

### FEATURES

- CYLINDRICAL LEADLESS TYPE FOR SURFACE MOUNTING
- WIDE TEMPERATURE -55 ~ +105°C WITH ECONOMICAL PRICING
- WIDE CV RANGE
- ANTI-SOLVENT (2 MINUTES)
- DESIGNED FOR AUTOMATIC MOUNTING AND REFLOW SOLDERING



### CHARACTERISTICS

Rated Voltage Range	6.3 ~ 100 Vdc**								
Rated Capacitance Range	0.1 ~ 6800µF								
Operating Temperature Range	-55° ~ +105°C (100V -40° ~ +105°C)								
Capacitance Tolerance	±20%(M), ±10%(K)*								
Max. Leakage Current After 2 Minutes @ 20°C	0.01CV or 3µA, whichever is greater								
Surge Voltage	W.V. (Vdc)	6.3	10	16	25	35	50	63	100
	S.V. (Vdc)	8.0	13	20	32	44	63	79	125
Max. Tanδ @ 120 Hz/20°C	Ø4-Ø6.3	0.24	0.20	0.16	0.14	0.12	0.10	0.12	0.10
	Ø8 & larger	0.28	0.24	0.20	0.16	0.14	0.12	0.12	0.10
Low Temperature Stability	W.V. (Vdc)	6.3	10	16	25	35	50	63	100
	Z-40°C/Z +20°C	3	3	2	2	2	2	2	3
Impedance Ratio @ 120Hz	Z-55°C/Z +20°C	8	6	4	4	3	3	3	-
	Capacitance Change	Within ± 25% of initial measured value							
Load Life Test @ 105°C 4 ~ 6.3mm Diameter & 10X8mm 1,000 Hours 8 ~ 16mm Diameter 2,000 Hours	Tanδ	Less than 200% of specified value							
	Leakage Current	Less than specified value							

\* Optional ± 10% (K) Tolerance - see case size chart.\*\* For higher voltages, 200V and 400V, see NACV series.

### MAXIMUM PERMISSIBLE RIPPLE CURRENT (mA rms AT 120Hz AND 105°C)

Cap (µF)	Working Voltage (Vdc)								
	6.3	10	16	25	35	50	63	100	
0.1	-	-	-	-	-	0.7	0.7	-	
0.22	-	-	-	-	-	1.6	1.6	-	
0.33	-	-	-	-	-	2.5	2.5	-	
0.47	-	-	-	-	-	3.5	3.5	-	
1.0	-	-	-	-	-	7.0	7.0	7.0	
2.2	-	-	-	-	-	11	11	14	
3.3	-	-	-	-	-	13	14	20	
4.7	-	-	-	13	14	16	16	25	
10	-	-	18	20	21	24	24	35	
22	22	25	27	36	38	32	49	84	
33	27	30	40	44	42	60	112	133	
47	33	41	48	48	49	63	119	240	
100	50	-	60	91	84	140	196	-	
150	55	62	95	140	155	-	-	500	
220	67	105	105	175	190	220	287	-	
330	105	195	195	220	300	-	-	-	
470	210	210	230	300	410	-	630	-	
1000	280	310	-	460	-	655	-	-	
1500	310	-	500	-	740	-	-	-	
2200	-	510	-	805	-	-	-	-	
3300	520	-	840	-	-	-	-	-	
4700	-	880	-	-	-	-	-	-	
6800	930	-	-	-	-	-	-	-	

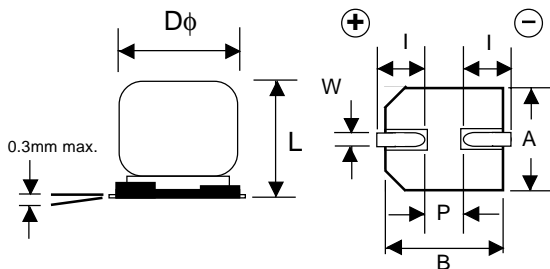
### MAXIMUM ESR (Ω AT 20°C AND 120Hz)

