

# Miniature Aluminum Electrolytic Capacitors

NRSG Series

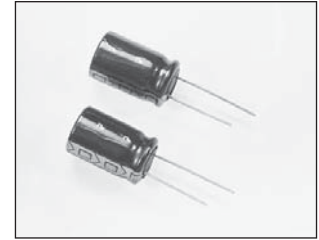
ULTRA LOW IMPEDANCE, RADIAL LEADS, POLARIZED, ALUMINUM ELECTROLYTIC

## FEATURES

- VERY LOW IMPEDANCE
- LONG LIFE AT 105°C (1000 ~ 5000 hrs.)
- HIGH STABILITY AT LOW TEMPERATURE
- IDEALLY FOR SWITCHING POWER SUPPLIES & CONVERTERS

**RoHS  
Compliant**  
includes all homogeneous materials

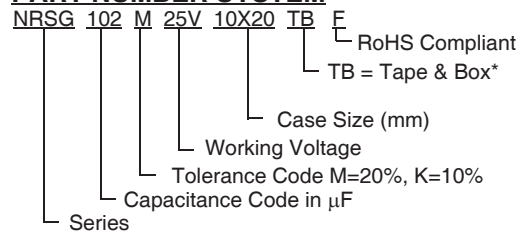
\*See Part Number System for Details



## CHARACTERISTICS

Rated Voltage Range	6.3 ~ 100Vdc									
Capacitance Range	5.6 ~ 6,800µF									
Operating Temperature Range	-40°C ~ +105°C									
Capacitance Tolerance	±20% (M)									
Maximum Leakage Current After 2 Minutes at 20°C	0.01CV or 3µA whichever is greater									
Max. Tan δ at 120Hz/20°C	W.V. (Vdc)	6.3	10	16	25	35	50	63	100	
	S.V. (Vdc)	8	13	20	32	44	63	79	125	
	C ≤ 1,000µF	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	
	C = 1,200µF	0.22	0.19	0.16	-	0.12	-	-	-	
	C = 1,500µF	0.22	0.19	0.16	0.14	0.12	-	-	-	
	C = 1,800µF	-	-	-	0.14	0.12	-	-	-	
	C = 2,200µF	0.24	0.21	0.18	0.16	-	-	-	-	
	C = 2,700µF	-	-	0.18	0.16	-	-	-	-	
	C = 3,300µF	0.26	0.23	0.20	-	-	-	-	-	
	C = 3,900µF	0.26	0.23	0.20	-	-	-	-	-	
	C = 4,700µF	0.28	0.25	-	-	-	-	-	-	
	C = 5,600µF	0.30	0.27	-	-	-	-	-	-	
C = 6,800µF	0.32	-	-	-	-	-	-	-		
Low Temperature Stability Impedance Ratio @ 120Hz	Z-25°C/Z+20°C	2								
	Z-40°C/Z+20°C	3								
Load Life Test at Rated W.V. & 105°C 1,000 Hrs. L = 7mm 2,000 Hrs. 5 ~ 6.3mm Dia. 3,000 Hrs. 8mm Dia. 4,000 Hrs. 10mm Dia. 5,000 Hrs. 12.5 ~ 18mm Dia.	Capacitance Change	Within ±25% of initial measured value								
	Tan δ	Less than 200% of specified value								
	Leakage Current	Less than specified value								

## PART NUMBER SYSTEM



\*see tape specification for details

## PRECAUTIONS

Please review the notes on correct use, safety and precautions found on pages T10 & T11 of NIC's Electrolytic Capacitor catalog.  
Also found at [www.niccomp.com/precautions](http://www.niccomp.com/precautions)  
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: [tpmg@niccomp.com](mailto:tpmg@niccomp.com)



