

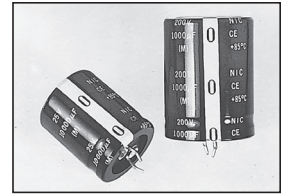
# NRLC Series

## Large Can Aluminum Electrolytic Capacitors



### FEATURES

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



### SPECIFICATIONS

Operating Temperature Range		-25 ~ +85°C						
Rated Voltage Range		200 ~ 450Vdc						
Rated Capacitance Range		68 ~ 2,200µF						
Capacitance Tolerance		±20% (M)						
Max. Leakage Current (µA) After 5 minutes (20°C)		0.02CV or 3,000µA						
Max. Tan δ at 120Hz/20°C	W.V. (Vdc)	200	220	250	400	420	450	
	Tan δ max.	0.20	0.20	0.20	0.20	0.20	0.20	
Surge Voltage	W.V. (Vdc)	200	220	250	400	420	450	
	S.V. (Vdc)	250	270	300	450	470	500	
Ripple Current Frequency Correction Factors	Frequency (Hz)	50 (60)	+120	+300	+1K	10K≤	-	
	Multiplier at 85°C	200 ~ 250Vdc	0.80	1.0	1.15	1.17	1.20	-
		400 ~ 450Vdc	0.77	1.00	1.10	1.12	1.15	-
Ripple Current Temperature Correction Factors	Temperature (°C)	+65	+85	-				
	Multiplier	1.15	1.0	-				
Low Temperature Stability (Impedance Ratio)	Temperature (°C)	200	220	250	400	420	450	
	Z-25°C/+20°C	7						
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 1,000 Cycles 30 seconds "On" and 5.5 minutes "Off" @ +15°C ~ +35°C	Capacitance Change	Within ±15% of initial measured value						
	Tan δ	Less than specified maximum value						
	Leakage Current	Less than specified maximum value						
Soldering Effect Solder Bath Temp.: +260 ± 5°C Pre-heat: 120 ± 2 sec. to +120 ± 2°C	Capacitance Change	Within ±10% of initial measured value						
	Tan δ	Less than specified maximum value						
	Leakage Current	Less than specified maximum value						

Note: Please note NRLC product series is specifically designed for use in commercial & consumer applications. For mission critical or industrial applications, NIC recommends our NRLF / NRLM / NRLP / NRLR series products. Please consult NIC product specifications available on [www.niccomp.com](http://www.niccomp.com). If in doubt, please contact NIC to review your requirements ([apreview@niccomp.com](mailto:apreview@niccomp.com))

### MECHANICAL CHARACTERISTICS:

#### 1. Safety Vent:

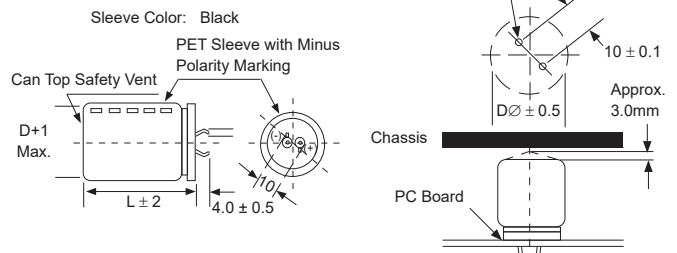
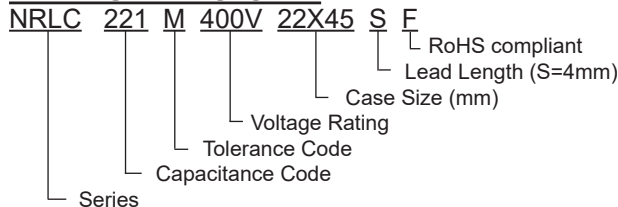
The capacitors are provided with a pressure sensitive safety vent on the top of can. The vent is designed to rupture in the event that high internal gas pressure is developed by circuit malfunction or mis-use like reverse voltage.

#### 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.

Recommended PC Board Mounting Holes:

### PART NUMBER SYSTEM



#### Notice for Mounting

The space from the top of the can shall be more than (3mm) from chassis or other construction materials so that safety vent has room to expand in case of emergency.

