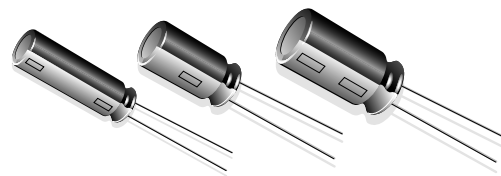


Aluminum Electrolytic Capacitors (Type Radial Lead)

Series: FA Type: A (Radial Leads)

Style: 04/JIS C 5141



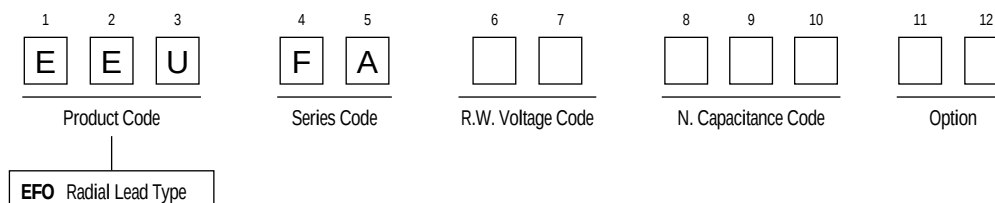
■ Features

- Smaller than Series HFQ
- Low impedance (20 to 40 less volume than Series HFQ)
- Long life: 2,000 to 5,000 hours at +105°C

■ Recommended Applications

- Power supplies, lighting, robots, industrial controls, telecommunications equipment

■ Explanation of Part Numbers



■ Specifications

Operating temperature range -55 to 105°C

Rated working voltage 6.3 to 63 V DC

Nominal capacitance range 68 to 15,000 μ F

Capacitance tolerance $\pm 20\%$ (120 Hz/+20°C)

$\tan \delta$	W.V. (V)	$\tan \delta^{**}$
	6.3	0.22
	10	0.19
	16	0.16
	25	0.14
	35	0.12
	50	0.10
	63	0.08

DC leakage current $I \leq 0.01 CV$ (μ A) after 2 minutes application of rated working voltage at +20°C

Characteristics at low temperature Impedance at -10°C, 100 kHz $\leq 200\%$ of initial specified value at +20°C, 100 kHz. (Impedance ratio at 100 kHz)

Endurance:

Capacitance change $\pm 20\%$ of initial measured value

$\tan \delta$ $\leq 200\%$ of initial specified value

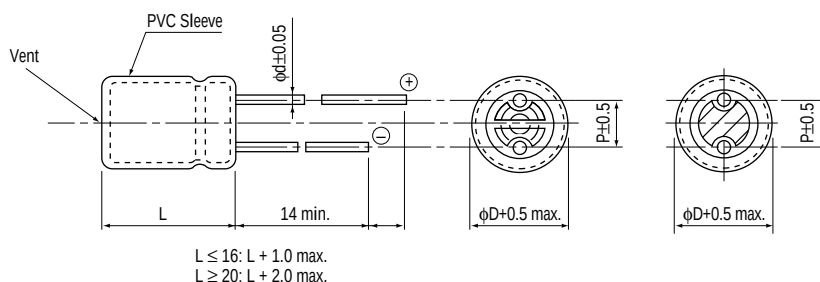
DC leakage current $\leq$ initial specified value

Shelf life

After storage for 1,000 hours at +105 $\pm$ 2°C with no voltage applied and then being stabilized at +20°C, capacitor shall meet the limits specified in "Endurance."

* (120 Hz/+20°C) ** Max.

■ Dimensions in mm (not to scale)



Body Dia. ϕD	8	10	12.5	x	16	18
Body Length L	—	—	≤ 25	≥ 30	—	—
Lead Dia. ϕD	0.6	0.6	0.6	0.8	0.8	0.8
Lead Space P	3.5	5.0	5.0	5.0	7.5	7.5

■ Frequency Correction Factor for Ripple Current

Working Voltage(V DC)	Capacitance (μ F)	Frequency (Hz)				
		60	120	1k	10k	100k
6.3 to 63	60 to 330	0.55	0.65	0.85	0.90	1.0
	390 to 1,000	0.70	0.75	0.90	0.95	1.0
	1,200 to 2,200	0.75	0.80	0.90	0.95	1.0
	2,700 to 15,000	0.80	0.85	0.95	1.00	1.0

