

FEATURES

- CYLINDRICAL LEADLESS TYPE FOR SURFACE MOUNTING
- LOW PROFILE, 4.6mm MAXIMUM HEIGHT
- DESIGNED FOR AUTOMATIC MOUNTING AND REFLOW SOLDERING

CHARACTERISTICS

Rated Voltage Range	4 ~ 50 Vdc							
Rated Capacitance Range	0.1 ~ 220μF							
Operating Temp. Range	-40°C ~ +85°C							
Capacitance Tolerance	±20%(M)							
Max. Leakage Current After 2 Minutes at 20°C	0.01CV or 3μA, whichever is greater							
Surge Voltage & Max. Tanδ	W.V. (Vdc)	4	6.3	10	16	25	35	50
	S.V. (Vdc)	5	8.0	13	20	32	44	63
	Tanδ @ 120Hz/20°C	0.40	0.30	0.24	0.20	0.16	0.14	0.12
Low Temperature Stability (Impedance Ratio @ 120Hz)	W.V. (Vdc)	4	6.3	10	16	25	35	50
	Z-25°C/Z +20°C	7	4	3	2	2	2	2
	Z-40°C/Z +20°C	15	10	8	6	4	4	4
Load Life Test at Rated W.V. 85°C 1,000 Hours	Capacitance Change	Within ± 25% of initial value						
	Tanδ	Less than 200% of specified value						
	Leakage Current	Less than the specified value						



SURFACE MOUNT

MAXIMUM PERMISSIBLE RIPPLE CURRENT (mA rms AT 120Hz AND 85°C)

Cap (μF)	Working Voltage (Vdc)						
	4	6.3	10	16	25	35	50
0.1							1.0
0.22							2.0
0.33							2.8
0.47							4.0
1.0							8.4
2.2							14
3.3							17
4.7					17	18	21
10				23	27	29	33
22		28	33	37	47	49	
33	28	37	41	51	57		
47	33	45	53	61			
100	56	70	74				
220	96						

MAXIMUM ESR (Ω AT 20°C AND 120Hz)

Cap (μF)	Working Voltage (Vdc)						
	4	6.3	10	16	25	35	50
0.1							1990
0.22							905
0.33							603
0.47							423
1.0							199
2.2						106	90.5
3.3					80.5	70.5	60.3
4.7				70.7	56.5	49.4	42.3
10			39.9	33.2	26.5	23.2	19.9
22	30.2	22.6	18.1	15.1	12.1	10.8	
33	20.1	15.1	12.6	10.1	8.1		
47	14.1	10.6	8.5	7.1			
100	6.6	5.0	3.98				
220	3.0						

RIPPLE CURRENT CORRECTION FACTOR

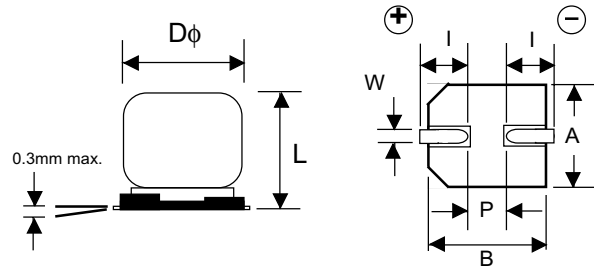
Cap (μF)	Frequency			
	100~<1KHz	1K~<10KHz	10K~<100KHz	≥100KHz
0.47 ~ 4.7	1.0	1.3	1.5	2.0
10 ~ 33	1.0	1.2	1.3	1.45
47 ~ 220	1.0	1.1	1.2	1.3

STANDARD PRODUCTION SIZE DØ xL

Cap (µF)	Working Voltage (Vdc)						
	4	6.3	10	16	25	35	50
0.1							4x4.5
0.22							4x4.5
0.33							4x4.5
0.47							4x4.5
1.0							4x4.5
2.2							4x4.5
3.3							4x4.5
4.7					4x4.5	4x4.5	5x4.5
10				4x4.5	5x4.5	5x4.5	6.3x4.5
22		4x4.5	5x4.5	5x4.5	6.3x4.5	6.3x4.5	
33	4x4.5	5x4.5	5x4.5	6.3x4.5	6.3x4.5		
47	4x4.5	5x4.5	6.3x4.5	6.3x4.5			
100	5x4.5	6.3x4.5	6.3x4.5				
220	6.3x4.5						

DIMENSIONS (mm)

Case Size	DØ ± 0.5	L ± 0.1	A ± 0.2	I ± 0.2	W	P ± 0.2
4x4.5	4	4.5	4.3	1.8	0.5 ~ 0.8	1.0
5x4.5	5	4.5	5.3	2.1	0.5 ~ 0.8	1.4
6.3x4.5	6.3	4.5	6.6	2.5	0.5 ~ 0.8	2.2



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

NACP	470	M	16V	6.3x4.5	TR	13	E
Series	Capacitance Code in µF, first 2 digits are significant Third digit is no. of zeros, "R" indicates decimal for values under 10µF	Tolerance Code M=20%, K=10%	Working Voltage	Size in mm	Tape & Reel	330mm (13") Reel	Lead Free Finish Optional 97% Sn (min.), 3% Bi (max.)