### PRECAUTIONS

Please review the notes on correct use, safety and precautions found at <https://www.niccomp.com/wp-content/uploads/files/aluminum/AlumApplInfoCautions.pdf>. If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: [tpmg@niccomp.com](mailto:tpmg@niccomp.com)

# NRLC Series

## Large Can Aluminum Electrolytic Capacitors



### STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

Part Number	Cap. (µF)	Voltage (Vdc)	Case Size (mm)	ESR (Ω @ 20°C)	Max. Ripple Current (Arms@85°C)		Load Life @ +85°C (Hours)	
				120Hz	120Hz	10K ~ 50KHz		
NRLC271M200V22X25SF	270	200	22X25	1.23	1.250	1.500	3,000	
NRLC331M200V22X25SF	330		22X25	1.01	1.320	1.584	3,000	
NRLC391M200V22X31SF	390		22X31	0.85	1.510	1.812	3,000	
NRLC391M200V25X25SF	390		25X25	0.85	1.560	1.872	3,000	
NRLC471M200V22X31SF	470		22X31	0.71	1.730	2.076	3,000	
NRLC471M200V25X31SF	470		25X31	0.71	1.780	2.136	3,000	
NRLC561M200V22X35SF	560		22X35	0.59	1.910	2.292	3,000	
NRLC561M200V25X31SF	560		25X31	0.59	1.960	2.352	3,000	
NRLC561M200V30X25SF	560		30X25	0.59	1.960	2.352	3,000	
NRLC681M200V22X41SF	680		22X41	0.49	2.170	2.604	3,000	
NRLC681M200V25X35SF	680		25X35	0.49	2.260	2.712	3,000	
NRLC681M200V30X31SF	680		30X31	0.49	2.270	2.724	3,000	
NRLC821M200V22X45SF	820		22X45	0.40	2.450	2.940	3,000	
NRLC821M200V25X41SF	820		25X41	0.40	2.540	3.048	3,000	
NRLC821M200V30X31SF	820		30X31	0.40	2.530	3.036	3,000	
NRLC102M200V22X55SF	1000		22X55	0.33	2.880	3.456	3,000	
NRLC102M200V25X45SF	1000		25X45	0.33	2.990	3.588	3,000	
NRLC102M200V30X35SF	1000		30X35	0.33	2.870	3.444	3,000	
NRLC122M200V25X51SF	1200		25X51	0.28	3.290	3.948	3,000	
NRLC122M200V30X41SF	1200		30X41	0.28	3.280	3.936	3,000	
NRLC122M200V35X35SF	1200		35X35	0.28	3.250	3.900	3,000	
NRLC152M200V30X51SF	1500		30X51	0.22	3.760	4.512	3,000	
NRLC152M200V35X41SF	1500		35X41	0.22	3.710	4.452	3,000	
NRLC182M200V30X55SF	1800		30X55	0.18	4.200	5.040	3,000	
NRLC182M200V35X45SF	1800		35X45	0.18	4.190	5.028	3,000	
NRLC222M200V35X51SF	2200		35X51	0.15	4.780	5.736	3,000	
NRLC331M220V22X31SF	330		220	22X31	1.01	1.450	1.740	3,000
NRLC391M220V22X35SF	390			22X35	0.85	1.640	1.968	3,000
NRLC391M220V25X31SF	390			25X31	0.85	1.590	1.908	3,000
NRLC471M220V22X35SF	470			22X35	0.71	1.870	2.244	3,000
NRLC471M220V25X35SF	470			25X35	0.71	1.900	2.280	3,000
NRLC561M220V22X41SF	560			22X41	0.59	2.030	2.436	3,000
NRLC561M220V25X35SF	560			25X35	0.59	2.170	2.604	3,000
NRLC561M220V30X31SF	560	30X31		0.59	1.990	2.388	3,000	
NRLC681M220V22X45SF	680	22X45		0.49	2.390	2.868	3,000	
NRLC681M220V25X41SF	680	25X41		0.49	2.330	2.796	3,000	
NRLC681M220V30X35SF	680	30X35		0.49	2.290	2.748	3,000	
NRLC821M220V25X48SF	820	25X48		0.40	2.650	3.180	3,000	
NRLC821M220V30X41SF	820	30X41		0.40	2.590	3.108	3,000	
NRLC821M220V35X31SF	820	35X31		0.40	2.540	3.048	3,000	
NRLC102M220V30X45SF	1000	30X45		0.33	3.060	3.672	3,000	
NRLC102M220V35X35SF	1000	35X35		0.33	3.000	3.600	3,000	
NRLC122M220V30X51SF	1200	30X51		0.28	3.390	4.068	3,000	
NRLC122M220V35X41SF	1200	35X41		0.28	3.360	4.032	3,000	
NRLC152M220V35X45SF	1500	35X45		0.22	3.730	4.476	3,000	
NRLC182M220V35X51SF	1800	35X51		0.18	4.120	4.944	3,000	
NRLC221M250V22X31SF	220	250 (continue next page)		22X31	1.51	1.130	1.356	3,000
NRLC271M250V22X31SF	270			22X31	1.23	1.370	1.644	3,000