## STANDARD PRODUCT AND CASE SIZE TABLE DΦ x L (mm)

Cap (μF)	Code	Working Voltage (Vdc)								
		6.3	10	16	25	35	50	63	100	
5.6	5R6	-	-	-	-	-	4x7	-	-	
6.8	6R8	-	-	-	-	-	-	-	5x11	
10	100	-	-	-	-	4x7	5x7	-	-	
15	150	-	-	-	4x7	-	-	5x11	6.3x11	
18	180	-	-	4x7	-	5x7	-	-	-	
22	220	-	-	-	-	-	5x11	-	-	
		-	-	-	-	-	6.3x7	-	-	
27	270	-	4x7	-	5x7	-	-	-	8x11.5	
33	330	-	-	5x7	-	5x11	8x7	6.3x11	-	
39	390	4x7	-	-	-	6.3x7	-	-	8x16	
47	470	-	-	-	5x11	-	6.3x11	-	10x12.5	
56	560	-	5x7	5x11	6.3x7	6.3x11	8x7	6.3x11	8x11.5	8x20
		-	-	-	-	-	-	-	-	-
68	680	5x7	-	6.3x7	-	-	-	-	10x16	
82	820	-	-	-	-	-	-	8x16	10x20	
		-	-	-	-	-	-	10x12.5	12.5x16	
100	101	-	5x11	-	6.3x11	-	8x12.5	-	10x23	
		-	-	-	8x7	-	-	-	-	
120	121	-	6.3x7	6.3x11	-	-	8x16	8x20	12.5x20	
		-	-	8x7	-	-	-	10x16	-	
150	151	5x11	-	-	-	8x12.5	10x12.5	-	-	
		6.3x7	-	-	-	-	-	-	-	
180	181	-	8x7	-	-	-	8x20	10x20	12.5x25	
		-	-	-	-	-	-	12.5x16	-	
220	221	8x7	6.3x11	-	8x11.5	8x16	10x16	10x23	12.5x30	
		-	-	-	-	10x12.5	-	-	16x20	
270	271	-	-	-	-	8x20	10x20	12.5x20	12.5x35	
		-	-	-	-	-	-	-	16x25	
		-	-	-	-	-	-	-	18x20	
330	331	6.3x11	-	8x11.5	8x16	10x16	10x23	12.5x25	12.5x40	
		-	-	-	10x12.5	-	-	-	-	
390	391	-	-	-	-	-	-	-	16x31.5	
		-	-	-	-	-	-	-	18x25	
470	471	-	8x11.5	8x16	8x20	10x20	12.5x20	12.5x30	16x35.5	
		-	-	10x12.5	10x16	-	-	16x20	18x31.5	
560	561	8x11.5	-	-	-	10x23	12.5x25	12.5x35	16x40	
		-	-	-	-	-	-	16x25	18x35.5	
680	681	-	8x16	8x20	10x20	12.5x20	12.5x30	12.5x40	18x40	
		-	10x12.5	10x16	-	-	-	18x20	-	
820	821	8x16	-	-	10x20	-	12.5x35	16x31.5	-	
		-	-	-	10x23	-	16x21	18x25	-	
1000	102	10x12.5	8x20	10x20	12.5x20	12.5x25	16x25	16x35.5	-	
		-	10x16	-	-	-	-	18x31.5	-	
1200	122	8x20	10x20	10x20	-	12.5x30	-	16x40	-	
		10x16	-	10x23	-	16x21	-	18x35.5	-	
1500	152	10x20	10x20	12.5x20	12.5x25	12.5x35	-	18x40	-	
1800	182	-	-	-	12.5x30	16x25	-	-	-	
		-	-	-	16x21	-	-	-	-	
2200	222	10x20	12.5x20	12.5x25	12.5x35	-	-	-	-	
		10x23	-	-	-	-	-	-	-	
2700	272	-	-	12.5x30	16x25	-	-	-	-	
		-	-	16x21	-	-	-	-	-	
3300	332	12.5x20	12.5x25	12.5x35	-	-	-	-	-	
3900	392	12.5x25	12.5x30	16x25	-	-	-	-	-	
		16x21	-	-	-	-	-	-	-	
4700	472	12.5x30	12.5x35	-	-	-	-	-	-	
5600	562	12.5x35	16x25	-	-	-	-	-	-	
		16x21	-	-	-	-	-	-	-	
6800	682	16x25	-	-	-	-	-	-	-	

