

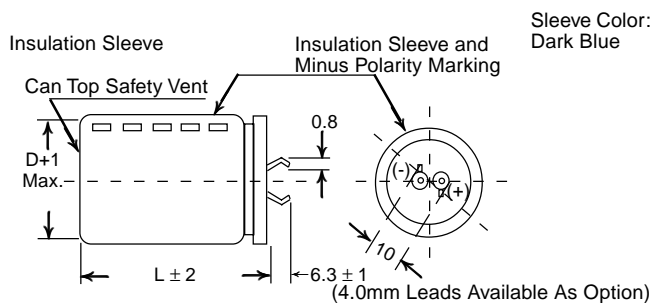
FEATURES

- 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									

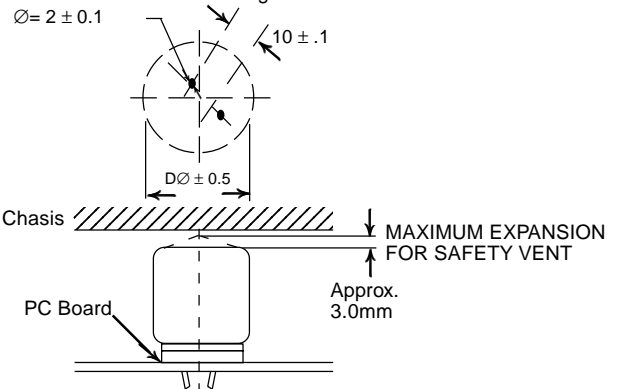


Notice for Mounting

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.

Sleeve Color: Dark Blue

Recommended PC Board Mounting Holes:



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
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
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
	3300	22x25	0.121	0.090	1.90	2.19
35	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
	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
63	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
	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
80	4700	30x50 35x40	0.049	0.037	3.30	3.80
	6800	35x50	0.041	0.031	3.90	4.49
	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

LEADED



LEADED

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	
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	
	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	
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	

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	
	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	

PART NUMBERING SYSTEM

NRLMW 471 M 250V 30X35