■ Case Size/Impedance/Ripple Current

Case Size φD x L (mm)	6.3 (0J)				10 (1A)			
	Capacitance (μF)	Impedance (Ω) (100 kHz)		Ripple Current (mA) rms (100 kHz/+105°C)	Capacitance (μF)	Impedance (Ω) (100 kHz)		Ripple Current (mA) rms (100 kHz/+105°C)
		-10°C	+20°C			-10°C	+20°C	
8 x11.5	560	0.234	0.117	555	390	0.234	0.117	555
8 x15	820 L*	0.170	0.085	730	680 L*	0.170	0.086	730
8 x20	1,200	0.130	0.065	995	1,000	0.130	0.65	995
10 x12.5	820	0.180	0.090	755	680	0.180	0.090	755
10 x16	1,000	0.136	0.068	950	820	0.136	0.068	950
10 x20	1,500	0.104	0.052	1,220	1,200	0.104	0.052	1,220
10 x25	1,800	0.090	0.045	1,440	1,500	0.090	0.045	1,440
10 x30	2,700 L	0.070	0.035	1,815	2,200	0.070	0.035	1,185
12.5 x15	1,500 X*	0.120	0.060	1,205	1,200 S*	0.120	0.060	1,205
12.5 x20	2,700	0.076	0.038	1,655	1,800	0.076	0.038	1,655
12.5 x25	3,900	0.068	0.034	1,945	2,700	0.068	0.034	1,945
12.5 x30	4,700 L*	0.050	0.025	2,310	3,300 L*	0.050	0.025	2,310
12.5 x35	5,600 L*	0.044	0.022	2,510	3,900	0.044	0.022	2,510
12.5 x40	6,800 L*	0.036	0.018	2,655	4,700 L*	0.036	0.018	2,655
16 x20	4,700	0.050	0.025	2,205	3,300	0.050	0.025	2,205
16 x25	5,600	0.044	0.022	2,555	4,700	0.044	0.222	2,555
16 x31.5	6,800	0.036	0.018	3,010	6,800	0.032	0.066	3,150
16 x35.5	8,200	0.032	0.016	3,150	6,800	0.032	0.016	3,150
16 x40	10,000 L*	0.030	0.015	3,360	8,200 L*	0.030	0.015	3,360
18 x20	5,600 S*	0.044	0.022	2,490	4,700 S*	0.044	0.022	2,490
18 x25	6,800 S*	0.038	0.019	2,740	5,600 S*	0.038	0.019	2,740
18 x31.5	10,000	0.032	0.016	3,635	8,200	0.032	0.016	3,635
18 x35.5	12,000	0.030	0.015	3,680	10,000	0.030	0.015	3,680
18 x40	15,000	0.028	0.014	3,735	12,000	0.028	0.014	3,745
	16 (1C)				25 (1E)			
8 x11.5	270	0.234	0.117	555	180	0.234	0.117	555
8 x15	470 L*	0.170	0.085	730	330 L*	0.170	0.085	730
8 x20	680	0.130	0.065	995	470	0.130	0.065	995
10 x12.5	470	0.018	0.090	755	330	0.180	0.090	755
10 x16	560	0.136	0.068	950	390	0.136	0.068	950
10 x20	820	0.104	0.052	1,220	560	0.104	0.052	1,220
10 x25	1,000	0.090	0.045	1,440	680	0.090	0.045	1,440
10 x30	1,500	0.070	0.035	1,815	1,000 L*	0.070	0.035	1,185
12.5 x15	820 S*	0.120	0.060	1,205	560 S*	0.120	0.060	1,205
12.5 x20	1,200	0.076	0.038	1,655	1,000	0.076	0.038	1,655
12.5 x25	1,800	0.068	0.034	1,945	1,200	0.068	0.034	1,945
12.5 x30	2,200 L*	0.060	0.025	2,310	1,500 L*	0.050	0.025	2,310
12.5 x35	2,700	0.044	0.022	2,510	1,800	0.044	0.022	2,510
12.5 x40	3,300 L*	0.036	0.018	2,655	2,200 L*	0.036	0.018	2,655
16 x20	2,200	0.050	0.025	2,205	1,500	0.050	0.025	2,205
16 x25	3,300	0.044	0.022	2,555	2,200	0.044	0.022	2,555
16 x31.5	3,900	0.036	0.018	3,010	2,700	0.036	0.018	3,010
16 x35.5	4,700	0.032	0.016	3,150	3,300	0.032	0.016	3,150
16 x40	5,600 L*	0.030	0.015	3,360	3,900 L*	0.030	0.015	3,360
18 x20	3,300 S*	0.044	0.022	2,490	2,200 S*	0.044	0.022	2,490
18 x25	3,900 S*	0.038	0.019	2,740	2,700 S*	0.038	0.019	2,740
18 x31.5	5,600	0.032	0.016	3,635	3,900	0.032	0.016	3,635
18 x35.5	6,800	0.030	0.015	3,680	4,700	0.030	0.015	3,680
18 x40	8,200	0.028	0.014	3,735	5,600	0.028	0.014	3,735

