

Large Can Aluminum Electrolytic Capacitors

NRLR Series

FEATURES

- EXPANDED VALUE RANGE
- LONG LIFE AT +85°C (3,000 HOURS)
- HIGH RIPPLE CURRENT
- LOW PROFILE, HIGH DENSITY DESIGN
- SUITABLE FOR SWITCHING POWER SUPPLIES

RoHS Compliant
includes all homogeneous materials

*See Part Number System for Details



SPECIFICATIONS

Operating Temperature Range		-40 ~ +85°C						-25 ~ +85°C			
Rated Voltage Range		10 ~ 250Vdc						315 ~ 450Vdc			
Rated Capacitance Range		180 ~ 82,000µF						56 ~ 1,000µF			
Capacitance Tolerance		±20% (M)									
Max. Leakage Current (µA) After 5 minutes (20°C)		$3 \times \sqrt{C(\mu F)V}$									
Max. Tan δ at 120Hz/20°C	W.V. (Vdc)	10	16	25	35	50	63	80	100	160~400	420~450
	Tan δ max.	0.55	0.50	0.45	0.40	0.35	0.30	0.25	0.20	0.15	0.25
Surge Voltage	W.V. (Vdc)	10	16	25	35	50	63	80	100	160	180
	S.V. (Vdc)	13	20	32	44	63	79	100	125	200	220
	W.V. (Vdc)	200	220	250	315	350	385	400	420	450	-
	S.V. (Vdc)	250	270	300	365	400	435	450	470	500	-
Ripple Current Correction Factors	Frequency (Hz)	50 (60)	120	500	1K	10K _≥	-	-	-	-	-
	Multiplier at 85°C	10 ~ 100Vdc	0.90	1.00	1.05	1.10	1.15	-	-	-	-
		160 ~ 250Vdc	0.80	1.00	1.20	1.30	1.50	-	-	-	-
		315 ~ 450Vdc	0.80	1.00	1.20	1.25	1.40	-	-	-	-
Low Temperature Stability (10 to 250Vdc)	Temperature (°C)	0	-25	-40	-	-	-	-	-	-	-
	Capacitance Change	-5%	-15%	-30%	-	-	-	-	-	-	-
	Impedance Ratio	1.5	3	12	-	-	-	-	-	-	-
Load Life Test 3,000 hours at +85°C	Capacitance Change	Within ±20% of initial measured value									
	Tan δ	Less than 200% of specified maximum value									
	Leakage Current	Less than specified maximum value									
Shelf Life Test 1,000 hours at +85°C (no load)	Capacitance Change	Within ±20% of initial measured value									
	Tan δ	Less than 200% of specified maximum value									
	Leakage Current	Less than specified maximum value									
Surge Voltage Test Per JIS-C-5141 (table #6, #4) Surge voltage applied: 30 seconds "On" and 5.5 minutes no voltage "Off"	Capacitance Change	Within ±20% of initial measured value									
	Tan δ	Less than 200% of specified maximum value									
	Leakage Current	Less than specified maximum value									
Soldering Effect Refer to JISC5102.8.5	Capacitance Change	Within ±10% of initial measured value									
	Tan δ	Less than specified maximum value									
	Leakage Current	Less than specified maximum value									

MECHANICAL CHARACTERISTICS:

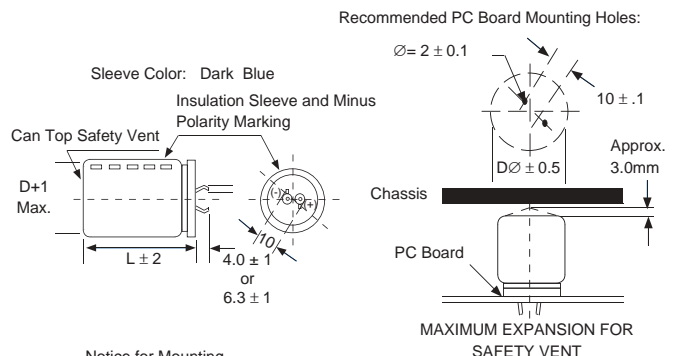
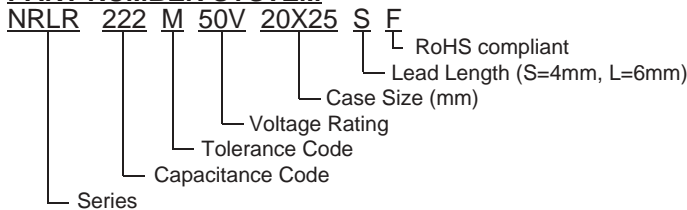
1. Safety Vent:

The capacitors are provided with a pressure sensitive safety vent on the top of can. The vent is designed to rupture in the event that high internal gas pressure is developed by circuit malfunction or mis-use like reverse voltage.

2. Terminal Strength:

Each terminal of the capacitor shall withstand an axial pull force of 4.5Kg for a period 10 seconds or a radial bent force of 2.5Kg for a period of 30 seconds.

