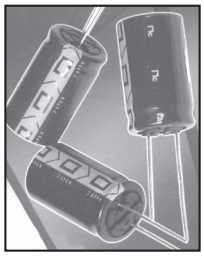
NRSH Series
Miniature Aluminum Electrolytic Capacitors

AEC-Q200 QUALIFIED | 9001:2015 CERTIFIED | ROHS/REACH COMPLIANT HALOGEN FREE | NIC Components Corp.

HIGH TEMPERATURE, EXTENDED LOAD LIFE, RADIAL LEADS, POLARIZED



FEATURES

- IMPROVED ENDURANCE AT HIGH TEMPERATURE (up to 10,000HRS @ 105°C)
- LOW IMPEDANCE & HIGH RIPPLE CURRENT RATINGS
- NEW REDUCED SIZES
- 63V ~ 100V PARTS MEET THE REQUIREMENTS OF AEC-Q200*

EXPANDED! 63V ~ 100V

*Contact NIC for supporting test data. Application review by NIC is required before using NRSH parts in automotive applications.

CHARACTERISTICS

Rated Voltage Range		6.3 ~ 100VDC								
Capacitance Range		8.2 ~ 8,200µF								
Operating Temperature Range		-40°C ~ +105°C								
Capacitance Tolerance		±20% (M)								
Maximum Leakage Current After 2 minutes		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	80	100
	S.V. (Vdc)	8	13	20	32	44	63	79	100	125
	C ≤ 1,000µF	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.08
	C = 1,200µF	0.22	0.19	0.16	0.14	0.12	-	0.09	0.08	-
	C = 1,500µF	0.22	0.19	0.16	0.14	0.12	-	0.09	0.08	-
	C = 1,800µF	0.22	0.19	0.16	0.14	0.12	-	0.09	-	-
	C = 2,200µF	0.24	0.21	0.18	0.16	0.14	-	0.11	-	-
	C = 2,700µF	0.24	0.21	0.18	0.16	-	-	-	-	-
	C = 3,300µF	0.26	0.23	0.20	0.18	-	-	-	-	-
	C = 3,900µF	0.26	0.23	0.20	-	-	-	-	-	-
	C = 4,700µF	0.28	0.25	0.22	-	-	-	-	-	-
	C = 5,600µF	0.30	0.27	-	-	-	-	-	-	-
	C = 6,800µF	0.32	0.29	-	-	-	-	-	-	-
	C = 8,200µF	0.36	-	-	-	-	-	-	-	-
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
Load Life Test @ 105°C	Duration	ϕ D = 5 & 6.3: 6,000 hours, ϕ D = 8: 8,000 hours, ϕ D = 10≥: 10,000 hours								
	Δ Capacitance	Within ±25% of initial measured value								
	Δ Tan δ	Less than 200% of specified value								
	Δ LC	Less than specified value								

VALUES MEETING REQUIREMENTS OF AEC-Q200

PART NUMBERING SYSTEM

NRSH 181 M 63V 10X20 TB Y F

- F — RoHS Compliant
- Y — Optional for 63V ~ 100V only: For automotive equipment, sourced to special production and inspection at TS-16949 certified production site
- TB = Tape & Box*
- 10X20 — Case Size (DϕxL)
- 63V — Working Voltage (Vdc)
- M — Tolerance Code (M=20%)
- 181 — Capacitance Code: First 2 characters significant, third character is multiplier
- NRSH — Series

*see tape specification for details

PRECAUTIONS

Please review the notes on correct use, safety and precautions found at https://www.niccomp.com/resource/files/aluminum/AlumApplInfoCautions.pdf
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: **tpmg@niccomp.com**

NRSH Series
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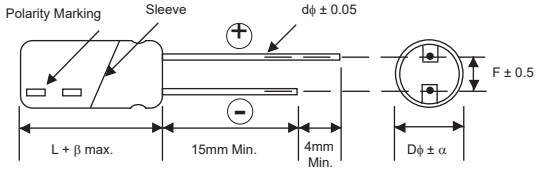
STANDARD PRODUCT AND CASE SIZE TABLE DϕxL (mm)

