

STANDARD/EXTENDED RATINGS: CLR79, M39006/22-XXXX

CAPACITANCE (μ F)	CASE CODE	CAP. TOL. (\pm %)	PART NO. M39006/22-* FAILURE RATE LEVEL (%/1000 h)			MAX. DCL (μ A) at + 25 °C + 125 °C	MAX. DF at + 25 °C + 25 °C	MAX. IMP. at - 55 °C (%)	MAX. CAPACITANCE CHANGE (%) at - 55 °C + 85 °C + 125 °C			MAX.** RIPPLE CURRENT at + 85 °C 40 kHz (mA)	
			M	P	R				- 55 °C	+ 85 °C	+ 125 °C		
			1.0	0.1	0.01				(%)				
125 WVDC at + 85 °C . . . 85 WVDC at + 125 °C													
1.7	T1	20	0201	0421	0641	1.0	2.0	2	1250	- 16	+ 7	+ 8	415
1.7	T1	10	0202	0422	0642	1.0	2.0	2	1250	- 16	+ 7	+ 8	415
1.7	T1	5	0203	0423	0643	1.0	2.0	2	1250	- 16	+ 7	+ 8	415
3.6	T1	20	0204	0424	0644	1.0	2.0	2.7	600	- 16	+ 7	+ 8	520
3.6	T1	10	0205	0425	0645	1.0	2.0	2.7	600	- 16	+ 7	+ 8	520
3.6	T1	5	0206	0426	0646	1.0	2.0	2.7	600	- 16	+ 7	+ 8	520
9.0	T2	20	0207	0427	0647	1.0	5.0	5	240	- 16	+ 7	+ 8	755
9.0	T2	10	0208	0428	0648	1.0	5.0	5	240	- 16	+ 7	+ 8	755
9.0	T2	5	0209	0429	0649	1.0	5.0	5	240	- 16	+ 7	+ 8	755
14.0	T2	20	0210	0430	0650	1.0	7.0	6	167	- 16	+ 7	+ 8	860
14.0	T2	10	0211	0431	0651	1.0	7.0	6	167	- 16	+ 7	+ 8	860
14.0	T2	5	0212	0432	0652	1.0	7.0	6	167	- 16	+ 7	+ 8	860
18.0	T3	20	0213	0433	0653	2.0	9.0	5	129	- 16	+ 7	+ 8	1130
18.0	T3	10	0214	0434	0654	2.0	9.0	5	129	- 16	+ 7	+ 8	1130
18.0	T3	5	0215	0435	0655	2.0	9.0	5	129	- 16	+ 7	+ 8	1130
25.0	T3	20	0216	0436	0656	2.0	13.0	6	93	- 16	+ 7	+ 8	1200
25.0	T3	10	0217	0437	0657	2.0	13.0	6	93	- 16	+ 7	+ 8	1200
25.0	T3	5	0218	0438	0658	2.0	13.0	6	93	- 16	+ 7	+ 8	1200
56.0	T4	20	0219	0439	0659	10.0	40.0	6.5	32	- 25	+ 15	+ 15	1800
56.0	T4	10	0220	0440	0660	10.0	40.0	6.5	32	- 25	+ 15	+ 15	1800

Notes

* Dash number will include the letter "H" to indicate the optional vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock).

