

**SUBJECT: ECA-xxFG Series Radial Leaded Aluminum Electrolytic Capacitor
will be Discontinued Effective per below.**

BULLETIN #: ECG.PG.44.99.0809

Date: August 12, 1999

LAST TIME BUY: December 31, 1999

LAST TIME SHIPMENT: March 31, 2000

**SUGGESTED REPLACEMENT: EEU-FC (FC series) Radial Leaded Aluminum
Electrolytic Capacitor**

The EEU-FC (FC Series) radial leaded aluminum electrolytic capacitor is the recommended replacement for the HFG series. Generally the FC series is a drop in replacement for the HFG series but there may be some exceptions in can size, lead spacing, footprint and electrical properties depending on the capacitance and voltage values required. Please contact the Resident Engineers for the exact replacement part number and any deviations.

Please notify your customers of the change.

HFG series replacement program to FC series (last order : Mar/End/2000)

ECEAxFGxxx

EEUFCxxxxx

1998/9/22

Recommend smaller capacitance or smaller size parts with same ripple current/impedance level,

shows deviation

1999/11/24 rev.A

HFG - series								FC - series							
HFG Part No.	WV V	Cap. uF	Case Size		Pitch mm	Ripple mA 105	Imp. ohm	FC Part No.	WV V	Cap. uF	Case Size		Pitch mm	Ripple mA 105	Imp. ohm
			Dmm	Lmm							Dmm	Lmm			
ECA0JFG101	6.3	100	5	11	2.0	140	1.000	EEUFC0J101	6.3	100	5	11	2.0	175	0.800
ECA0JFG221	6.3	220	6.3	11.2	2.5	245	0.420	EEUFC0J221	6.3	220	6.3	11.2	2.5	290	0.350
ECA0JFG331	6.3	330	6.3	11.2	2.5	245	0.420	EEUFC0J331S	6.3	330	6.3	11.2	2.5	290	0.350
ECA0JFG471	6.3	470	8	11.5	3.5	400	0.210	EEUFC0J471	6.3	470	8	11.5	3.5	555	0.117
ECA0JFG102	6.3	1000	10	12.5	5.0	560	0.150	EEUFC0J102	6.3	1000	10	12.5	5.0	755	0.090
ECA0JFG222	6.3	2200	12.5	20	5.0	1280	0.050	EEUFC0J222	6.3	2200	10	25	5.0	1440	0.045
								EEUFC1A222	10	2200	12.5	20	5.0	1655	0.038
ECA0JFG332	6.3	3300	12.5	20	5.0	1280	0.050	EEUFC0J332	6.3	3300	12.5	20	5.0	1655	0.038
ECA0JFG472	6.3	4700	16	25	7.5	1970	0.031	EEUFC0J472S	6.3	4700	16	20	7.5	2205	0.029
ECA0JFG682	6.3	6800	16	25	7.5	1970	0.031	EEUFC0J682	6.3	6800	16	25	7.5	2555	0.022
ECA0JFG103	6.3	10000	16	31.5	7.5	2220	0.028	EEUFC0J103	6.3	10000	16	35.5	7.5	3150	0.016
								EEUFC0J103S	6.3	10000	18	25	7.5	2740	0.020
ECA0JFG153	6.3	15000	18	35.5	7.5	2770	0.023	EEUFC0J153	6.3	15000	18	35.5	7.5	3680	0.015
ECA1AFG101	10	100	5	11	2.0	140	1.000	EEUFC1A101S	10	100	5	11	2.0	175	0.80
ECA1AFG221	10	220	6.3	11.2	2.5	245	0.420	EEUFC1A221S	10	220	6.3	11.2	2.5	290	0.35
ECA1AFG331	10	330	8	11.5	3.5	400	0.210	EEUFC1A331	10	330	8	11.5	3.5	555	0.117
ECA1AFG471	10	470	8	11.5	3.5	400	0.210	EEUFC1A471	10	470	8	11.5	3.5	555	0.117
ECA1AFG102	10	1000	10	16	5.0	720	0.110	EEUFC1A102	10	1000	10	16	5.0	1050	0.068
ECA1AFG222	10	2200	12.5	20	5.0	1280	0.050	EEUFC1A222	10	2200	12.5	20	5.0	1655	0.038