Denotes New Value



## STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS D $\phi$ x L (mm)

Part Number	Cap (μF)	W.V (Vdc)	Max. Tanδ	Max. Z (mΩ) 100KHz & 20°C	Max. Ripple Current (mA) 100KHz & 105°C	Load Life Hours @ +105°C	
NRSG390M6.3V4X7F	39	6.3	0.22	850	130	1000	
NRSG680M6.3V5X7F	68		0.22	430	210	1000	
NRSG151M6.3V5x11F	150		0.22	300	250	2000	
NRSG151M6.3V6.3X7F	150		0.22	230	300	1000	
NRSG221M6.3V8X7F	220		0.22	150	380	1000	
NRSG331M6.3V6.3x11F	330		0.22	130	405	2000	
NRSG561M6.3V8x11.5F	560		0.22	72	760	3000	
NRSG821M6.3V8x16F	820		0.22	56	995	3000	
NRSG102M6.3V10x12.5F	1000		0.22	53	1030	4000	
NRSG122M6.3V8x20F	1200		0.22	41	1250	3000	
NRSG122M6.3V10x16F	1200		0.22	38	1430	4000	
NRSG152M6.3V10x20F	1500		0.22	23	1820	4000	
NRSG222M6.3V10x20F	2200		0.24	23	1820	4000	
NRSG222M6.3V10x23F			0.24	22	2150	4000	
NRSG332M6.3V12.5x20F	3300		0.26	21	2360	5000	
NRSG392M6.3V12.5x25F	3900		0.26	18	2770	5000	
NRSG472M6.3V12.5x30F	4700		0.28	16	3290	5000	
NRSG562M6.3V12.5X35F	5600		0.30	15	3400	5000	
NRSG562M6.3V16x21F			0.30	18	3140	5000	
NRSG682M6.3V16x25F	6800		0.32	16	3460	5000	
NRSG270M10V4X7F	27	10	0.19	890	130	1000	
NRSG560M10V5X7F	56		0.19	440	210	1000	
NRSG101M10V5x11F	100		0.19	300	250	2000	
NRSG121M10V6.3X7F	120		0.19	230	300	1000	
NRSG181M10V8X7F	180		0.19	150	380	1000	
NRSG221M10V6.3x11F	220		0.19	130	405	2000	
NRSG471M10V8x11.5F	470		0.19	72	760	3000	
NRSG681M10V8x16F	680		0.19	56	995	3000	
NRSG681M10V10x12.5F			0.19	53	1030	4000	
NRSG102M10V8x20F	1000		0.19	41	1250	3000	
NRSG102M10V10x16F			0.19	38	1430	4000	
NRSG122M10V10x20F	1200		0.19	23	1820	4000	
NRSG152M10V10x20F	1500		0.19	23	1820	4000	
NRSG152M10V10x23F			0.19	22	2150	4000	
NRSG222M10V12.5x20F	2200		0.21	21	2360	5000	
NRSG332M10V12.5x25F	3300		0.23	18	2770	5000	
NRSG392M10V12.5x30F	3900		0.23	16	3290	5000	
NRSG392M10V16x21F			0.23	18	3140	5000	
NRSG472M10V12.5X35F	4700		0.25	15	3400	5000	
NRSG562M10V16x25F	5600		0.27	16	3460	5000	
NRSG180M16V4X7F	18		16	0.16	920	130	1000
NRSG330M16V5X7F	33			0.16	450	210	1000
NRSG560M16V5x11F	56			0.16	300	250	2000
NRSG680M16V6.3X7F	68			0.16	240	300	1000
NRSG121M16V6.3x11F	120			0.16	130	405	2000
NRSG121M16V8X7F	120			0.16	150	380	1000
NRSG331M16V8x11.5F	330			0.16	72	760	3000
NRSG471M16V8x16F	470			0.16	56	995	3000
NRSG471M16V10x12.5F				0.16	53	1030	4000
NRSG681M16V8x20F	680			0.16	41	1250	3000
NRSG681M16V10x16F		0.16		38	1430	4000	
NRSG102M16V10x20F	1000	0.16		23	1820	4000	
NRSG122M16V10x20F	1200	0.16		23	1820	4000	
NRSG122M16V10x23F		0.16		22	2150	4000	
NRSG152M16V12.5x20F	1500	0.16		21	2360	5000	
NRSG222M16V12.5x25F	2200	0.18		18	2770	5000	
NRSG272M16V12.5x30F	2700	0.18		16	3290	5000	
NRSG272M16V16x21F		0.18		18	3140	5000	
NRSG332M16V12.5X35F	3300	0.20		15	3400	5000	
NRSG392M16V16x25F	3900	0.20		16	3460	5000	