PART NUMBER SYSTEM



PRECAUTIONS

Please review the notes on correct use, safety and precautions found on pages T10 & T11 of NIC's Electrolytic Capacitor catalog.
Also found at www.niccomp.com/precautions
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: tpmg@niccomp.com



STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

W.V.	Cap (μF)	Case Size	ESR (Ω @ 20°C)		Max. Ripple Current (Arms@85°C)	
			120Hz	20KHz	120Hz	10K ~ 50KHz
10	10,000	20x25	0.092	0.071	2.22	2.55
	12,000	20x30	0.076	0.059	2.44	2.80
		22x25	0.076	0.059	2.41	2.77
	15,000	20x35	0.061	0.047	2.90	3.33
		22x30	0.061	0.047	2.88	3.31
		25x25	0.061	0.047	2.88	3.31
	18,000	20x40	0.051	0.039	3.31	3.80
		22x35	0.051	0.039	3.32	3.81
		25x30	0.051	0.039	3.08	3.54
	22,000	22x40	0.042	0.032	3.79	4.35
		25x30	0.042	0.032	3.66	4.20
		30x25	0.042	0.032	3.58	4.11
	27,000	22x45	0.034	0.026	4.04	4.64
		25x35	0.034	0.026	4.04	4.64
		30x30	0.034	0.026	3.99	4.58
	33,000	22x50	0.028	0.022	4.58	5.26
		25x40	0.028	0.022	4.56	5.24
		30x30	0.028	0.022	4.58	5.26
	39,000	25x45	0.024	0.018	5.29	6.08
		30x35	0.024	0.018	5.21	5.99
35x30		0.024	0.018	5.05	5.80	
47,000	25x50	0.020	0.015	5.78	6.64	
	30x40	0.020	0.015	5.78	6.64	
	35x35	0.020	0.015	5.55	6.38	
56,000	30x45	0.017	0.013	6.59	7.57	
	35x35	0.017	0.013	6.40	7.36	
68,000	30x50	0.014	0.011	7.50	8.62	
	35x40	0.014	0.011	7.48	8.60	
82,000	35x50	0.012	0.009	8.50	9.77	
16	8,200	20x25	0.102	0.078	2.56	2.94
	10,000	20x30	0.083	0.064	2.85	3.27
		22x25	0.083	0.064	2.85	3.27
	12,000	20x35	0.070	0.054	3.20	3.68
		22x30	0.070	0.054	3.20	3.68
	15,000	20x40	0.056	0.043	3.70	4.25
		22x35	0.056	0.043	3.70	4.25
		25x25	0.056	0.043	3.70	4.25
	18,000	22x40	0.047	0.036	3.98	4.57
		25x30	0.047	0.036	3.98	4.57
	22,000	22x45	0.038	0.029	4.52	5.19
		25x35	0.038	0.029	4.52	5.19
		30x25	0.038	0.029	4.52	5.19
	27,000	22x50	0.031	0.024	4.98	5.72
		25x40	0.031	0.024	4.98	5.72
		30x30	0.031	0.024	4.98	5.72
	33,000	25x45	0.026	0.020	5.49	6.31
		30x35	0.026	0.020	5.49	6.31
		35x30	0.026	0.020	5.49	6.31
	39,000	25x50	0.022	0.017	6.11	7.02
30x40		0.022	0.017	6.11	7.02	
35x35		0.022	0.017	6.11	7.02	
47,000	30x45	0.018	0.014	6.80	7.82	
	35x35	0.018	0.014	6.80	7.82	
56,000	30x50	0.015	0.012	7.62	8.76	
	35x40	0.015	0.012	7.62	8.76	
68,000	35x45	0.013	0.010	8.45	9.71	
82,000	35x50	0.011	0.008	9.14	10.51	

STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

W.V.	Cap (μF)	Case Size	ESR (Ω @ 20°C)		Max. Ripple Current (Arms@85°C)	
			120Hz	20KHz	120Hz	10K ~ 50KHz
25	5,600	20x25	0.134	0.103	2.33	2.67
	6,800	20x30	0.110	0.085	2.56	2.94
		22x25	0.110	0.085	2.56	2.94
	8,200	20x35	0.091	0.070	2.91	3.34
		22x30	0.091	0.070	2.91	3.34
	10,000	20x40	0.075	0.058	3.18	3.65
		22x35	0.075	0.058	3.18	3.65
		25x25	0.075	0.058	3.18	3.65
	12,000	22x40	0.063	0.048	3.53	4.05
		25x30	0.063	0.048	3.53	4.05
	15,000	22x45	0.050	0.039	4.08	4.69
		25x35	0.050	0.039	4.08	4.69
		30x25	0.050	0.039	4.08	4.69
	18,000	22x50	0.042	0.032	4.68	5.38
		25x40	0.042	0.032	4.68	5.38
		30x30	0.042	0.032	4.68	5.38
	22,000	25x45	0.034	0.027	5.19	5.96
		30x35	0.034	0.027	5.19	5.96
35x30		0.034	0.027	5.19	5.96	
27,000	25x50	0.028	0.022	6.02	6.92	
	30x40	0.028	0.022	6.02	6.92	
	35x35	0.028	0.022	6.02	6.92	
33,000	30x45	0.023	0.018	6.75	7.76	
	35x40	0.023	0.018	6.75	7.76	
39,000	30x50	0.020	0.015	7.56	8.69	
	35x45	0.020	0.015	7.56	8.69	
47,000	35x50	0.016	0.013	8.30	9.54	
35	3,300	20x25	0.201	0.155	2.14	2.46
	3,900	20x30	0.171	0.131	2.28	2.62
	4,700	20x35	0.142	0.109	2.46	2.82
		22x25	0.142	0.109	2.46	2.82
	5,600	20x40	0.119	0.092	2.79	3.20
		22x30	0.119	0.092	2.79	3.20
		25x25	0.119	0.092	2.79	3.20
	6,800	22x35	0.098	0.076	2.89	3.32
		25x30	0.098	0.076	2.89	3.32
	8,200	22x40	0.081	0.063	3.47	3.99
		25x30	0.081	0.063	3.47	3.99
		30x25	0.081	0.063	3.47	3.99
	10,000	22x45	0.067	0.052	3.59	4.12
		25x35	0.067	0.052	3.59	4.12
		30x30	0.067	0.052	3.59	4.12
	12,000	22x50	0.056	0.043	4.51	5.18
		25x40	0.056	0.043	4.51	5.18
		30x30	0.056	0.043	4.51	5.18
15,000	25x45	0.045	0.035	4.80	5.52	
	30x35	0.045	0.035	4.80	5.52	
	35x30	0.045	0.035	4.80	5.52	
22,000	30x45	0.031	0.024	6.38	7.33	
	35x40	0.031	0.024	6.38	7.33	
27,000	35x45	0.025	0.019	6.90	7.93	
33,000	35x50	0.021	0.016	7.49	8.61	

STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

W.V.	Cap (μF)	Case Size	ESR (Ω @ 20°C)		Max. Ripple Current (Arms @ 85°C)	
			120Hz	20KHz	120Hz	10K ~ 50KHz
50	2,200	20x25	0.264	0.203	2.07	2.38
	2,700	20x30	0.215	0.166	2.21	2.54
		22x25	0.215	0.166	2.21	2.54
	3,300	20x35	0.176	0.136	2.41	2.77
		22x30	0.176	0.136	2.41	2.77
	3,900	20x40	0.149	0.115	2.72	3.12
		22x30	0.149	0.115	2.72	3.12
		25x25	0.149	0.115	2.72	3.12
	4,700	22x35	0.124	0.095	3.01	3.46
		25x30	0.124	0.095	3.01	3.46
	5,600	22x40	0.104	0.080	3.43	3.94
		25x35	0.104	0.080	3.43	3.94
		30x25	0.104	0.080	3.43	3.94
	6,800	22x45	0.086	0.066	3.94	4.53
		25x35	0.086	0.066	3.94	4.53
		30x30	0.086	0.066	3.94	4.53
	8,200	25x40	0.071	0.055	4.37	5.02
		30x35	0.071	0.055	4.37	5.02
10,000	25x50	0.059	0.045	5.02	5.77	
	30x40	0.059	0.045	5.02	5.77	
	35x30	0.059	0.045	5.02	5.77	
12,000	30x45	0.049	0.038	5.60	6.44	
	35x35	0.049	0.038	5.60	6.44	
15,000	30x50	0.039	0.030	6.44	7.40	
	35x40	0.039	0.030	6.44	7.40	
18,000	35x45	0.033	0.025	6.71	7.71	
63	1,500	20x25	0.332	0.256	1.69	1.94
	1,800	20x30	0.277	0.213	2.04	2.34
		22x25	0.277	0.213	2.04	2.34
	2,200	20x35	0.227	0.174	2.40	2.76
		22x30	0.227	0.174	2.40	2.76
	2,700	20x40	0.185	0.142	2.52	2.89
		22x35	0.185	0.142	2.52	2.89
		25x25	0.185	0.142	2.52	2.89
	3,300	22x40	0.151	0.116	2.69	3.09
		25x30	0.151	0.116	2.69	3.09
	3,900	22x45	0.128	0.099	3.10	3.56
		25x35	0.128	0.099	3.10	3.56
		30x25	0.128	0.099	3.10	3.56
	4,700	22x50	0.106	0.082	3.49	4.01
		25x40	0.106	0.082	3.49	4.01
		30x30	0.106	0.082	3.49	4.01
	5,600	25x45	0.089	0.069	3.81	4.38
		30x35	0.089	0.069	3.81	4.38
6,800	25x50	0.074	0.057	4.41	5.07	
	30x40	0.074	0.057	4.41	5.07	
	35x30	0.074	0.057	4.41	5.07	
8,200	30x45	0.061	0.047	4.90	5.63	
	35x35	0.061	0.047	4.90	5.63	
10,000	30x50	0.050	0.039	5.49	6.31	
	35x40	0.050	0.039	5.49	6.31	
12,000	35x45	0.042	0.032	6.30	7.24	

STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

W.V.	Cap (μF)	Case Size	ESR (Ω @ 20°C)		Max. Ripple Current (Arms@85°C)	
			120Hz	20KHz	120Hz	10K ~ 50KHz
80	1,000	20x25	0.415	0.319	1.56	1.79
	2,200	20x30	0.346	0.266	1.80	2.07
		22x25	0.346	0.266	1.80	2.07
	1,500	20x30	0.277	0.213	2.10	2.41
		22x30	0.277	0.213	2.10	2.41
	1,800	20x35	0.231	0.178	2.30	2.64
		22x30	0.231	0.178	2.30	2.64
		25x25	0.231	0.178	2.30	2.64
	2,200	20x40	0.189	0.145	2.53	2.90
		22x35	0.189	0.145	2.53	2.90
		25x30	0.189	0.145	2.53	2.90
	2,700	22x40	0.154	0.119	2.93	3.36
		25x35	0.154	0.119	2.93	3.36
		30x25	0.154	0.119	2.93	3.36
	3,300	22x45	0.126	0.097	3.25	3.73
		25x35	0.126	0.097	3.25	3.73
		30x30	0.126	0.097	3.25	3.73
	3,900	25x40	0.107	0.082	3.62	4.16
		30x35	0.107	0.082	3.62	4.16
	4,700	25x45	0.089	0.068	4.28	4.92
30x40		0.089	0.068	4.28	4.92	
5,600	35x30	0.089	0.068	4.28	4.92	
	30x45	0.075	0.057	4.55	5.23	
6,800	35x35	0.075	0.057	4.55	5.23	
	30x45	0.061	0.047	5.83	6.70	
8,200	35x40	0.061	0.047	5.83	6.70	
	35x40	0.061	0.047	5.83	6.70	
10,000	35x50	0.042	0.032	7.03	8.08	
100	680	20x25	0.488	0.376	1.66	1.90
	820	20x30	0.405	0.312	1.86	2.13
		22x25	0.405	0.312	1.86	2.13
	1,000	20x30	0.332	0.256	2.02	2.32
		22x30	0.332	0.256	2.02	2.32
	1,200	20x35	0.277	0.213	2.12	2.43
		22x30	0.277	0.213	2.12	2.43
		25x25	0.277	0.213	2.12	2.43
	1,500	20x40	0.222	0.171	2.45	2.81
		22x35	0.222	0.171	2.45	2.81
		25x30	0.222	0.171	2.45	2.81
	1,800	22x40	0.185	0.142	2.77	3.18
		25x30	0.185	0.142	2.77	3.18
		30x25	0.185	0.142	2.77	3.18
	2,200	22x45	0.151	0.116	3.12	3.58
		25x35	0.151	0.116	3.12	3.58
		30x30	0.151	0.116	3.12	3.58
	2,700	25x40	0.123	0.095	3.61	4.15
		30x30	0.123	0.095	3.61	4.15
	3,300	25x50	0.101	0.078	4.06	4.66
		30x35	0.101	0.078	4.06	4.66
		35x30	0.101	0.078	4.06	4.66
	3,900	30x40	0.086	0.066	4.60	5.29
		35x35	0.086	0.066	4.60	5.29
	4,700	30x45	0.071	0.055	5.13	5.89
		35x40	0.071	0.055	5.13	5.89
	5,600	35x45	0.06	0.046	5.75	6.61
	6,800	35x50	0.049	0.038	6.01	6.91

STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

W.V.	Cap (μF)	Case Size	ESR (Ω @ 20°C)		Max. Ripple Current (Arms@85°C)	
			120Hz	20KHz	120Hz	10K ~ 50KHz
160	270	20x25	0.922	0.709	1.28	1.92
	330	20x25	0.754	0.580	1.55	2.32
	390	20x30	0.638	0.491	1.63	2.44
		22x25	0.638	0.491	1.63	2.44
	470	20x30	0.53	0.408	1.90	2.85
		22x30	0.53	0.408	1.86	2.79
		25x25	0.53	0.408	1.86	2.79
	560	20x35	0.445	0.342	2.14	3.21
		22x30	0.445	0.342	2.15	3.22
		25x25	0.445	0.342	2.15	3.22
	680	20x40	0.366	0.282	2.35	3.52
		22x35	0.366	0.282	2.35	3.52
		25x30	0.366	0.282	2.33	3.49
		30x25	0.366	0.282	2.33	3.49
	820	22x40	0.304	0.234	2.68	4.02
		25x30	0.304	0.234	2.65	3.97
		30x25	0.304	0.234	2.64	3.96
	1,000	22x45	0.249	0.192	3.02	4.53
		25x35	0.249	0.192	3.00	4.50
		30x30	0.249	0.192	2.96	4.44
	1,200	25x40	0.208	0.160	3.43	5.14
		30x30	0.208	0.160	3.41	5.11
		35x30	0.208	0.160	3.40	5.10
	1,500	25x50	0.166	0.128	3.96	5.94
30x35		0.166	0.128	3.96	5.94	
35x30		0.166	0.128	3.94	5.91	
1,800	30x40	0.139	0.107	4.31	6.46	
	35x35	0.139	0.107	4.28	6.42	
2,200	30x50	0.114	0.087	4.96	7.44	
	35x40	0.114	0.087	4.96	7.44	
2,700	35x45	0.093	0.071	5.57	8.35	
180	270	20x25	0.922	0.709	1.29	1.93
	330	20x30	0.754	0.580	1.77	2.65
		22x25	0.754	0.580	1.49	2.23
	390	20x30	0.638	0.491	1.84	2.76
		22x25	0.638	0.491	1.84	2.76
	470	20x35	0.530	0.408	1.91	2.86
		22x30	0.530	0.408	1.91	2.86
		25x25	0.530	0.408	2.08	3.12
	560	20x40	0.445	0.342	2.15	3.22
		22x35	0.445	0.342	2.25	3.37
		25x25	0.445	0.342	2.25	3.37
	680	22x35	0.366	0.282	2.48	3.72
		25x30	0.366	0.282	2.50	3.75
		30x25	0.366	0.282	2.46	3.69
	820	22x40	0.304	0.234	2.86	4.29
		25x35	0.304	0.234	2.75	4.12
		30x25	0.304	0.234	2.69	4.03
	1,000	22x50	0.249	0.192	3.10	4.65
		25x40	0.249	0.192	3.06	4.59
		30x30	0.249	0.192	3.10	4.65
	1,200	25x45	0.208	0.160	3.63	5.44
		30x35	0.208	0.160	3.55	5.32
		35x30	0.208	0.160	3.49	5.23
	1,500	30x40	0.166	0.128	4.10	6.15
35x35		0.166	0.128	4.02	6.03	

180Vdc Continued next page



STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

W.V.	Cap (μF)	Case Size	ESR (Ω @ 20°C)		Max. Ripple Current (Arms@85°C)	
			120Hz	20KHz	120Hz	10K ~ 50KHz
180	1,800	30x45	0.139	0.107	4.55	6.82
		35x35	0.139	0.107	4.54	6.81
	2,200	35x40	0.114	0.087	4.83	7.24
	2,700	35x50	0.093	0.071	5.3	7.95
200	220	20x25	1.131	0.870	1.19	1.78
	270	20x25	0.922	0.709	1.39	2.08
		22x25	0.922	0.709	1.37	2.05
	330	20x30	0.754	0.580	1.56	2.34
		22x25	0.754	0.580	1.51	2.26
	390	20x35	0.638	0.491	1.74	2.61
		22x30	0.638	0.491	1.73	2.59
		25x25	0.638	0.491	1.71	2.56
	470	20x35	0.530	0.408	2.03	3.04
		22x30	0.530	0.408	1.97	2.95
		25x25	0.530	0.408	1.95	2.92
	560	20x40	0.445	0.342	2.18	3.27
		22x35	0.445	0.342	2.18	3.27
		25x30	0.445	0.342	2.15	3.22
		30x25	0.445	0.342	2.15	3.22
	680	22x40	0.366	0.282	2.48	3.72
		25x30	0.366	0.282	2.48	3.72
		30x25	0.366	0.282	2.48	3.72
	820	22x45	0.304	0.234	2.81	4.21
		25x35	0.304	0.234	2.79	4.18
		30x30	0.304	0.234	2.75	4.12
	1,000	22x50	0.249	0.192	3.28	4.92
		25x40	0.249	0.192	3.28	4.92
		30x35	0.249	0.192	3.15	4.72
	1,200	25x45	0.208	0.160	3.61	5.41
		30x35	0.208	0.160	3.61	5.41
		35x30	0.208	0.160	3.57	5.35
	1,500	30x45	0.166	0.128	4.13	6.19
		35x35	0.166	0.128	4.06	6.09
	1,800	30x50	0.139	0.107	4.60	6.90
		35x40	0.139	0.107	4.59	6.88
	2,200	35x45	0.114	0.087	5.25	7.87
220	220	20x25	1.131	0.870	1.23	1.84
	270	20x30	0.922	0.709	1.46	2.19
		22x25	0.922	0.709	1.42	2.13
	330	20x35	0.754	0.580	1.64	2.46
		22x30	0.754	0.580	1.59	2.38
	390	20x35	0.638	0.491	1.79	2.68
		22x30	0.638	0.491	1.80	2.70
		25x25	0.638	0.491	1.75	2.62
	470	20x40	0.530	0.408	2.12	3.18
		22x35	0.530	0.408	2.06	3.09
		25x30	0.530	0.408	2.08	3.12
	560	22x40	0.445	0.342	2.22	3.33
		25x35	0.445	0.342	2.38	3.57
		30x25	0.445	0.342	2.18	3.27
	680	22x45	0.366	0.282	2.62	3.93
		25x35	0.366	0.282	2.56	3.84
		30x30	0.366	0.282	2.52	3.78