** For ripple current limits at various temperatures, voltages and frequencies, see Ripple Current Table.

STANDARD/EXTENDED RATINGS: CLR81, M39006/25-XXXX

CAPACITANCE (μ F)	CASE CODE	CAP. TOL. (\pm %)	PART NO. M39006/25-* FAILURE RATE LEVEL (%/1000 h)			MAX. DCL (μ A) at + 25 °C + 125 °C	MAX. DF at + 25 °C + 25 °C	MAX. IMP. at - 55 °C (%)	MAX. CAPACITANCE CHANGE (%) at - 55 °C + 85 °C + 125 °C			MAX.** RIPPLE CURRENT at + 85 °C 40 kHz (mA)	
			M	P	R				- 55 °C	+ 85 °C	+ 125 °C		
			1.0	0.1	0.01				(%)				
6 WVDC at + 85 °C . . . 4 WVDC at + 125 °C													
220.0	T1	20	0001	0089	0177	2.0	9.0	50	36	- 64	+ 13	+ 16	1000
220.0	T1	10	0002	0090	0178	2.0	9.0	50	36	- 64	+ 13	+ 16	1000
820.0	T2	20	0003	0091	0179	3.0	14.0	155	18	- 88	+ 16	+ 20	1500
820.0	T2	10	0004	0092	0180	3.0	14.0	155	18	- 88	+ 16	+ 20	1500
1500.0	T3	20	0005	0093	0181	5.0	20.0	172	18	- 90	+ 20	+ 25	1900
1500.0	T3	10	0006	0094	0182	5.0	20.0	172	18	- 90	+ 20	+ 25	1900
2200.0	T4	20	0007	0095	0183	6.0	24.0	170	13	- 90	+ 25	+ 30	2300
2200.0	T4	10	0008	0096	0184	6.0	24.0	170	13	- 90	+ 25	+ 30	2300
8 WVDC at + 85 °C . . . 5 WVDC at + 125 °C													
180.0	T1	20	0009	0097	0185	2.0	9.0	41	45	- 60	+ 13	+ 16	1000
180.0	T1	10	0010	0098	0186	2.0	9.0	41	45	- 60	+ 13	+ 16	1000
680.0	T2	20	0011	0099	0187	3.0	14.0	130	22	- 83	+ 16	+ 20	1500
680.0	T2	10	0012	0100	0188	3.0	14.0	130	22	- 83	+ 16	+ 20	1500
1500.0	T3	20	0013	0101	0189	5.0	20.0	170	18	- 90	+ 20	+ 25	1900
1500.0	T3	10	0014	0102	0190	5.0	20.0	170	18	- 90	+ 20	+ 25	1900
1800.0	T4	20	0015	0103	0191	7.0	25.0	138	14	- 90	+ 25	+ 30	2300
1800.0	T4	10	0016	0104	0192	7.0	25.0	138	14	- 90	+ 25	+ 30	2300

Notes

* Dash number will include the letter "H" to indicate the optional vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock).

