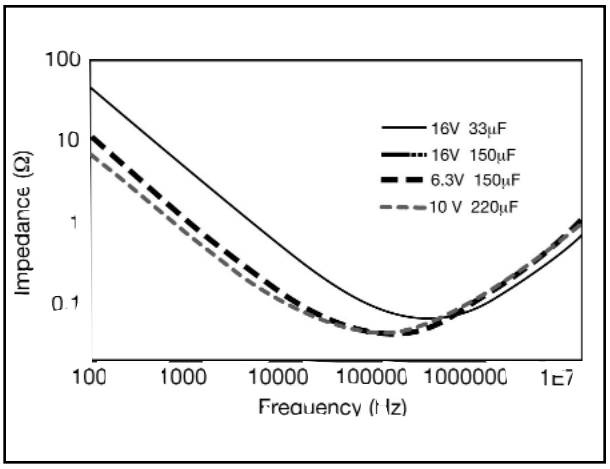


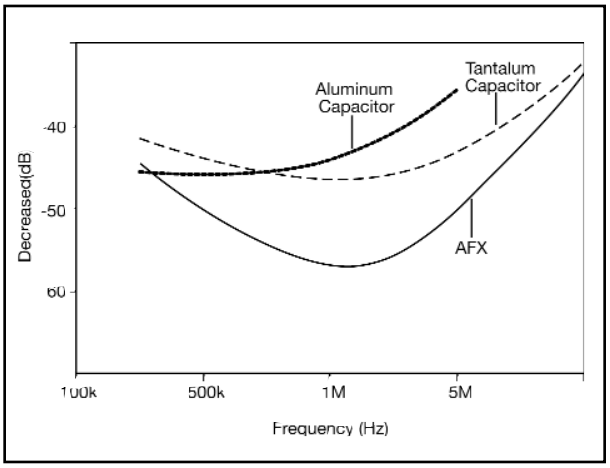
Impedance Characteristic

At 1MHz our organic semi-conductive electrolytic capacitors have impedances that are one eighth of a Tantalum capacitor and one fourteenth of an aluminum electrolytic capacitor.
By use of an organic semiconductor electrolytic the frequency characteristics of these capacitors series approach that of a film capacitor.



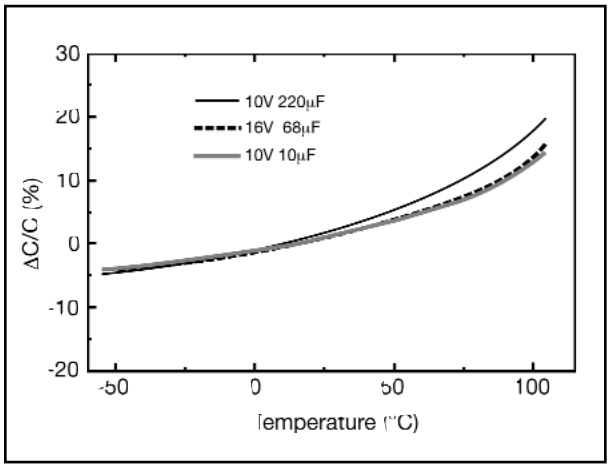
Impedance Characteristic

Organic semi-conductive electrolytic capacitors have self-resonance frequencies at 100kHz to 10MHz with impedances greatly lower than aluminum or tantalum electrolytic capacitors.



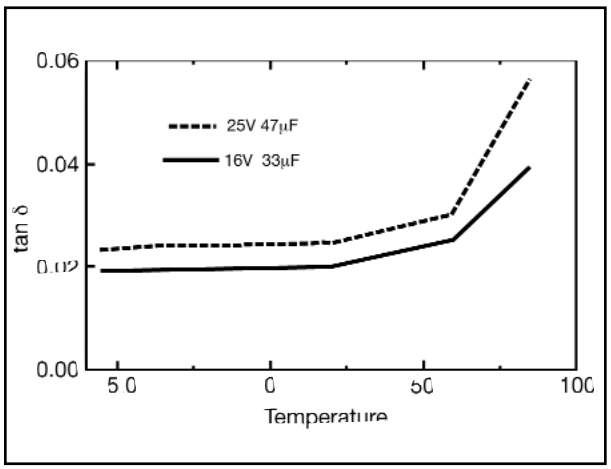
Noise Reduction Characteristics

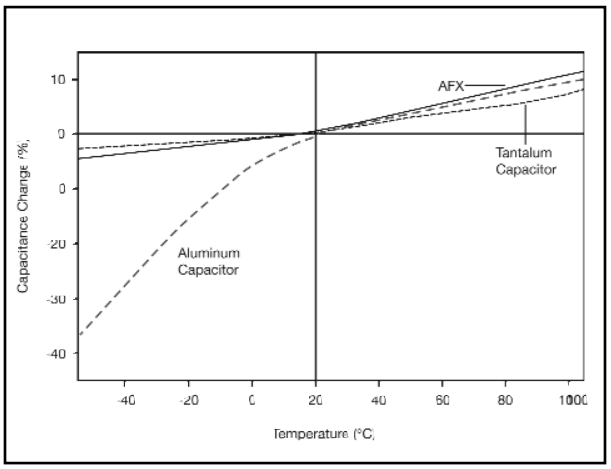
The noise reduction characteristics of our organic semi-conductive electrolytic capacitors are superior to tantalum and aluminum electrolytic capacitors.
Our organic semi-conductive electrolytic capacitors have noise levels that are about 10% of a tantalum capacitor and about 8% of an aluminum electrolytic capacitor.

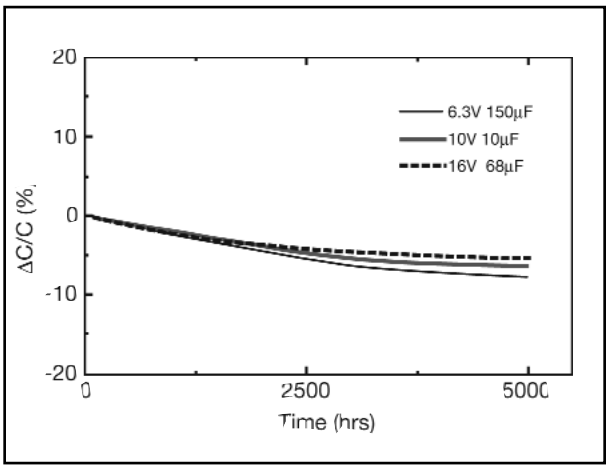


Temperature Characteristics

Organic semi-conductive electrolytic capacitors are stable with temperature especially at lower temperatures where changes can be severe.







Life test for Organic semi-conductive electrolytic capacitors

Organic semi-conductive electrolytic capacitors are very stable over time and have operating life expectancies superior to aluminum electrolytic capacitors.