

Miniature Aluminum Electrolytic Capacitors

NRSZC Series

VERY LOW IMPEDANCE (LOWER THAN NRSZ) AT HIGH FREQUENCY
 RADIAL LEADS, POLARIZED ALUMINUM ELECTROLYTIC CAPACITORS

FEATURES

- VERY LOW IMPEDANCE
- LONG LIFE AT 105°C (2000 ~ 7000 hrs.)
- HIGH STABILITY AT LOW TEMPERATURE
- IDEALLY FOR SWITCHING POWER SUPPLIES

**RoHS
Compliant**

includes all homogeneous materials

*See Part Number System for Details



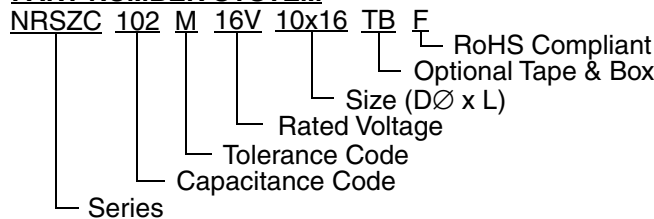
CHARACTERISTICS

Rated Voltage Range	6.3 ~ 35 VDC
Capacitance Range	47 ~ 18,000µF
Operating Temperature Range	-55 ~ +105°C
Capacitance Tolerance	± 20% (M)

NRSZ → NRSZC
 (today's standard) (for new designs)

Max. Leakage Current @ (20°C) After 2 min.	0.01CV					
Max. Tan δ @ 120Hz/20°C	W.V. (Vdc)	6.3	10	16	25	35
	S.V. (Vdc)	8	13	20	32	44
	C ≤ 1,000µF	0.22	0.19	0.16	0.14	0.12
	C ≤ 1,800µF	0.22	0.19	0.16	0.14	0.12
	C = 2,200µF	0.24	-	0.18	0.16	0.14
	C = 2,700µF	0.24	0.21	0.18	0.16	0.14
	C = 3,300µF	-	-	0.20	0.18	0.16
	C = 3,900µF	0.26	0.23	0.20	0.18	0.16
	C = 4,700µF	0.28	0.25	0.22	-	0.18
	C = 5,600µF	0.30	0.27	0.24	0.22	-
	C = 6,800µF	0.32	0.29	0.26	0.24	-
	C = 8,200µF	0.36	0.33	0.30	-	-
	C = 10,000µF	0.40	0.37	0.34	-	-
	C = 12,000µF	0.44	0.41	-	-	-
C = 15,000µF	0.50	0.47	-	-	-	
C = 18,000µF	0.56	-	-	-	-	
Low Temperature Stability Impedance Ratio @ 120Hz	Z-25°C/Z+20°C	3	2	2	2	2
	Z-40°C/Z+20°C	4	4	3	3	3
Load Life Test at Rated W.V. & 105°C 7,000 Hours: 16 ~ 18∅ 5,000 Hours: 12.5∅ 4,000 Hours: 10∅ 3,000 Hours: 8∅ 2,000 Hours: 5 ~ 6.3∅	Capacitance Change	Within ± 25% of initial measured value				
	Tan δ	Less than 200% of specified maximum value				
	Leakage Current	Less than specified maximum value				
Shelf Life Test 105°C 1,000 Hours No Load	Capacitance Change	Within ±20% of initial measured value				
	Tan δ	Less than 200% of specified maximum value				
	Leakage Current	Less than specified maximum value				

