Large Can Aluminum Electrolytic Capacitors

NRLMW Series

LEADED

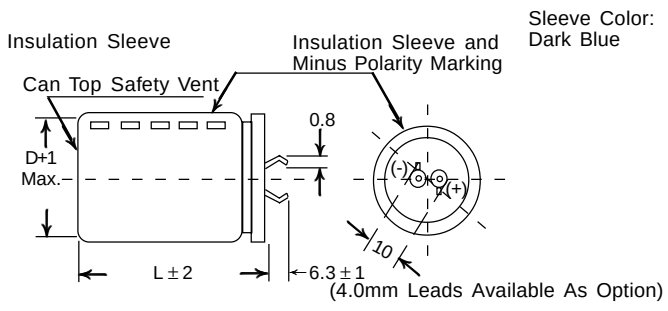
FEATURES

- LONG LIFE (105°C, 2000 HOURS)
- NEW SIZES FOR LOW PROFILE AND HIGH DENSITY DESIGN OPTIONS
- EXPANDED CV VALUE RANGE
- HIGH RIPPLE CURRENT
- CAN-TOP SAFETY VENT
- DESIGNED AS INPUT FILTER OF SWITCHED MODE POWER SUPPLY
- STANDARD 10mm (.400") SNAP-IN SPACING

SPECIFICATIONS

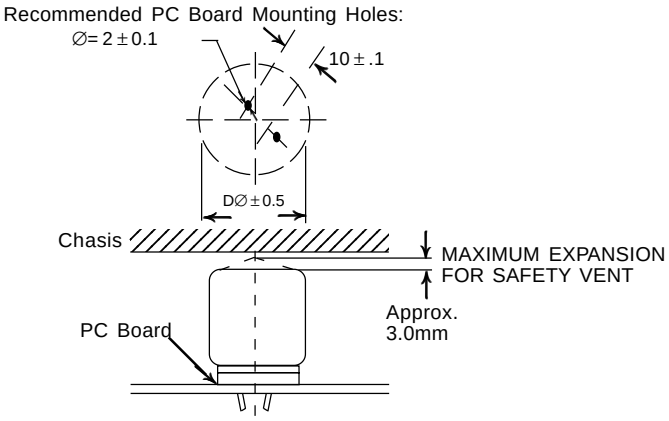
Operating Temperature Range	-40°C ~ +105°C	-25°C ~ +105°C									
Rated Working Voltage Range	10 ~ 250Vdc	450Vdc									
Rated Capacitance Range	180 ~ 68,000µF	56 ~ 470µF									
Capacitance Tolerance	± 20% (M) at 120Hz, +20°C										
Max. Leakage Current After 5 Minutes (20°C)	$3\sqrt{C(\mu F)V}$ (µA)										
Dissipation Factor (Tan δ) 120Hz/20°C	W.V. (Vdc)		10	16	25	35	50	63	80	100~400	450
	Tan δ max.		0.55	0.45	0.35	0.30	0.25	0.20	0.17	0.15	0.20
Surge Voltage	W.V. (Vdc)		10	16	25	35	50	63	80	100	160
	S.V. (Vdc)		13	20	32	44	63	79	100	125	200
	W.V. (Vdc)		180	200	250	400	450	-	-	-	-
	S.V. (Vdc)		220	250	300	450	500	-	-	-	-
Ripple Current Correction Factors	Frequency (Hz)		50	60	100	120	500	1K	10K~50K	-	
	Multiplier @ 105°C	16 ~ 100Vdc	0.93	0.95	0.99	1.0	1.05	1.08	1.15	-	
		160 ~ 450Vdc	0.75	0.80	0.95	1.0	1.20	1.25	1.40	-	
	Temperature (°C)		≤ +45		+60		+70		+85	+105	
	Multiplier		2.7		2.6		2.5		2.1	1.0	
Low Temperature Stability (10 ~ 250Vdc Ratings)	Temperature (°C)		0		-25		-40		-		
	Capacitance Decrease		5%		10%		20%		-		
	Impedance Ratio		1.5		3		9		-		
Load Life Test 2,000 Hours @ 105°C	Capacitance Change		Within ± 20% of initial measured value								
	Tan δ & ESR		Less than 200% of the specified maximum value								
	Leakage Current		Less than the specified maximum value								
Shelf Life Test No Load 2,000 Hours @ 105°C	Capacitance Change		Within ± 20% of initial measured value								
	Tan δ & ESR		Less than 200% of the specified maximum value								
	Leakage Current		Less than the specified maximum value								
Surge Voltage Test 1,000 Cycles of 0.5" On & 4.5" Off at 25°C	Capacitance Change		Within ± 20% of initial measured value								
	Tan δ & ESR		Less than 200% of the specified maximum value								
	Leakage Current		Less than the specified maximum value								
Soldering Effect MIL-STD-202F Method 210A	Capacitance Change		Within ± 10% of initial measured value								
	Tan δ & ESR		Less than the specified maximum value								
	Leakage Current		Less than the specified maximum value								