Cap. (µF)	Code	Working Voltage (Vdc)								
		6.3	10	16	25	35	50	63	80	100
8.2	8R2	-	-	-	-	-	-	-	-	5x11
12	120	-	-	-	-	-	-	-	5x11	-
18	180	-	-	-	-	-	-	5x11	-	6.3x11
27	270	-	-	-	-	-	5 x11	-	-	-
33	330	-	-	-	-	-	-	-	6.3x11	8x11.5
47	470	-	-	-	-	5x11	-	6.3x11	-	8x16
56	560	-	-	-	-	-	6.3x11	-	8x11.5	10x12.5
68	680	-	-	-	5x11	-	-	-	8x16	8x20
82	820	-	-	-	-	-	-	8x11.5	10x12.5	10x16
100	101	-	-	5x11	-	6.3x11	8x11.5	8x16	8x20	10x20 12.5x16
120	121	-	-	-	-	-	8x16	10x12.5	10x16	10x23
150	151	-	5x11	-	6.3x11	-	10x12.5	8x20	-	12.5x20
180	181	-	-	-	-	-	8x20	10x16	10x20 12.5x16	-
220	221	5x11	-	6.3x11	-	8x11.5	10x16	-	10x23	12.5x25
270	271	-	-	-	-	8x16	10x20	10x20 12.5x16	12.5x20	12.5x30 16x20
330	331	-	6.3x11	-	8x11.5	10x12.5	10x23	10x23	12.5x25	12.5x35
390	391	-	-	-	8x16	8x20	-	12.5x20	12.5x30 16x20	12.5x40 16x25 18x20
470	471	6.3x11	-	8x11.5	10x12.5	10x16	12.5x20	12.5x25	12.5x35	16x31.5 18x25
560	561	-	-	-	8x20	10x20	12.5x25	12.5x30 16x20	12.5x40 16x25 18x20	16x35.5 18x31.5
680	681	-	8x11.5	8x16 10x12.5	10x16	10x23	12.5x30	12 5x35	16x31.5	16x40 18x35.5
820	821	8x11.5	-	-	10x20	-	12.5x35 16x20	12.5x40 16x25 18x20	16x35.5 18x25	18x40
1,000	102		8x16 10x12.5	8x20 10x16	10x23	12.5x20	16x25	-	16x40 18x31.5	-
1,200	122	8x16 10x12.5	-	-	-	12.5x25	-	16x31 18x25	18x35.5	-
1,500	152	8x20	8x20 10x16	10x20	12.5x20	12.5x30 16x20	-	16x35.5 18x31.5	18x40	-
1,800	182	10x16	10x20	10x23	12.5x25	12.5x35	-	16x40 18x35.5	-	-
2,200	222	10x20	10x23	12.5x20	12.5x30 16x20	16x25	-	18x40	-	-
2,700	272	10x23	-	12.5x25	12.5x35	-	-	-	-	-
3,300	332	-	12.5x20	12.5x30 16x20	16x25	-	-	-	-	-
3,900	392	12.5x20	12.5x25	12.5x35	-	-	-	-	-	-
4,700	472	12.5x25	12.5x30 16x20	16x25	-	-	-	-	-	-
5,600	562	12.5x30	12.5x35	-	-	-	-	-	-	-
6,800	682	16x20 12.5x35	16x25	-	-	-	-	-	-	-
8,200	822	16x25	-	-	-	-	-	-	-	-

LEAD SPACING AND DIAMETER (mm)

Case Dia. (Dϕ)	5	6.3	8	10	12.5	16	18
Lead Dia. (dϕ)	0.5	0.5	0.6	0.6	0.6	0.8	0.8
Lead Spacing (F)	2.0	2.5	3.5	5.0	5.0	7.5	7.5
Dim. α	0.5						

β = L ≤ 16mm = 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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STANDARD VALUES, SPECIFICATIONS AND CASE SIZES (mm)