220Vdc Continued on next page



STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

W.V.	Cap (μF)	Case Size	ESR (Ω @ 20°C)		Max. Ripple Current (Arms@85°C)	
			120Hz	20KHz	120Hz	10K ~ 50KHz
220	820	25x45	0.304	0.234	2.91	4.36
		30x35	0.304	0.234	2.84	4.26
		35x30	0.304	0.234	2.79	4.18
	1,000	30x35	0.249	0.192	3.36	5.04
		35x30	0.249	0.192	3.29	4.93
	1,200	30x40	0.208	0.160	3.72	5.58
		35x35	0.208	0.160	3.68	5.52
	1,500	30x50	0.166	0.128	4.18	6.27
		35x40	0.166	0.128	4.10	6.15
	1,800	35x45	0.139	0.107	4.52	6.78
250	180	20x25	1.382	1.063	1.20	1.80
	220	20x25	1.131	0.870	1.26	1.89
		22x25	1.131	0.870	1.24	1.86
	270	20x30	0.922	0.709	1.42	2.13
		22x25	0.922	0.709	1.50	2.25
	330	20x35	0.754	0.580	1.68	2.52
		22x30	0.754	0.580	1.66	2.49
		25x25	0.754	0.580	1.61	2.41
	390	20x40	0.638	0.491	1.92	2.88
		22x35	0.638	0.491	1.88	2.82
		25x30	0.638	0.491	1.88	2.82
	470	22x35	0.530	0.408	2.15	3.22
		25x35	0.530	0.408	2.15	3.22
		30x25	0.530	0.408	2.04	3.06
	560	22x40	0.445	0.342	2.48	3.72
		25x35	0.445	0.342	2.35	3.52
		30x25	0.445	0.342	2.35	3.52
	680	25x40	0.366	0.282	2.67	4.00
		30x30	0.366	0.282	2.71	4.06
	820	25x45	0.304	0.234	3.01	4.51
		30x35	0.304	0.234	2.98	4.47
		35x30	0.304	0.234	2.96	4.44
	1,000	30x40	0.249	0.192	3.56	5.34
		35x35	0.249	0.192	3.48	5.22
	1,200	30x45	0.208	0.160	3.99	5.98
		35x35	0.208	0.160	3.84	5.76
	1,500	35x40	0.166	0.128	4.33	6.49
	1,800	35x50	0.139	0.107	4.54	6.81
315	150	20x30	1.658	1.276	1.00	1.40
	180	20x35	1.382	1.063	1.13	1.58
		22x30	1.382	1.063	1.29	1.80
		25x25	1.382	1.063	1.38	1.93
	220	20x35	1.131	0.870	1.29	1.80
		22x30	1.131	0.870	1.41	1.97
		25x25	1.131	0.870	1.47	2.05
	270	22x35	0.922	0.709	1.68	2.35
		25x30	0.922	0.709	1.70	2.38
	330	22x40	0.754	0.580	1.91	2.67
		25x35	0.754	0.580	1.94	2.71
		30x25	0.754	0.580	1.98	2.77
	390	22x45	0.638	0.491	2.07	2.89
		25x40	0.638	0.491	2.11	2.95
		30x30	0.638	0.491	2.15	3.01
	470	25x50	0.530	0.408	2.31	3.23
		30x35	0.530	0.408	2.38	3.33
		35x30	0.530	0.408	2.36	3.30