** For ripple current limits at various temperatures, voltages and frequencies, see Ripple Current Table.

**STANDARD/EXTENDED RATINGS: CLR81, M39006/25-XXXX**

CAPACITANCE (μ F)	CASE CODE	CAP. TOL. (\pm %)	PART NO. M39006/25-* FAILURE RATE LEVEL (%/1000 h)			MAX. DCL (μ A) at + 25 °C + 125 °C	MAX. DF at + 25 °C + 125 °C	MAX. IMP. at - 55 °C	MAX. CAPACITANCE CHANGE (%) at			MAX.** RIPPLE CURRENT at + 85 °C 40 kHz (mA)	
			M 1.0	P 0.1	R 0.01				- 55 °C	+ 85 °C	+ 125 °C		
									(%)	(Ω)			
10 WVDC at + 85 °C . . . 7 WVDC at + 125 °C													
150.0	T1	20	0017	0105	0193	2.0	9.0	34	54	- 55	+ 13	+ 16	900
150.0	T1	10	0018	0106	0194	2.0	9.0	34	54	- 55	+ 13	+ 16	900
560.0	T2	20	0019	0107	0195	3.0	16.0	106	27	- 77	+ 16	+ 20	1450
560.0	T2	10	0020	0108	0196	3.0	16.0	106	27	- 77	+ 16	+ 20	1450
1200.0	T3	20	0021	0109	0197	5.0	20.0	137	18	- 88	+ 20	+ 25	1850
1200.0	T3	10	0022	0110	0198	5.0	20.0	137	18	- 88	+ 20	+ 25	1850
1500.0	T4	20	0023	0111	0199	7.0	25.0	114	15	- 88	+ 25	+ 30	2300
1500.0	T4	10	0024	0112	0200	7.0	25.0	114	15	- 88	+ 25	+ 30	2300
15 WVDC at + 85 °C . . . 10 WVDC at + 125 °C													
100.0	T1	20	0025	0113	0201	2.0	9.0	30	72	- 44	+ 13	+ 16	900
100.0	T1	10	0026	0114	0202	2.0	9.0	30	72	- 44	+ 13	+ 16	900
390.0	T2	20	0027	0115	0203	3.0	16.0	74	31	- 66	+ 16	+ 20	1450
390.0	T2	10	0028	0116	0204	3.0	16.0	74	31	- 66	+ 16	+ 20	1450
820.0	T3	20	0029	0117	0205	6.0	24.0	111	22	- 77	+ 20	+ 25	1800
820.0	T3	10	0030	0118	0206	6.0	24.0	111	22	- 77	+ 20	+ 25	1800
1000.0	T4	20	0031	0119	0207	8.0	32.0	92	17	- 77	+ 25	+ 30	2300
1000.0	T4	10	0032	0120	0208	8.0	32.0	92	17	- 77	+ 25	+ 30	2300
25 WVDC at + 85 °C . . . 15 WVDC at + 125 °C													
68.0	T1	20	0033	0121	0209	2.0	9.0	22	90	- 40	+ 12	+ 15	850
68.0	T1	10	0034	0122	0210	2.0	9.0	22	90	- 40	+ 12	+ 15	850
270.0	T2	20	0035	0123	0211	3.0	16.0	55	33	- 62	+ 13	+ 16	1400
270.0	T2	10	0036	0124	0212	3.0	16.0	55	33	- 62	+ 13	+ 16	1400
560.0	T3	20	0037	0125	0213	7.0	28.0	76	24	- 72	+ 20	+ 25	1750
560.0	T3	10	0038	0126	0214	7.0	28.0	76	24	- 72	+ 20	+ 25	1750
680.0	T4	20	0039	0127	0215	8.0	32.0	63	19	- 72	+ 25	+ 30	2100
680.0	T4	10	0040	0128	0216	8.0	32.0	63	19	- 72	+ 25	+ 30	2100
30 WVDC at + 85 °C . . . 20 WVDC at + 125 °C													
56.0	T1	20	0041	0129	0217	2.0	9.0	22	100	- 38	+ 12	+ 15	800
56.0	T1	10	0042	0130	0218	2.0	9.0	22	100	- 38	+ 12	+ 15	800
220.0	T2	20	0043	0131	0219	3.0	16.0	42	36	- 60	+ 13	+ 16	1200
220.0	T2	10	0044	0132	0220	3.0	16.0	42	36	- 60	+ 13	+ 16	1200
470.0	T3	20	0045	0133	0221	8.0	32.0	64	25	- 65	+ 20	+ 25	1500
470.0	T3	10	0046	0134	0222	8.0	32.0	64	25	- 65	+ 20	+ 25	1500
560.0	T4	20	0047	0135	0223	9.0	36.0	55	20	- 65	+ 25	+ 30	2000
560.0	T4	10	0048	0136	0224	9.0	36.0	55	20	- 65	+ 25	+ 30	2000
50 WVDC at + 85 °C . . . 30 WVDC at + 125 °C													
33.0	T1	20	0049	0137	0225	2.0	9.0	12.3	135	- 29	+ 10	+ 12	700
33.0	T1	10	0050	0138	0226	2.0	9.0	12.3	135	- 29	+ 10	+ 12	700
120.0	T2	20	0051	0139	0227	4.0	24.0	22.5	49	- 42	+ 12	+ 15	1200
120.0	T2	10	0052	0140	0228	4.0	24.0	22.5	49	- 42	+ 12	+ 15	1200
270.0	T3	20	0053	0141	0229	8.0	32.0	37	29	- 46	+ 20	+ 25	1450
270.0	T3	10	0054	0142	0230	8.0	32.0	37	29	- 46	+ 20	+ 25	1450
330.0	T4	20	0055	0143	0231	9.0	36.0	38	22	- 46	+ 25	+ 30	1900
330.0	T4	10	0056	0144	0232	9.0	36.0	38	22	- 46	+ 25	+ 30	1900
60 WVDC at + 85 °C . . . 40 WVDC at + 125 °C													
27.0	T1	20	0057	0145	0233	3.0	12.0	10.2	144	- 24	+ 10	+ 12	700
27.0	T1	10	0058	0146	0234	3.0	12.0	10.2	144	- 24	+ 10	+ 12	700
100.0	T2	20	0059	0147	0235	4.0	20.0	19	54	- 36	+ 12	+ 15	1100
100.0	T2	10	0060	0148	0236	4.0	20.0	19	54	- 36	+ 12	+ 15	1100
220.0	T3	20	0061	0149	0237	8.0	32.0	30	29	- 40	+ 16	+ 20	1400
220.0	T3	10	0062	0150	0238	8.0	32.0	30	29	- 40	+ 16	+ 20	1400
270.0	T4	20	0063	0151	0239	9.0	36.0	27	23	- 45	+ 20	+ 25	1850
270.0	T4	10	0064	0152	0240	9.0	36.0	27	23	- 45	+ 20	+ 25	1850