Denotes New Value



## STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS D $\phi$ x L (mm)

Part Number	Cap (μF)	W.V (Vdc)	Max. Tanδ	Max. Z (mΩ) 100KHz & 20°C	Max. Ripple Current (mA) 100KHz & 105°C	Load Life Hours @ +105°C
NRSG150M25V4X7F	15	25	0.14	940	130	1000
NRSG270M25V5X7F	27		0.14	460	210	1000
NRSG470M25V5x11F	47		0.14	300	250	2000
NRSG560M25V6.3X7F	56		0.14	240	300	1000
NRSG101M25V6.3x11F	100		0.14	130	405	2000
NRSG101M25V8X7F	100		0.14	150	380	1000
NRSG221M25V8x11.5F	220		0.14	72	760	3000
NRSG331M25V8x16F	330		0.14	56	995	3000
NRSG331M25V10x12.5F			0.14	53	1030	4000
NRSG471M25V8x20F	470		0.14	41	1250	3000
NRSG471M25V10x16F			0.14	38	1430	4000
NRSG681M25V10x20F	680		0.14	23	1820	4000
NRSG821M25V10x20F	820		0.14	23	1820	4000
NRSG821M25V10x23F			0.14	22	2150	4000
NRSG102M25V12.5x20F	1000		0.14	21	2360	5000
NRSG152M25V12.5x25F	1500		0.14	18	2770	5000
NRSG182M25V12.5x30F	1800		0.14	16	3290	5000
NRSG182M25V16x21F			0.14	18	3140	5000
NRSG222M25V12.5X35F	2200		0.16	15	3400	5000
NRSG272M25V16x25F	2700		0.16	16	3460	5000
NRSG100M35V4X7F	10	35	0.12	960	130	1000
NRSG180M35V5X7F	18		0.12	470	210	1000
NRSG330M35V5x11F	33		0.12	300	250	2000
NRSG390M35V6.3X7F	39		0.12	250	300	1000
NRSG560M35V6.3x11F	56		0.12	130	405	2000
NRSG560M35V8X7F	56		0.12	160	380	1000
NRSG151M35V8x12.5F	150		0.12	72	760	3000
NRSG221M35V8x16F	220		0.12	56	995	3000
NRSG221M35V10x12.5F			0.12	53	1030	4000
NRSG271M35V8x20F	270		0.12	41	1250	3000
NRSG331M35V10x16F	330		0.12	38	1430	4000
NRSG471M35V10x20F	470		0.12	23	1820	4000
NRSG561M35V10x23F	560		0.12	22	2150	4000
NRSG681M35V12.5x20F	680		0.12	21	2360	5000
NRSG102M35V12.5x25F	1000		0.12	18	2770	5000
NRSG122M35V12.5x30F	1200		0.12	16	3290	5000
NRSG122M35V16x21F			0.12	18	3140	5000
NRSG152M35V12.5X35F	1500		0.12	15	3400	5000
NRSG182M35V16x25F	1800		0.12	16	3460	5000
NRSG5R6M50V4X7F	5.6		50	0.10	1000	130
NRSG100M50V5X7F	10	0.10		500	210	1000
NRSG220M50V5x11F	22	0.10		340	238	2000
NRSG220M50V6.3X7F	22	0.10		260	300	1000
NRSG330M50V8X7F	33	0.10		170	380	1000
NRSG470M50V6.3x11F	47	0.10		140	385	2000
NRSG560M50V6.3X11F	56	0.10		140	385	2000
NRSG101M50V8x12.5F	100	0.10		74	724	3000
NRSG121M50V8x16F	120	0.10		61	950	3000
NRSG151M50V10x12.5F	150	0.10		61	979	4000
NRSG181M50V8x20F	180	0.10		46	1190	3000
NRSG221M50V10x16F	220	0.10		42	1370	4000
NRSG271M50V10x20F	270	0.10		30	1580	4000
NRSG331M50V10x23F	330	0.10		28	1870	4000
NRSG471M50V12.5x20F	470	0.10		27	2050	5000
NRSG561M50V12.5x25F	560	0.10		28	2410	5000
NRSG681M50V12.5x30F	680	0.10		21	2360	5000
NRSG821M50V12.5X35F	820	0.10		19	2960	5000
NRSG821M50V16x21F	820	0.10		23	2730	5000
NRSG102M50V16x25F	1000	0.10		21	3010	5000