ECA1AFG332	10	3300	12.5	20	5.0	1560	0.040	EEUFC1A332	10	3300	12.5	30	5.0	2310	0.025
								EEUFC1A332S	10	3300	16	20	7.5	2205	0.029
ECA1AFG472	10	4700	16	25	7.5	1970	0.031	EEUFC1A472	10	4700	16	25	7.5	2555	0.022
ECA1AFG682	10	6800	16	31.5	7.5	2220	0.028	EEUFC1A682	10	6800	16	31.5	7.5	3010	0.018
ECA1AFG103	10	10000	18	35.5	7.5	2770	0.023	EEUFC1A103	10	10000	18.0	35.5	7.5	3680	0.015
ECA1CFG470	16	47	5	11	2.0	140	1.000	EEUFC1C470	16	47	5	11	2.0	175	0.80
ECA1CFG101	16	100	6.3	11.2	2.5	245	0.420	EEUFC1C101	16	100	6.3	11.2	2.5	290	0.350
ECA1CFG221	16	220	8	11.5	3.5	400	0.210	EEUFC1C221	16	220	8	11.5	3.5	555	0.117
ECA1CFG331	16	330	8	11.5	3.5	400	0.210	EEUFC1C331	16	330	8	11.5	3.5	555	0.117
ECA1CFG471	16	470	10	12.5	5.0	560	0.150	EEUFC1C471	16	470	10	12.5	5.0	755	0.09
ECA1CFG102	16	1000	10	20	5.0	940	0.076	EEUFC1C102S	16	1000	10	20	5.0	1220	0.052
ECA1CFG222	16	2200	12.5	25	5.0	1560	0.040	EEUFC1C222	16	2200	12.5	25	5.0	1945	0.030
ECA1CFG332	16	3300	16	25	7.5	1970	0.031	EEUFC1C332S	16	3300	18	20	7.5	2490	0.028
								EEUFC1C332	16	3300	12.5	35	5.0	2510	0.022
ECA1CFG472	16	4700	16	31.5	7.5	2220	0.028	EEUFC1C472	16	4700	16	31.5	7.5	3010	0.018
ECA1CFG682	16	6800	18	35.5	7.5	2770	0.023	EEUFC1C682	16	6800	16	40	7.5	3360	0.015
ECA1EFG470	25	47	5	11	2.0	140	1.000	EEUFC1E470	25	47	5	11	2.0	175	0.800
ECA1EFG101	25	100	6.3	11.2	2.5	245	0.570	EEUFC1E101S	25	100	6.3	11.2	2.5	290	0.350
ECA1EFG221	25	220	8	11.5	3.5	400	0.210	EEUFC1E221	25	220	8	11.5	3.5	555	0.117
ECA1EFG331	25	330	10	12.5	5.0	560	0.150	EEUFC1E331	25	330	10	12.5	5.0	755	0.090
ECA1EFG471	25	470	10	16	5.0	720	0.110	EEUFC1E471	25	470	10	16	5.0	1050	0.068
ECA1EFG102	25	1000	12.5	20	5.0	1280	0.050	EEUFC1E102	25	1000	12.5	20	5.0	1655	0.038
ECA1EFG222	25	2200	16	25	7.5	1970	0.031	EEUFC1E222S	25	2200	18	20	7.5	2490	0.028
								EEUFC1E222	25	2200	12.5	35	5.0	2510	0.022
ECA1EFG332	25	3300	16	31.5	7.5	2220	0.028	EEUFC1E332	25	3300	16	31.5	7.5	3010	0.018
ECA1EFG472	25	4700	18	35.5	7.5	2770	0.023	EEUFC1E472	25	4700	18	35.5	7.5	3680	0.015
ECA1VFG330	35	33	5	11	2.0	125	1.300	EEUFC1V330	35	33	5	11	2.0	175	0.80
ECA1VFG470	35	47	6.3	11.2	2.5	210	0.570	EEUFC1V470	35	47	6.3	11.2	2.5	290	0.35
ECA1VFG101	35	100	8	11.5	3.5	325	0.320	EEUFC1V101	35	100	8	11.5	3.5	555	0.117
ECA1VFG221	35	220	10	12.5	5.0	450	0.230	EEUFC1V221	35	220	10	12.5	5.0	755	0.090
ECA1VFG331	35	330	10	16	5.0	565	0.180	EEUFC1V331	35	330	10	16	5.0	1050	0.068
ECA1VFG471	35	470	10	20	5.0	720	0.130	EEUFC1V471	35	470	10	20	5.0	1220	0.052
ECA1VFG102	35	1000	12.5	25	5.0	1140	0.074	EEUFC1V102	35	1000	12.5	25	5.0	1945	0.030
ECA1VFG222	35	2200	16	31.5	7.5	2010	0.034	EEUFC1V222	35	2200	16	31.5	7.5	3010	0.018
ECA1VFG332	35	3300	18	35.5	7.5	2710	0.024	EEUFC1V332	35	3300	18	35.5	7.5	3680	0.015