315Vdc Continued on next page



STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

W.V.	Cap (μF)	Case Size	ESR (Ω @ 20°C)		Max. Ripple Current (Arms@85°C)	
			120Hz	20KHz	120Hz	10K ~ 50KHz
315	560	30x35	0.445	0.342	2.63	3.68
		35x30	0.445	0.342	2.69	3.76
	680	30x45	0.366	0.282	2.80	3.92
		35x35	0.366	0.282	3.05	4.27
	820	30x50	0.304	0.234	3.28	4.59
		35x40	0.304	0.234	3.45	4.83
1,000	35x45	0.249	0.192	3.57	4.99	
350	120	20x30	2.073	1.595	0.96	1.34
		22x25	2.073	1.595	1.04	1.45
	150	20x30	1.658	1.276	1.10	1.54
		22x30	1.658	1.276	1.20	1.68
		25x25	1.658	1.276	1.22	1.70
	180	20x35	1.382	1.063	1.24	1.73
		22x30	1.382	1.063	1.34	1.87
		25x25	1.382	1.063	1.37	1.91
	220	22x35	1.131	0.870	1.47	2.05
		25x30	1.131	0.870	1.53	2.14
		30x25	1.131	0.870	1.54	2.15
	270	22x40	0.922	0.709	1.70	2.38
		25x35	0.922	0.709	1.73	2.42
		30x25	0.922	0.709	1.80	2.52
	330	22x45	0.754	0.580	1.87	2.61
		25x35	0.754	0.580	1.97	2.75
		30x30	0.754	0.580	2.03	2.84
	390	25x40	0.638	0.491	2.14	2.99
		30x35	0.638	0.491	2.23	3.12
		35x30	0.638	0.491	2.30	3.22
	470	25x50	0.530	0.408	2.55	3.57
		30x35	0.530	0.408	2.53	3.54
		35x30	0.530	0.408	2.55	3.57
	560	30x40	0.445	0.342	2.73	3.82
		35x35	0.445	0.342	2.75	3.85
	680	30x50	0.366	0.282	3.15	4.41
		35x40	0.366	0.282	3.15	4.41
820	35x45	0.304	0.234	3.47	4.85	
1,000	35x50	0.249	0.192	3.60	5.04	
385	68	20x25	3.658	2.814	0.68	0.95
		20x30	3.033	2.333	0.74	1.03
	82	22x25	3.033	2.333	0.76	1.06
		20x30	2.487	1.913	0.86	1.2
	100	22x30	2.487	1.913	0.89	1.24
		20x35	2.073	1.595	0.96	1.34
	120	22x30	2.073	1.595	0.98	1.37
		25x25	2.073	1.595	1.02	1.42
		20x35	1.658	1.276	1.10	1.54
	150	22x35	1.658	1.276	1.12	1.56
		25x30	1.658	1.276	1.14	1.59
		20x40	1.382	1.063	1.27	1.77
	180	22x35	1.382	1.063	1.27	1.77
		25x30	1.382	1.063	1.30	1.82
		30x25	1.382	1.063	1.37	1.91
	220	22x40	1.131	0.870	1.42	1.98
		25x35	1.131	0.870	1.48	2.07
		30x30	1.131	0.870	1.49	2.08
	270	22x50	0.922	0.709	1.60	2.24
		25x40	0.922	0.709	1.61	2.25
		30x30	0.922	0.709	1.64	2.29

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STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

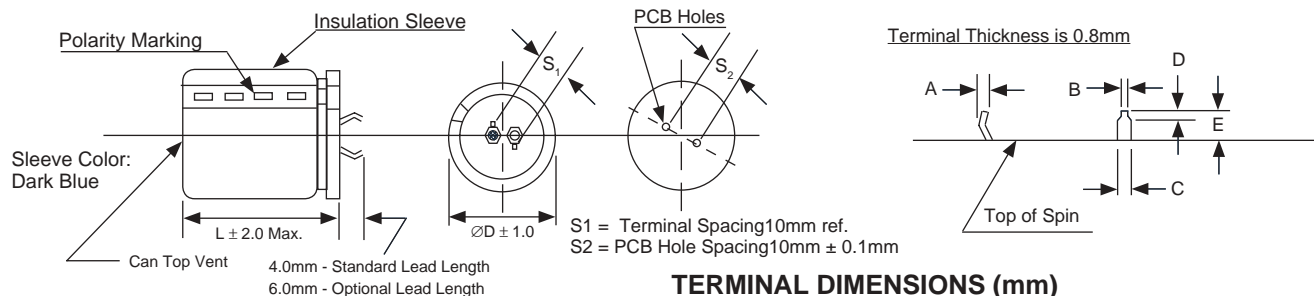
W.V.	Cap (μF)	Case Size	ESR (Ω @ 20°C)		Max. Ripple Current (Arms@85°C)	
			120Hz	20KHz	120Hz	10K ~ 50KHz
385	330	25x45	0.754	0.580	1.80	2.52
		30x35	0.754	0.580	1.85	2.59
		35x30	0.754	0.580	1.87	2.61
	390	25x50	0.638	0.491	2.04	2.85
		30x40	0.638	0.491	2.05	2.87
		35x35	0.638	0.491	2.07	2.89
	470	30x45	0.530	0.408	2.26	3.16
		35x35	0.530	0.408	2.26	3.16
	560	30x50	0.445	0.342	2.57	3.59
		35x40	0.445	0.342	2.59	3.62
680	35x45	0.366	0.282	2.80	3.92	
400	68	20x25	3.658	2.814	0.75	1.05
	82	20x30	3.033	2.333	0.82	1.14
		22x25	3.033	2.333	0.84	1.17
	100	20x30	2.487	1.913	0.95	1.33
		22x30	2.487	1.913	0.99	1.38
	120	20x35	2.073	1.595	1.07	1.49
		22x30	2.073	1.595	1.09	1.52
		25x25	2.073	1.595	1.13	1.58
	150	20x40	1.658	1.276	1.22	1.70
		22x35	1.658	1.276	1.24	1.73
		25x30	1.658	1.276	1.27	1.77
	180	22x40	1.382	1.063	1.41	1.97
		25x30	1.382	1.063	1.44	2.01
		30x25	1.382	1.063	1.52	2.12
	220	22x45	1.131	0.870	1.58	2.21
		25x35	1.131	0.870	1.64	2.29
		30x30	1.131	0.870	1.66	2.32
	270	25x40	0.922	0.709	1.79	2.50
		30x30	0.922	0.709	1.82	2.54
	330	25x45	0.754	0.580	2.00	2.80
		30x35	0.754	0.580	2.05	2.87
		35x30	0.754	0.580	2.05	2.87
	390	30x40	0.638	0.491	2.26	3.16
		35x35	0.638	0.491	2.28	3.19
	470	30x45	0.530	0.408	2.51	3.51
		35x40	0.530	0.408	2.54	3.55
	560	30x50	0.445	0.342	2.85	3.99
		35x40	0.445	0.342	2.85	3.99
	680	35x50	0.366	0.282	3.10	4.34
	420	68	20x25	6.096	4.689	0.70
82		20x30	5.055	3.889	0.80	1.12
		22x25	5.055	3.889	0.85	1.19
100		20x35	4.145	3.189	0.90	1.26
		22x30	4.145	3.189	0.97	1.35
		25x25	4.145	3.189	0.98	1.37
120		20x35	3.454	2.657	1.04	1.45
		22x30	3.454	2.657	1.07	1.49
		25x25	3.454	2.657	1.08	1.51
150		20x40	2.764	2.126	1.17	1.63
		22x35	2.764	2.126	1.21	1.69
		25x30	2.764	2.126	1.26	1.76
		30x25	2.764	2.126	1.30	1.82
180		22x40	2.303	1.772	1.33	1.86
		25x35	2.303	1.772	1.42	1.98
		30x25	2.303	1.772	1.48	2.07