Notes

* Dash number will include the letter "H" to indicate the optional vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock).

** For ripple current limits at various temperatures, voltages and frequencies, see Ripple Current Table.

STANDARD/EXTENDED RATINGS: CLR81, M39006/25-XXXX

CAPACITANCE (μ F)	CASE CODE	CAP. TOL. (\pm %)	PART NO. M39006/25-* FAILURE RATE LEVEL (%/1000 h)			MAX. DCL (μ A) at + 25 °C + 125 °C	MAX. DF at + 25 °C + 125 °C	MAX. IMP. at - 55 °C (%)	MAX.. CAPACITANCE CHANGE (%) at - 55 °C + 85 °C + 125 °C			MAX.** RIPPLE CURRENT at + 85 °C 40 kHz (mA)	
			M	P	R				- 55 °C (%)	+ 85 °C	+ 125 °C		
			1.0	0.1	0.01								
75 WVDC at + 85 °C . . . 50 WVDC at + 125 °C													
22.0	T1	20	0065	0153	0241	3.0	12.0	8.5	157	- 19	+ 10	+ 12	600
22.0	T1	10	0066	0154	0242	3.0	12.0	8.5	157	- 19	+ 10	+ 12	600
82.0	T2	20	0067	0155	0243	4.0	24.0	15.2	63	- 30	+ 12	+ 15	1000
82.0	T2	10	0068	0156	0244	4.0	24.0	15.2	63	- 30	+ 12	+ 15	1000
180.0	T3	20	0069	0157	0245	9.0	36.0	24.4	30	- 35	+ 16	+ 20	1300
180.0	T3	10	0070	0158	0246	9.0	36.0	24.4	30	- 35	+ 16	+ 20	1300
220.0	T4	20	0071	0159	0247	10.0	40.0	37.0	24	- 40	+ 20	+ 25	1800
220.0	T4	10	0072	0160	0248	10.0	40.0	37.0	24	- 40	+ 20	+ 25	1800
100 WVDC at + 85 °C . . . 65 WVDC at + 125 °C													
10.0	T1	20	0073	0161	0249	3.0	12.0	4.5	200	- 17	+ 10	+ 12	800
10.0	T1	10	0074	0162	0250	3.0	12.0	4.5	200	- 17	+ 10	+ 12	800
39.0	T2	20	0075	0163	0251	5.0	24.0	10.4	80	- 20	+ 12	+ 15	1300
39.0	T2	10	0076	0164	0252	5.0	24.0	10.4	80	- 20	+ 12	+ 15	1300
68.0	T3	20	0077	0165	0253	10.0	40.0	11.3	40	- 30	+ 14	+ 16	1600
68.0	T3	10	0078	0166	0254	10.0	40.0	11.3	40	- 30	+ 14	+ 16	1600
120.0	T4	20	0079	0167	0255	12.0	48.0	25	30	- 35	+ 15	+ 17	2000
120.0	T4	10	0080	0168	0256	12.0	48.0	25	30	- 35	+ 15	+ 17	2000
125 WVDC at + 85 °C . . . 85 WVDC at + 125 °C													
6.8	T1	20	0081	0169	0257	3.0	12.0	6.0	300	- 14	+ 10	+ 12	700
6.8	T1	10	0082	0170	0258	3.0	12.0	6.0	300	- 14	+ 10	+ 12	700
27.0	T2	20	0083	0171	0259	5.0	24.0	7.2	90	- 18	+ 12	+ 15	1200
27.0	T2	10	0084	0172	0260	5.0	24.0	7.2	90	- 18	+ 12	+ 15	1200
47.0	T3	20	0085	0173	0261	10.0	40.0	7.9	50	- 26	+ 14	+ 16	1500
47.0	T3	10	0086	0174	0262	10.0	40.0	7.9	50	- 26	+ 14	+ 16	1500
82.0	T4	20	0087	0175	0263	12.0	48.0	17.4	32	- 30	+ 15	+ 17	1900
82.0	T4	10	0088	0176	0264	12.0	48.0	17.4	32	- 30	+ 15	+ 17	1900