() shows W. V. code

* L or S in case size table are optional codes. Example: EEUFA □ □ □ □ □ □ □ □

■ Case Size/Impedance/Ripple Current (cont'd)

Case Size φD x L (mm)	35 (1V)				50 (1H)			
	Capacitance (μF)	Impedance (Ω) (100 kHz)		Ripple Current (mA) rms (100 kHz/+105°C)	Capacitance (μF)	Impedance (Ω) (100 kHz)		Ripple Current (mA) rms (100 kHz/+105°C)
		-10°C	+20°C			-10°C	+20°C	
8 x11.5	150	0.234	0.117	555	82	0.468	0.234	485
8 x15	220 L*	0.170	0.085	730	120 L*	0.310	0.155	635
8 x20	330	0.130	0.065	995	180	0.240	0.120	860
10 x12.5	220	0.180	0.090	755	120	0.324	0.162	614
10 x16	270	0.136	0.068	950	150	0.238	0.119	740
10 x20	390	0.104	0.052	1,220	220	0.180	0.090	1,030
10 x25	470	0.090	0.045	1,440	270	0.164	0.082	1,200
10 x30	680 L*	0.070	0.035	1,815	470	0.120	0.060	1,610
12.5 x15	390 S*	0.120	0.070	1,205	220 S*	0.200	0.100	1,150
12.5 x20	680	0.076	0.038	1,655	390	0.116	0.058	1,480
12.5 x25	1,000	0.068	0.034	1,945	560	0.100	0.050	1,832
12.5 x30	1,200 L*	0.050	0.025	2,310	680 L*	0.080	0.040	2,215
12.5 x35	1,500 L*	0.044	0.022	2,510	820 L*	0.068	0.034	2,285
12.5 x40	1,800 L*	0.036	0.018	2,655	1,000 L*	0.060	0.030	2,590
16 x20	1,200	0.050	0.025	2,205	680	0.096	0.048	1,835
16 x25	1,500	0.044	0.022	2,555	1,000	0.068	0.034	2,235
16 x31.5	1,800	0.036	0.018	3,010	1,200	0.056	0.028	2,700
16 x35.5	2,200	0.032	0.016	3,150	1,500 L*	0.050	0.025	2,790
16 x40	2,700 L*	0.030	0.015	3,360	1,800 L*	0.046	0.023	2,845
18 x20	1,500 S*	0.044	0.022	2,490	820	0.080	0.040	2,420
18 x25	1,800 S*	0.038	0.019	2,740	1,200 S*	0.058	0.029	2,610
18 x31.5	2,700	0.032	0.016	3,635	1,500	0.050	0.025	3,000
18 x35.5	3,300	0.030	0.015	3,680	1,800	0.046	0.023	3,100
18 x40	3,900	0.028	0.014	3,735	2,200	0.040	0.020	3,250
63 (1J)								
8 x11.5	68	0.064	0.032	405				
8 x15	100 L*	0.460	0.230	535				
8 x20	150	0.356	0.178	690				
10 x12.5	100	0.512	0.256	535				
10 x16	120	0.388	0.194	600				
10 x20	180	0.294	0.147	885				
10 x25	220	0.260	0.130	1,050				
10 x30	330 L*	0.180	0.090	1,300				
12.5 x15	180 S*	0.300	0.150	1,020				
12.5 x20	330	0.170	0.085	1,285				
12.5 x25	390	0.140	0.070	1,720				
12.5 x30	470 L*	0.110	0.055	2,090				
12.5 x35	680 L*	0.094	0.047	2,265				
12.5 x40	820 L*	0.084	0.042	2,560				
16 x20	470	0.118	0.049	1,765				
16 x25	680	0.100	0.050	2,160				
16 x31.5	820	0.086	0.043	2,670				
16 x35.5	1,000	0.072	0.036	2,770				
16 x40	1,200 L*	0.060	0.030	2,825				
18 x20	680 S*	0.110	0.055	2,290				
18 x25	820 S*	0.086	0.043	2,585				
18 x31.5	1,200	0.064	0.032	2,950				
18 x35.5	1,500	0.060	0.030	2,825				
18 x40	1,800	0.050	0.025	3,205				

() shows W. V. code

* L or S in case size table are optional codes. Example: EEUFA □ □ □ □ □ _s