Part Numbering System



Notice for Mounting

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



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STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
10	6800	20x25	0.110	0.093	1.30	1.50
	8200	20x30	0.091	0.077	1.60	1.84
	10,000	22x25	0.075	0.063	1.80	2.07
	15,000	25x25	0.053	0.045	2.30	2.65
	22,000	25x35 30x25	0.038	0.032	2.60	2.99
	33,000	25x45 30x35 35x30	0.027	0.023	3.40	3.91
	47,000	30x45 35x35	0.023	0.020	4.20	4.83
	68,000	35x50	0.021	0.020	5.50	6.33

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
16	6800	22x25	0.085	0.068	2.20	2.53
	8200	22x30	0.071	0.057	2.40	2.76
	10,000	25x25	0.066	0.053	2.60	2.99
	15,000	25x35 30x30	0.046	0.037	3.20	3.68
	22,000	25x45 30x35 35x30	0.033	0.028	3.80	4.37
	33,000	30x45 35x35	0.023	0.020	4.70	5.41
	47,000	35x45	0.020	0.018	5.50	6.33
	56,000	35x50	0.019	0.017	6.00	6.90

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
25	4700	22x25	0.106	0.079	2.00	2.30
	6800	25x25	0.073	0.055	2.40	2.76
	8200	25x30 30x25	0.061	0.045	2.70	3.11
	10,000	25x35 30x30	0.051	0.039	3.00	3.45
	15,000	25x45 30x35 35x30	0.036	0.031	3.60	4.14
	22,000	30x45 35x35	0.025	0.022	4.30	4.95
	33,000	35x50	0.018	0.016	5.50	6.33

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
35	3300	22x25	0.121	0.090	1.90	2.19
	4700	25x25	0.088	0.066	2.20	2.53
	6800	25x35 30x30	0.061	0.046	2.60	2.99
	8200	25x40 30x30 35x25	0.051	0.038	2.90	3.34
	10,000	25x45 30x35 35x30	0.041	0.031	3.20	3.68
	15,000	30x45 35x35	0.030	0.022	3.90	4.49
	22,000	35x50	0.023	0.017	5.00	5.75

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
50	2200	22x30	0.105	0.079	1.70	1.96
	3300	25x30	0.070	0.053	2.00	2.30
	4700	25x40 30x30 35x25	0.053	0.040	2.50	2.88
	6800	25x50 30x40 35x30	0.046	0.035	3.30	3.80
	8200	30x45 35x35	0.038	0.029	3.60	4.14
	10,000	30x50 35x40	0.033	0.025	4.00	4.60
	15,000	35x50	0.022	0.018	4.80	5.52