420Vdc Continued on next page



STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

W.V.	Cap (μF)	Case Size	ESR (Ω @ 20°C)		Max. Ripple Current (Arms@85°C)	
			120Hz	20KHz	120Hz	10K ~ 50KHz
420	220	22x45	1.884	1.450	1.55	2.17
		25x35	1.884	1.450	1.58	2.21
		30x30	1.884	1.450	1.65	2.31
	270	25x40	1.536	1.181	1.74	2.43
		30x35	1.536	1.181	1.90	2.66
		35x30	1.536	1.181	1.94	2.71
	330	25x50	1.256	0.967	2.20	3.08
		30x35	1.256	0.967	1.98	2.77
		35x35	1.256	0.967	2.17	3.03
	390	30x40	1.063	0.818	2.22	3.10
		35x35	1.063	0.818	2.27	3.17
	470	30x45	0.882	0.679	2.50	3.50
35x40		0.882	0.679	2.61	3.65	
560	35x45	0.741	0.570	2.95	4.13	
450	56	20x25	7.402	5.694	0.61	0.85
	68	20x30	6.096	4.689	0.70	0.98
		22x25	6.096	4.689	0.71	0.99
	82	20x35	5.055	3.889	0.80	1.12
		22x25	5.055	3.889	0.86	1.20
	100	20x35	4.145	3.189	0.88	1.23
		22x30	4.145	3.189	0.95	1.33
		25x25	4.145	3.189	0.97	1.35
	120	20x40	3.454	2.657	0.99	1.38
		22x35	3.454	2.657	1.07	1.49
		25x30	3.454	2.657	1.09	1.52
		30x25	3.454	2.657	1.12	1.56
	150	22x40	2.764	2.126	1.18	1.65
		25x30	2.764	2.126	1.25	1.75
		30x25	2.764	2.126	1.29	1.80
	180	22x45	2.303	1.772	1.32	1.84
		25x35	2.303	1.772	1.40	1.96
		30x30	2.303	1.772	1.45	2.03
	220	25x40	1.884	1.450	1.59	2.22
		30x30	1.884	1.450	1.64	2.29
		35x30	1.884	1.450	1.66	2.32
	270	25x45	1.536	1.181	1.73	2.42
		30x35	1.536	1.181	1.89	2.64
		35x30	1.536	1.181	1.90	2.66
	330	25x50	1.256	0.967	2.12	2.96
		30x40	1.256	0.967	2.12	2.96
		35x35	1.256	0.967	2.15	3.01
	390	30x45	1.063	0.818	2.35	3.29
		35x40	1.063	0.818	2.38	3.33
	470	30x50	0.882	0.679	2.65	3.71
		35x45	0.882	0.679	2.68	3.75
	560	35x50	0.741	0.570	2.88	4.03



TERMINAL DIMENSIONS (mm)

Terminal Length	A	B	C	D	E
S = 4.0	2.0 max.	0.9 ± 0.1	1.5 ± 0.1	1.5 ± 0.3	4.0 ± 0.50
L = 6.0				2.7 ± 0.3	6.0 ± 1.00