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EEUFCxxxxx

1998/9/22

Recommend smaller capacitance or smaller size parts with same ripple current/impedance level,

shows deviation

1999/11/24 rev.A

HFG - series								FC - series							
HFG Part No.	WV V	Cap. uF	Case Size		Pitch mm	Ripple mA 105	Imp. ohm	FC Part No.	WV V	Cap. uF	Case Size		Pitch mm	Ripple mA 105	Imp. ohm
			Dmm	Lmm							Dmm	Lmm			
ECA1HFG0R1	50	0.1	5	11	2.0	2	24.00	N/B							
ECA1HFGR22	50	0.22	5	11	2.0	4.5	10.00	N/B							
ECA1HFGR33	50	0.33	5	11	2.0	6.7	7.200	N/B							
ECA1HFGR47	50	0.47	5	11	2.0	9.5	5.000	N/B							
ECA1HFG010	50	1.0	5	11	2.0	20	2.400	EEUFC1H1R0	50	1.0	5	11	2.0	20	2.40
ECA1HFG2R2	50	2.2	5	11	2.0	45	1.300	EEUFC1H2R2	50	2.2	5	11	2.0	45	1.30
ECA1HFG3R3	50	3.3	5	11	2.0	65	1.300	EEUFC1H3R3	50	3.3	5	11	2.0	65	1.30
ECA1HFG4R7	50	4.7	5	11	2.0	95	1.300	EEUFC1H4R7	50	4.7	5	11	2.0	95	1.30
ECA1HFG100	50	10	5	11	2.0	125	1.300	EEUFC1H100L	50	10	5	11	2.0	125	1.30
ECA1HFG220	50	22	5	11	2.0	125	1.300	EEUFC1H220	50	22	5	11	2.0	155	1.30
ECA1HFG330	50	33	6.3	11.2	2.5	210	0.570	EEUFC1H330	50	33	6.3	11.2	2.5	260	0.60
ECA1HFG470	50	47	6.3	11.2	2.5	210	0.570	EEUFC1H470	50	47	6.3	11.2	2.5	260	0.60
ECA1HFG101	50	100	8	11.5	3.5	325	0.320	EEUFC1H101	50	100	10	12.5	5.0	615	0.162
ECA1HFG221	50	220	10	16	5.0	565	0.180	EEUFC1H221	50	220	10	20	5.0	1030	0.090
								EEUFC1H221S	50	220	12.5	15	5.0	1150	0.110
ECA1HFG331	50	330	10	20	5.0	720	0.130	EEUFC1H331L	50	330	10	30	5.0	1610	0.060
								EEUFC1H331	50	330	12.5	20	5.0	1480	0.063
ECA1HFG471	50	470	12.5	20	5.0	965	0.088	EEUFC1H471	50	470	12.5	25	5.0	1832	0.050
								EEUFC1H471L	50	470	10	30	5.0	1610	0.060
ECA1HFG102	50	1000	16	25.0	7.5	1600	0.047	EEUFC1H102	50	1000	16	25	7.5	2235	0.034
ECA1HFG222	50	2200	18	35.5	7.5	2710	0.024	EEUFC1H222	50	2200	18	35.5	7.5	3100	0.023
ECA1JFG100	63	10	5	11	2.0	95	2.200	EEUFC1H100L	50	10	5	11	2.0	125	1.30
								EEUFC1J120	63	12	5	11	2.0	145	2.00
ECA1JFG220	63	22	6.3	11.2	2.5	165	0.940	EEUFC1J220	63	22	6.3	11.2	2.5	240	1.00
ECA1JFG330	63	33	6.3	11.2	2.5	165	0.940	EEUFC1J330	63	33	6.3	11.2	2.5	240	1.00
ECA1JFG470	63	47	8	11.5	3.5	220	0.680	EEUFC1J470	63	47	8	11.5	3.5	405	0.342
ECA1JFG101	63	100	10	12.5	5.0	360	0.360	EEUFC1J101	63	100	10	12.5	5.0	535	0.256
ECA1JFG221	63	220	10	20	5.0	580	0.200	EEUFC1J221X	63	220	10	20	5.0	885	0.147
ECA1JFG331	63	330	12.5	20	5.0	765	0.140	EEUFC1J331	63	330	12.5	20	5.0	1285	0.085
ECA1JFG471	63	470	12.5	25	5.0	900	0.120	EEUFC1J471L	63	470	12.5	30	5.0	2090	0.055
								EEUFC1J471	63	470	16	20	7.5	1765	0.059
ECA1JFG102	63	1000	16	31.5	7.5	1630	0.052	EEUFC1J102U	63	1000	16	31.5	7.5	2670	0.043