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
63	1500	22x30	0.188	0.141	1.50	1.73
	2200	25x30	0.128	0.096	2.00	2.30
	3300	25x40 30x30 35x25	0.090	0.068	2.50	2.88
	4700	25x50 30x40 35x30	0.063	0.048	3.00	3.45
	6800	30x50 35x40	0.049	0.037	3.60	4.14
	8200	35x45	0.040	0.030	3.90	4.49
	10,000	35x50	0.033	0.028	4.40	5.06

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STANDARD PRODUCT LIST, CASE SIZE AND SPECIFICATIONS

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
80	1000	25x25	0.182	0.119	1.30	1.50
	1500	25x30	0.133	0.093	1.70	1.96
	2200	25x35 30x30 35x25	0.090	0.063	2.10	2.42
	3300	25x50 30x40 35x30	0.065	0.049	2.60	2.99
	4700	30x50 35x40	0.049	0.037	3.30	3.80
	6800	35x50	0.041	0.031	3.90	4.49

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
100	820	25x25	0.202	0.121	1.40	2.10
	1000	25x30	0.182	0.109	1.70	2.55
	1500	25x40 30x30 35x25	0.122	0.079	2.10	3.15
	2200	25x50 30x40 35x30	0.090	0.059	2.60	3.90
	3300	30x50 35x40	0.075	0.053	3.20	4.80
	4700	35x50	0.053	0.040	3.80	5.70

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
160	220	20x25	0.829	0.373	1.00	1.40
	330	22x30	0.553	0.249	1.20	1.68
	470	25x30	0.459	0.208	1.40	1.96
	680	25x35 30x30	0.317	0.143	1.70	2.38
	820	25x40 30x30	0.263	0.118	2.00	2.80
	1000	25x45 30x35	0.216	0.108	2.20	3.08
	1500	30x45 35x35	0.166	0.083	2.50	3.50
	1800	30x45	0.129	0.064	2.70	3.78
	2200	35x50	0.113	0.057	2.90	4.06

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
200	220	22x25	0.754	0.339	1.00	1.40
	330	25x25	0.502	0.226	1.20	1.68
	470	22x40 25x35 30x25	0.353	0.159	1.40	1.96
	680	25x40 30x30	0.244	0.110	1.70	2.38
	820	25x50 30x35 35x30	0.222	0.111	2.00	2.80
	1000	30x45 35x35	0.199	0.099	2.20	3.08
	1500	35x50	0.144	0.072	2.50	3.50

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
250	220	25x25	0.754	0.377	1.00	1.40
	330	25x35 30x25	0.502	0.251	1.20	1.68
	470	25x45 30x35 35x30	0.353	0.176	1.40	1.96
	680	30x45 35x35	0.244	0.122	1.70	2.38
	820	30x50 35x40	0.202	0.101	2.00	2.80
	1000	35x45	0.199	0.099	2.20	3.08

See page 8 for complete part numbering system.

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
400	68	25x25	1.950	0.683	0.56	0.78
	82	25x25	1.617	0.566	0.64	0.90
	100	25x30	1.325	0.464	0.69	0.97
	150	25x40 30x30	0.884	0.309	0.82	1.15
	220	25x50 30x40 35x30	0.603	0.211	1.10	1.54
	330	30x50 35x40	0.402	0.161	1.35	1.89
	470	35x50	0.282	0.127	1.75	2.45

W.V. (Vdc)	Cap. (µF)	Case Size DxL (mm)	ESR (Ω@20°C)		Max. Ripple Current (Arms@105°C)	
			120Hz	20kHz	120Hz	10k~50khz
450	56	22x25	2.368	0.947	0.40	0.56
	68	25x25	1.950	0.683	0.50	0.70
	82	22x35	1.617	0.647	0.56	0.78
	100	25x30 30x25	1.326	0.531	0.64	0.90
	150	25x40 30x30	0.884	0.354	0.79	1.11
	220	30x40 35x30	0.678	0.271	1.00	1.40
	330	30x50 35x40	0.502	0.201	1.38	1.93
	470	35x50	0.353	0.123	1.74	2.44