

# Large Can Aluminum Electrolytic Capacitors

NRLM Series

## FEATURES

- NEW SIZES FOR LOW PROFILE AND HIGH DENSITY DESIGN OPTIONS
- EXPANDED CV VALUE RANGE
- HIGH RIPPLE CURRENT
- LONG LIFE
- CAN-TOP SAFETY VENT
- DESIGNED AS INPUT FILTER OF SMPS
- STANDARD 10mm (.400") SNAP-IN SPACING

**RoHS Compliant**  
includes all homogeneous materials

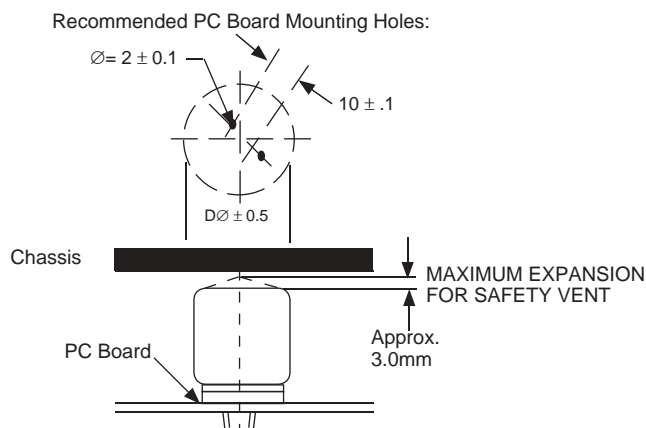
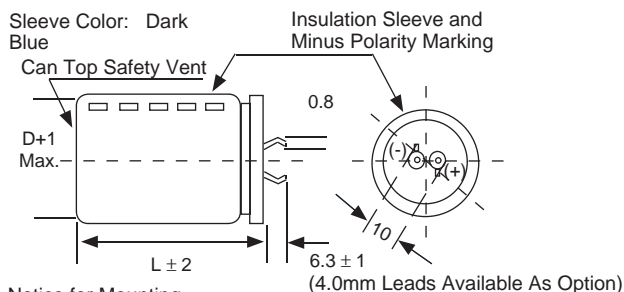
\*See Part Number System for Details



## SPECIFICATIONS

Operating Temperature Range		-40 ~ +85°C				-25 ~ +85°C			
Rated Voltage Range		16 ~ 250Vdc				350 ~ 450Vdc			
Rated Capacitance Range		180 ~ 68,000µF				56 ~ 680µF			
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)	16	25	35	50	63	80	100	160~450
	Tan δ max.	0.50*	0.40*	0.35	0.30	0.25	0.20	0.20	0.15
Surge Voltage	W.V. (Vdc)	16	25	35	50	63	80	100	160
	S.V. (Vdc)	20	32	44	63	79	100	125	200
	W.V. (Vdc)	180	200	250	350	400	450	-	-
	S.V. (Vdc)	220	250	300	400	450	500	-	-
Ripple Current Correction Factors	Frequency (Hz)	50	60	100	120	500	1K	10K ~ 50K	-
	Multiplier at 85°C	0.75	0.80	0.95	1.00	1.05	1.08	1.15	-
Low Temperature Stability (10 to 250Vdc)	Temperature (°C)	0	-25	-40	-	-	-	-	-
	Capacitance Change	-5%	-15%	-30%	-	-	-	-	-
	Impedance Ratio	1.5	3	9	-	-	-	-	-
Load Life Test 2,000 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 MIL-STD-202F Method 210A	Capacitance Change	Within ±10% of initial measured value							
	Tan δ	Less than specified maximum value							
	Leakage Current	Less than specified maximum value							

(\* 47,000µF add 0.14, 68,000µF add 0.35.)