Performance Passives By Design

# NRLC Series

## Large Can Aluminum Electrolytic Capacitors



### STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

Part Number	Cap. (µF)	Voltage (Vdc)	Case Size (mm)	ESR (Ω @ 20°C)	Max. Ripple Current (Arms@85°C)		Load Life @ +85°C (Hours)	
				120Hz	120Hz	10K ~ 50KHz		
NRLC331M250V22X35SF	330	250	22X35	1.01	1.520	1.824	3,000	
NRLC331M250V25X31SF	330		25X31	1.01	1.470	1.764	3,000	
NRLC391M250V22X41SF	390		22X41	0.85	1.720	2.064	3,000	
NRLC391M250V25X35SF	390		25X35	0.85	1.720	2.064	3,000	
NRLC471M250V22X45SF	470		22X45	0.71	1.960	2.352	3,000	
NRLC471M250V25X41SF	470		25X41	0.71	1.960	2.352	3,000	
NRLC471M250V30X31SF	470		30X31	0.71	1.860	2.232	3,000	
NRLC561M250V22X51SF	560		22X51	0.59	2.270	2.724	3,000	
NRLC561M250V25X45SF	560		25X45	0.59	2.140	2.568	3,000	
NRLC561M250V30X35SF	560		30X35	0.59	2.140	2.568	3,000	
NRLC681M250V25X51SF	680		25X51	0.49	2.440	2.928	3,000	
NRLC681M250V30X41SF	680		30X41	0.49	2.470	2.964	3,000	
NRLC821M250V30X45SF	820		30X45	0.40	2.720	3.264	3,000	
NRLC821M250V35X35SF	820		35X35	0.40	2.700	3.240	3,000	
NRLC102M250V30X51SF	1000		30X51	0.33	3.240	3.888	3,000	
NRLC102M250V35X41SF	1000		35X41	0.33	3.180	3.816	3,000	
NRLC122M250V35X51SF	1200		35X51	0.28	3.500	4.200	3,000	
NRLC820M400V22X25SF	82		400	22X25	4.05	0.760	0.874	3,000
NRLC101M400V22X31SF	100			22X31	3.32	0.900	1.035	3,000
NRLC121M400V22X31SF	120			22X31	2.76	1.000	1.150	3,000
NRLC121M400V25X25SF	120	25X25		2.76	1.030	1.184	3,000	
NRLC151M400V22X35SF	150	22X35		2.21	1.130	1.299	3,000	
NRLC151M400V25X31SF	150	25X31		2.21	1.160	1.334	3,000	
NRLC181M400V22X41SF	180	22X41		1.84	1.290	1.483	3,000	
NRLC181M400V25X35SF	180	25X35		1.84	1.320	1.518	3,000	
NRLC181M400V30X25SF	180	30X25		1.84	1.380	1.587	3,000	
NRLC221M400V22X45SF	220	22X45		1.51	1.440	1.656	3,000	
NRLC221M400V25X41SF	220	25X41		1.51	1.500	1.725	3,000	
NRLC221M400V30X31SF	220	30X31		1.51	1.520	1.748	3,000	
NRLC271M400V25X45SF	270	25X45		1.23	1.630	1.874	3,000	
NRLC271M400V30X35SF	270	30X35		1.23	1.660	1.909	3,000	
NRLC331M400V25X51SF	330	25X51		1.01	1.820	2.093	3,000	
NRLC331M400V30X41SF	330	30X41		1.01	1.870	2.150	3,000	
NRLC331M400V35X31SF	330	35X31		1.01	1.870	2.150	3,000	
NRLC391M400V30X45SF	390	30X45		0.85	2.060	2.369	3,000	
NRLC391M400V35X35SF	390	35X35		0.85	2.080	2.392	3,000	
NRLC471M400V30X51SF	470	30X51		0.71	2.280	2.622	3,000	
NRLC471M400V35X41SF	470	35X41	0.71	2.310	2.656	3,000		
NRLC561M400V35X45SF	560	35X45	0.59	2.600	2.990	3,000		
NRLC681M400V35X51SF	680	35X51	0.49	2.830	3.254	3,000		
NRLC820M420V22X25SF	82	420 (continue next page)	22X25	4.05	0.780	0.897	3,000	
NRLC101M420V22X31SF	100		22X31	3.32	0.880	1.012	3,000	
NRLC101M420V25X25SF	100		25X25	3.32	0.890	1.023	3,000	
NRLC121M420V22X31SF	120		22X31	2.76	0.980	1.127	3,000	
NRLC121M420V25X31SF	120		25X31	2.76	0.990	1.138	3,000	
NRLC151M420V22X35SF	150		22X35	2.21	1.100	1.265	3,000	
NRLC151M420V25X31SF	150		25X31	2.21	1.150	1.322	3,000	
NRLC151M420V30X25SF	150		30X25	2.21	1.190	1.368	3,000	

