

### FEATURES

- CYLINDRICAL LEADLESS TYPE FOR SURFACE MOUNTING
- VERY LOW IMPEDANCE AT 100KHz (**Up to 60% lower than NACZ**)
- WIDE TEMPERATURE RANGE (-55 +105°C)
- REDUCED SIZE (**Up to 50% smaller than NACZ**)
- DESIGNED FOR AUTOMATIC MOUNTING AND REFLOW SOLDERING



### CHARACTERISTICS

Rated Voltage Range	6.3 ~ 100 Vdc										
Rated Capacitance Range	3.3 ~ 6800μF										
Operating Temp. Range	-55 ~ +105°C										
Capacitance Tolerance	±20%(M)										
Max. Leakage Current after 2 Minutes @ 20°C	0.01CV or 3μA, whichever is greater										
Max. Tanδ @ 120Hz/20°C	W.V. (Vdc)		6.3	10	16	25	35	50	63	80	100
	S.V. (Vdc)		8.0	13	20	32	44	63	79	100	125
	All Case Sizes	C ≤ 1000μF	0.26	0.19	0.16	0.14	0.12	0.10	0.08	0.08	0.07
		C = 2200μF	-	0.21	-	0.16	-	-	-	-	-
		C = 3300μF	0.30	-	0.20	0.18	-	-	-	-	-
C = 4700μF		-	0.25	0.22	-	-	-	-	-	-	
		C = 6800μF	0.36	0.29	-	-	-	-	-	-	
Low Temperature Stability Impedance Ratio @ 120Hz	Z-25°C/Z +20°C		2	2	2	2	2	2	2	2	2
	Z-40°C/Z +20°C		3	3	3	3	3	3	3	3	3
	Z-55°C/Z +20°C		4	4	4	3	3	3	3	3	3
Load Life Test @ 105°C 4~10mm Dia 2,000 Hours 12.5~18mm Dia 5,000 Hours	Capacitance Change		Within ± 30% of initial measured value								
	Tanδ		Less than 200% of specified max. value								
	Leakage Current		Less than specified max. value								

**LOW ESR COMPONENT**  
LIQUID ELECTROLYTE  
For Performance Data  
see [www.LowESR.com](http://www.LowESR.com)

### STANDARD PRODUCTION SIZE Dφ xL (mm)

Cap (μF)	Code	Working Voltage (Vdc)								
		6.3	10	16	25	35	50	63	80	100
3.3	3R3	-	-	-	-	-	-	-	5x6.1	-
4.7	4R7	-	-	-	-	4x6.1	4x6.1	5x6.1	6.3x6.1	-
10	100	-	-	4x6.1	4x6.1	4x6.1	5x6.1	6.3x6.1	6.3x8	-
						5x6.1	6.3x6.1		8x6.5	
22	220	4x6.1	4x6.1	4x6.1	5x6.1	5x6.1	6.3x6.1	6.3x8	8x10.5	8x10.5
				5x6.1				8x6.5		
33	330	-	4x6.1	-	5x6.1	6.3x6.1	6.3x8	8x10.5	8x10.5	10x10.5
			5x6.1		6.3x6.1					
47	470	4x6.1	-	5x6.1	6.3x6.1	6.3x6.1	8x6.5	8x10.5	10x10.5	12.5x14
		5x6.1		6.3x6.1						
68	680	-	-	-	-	-	-	-	-	12.5x14
100	101	5x6.1	-	6.3x6.1	6.3x8	6.3x8	8x10.5	10x10.5	12.5x14	16x17
		6.3x6.1			8x6.5	8x10.5				
150	151	-	-	-	-	-	-	-	12.5x14	16x17
220	221	6.3x6.1	6.3x8	6.3x8	8x10.5	8x10.5	10x10.5	12.5x14	-	18x17
			8x6.5	8x6.5						
330	331	6.3x8	8x10.5	8x10.5	8x10.5	10x10.5	12.5x14	-	16x17	18x17
		8x6.5								
390	391	-	-	-	-	-	12.5x14	-	-	-
470	471	8x10.5	8x10.5	8x10.5	10x10.5	12.5x14	-	16x17	18x17	-
680	681	-	8x10.5	10x10.5	-	12.5x14	16x17	18x17	-	-
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	18x17	-	-	-	-	-
4700	472	-	16x17	18x17	-	-	-	-	-	-
6800	682	16x17	18x17	-	-	-	-	-	-	-