## 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.nicomp.com/precautions](http://www.nicomp.com/precautions)  
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: [tpmg@nicomp.com](mailto:tpmg@nicomp.com)



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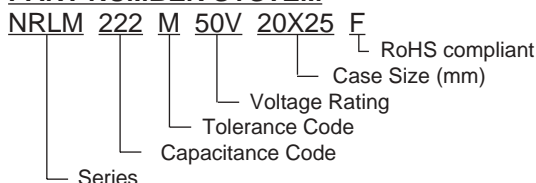
NRLM Series

## 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
16	6,800	20x25	0.098	0.083	3.15	3.62
	8,200	20x30	0.081	0.069	3.47	3.99
	10,000	20x35	0.075	0.063	3.78	4.35
		22x30				
		25x25				
	15,000	20x40	0.053	0.045	5.26	6.05
		22x35				
		25x30				
	22,000	22x45	0.038	0.032	6.10	7.02
		25x35				
		30x30				
	33,000	30x40	0.025	0.021	6.84	7.87
		35x30				
	47,000	30x50	0.021	0.019	7.47	8.59
35x50						
68,000	35x50	0.018	0.017	9.05	10.41	
25	4,700	20x25	0.113	0.090	3.05	3.51
	6,800	22x30	0.078	0.062	3.47	3.99
		25x25				
	8,200	22x30	0.065	0.052	3.57	4.11
		25x25				
	10,000	22x35	0.058	0.046	3.78	4.35
		25x30				
		30x25				
	15,000	22x50	0.039	0.031	4.63	5.32
		25x40				
		30x30				
	22,000	25x50	0.029	0.023	6.10	7.02
		30x40				
	33,000	30x50	0.020	0.017	6.84	7.87
35x40						
47,000	35x50	0.017	0.015	8.00	9.20	
35	2,200	22x25	0.181	0.136	1.40	1.61
	3,300	20x25	0.111	0.083	2.73	3.14
	4,700	20x35	0.078	0.058	3.26	3.75
		22x30				
	6,800	22x35	0.066	0.049	3.68	4.23
		25x30				
	8,200	25x35	0.057	0.042	4.00	4.60
		22x45				
	10,000	25x40	0.050	0.037	4.42	5.08
		30x30				
		35x25				
	15,000	25x50	0.036	0.027	5.57	6.41
		30x40				
		35x30				
22,000	30x50	0.026	0.020	6.10	7.02	
	35x40					
33,000	35x50	0.018	0.014	7.15	8.22	

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	0.151	0.113	2.26	2.60
	3,300	22x30	0.100	0.075	2.73	3.14
25x25						
25x30						
4,700	25x30	0.071	0.053	3.03	3.48	
	30x25					
6,800	25x40	0.049	0.037	3.85	4.43	
	30x30					
8,200	25x45	0.040	0.030	4.41	5.07	
	30x35					
10,000	25x50	0.036	0.027	4.97	5.72	
	30x40					
	35x30					
	15,000	30x50	0.028	0.021	6.44	7.41
35x40						
22,000	35x50	0.021	0.017	7.57	8.71	
	1,000	22x25	0.381	0.286	1.20	1.38
2,200	20x35	0.151	0.113	2.52	2.90	
	22x30					
3,300	25x25	0.105	0.079	4.10	4.72	
	22x40					
4,700	25x30	0.081	0.061	4.86	5.59	
	30x25					
	22x50					
6,800	25x40	0.061	0.046	5.84	6.72	
	30x30					
	35x25					
8,200	25x50	0.061	0.046	5.84	6.72	
	30x40					
	35x30					
	8,200	30x45	0.051	0.046	6.00	6.90
35x35						
10,000	35x40	0.041	0.033	6.52	7.50	
	12,000	35x50	0.035	0.028	7.15	8.22
80	1,500	20x35	0.177	0.133	2.26	2.60
		22x30				
		25x25				
	2,200	22x40	0.121	0.090	2.73	3.14
		25x30				
		30x25				
	3,300	22x50	0.085	0.064	3.21	3.69
		25x40				
	4,700	30x30	0.063	0.048	4.09	4.70
		25x50				
6,800	30x40	0.046	0.035	5.16	5.93	
	35x40					
8,200	35x50	0.038	0.029	5.83	6.70	
100	1,000	20x35	0.216	0.140	1.96	2.25
		22x30				
		25x25				
	1,500	22x40	0.155	0.101	2.57	2.96
		25x30				
		30x25				
	2,200	25x40	0.121	0.078	3.14	3.61
		30x30				
	3,300	25x50	0.090	0.059	4.06	4.67
		30x40				
4,700	30x50	0.071	0.049	5.13	5.90	
	35x40					
6,800	35x50	0.049	0.037	6.60	7.59	