Performance Passives By Design

### STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

Part Number	Cap. (µF)	Voltage (Vdc)	Case Size (mm)	ESR (Ω @ 20°C)	Max. Ripple Current (Arms@85°C)		Load Life @ +85°C (Hours)	
				120Hz	120Hz	10K ~ 50KHz		
NRLC181M420V22X41SF	180	420	22X41	1.84	1.210	1.391	3,000	
NRLC181M420V25X35SF	180		25X35	1.84	1.300	1.495	3,000	
NRLC181M420V30X31SF	180		30X31	1.84	1.350	1.552	3,000	
NRLC221M420V22X48SF	220		22X48	1.51	1.410	1.621	3,000	
NRLC221M420V25X41SF	220		25X41	1.51	1.440	1.656	3,000	
NRLC221M420V30X35SF	220		30X35	1.51	1.510	1.736	3,000	
NRLC271M420V25X48SF	270		25X48	1.23	1.580	1.817	3,000	
NRLC271M420V30X41SF	270		30X41	1.23	1.740	2.001	3,000	
NRLC271M420V35X31SF	270		35X31	1.23	1.770	2.035	3,000	
NRLC331M420V25X55SF	330		25X55	1.01	2.010	2.311	3,000	
NRLC331M420V30X45SF	330		30X45	1.01	1.800	2.070	3,000	
NRLC331M420V35X35SF	330		35X35	1.01	1.980	2.277	3,000	
NRLC391M420V30X51SF	390		30X51	0.85	2.030	2.334	3,000	
NRLC391M420V35X41SF	390		35X41	0.85	2.070	2.380	3,000	
NRLC471M420V30X55SF	470		30X55	0.71	2.280	2.622	3,000	
NRLC471M420V35X45SF	470		35X45	0.71	2.380	2.737	3,000	
NRLC561M420V35X51SF	560		35X51	0.59	2.690	3.093	3,000	
NRLC680M450V22X25SF	680		450	22X25	4.88	0.640	0.736	3,000
NRLC820M450V22X25SF	820			22X25	4.05	0.790	0.908	3,000
NRLC101M450V22X31SF	100			22X31	3.32	0.860	0.989	3,000
NRLC101M450V25X25SF	100	25X25		3.32	0.880	1.012	3,000	
NRLC121M450V22X35SF	120	22X35		2.76	0.980	1.127	3,000	
NRLC121M450V25X31SF	120	25X31		2.76	1.000	1.150	3,000	
NRLC121M450V30X25SF	120	30X25		2.76	1.020	1.173	3,000	
NRLC151M450V22X41SF	150	22X41		2.21	1.080	1.242	3,000	
NRLC151M450V25X35SF	150	25X35		2.21	1.130	1.299	3,000	
NRLC151M450V30X25SF	150	30X25		2.21	1.180	1.357	3,000	
NRLC181M450V22X45SF	180	22X45		1.84	1.200	1.380	3,000	
NRLC181M450V25X41SF	180	25X41		1.84	1.280	1.472	3,000	
NRLC181M450V30X31SF	180	30X31		1.84	1.320	1.518	3,000	
NRLC221M450V25X45SF	220	25X45		1.51	1.450	1.667	3,000	
NRLC221M450V30X35SF	220	30X35		1.51	1.500	1.725	3,000	
NRLC221M450V35X31SF	220	35X31		1.51	1.460	1.679	3,000	
NRLC271M450V25X51SF	270	25X51		1.23	1.570	1.805	3,000	
NRLC271M450V30X41SF	270	30X41		1.23	1.730	1.989	3,000	
NRLC271M450V35X31SF	270	35X31		1.23	1.730	1.989	3,000	
NRLC331M450V30X45SF	330	30X45		1.01	1.930	2.219	3,000	
NRLC331M450V35X35SF	330	35X35	1.01	1.960	2.254	3,000		
NRLC391M450V30X51SF	390	30X51	0.85	2.170	2.495	3,000		
NRLC391M450V35X41SF	390	35X41	0.85	2.170	2.495	3,000		
NRLC471M450V35X45SF	470	35X45	0.71	2.450	2.817	3,000		
NRLC561M450V35X51SF	560	35X51	0.59	2.630	3.024	3,000		