Cap (µF)	Working Voltage (Vdc)								
	6.3	10	16	25	35	50	63	100	
0.1	-	-	-	-	-	1660	1990	-	
0.22	-	-	-	-	-	754	905	-	
0.33	-	-	-	-	-	503	604	-	
0.47	-	-	-	-	-	353	424	-	
1.0	-	-	-	-	-	166	199	166	
2.2	-	-	-	-	-	75.4	90.5	75.4	
3.3	-	-	-	-	-	50.3	60.3	50.3	
4.7	-	-	-	49.4	42.3	35.3	42.4	35.3	
10	-	-	26.5	23.2	19.9	16.6	19.9	16.6	
22	18.1	15.1	12.1	10.6	9.05	7.64	9.04	7.64	
33	12.1	10.1	8.04	7.04	6.04	5.03	6.03	5.03	
47	8.47	7.06	5.65	4.95	4.24	3.53	4.24	3.53	
100	3.98	-	2.66	2.32	2.32	1.99	1.99	-	
150	2.66	2.21	1.77	1.77	1.55	-	-	1.10	
220	1.81	1.51	1.21	1.21	1.06	0.91	0.91	-	
330	1.21	1.21	1.00	0.80	0.70	-	-	-	
470	0.99	0.85	0.71	0.57	0.49	-	0.42	-	
1000	0.46	0.40	-	0.27	-	0.20	-	-	
1500	0.31	-	0.23	-	0.15	-	-	-	
2200	-	0.18	-	0.14	-	-	-	-	
3300	0.14	-	0.12	-	-	-	-	-	
4700	-	0.11	-	-	-	-	-	-	
6800	0.093	-	-	-	-	-	-	-	

### STANDARD PRODUCT AND CASE SIZE TABLE DØxL (mm)

Cap. (µF)	Code	Working Voltage (Vdc)							
		6.3	10	16	25	35	50	63	100
0.1	R10	-	-	-	-	-	4x5.5*	4x5.5*	-
0.22	R22	-	-	-	-	-	4x5.5*	4x5.5*	-
0.33	R33	-	-	-	-	-	4x5.5*	4x5.5*	-
0.47	R47	-	-	-	-	-	4x5.5*	4x5.5*	-
1.0	1R0	-	-	-	-	-	4x5.5*	4x5.5*	4x6.3*
2.2	2R2	-	-	-	-	-	4x5.5*	4x5.5*	6.3x6.3*
3.3	3R3	-	-	-	-	-	4x5.5*	5x5.5*	6.3x6.3*
4.7	4R7	-	-	-	4x5.5*	4x5.5*	5x5.5*	5x5.5*	6.3x6.3*
10	100	-	-	4x5.5*	5x5.5*	5x5.5*	6.3x5.5*	6.3x5.5*	6.3x8*
22	220	4x5.5*	5x5.5*	5x5.5*	6.3x5.5*	6.3x5.5*	6.3x6.3*	6.3x8*	8x10.5*
33	330	5x5.5*	5x5.5*	6.3x5.5*	6.3x5.5*	6.3x6.3*	6.3x8*	8x10.5*	10x10.5*
47	470	5x5.5*	6.3x5.5*	6.3x5.5*	6.3x6.3*	6.3x6.3*	6.3x8*	8x10.5*	12.5x14
100	101	6.3x5.5*	-	6.3x5.5*	6.3x8*	6.3x8	8x10.5*	10x10.5*	-
150	151	6.3x5.5*	6.3x6.3*	6.3x8*	8x10.5*	8x10.5* 10x8*	-	-	16x17
220	221	6.3x6.3*	6.3x8*	6.3x8*	8x10.5* 10x8*	8x10.5	10x10.5	12.5x14	-
330	331	6.3x8*	8x10.5*	8x10.5* 10x8	8x10.5*	10x10.5	-	-	-
470	471	8x10.5	8x10.5 10x8	8x10.5	10x10.5*	12.5x14	-	16x17	-
1000	102	8x10.5*	10x10.5*	-	12.5x14	-	16x17	-	-
1500	152	10x10.5*	-	12.5x14	-	16x17	-	-	-
2200	222	-	12.5x14	-	16x17	-	-	-	-
3300	332	12.5x14	-	16x17	-	-	-	-	-
4700	472	-	16x17	-	-	-	-	-	-
6800	682	16x17	-	-	-	-	-	-	-

\*Denotes values that are available in optional 10% tolerance



**SEE PAGE 38**  
For Case Size Data  
**SEE PAGE 39**  
For Taping/Packaging Data

### RIPPLE CURRENT CORRECTION FACTOR

Ripple Current Frequency Correction Factors				
Frequency Hz	f ≤ 100	100 > f ≤ 1K	1K > f ≤ 10K	f ≥ 100K
Correction Factor	0.8	1.0	1.3	1.5
Ripple Current Temperature Correction Factors				
Temperature	40°C ~ 85°C	> 85° ~ 105°C		
Correction Factor	1.42	1.0		