PART NUMBER SYSTEM



STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS

W.V. (Vdc)	Cap.		Case Size D ϕ x L(mm)	Lead Space (mm)	Max. Tan δ at 120Hz	Max. LC (μ A) 2 minutes	Max. Z(Ω) 100KHz/20 $^{\circ}$ C	Max. Ripple Current 100KHz/105 $^{\circ}$ C (mA rms)
	(μ F)	Code						
6.3	180	181	5x11	2.0	0.22	11.3	0.340	205
	330	331	6.3x11	2.5	0.22	20.8	0.170	330
	390	391	6.3x11	2.5	0.22	24.6	0.170	330
	680	681	8x11.5	3.5	0.22	42.8	0.110	580
	1000	102	8x15	3.5	0.22	63.0	0.080	750
	1200	122	8x20	3.5	0.22	75.6	0.060	1000
			10x12.5	5.0	0.22	75.6	0.063	900
	1500	152	8x20	3.5	0.22	94.5	0.060	1000
			10x16	5.0	0.22	94.5	0.049	1200
	2200	222	10x20	5.0	0.24	138.6	0.036	1450
			12.5x16	5.0	0.24	138.6	0.049	1400
	2700	272	10x22	5.0	0.24	170.1	0.036	1500
	3300	332	12.5x20	5.0	0.26	245.7	0.035	1660
	4700	472	12.5x25	5.0	0.28	296.1	0.027	2000
	5600	562	12.5x25	5.0	0.30	352.8	0.027	2000
			16x21	7.5	0.30	352.8	0.032	2000
	6800	682	12.5x30	5.0	0.32	428.4	0.024	2450
			16x25	7.5	0.32	428.4	0.022	2560
			18x21	7.5	0.32	428.4	0.030	2490
	8200	822	16x25	7.5	0.36	516.6	0.022	2560
10000	103	16x25	7.5	0.40	630.0	0.017	3010	
		18x25	7.5	0.40	630.0	0.022	2740	
12000	123	16x35.5	7.5	0.44	756.0	0.016	3150	
		18x30.5	7.5	0.44	756.0	0.017	3330	
15000	153	18x35.5	7.5	0.50	945.0	0.016	3680	
18000	183	18x41	7.5	0.56	1134	0.015	3800	
10	150	151	5x11	2.0	0.19	15.0	0.340	205
	270	271	6.3x11	2.5	0.19	27.0	0.170	330
	470	471	8x11.5	3.5	0.19	47.0	0.110	580
	560	561	8x11.5	3.5	0.19	56.0	0.110	580
	680	681	8x15	3.5	0.19	68.0	0.080	750
	820	821	10x12.5	5.0	0.19	82.0	0.063	900
	1000	102	8x20	3.5	0.19	100.0	0.060	1000
			10x16	5.0	0.19	100.0	0.049	1200
	1200	122	10x16	5.0	0.19	120.0	0.049	1200
1500	152	10x20	5.0	0.19	150.0	0.036	1450	

STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS

W.V. (Vdc)	Cap.		Case Size D ϕ x L(mm)	Lead Space (mm)	Max. Tan δ at 120Hz	Max. LC (μ A) 2 minutes	Max. Z(Ω) 100KHz/20 $^{\circ}$ C	Max. Ripple Current 100KHz/105 $^{\circ}$ C (mA rms)
	(μ F)	Code						
10	1800	182	10x22	5.0	0.19	180.0	0.036	1500
			12.5x16	5.0	0.19	180.0	0.049	1400
	2700	272	12.5x20	5.0	0.21	270.0	0.035	1660
	3900	392	12.5x25	5.0	0.23	390	0.027	2000
			16x21	7.5	0.23	390	0.032	2000
	4700	472	12.5x30	5.0	0.25	470	0.024	2450
			16x25	7.5	0.25	470.0	0.022	2560
	5600	562	16x25	7.5	0.27	560.0	0.022	2560
			18x21	7.5	0.27	560.0	0.030	2490
	6800	682	16x31.5	7.5	0.29	680.0	0.017	3010
			18x25	7.5	0.29	680.0	0.022	2740
	8200	822	16x31.5	7.5	0.33	820.0	0.017	3010
	10000	103	16x35.5	7.5	0.37	1000	0.016	3150
			18x30.5	7.5	0.37	1000	0.017	3330
12000	123	18x35.5	7.5	0.41	1200	0.016	3680	
15000	153	18x41	7.5	0.47	1500	0.015	3800	
16	100	101	5x11	2.0	0.16	16.0	0.340	205
	180	181	6.3x11	2.5	0.16	28.8	0.170	330
	330	331	8x11.5	3.5	0.16	52.8	0.110	580
	470	471	8x15	3.5	0.16	75.2	0.080	750
	560	561	10x12.5	5.0	0.16	89.6	0.063	900
	680	681	8x20	3.5	0.16	108.8	0.060	1000
	820	821	10x16	5.0	0.16	131.2	0.049	1200
	1000	102	10x20	5.0	0.16	160.0	0.036	1450
	1200	122	10x22	5.0	0.16	192.0	0.036	1500
			12.5x16	5.0	0.16	192.0	0.049	1400
	1500	152	12.5x20	5.0	0.16	240.0	0.035	1660
	1800	182	12.5x20	5.0	0.16	288.0	0.035	1660
	2200	222	12.5x25	5.0	0.18	352.0	0.027	2000
	2700	272	12.5x25	5.0	0.18	432.0	0.027	2000
			16x21	7.5	0.18	432.0	0.032	2000
	3300	332	12.5x30	5.0	0.20	528.0	0.024	2450
			16x25	7.5	0.20	528.0	0.022	2560
18x21			7.5	0.20	528.0	0.030	2490	
3900	392	16x25	7.5	0.20	624.0	0.022	2560	

STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS

W.V. (Vdc)	Cap.		Case Size D ϕ x L(mm)	Lead Space (mm)	Max. Tan δ at 120Hz	Max. LC (μ A) 2 minutes	Max. Z(Ω) 100KHz/20 $^{\circ}$ C	Max. Ripple Current 100KHz/105 $^{\circ}$ C (mA rms)
	(μ F)	Code						
16	4700	472	16x31.5	7.5	0.22	752.0	0.017	3010
			18x25	7.5	0.22	752.0	0.022	2740
	5600	562	16x31.5	7.5	0.24	896.0	0.017	3010
	6800	682	16x35.5	7.5	0.26	1088	0.016	3150
	8200	822	18x35.5	7.5	0.30	1312	0.016	3680
	10000	103	18x41	7.5	0.34	1600	0.015	3800
25	68	680	5x11	2.0	0.14	17.0	0.340	205
	120	121	6.3x11	2.5	0.14	30.0	0.170	330
	220	221	8x11.5	3.5	0.14	55.0	0.110	580
	330	331	8x15	3.5	0.14	82.5	0.080	750
	390	391	10x12.5	5.0	0.14	97.5	0.063	900
	470	471	8x20	3.5	0.14	117.5	0.060	1000
	560	561	10x16	5.0	0.14	140.0	0.049	1200
	680	681	10x20	5.0	0.14	170.0	0.036	1450
	820	821	10x20	5.0	0.14	205.0	0.036	1450
			12.5x16	5.0	0.14	205.0	0.049	1400
	1000	102	10x22	5.0	0.14	250.0	0.036	1500
	1200	122	12.5x20	5.0	0.14	300.0	0.035	1660
	1800	182	12.5x25	5.0	0.14	450.0	0.027	2000
			16x21	7.5	0.14	450.0	0.032	2000
	2200	222	12.5x30	5.0	0.16	550.0	0.024	2450
			18x21	7.5	0.16	550.0	0.030	2490
	2700	272	16x25	7.5	0.16	675.0	0.022	2560
	3300	332	16x31.5	7.5	0.18	825.0	0.017	3010
			18x25	7.5	0.18	825.0	0.022	2740
	3900	392	16x35.5	7.5	0.18	975.0	0.016	3150
18x30.5			7.5	0.18	975.0	0.017	3330	
5600	562	18x35.5	7.5	0.22	1400	0.016	3680	
6800	682	18x41	7.5	0.24	1700	0.015	3800	
35	47	470	5x11	2.0	0.12	16.5	0.340	205
	100	101	6.3x11	2.5	0.12	35.0	0.170	330
	150	151	8x11.5	3.5	0.12	52.5	0.110	580
	220	221	8x15	3.5	0.12	77.0	0.080	750
	270	271	10x12.5	5.0	0.12	94.5	0.063	900
	330	331	8x20	3.5	0.12	115.5	0.060	1000
			10x16	5.0	0.12	115.5	0.049	1200

STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS

W.V. (Vdc)	Cap.		Case Size D ϕ x L(mm)	Lead Space (mm)	Max. Tan δ at 120Hz	Max. LC (μ A) 2 minutes	Max. Z(Ω) 100KHz/20 $^{\circ}$ C	Max. Ripple Current 100KHz/105 $^{\circ}$ C (mA rms)
	(μ F)	Code						
35	390	391	10x16	5.0	0.12	136.5	0.049	1200
	470	471	10x20	5.0	0.12	164.5	0.036	1450
	560	561	10x20	5.0	0.12	196.0	0.036	1450
			12.5x16	5.0	0.12	196.0	0.049	1400
	680	681	10x22	5.0	0.12	238.0	0.036	1500
	820	821	12.5x20	5.0	0.12	287.0	0.035	1660
	1200	122	12.5x25	5.0	0.12	420.0	0.027	2000
			16x21	7.5	0.12	420.0	0.032	2000
	1500	152	12.5x30	5.0	0.12	525.0	0.024	2450
			18x21	7.5	0.12	525.0	0.030	2490
	1800	182	16x25	7.5	0.12	630.0	0.022	2560
	2200	222	18x25	7.5	0.14	770.0	0.022	2740
	2700	272	16x31.5	7.5	0.14	945.0	0.017	3010
	3300	332	16x35.5	7.5	0.16	1155	0.016	3150
3900	392	18x35.5	7.5	0.16	1365	0.016	3680	
4700	472	18x41	7.5	0.18	1645	0.015	3800	

LEAD SPACING AND DIAMETER (mm)

Case Dia. (D ϕ)	5.0	6.3	8	10	12.5	12.5x30	16	18
Lead Spacing (F)	2.0	2.5	3.5	5.0	5.0	5.0	7.5	7.5
Leads Dia. (d ϕ)	0.5	0.5	0.6	0.6	0.6	0.8	0.8	0.8

$\beta = L < 20\text{mm} = 1.5\text{mm}, L \geq 20\text{mm} = 2.0\text{mm}$
 $\alpha = 0.5\text{mm}$