### PART NUMBER SYSTEM



# Large Can Aluminum Electrolytic Capacitors

NRLM Series

## 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	330	22x25	0.553	0.276	1.45	2.03
	470	22x30	0.423	0.212	2.50	2.95
		25x25				
	680	25x35	0.293	0.146	2.50	3.50
		30x25				
	820	25x35	0.263	0.131	2.75	3.85
		30x30				
	1,000	25x45	0.232	0.128	3.00	4.20
30x35						
35x30						
1,500	30x45	0.166	0.910	3.73	5.22	
	35x45					
2,200	35x45	0.113	0.073	4.78	6.69	
200	220	22x25	0.904	0.407	0.87	1.22
		25x25				
	330	20x35	0.553	0.249	1.56	2.18
		22x30				
		25x25				
	470	22x35	0.388	0.175	1.85	2.59
		25x30				
		30x25				
	680	22x45	0.268	0.121	2.68	3.75
		25x35				
		30x30				
	820	25x45	0.243	0.109	2.93	4.10
		30x35				
		35x25				
	1,000	25x50	0.199	0.090	3.25	4.55
		30x40				
35x30						
1,500	30x50	0.144	0.072	3.87	5.42	
	35x40					
2,200	35x50	0.098	0.054	4.92	6.89	
250	220	22x30	0.904	0.360	1.17	1.64
		25x25				
	330	22x35	0.653	0.261	1.75	2.45
		25x30				
		30x25				
	470	22x45	0.388	0.155	2.11	2.95
		25x40				
		30x30				
	680	25x50	0.268	0.107	2.50	3.50
		30x40				
		35x30				
	820	30x45	0.222	0.089	2.77	3.88
		35x45				
	1,000	30x50	0.199	0.090	3.32	4.65
		35x40				
	1,500	30x50	0.168	0.083	3.87	4.94
35x40						
1,500	35x50	0.133	0.066	4.04	5.66	

W.V.	Cap (μF)	Case Size	ESR (Ω @ 20°C)		Max. Ripple Current (Arms@85°C)	
			120Hz	20KHz	120Hz	10K ~ 50KHz
350	100	20x35	1.658	0.580	0.91	1.27
		22x30				
	150	22x35	1.105	0.387	1.12	1.57
		25x30				
		30x25				
	220	22x45	0.754	0.264	1.44	2.02
		25x40				
		30x30				
	330	25x50	0.502	0.176	1.88	2.63
		30x40				
		35x30				
	470	30x50	0.388	0.136	2.40	3.36
		35x40				
	560	35x45	0.355	0.142	2.60	3.64
	680	35x50	0.293	0.117	2.96	4.14
	400	68	20x30	2.438	0.853	0.76
22x25						
82		20x30	2.022	0.708	0.83	1.16
		22x25				
100		20x35	1.658	0.580	0.92	1.29
		22x30				
		25x25				
150		25x30	1.105	0.387	1.16	1.62
		30x25				
220		25x40	0.754	0.264	1.49	2.09
	30x30					
330	30x40	0.553	0.193	1.90	2.66	
	35x45					
	470					35x45
450	56	20x30	2.960	1.184	0.70	0.98
		22x25				
	68	22x25*	2.438	0.975	0.76	1.06
		22x30				
	82	20x35	2.022	0.809	0.83	1.16
		22x30				
25x25						
100	22x35	1.658	0.663	0.93	1.30	
	25x30					
	30x25					
220	25x50	0.754	0.301	1.55	2.17	
	30x40					
	35x30					
330	30x50	0.533	0.249	2.01	2.81	
	35x40					
470	35x50	0.423	0.233	2.53	3.54	

\* Special Size.