Notes

* Dash number will include the letter "H" to indicate the optional vibration and shock requirements (i.e., 51 g random vibration, 80 g sinusoidal vibration and 500 g shock).

** For ripple current limits at various temperatures, voltages and frequencies, see Ripple Current Table.

CLR79, CLR81 RIPPLE CURRENT MULTIPLIERS VS. FREQUENCY, TEMPERATURE AND APPLIED PEAK VOLTAGE

FREQUENCY OF APPLIED RIPPLE CURRENT	120 Hz				800 Hz				1 kHz				10 kHz				40 kHz				100 kHz				
	TEMP °C				TEMP °C				TEMP °C				TEMP °C				TEMP °C				TEMP °C				
AMBIENT STILL AIR	≤ 55	85	105	125	≤ 55	85	105	125	≤ 55	85	105	125	≤ 55	85	105	125	≤ 55	85	105	125	≤ 55	85	105	125	
% of APPLIED VOLTAGE	100 %	0.60	0.39	-	-	0.71	0.43	-	-	0.72	0.46	-	-	0.88	0.55	-	-	1.0	0.63	-	-	1.1	0.69	-	-
	90 %	0.60	0.46	-	-	0.71	0.55	-	-	0.72	0.55	-	-	0.88	0.67	-	-	1.0	0.77	-	-	1.1	0.85	-	-
	80 %	0.60	0.52	0.35	-	0.71	0.62	0.42	-	0.72	0.62	0.42	-	0.88	0.76	0.52	-	1.0	0.87	0.59	-	1.1	0.96	0.65	-
	70 %	0.60	0.58	0.44	-	0.71	0.69	0.52	-	0.72	0.70	0.52	-	0.88	0.85	0.64	-	1.0	0.97	0.73	-	1.1	1.07	0.80	-
	66 2/3 %	0.60	0.60	0.46	0.27	0.71	0.71	0.55	0.32	0.72	0.72	0.55	0.32	0.88	0.88	0.68	0.40	1.0	1.0	0.77	0.45	1.1	1.1	0.85	0.50

Notes

- At + 125 °C the rated voltage of the capacitors decreases to 66 2/3 percent of the + 85 °C rated voltage.
- The peak of the applied AC ripple voltage plus the applied DC voltage must not exceed the DC voltage rating of the capacitor either forward or reverse.
- The ripple current listed represents a rating calculated using a maximum internal temperature rise (ΔT) of + 50 °C at 40 kHz at + 85 °C ambient with a maximum peak rated voltage of 66 2/3 percent of the + 85 °C peak voltage rating.
- The maximum allowable internal temperature rise (ΔT) decreases linearly to a calculated + 10 °C rise at + 125 °C ambient.
- The internal temperature rise is directly proportional to the equivalent series resistance of the capacitor and equivalent series resistance increases with decreasing frequency.