Denotes New Value



## STANDARD PRODUCTS, CASE SIZES AND SPECIFICATIONS D $\phi$ x L (mm)

Part Number	Cap ( $\mu$ F)	W.V (Vdc)	Max. Tan $\delta$	Max. Z ( $m\Omega$ ) 100KHz & 20°C	Max. Ripple Current (mA) 100KHz & 105°C	Load Life Hours @ +105°C
NRSG150M63V5x11F	15	63	0.09	880	165	2000
NRSG330M63V6.3x11F	33		0.09	350	265	2000
NRSG560M63V8x11.5F	56		0.09	220	500	3000
NRSG820M63V8x16F	82		0.09	160	665	3000
NRSG820M63V10x12.5F			0.09	150	685	4000
NRSG121M63V8x20F	120		0.09	120	820	3000
NRSG121M63V10x16F			0.09	110	945	4000
NRSG181M63V10x20F	180		0.09	80	1100	4000
NRSG181M63V12.5x16F			0.09	82	1135	5000
NRSG221M63V10x23F	220		0.09	73	1300	4000
NRSG271M63V12.5x20F	270		0.09	60	1495	5000
NRSG331M63V12.5x25F	330		0.09	43	1850	5000
NRSG471M63V12.5x30F	470		0.09	39	2250	5000
NRSG471M63V16x20F			0.09	45	1990	5000
NRSG561M63V12.5x35F	560		0.09	33	2450	5000
NRSG561M63V16x25F			0.09	32	2550	5000
NRSG681M63V12.5x40F	680		0.09	29	2780	5000
NRSG681M63V18x20F			0.09	38	2450	5000
NRSG821M63V16x31.5F	820		0.09	26	2810	5000
NRSG821M63V18x25F			0.09	31	2780	5000
NRSG102M63V16x35.5F	1000		0.09	21	2835	5000
NRSG102M63V18x31.5F			0.09	25	3270	5000
NRSG122M63V16x40F	1200		0.09	19	3340	5000
NRSG122M63V18x35.5F			0.09	20	3310	5000
NRSG152M63V18x40F			1500	0.09	18	3420
NRSG6R8M100V5x11F	6.8	100	0.08	1400	125	2000
NRSG150M100V6.3x11F	15		0.08	570	205	2000
NRSG270M100V8x11.5F	27		0.08	360	355	3000
NRSG390M100V8x16F	39		0.08	250	450	3000
NRSG470M100V10x12.5F	47		0.08	240	450	4000
NRSG560M100V8x20F	56		0.08	190	565	3000
NRSG680M100V10x16F	68		0.08	180	580	4000
NRSG820M100V10x20F	82		0.08	130	750	4000
NRSG820M100V12.5x16F			0.08	130	735	5000
NRSG101M100V10x23F	100		0.08	120	880	4000
NRSG121M100V12.5x20F	120		0.08	94	1045	5000
NRSG181M100V12.5x25F	180		0.08	71	1195	5000
NRSG221M100V12.5x30F	220		0.08	63	1410	5000
NRSG221M100V16x20F			0.08	71	1295	5000
NRSG271M100V12.5x35F	270		0.08	52	1560	5000
NRSG271M100V16x25F			0.08	53	1600	5000
NRSG271M100V18x20F			0.08	69	1470	5000
NRSG331M100V12.5x40F	330		0.08	46	1700	5000
NRSG391M100V16x31.5F	390		0.08	41	1750	5000
NRSG391M100V18x25F			0.08	49	1620	5000
NRSG471M100V16x35.5F	470		0.08	33	1890	5000
NRSG471M100V18x31.5F			0.08	39	1775	5000
NRSG561M100V16x40F	560		0.08	30	2080	5000
NRSG561M100V18x35.5F			0.08	31	2060	5000
NRSG681M100V18x40F			680	0.08	28	2570

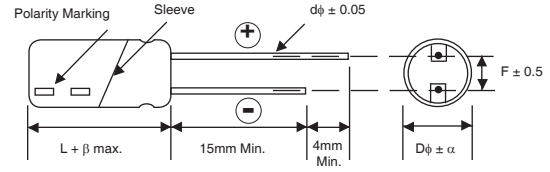
## RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

Frequency (Hz)	120	1K	10K	$\leq$ 100K
5.6 ~ 33 $\mu$ F	0.42	0.70	0.90	1.00
39 ~ 270 $\mu$ F	0.50	0.73	0.92	1.00
330 ~ 680 $\mu$ F	0.55	0.77	0.94	1.00
820 ~ 1800 $\mu$ F	0.60	0.80	0.96	1.00
2200 ~ 82000 $\mu$ F	0.70	0.85	0.98	1.00



## LEAD SPACING AND DIAMETER (mm)

Case Dia. (D $\phi$ )	4	5	6.3	8	10	12.5	16	18
L=7 Lead Dia. (D $\phi$ )	0.45	0.45	0.45	0.45	-	-	-	-
Lead Dia. (D $\phi$ )	-	0.5	0.5	0.6	0.6	0.6	0.8	0.8
Lead Spacing (F)	1.5	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Dim. $\alpha$	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Dim. $\beta$	L=7: 1.0, L < 20mm: 1.5mm, L > 20mm: 2.0mm							



**Drawing is representative of parts as supplied in bulk or straight lead format, please see taping specification for details on taped format packaging.**

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