# Surface Mount Aluminum Electrolytic Capacitors NACK Series

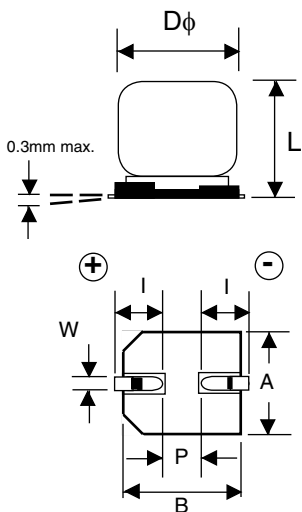
## MAXIMUM IMPEDANCE (W AT 20°C AND 100KHz)

Cap ( $\mu$ F)	Working Voltage (Vdc)								
	6.3	10	16	25	35	50	63	80	100
3.3	-	-	-	-	-	-	-	5.0	-
4.7	-	-	-	-	1.35	2.9	3.0	3.0	-
10	-	-	1.35	1.35	1.52 0.70	1.52 0.88	1.5	2.4 2.4	-
22	1.35	1.35	1.35 0.70	0.70	0.70	0.88	1.2 1.2	1.3	1.3
33	-	1.35 0.70	-	0.70 0.36	0.36	0.68 0.68	0.65	1.3	0.7
47	1.35 0.70	-	0.70 0.36	0.36	0.36	0.68	0.65	0.7	0.32
68	-	-	-	-	-	-	-	-	0.32
100	0.70 0.36	-	0.36	0.34 0.26	0.34 0.16	0.34	0.35	0.32	0.17
150	-	-	-	-	-	-	-	0.32	0.17
220	0.36	0.34 0.26	0.34 0.26	0.16	0.16	0.18	0.16	-	0.153
330	0.34 0.26	0.16	0.16	0.16	0.08	0.12	-	0.17	0.153
390	-	-	-	-	-	0.12	-	-	-
470	0.16	0.16	0.16	0.08	0.06	-	0.082	0.153	-
680	-	0.16	0.08	-	0.06	0.073	0.08	-	-
1000	0.16	0.08	-	0.06	-	0.073	-	-	-
1500	0.08	-	0.06	-	0.035	-	-	-	-
2200	-	0.06	-	0.035	-	-	-	-	-
3300	0.06	-	0.035	0.033	-	-	-	-	-
4700	-	0.035	0.033	-	-	-	-	-	-
6800	0.035	0.033	-	-	-	-	-	-	-

## MAXIMUM PERMISSIBLE RIPPLE CURRENT (mA rms AT 100KHz AND 105°C)

Cap ( $\mu$ F)	Working Voltage (Vdc)								
	6.3	10	16	25	35	50	63	80	100
3.3	-	-	-	-	-	-	-	25	-
4.7	-	-	-	-	-	-	-	50	40
10	-	-	90	90	90	85	80	60	-
22	90	90	90 160	160	160	165	120 120	130	130
33	-	90 160	-	160 240	240	195 195	250	130	200
47	90 160	-	160 240	240	240	195	250	200	500
68	-	-	-	-	-	-	-	-	500
100	160 240	-	240	280 300	280 600	350	400	500	793
150	-	-	-	-	-	-	-	500	793
220	240	160 300	280 300	600	600	670	800	-	917
330	280 300	600	600	600	850	900	-	793	917
390	-	-	-	-	-	900	-	-	-
470	600	600	600	850	1100	-	1410	917	-
680	-	600	850	-	1100	1610	1690	-	-
1000	600	850	-	1100	-	1610	-	-	-
1500	850	-	1100	-	1800	-	-	-	-
2200	-	1100	-	1800	-	-	-	-	-
3300	1100	-	1800	2060	-	-	-	-	-
4700	-	1800	2060	-	-	-	-	-	-
6800	1800	2060	-	-	-	-	-	-	-

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



### RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

Frequency	60Hz	120Hz	1KHz	10KHz	100KHz
Correction Factor	0.7	0.75	0.9	0.95	1.0

### RIPPLE CURRENT TEMPERATURE CORRECTION FACTOR

Temperature	-55°C ~ +85°C	> 85°C
Correction Factor	1.4	1.0

**NACK 101 M 50V 8x10.5 TR 13 E**

- Optional Pb-Free Finish (97% Sn/3% Bi for 4 ~ 10mm Diameter) (100% Sn for 10 ~ 18mm Diameter)
- 330mm (13") Reel
- Tape & Reel
- Size in mm
- Working Voltage
- Tolerance Code M=20%, K=10%
- Capacitance Code in  $\mu$ F, first 2 digits are significant
- Third digit is no. of zeros, "R" indicates decimal for values under 10 $\mu$ F
- Series