Part Number	Cap. (µF)	W.V. (Vdc)	Dissipation Factor +20°C/120Hz	Ripple Current Rating (mA) +105°C/100KHz	Max. ESR (Ω) +20°C/100KHz	Load Life Hours @+105°C
NRSH221M6.3V5x11F	220	6.3	0.22	345	0.220	6,000
NRSH471M6.3V6.3x11F	470		0.22	540	0.094	6,000
NRSH821M6.3V8x11.5F	820		0.22	945	0.056	8,000
NRSH122M6.3V8x16F	1,200		0.22	1250	0.045	8,000
NRSH122M6.3V10x12.5F			0.22	1330	0.039	10,000
NRSH152M6.3V8x20F	1,500		0.22	1500	0.029	8,000
NRSH182M6.3V10x16F	1,800		0.22	1760	0.028	10,000
NRSH222M6.3V10x20F	2,200		0.24	1960	0.020	10,000
NRSH272M6.3V10x23F	2,700		0.24	2250	0.018	10,000
NRSH392M6.3V12.5x20F	3,900		0.26	2480	0.017	10,000
NRSH472M6.3V12.5x25F	4,700		0.28	2900	0.015	10,000
NRSH562M6.3V12.5x30F	5,600		0.30	3450	0.013	10,000
NRSH682M6.3V16x20F	6,800		0.32	3250	0.015	10,000
NRSH682M6.3V12.5x35F			0.32	3570	0.012	10,000
NRSH822M6.3V16x25F	8,200		0.36	3630	0.013	10,000
NRSH151M10V5x11F	150	10	0.19	345	0.220	6,000
NRSH331M10V6.3x11F	330		0.19	540	0.094	6,000
NRSH681M10V8x11.5F	680		0.19	945	0.056	8,000
NRSH102M10V8x16F	1,000		0.19	1250	0.045	8,000
NRSH102M10V10x12.5F			0.19	1330	0.039	10,000
NRSH152M10V8x20F	1,500		0.19	1500	0.029	8,000
NRSH152M10V10x16F			0.19	1760	0.028	10,000
NRSH182M10V10x20F	1,800		0.19	1960	0.020	10,000
NRSH222M10V10x23F	2,200		0.21	2250	0.018	10,000
NRSH332M10V12.5x20F	3,300		0.23	2480	0.017	10,000
NRSH392M10V12.5x25F	3,900		0.23	2900	0.015	10,000
NRSH472M10V12.5x30F	4,700		0.25	3450	0.013	10,000
NRSH472M10V16x20F			0.25	3250	0.015	10,000
NRSH562M10V12.5x35F	5,600		0.27	3570	0.012	10,000
NRSH682M10V16x25F	6,800		0.29	3630	0.013	10,000
NRSH101M16V5x11F	100	16	0.16	345	0.220	6,000
NRSH221M16V6.3x11F	220		0.16	540	0.094	6,000
NRSH471M16V8x11.5F	470		0.16	945	0.056	8,000
NRSH681M16V8x16F	680		0.16	1250	0.045	8,000
NRSH681M16V10x12.5F			0.16	1330	0.039	10,000
NRSH102M16V8x20F	1,000		0.16	1500	0.029	8,000
NRSH102M16V10x16F			0.16	1760	0.028	10,000
NRSH152M16V10x20F	1,500		0.16	1960	0.020	10,000
NRSH182M16V10x23F	1,800		0.16	2250	0.018	10,000
NRSH222M16V12.5x20F	2,200		0.18	2480	0.017	10,000
NRSH272M16V12.5x25F	2,700		0.18	2900	0.015	10,000
NRSH332M16V12.5x30F	3,300		0.20	3450	0.013	10,000
NRSH332M16V16x20F			0.20	3250	0.015	10,000
NRSH392M16V12.5x35F	3,900		0.20	3570	0.012	10,000
NRSH472M16V16x25F	4,700		0.22	3630	0.013	10,000
NRSH680M25V5x11F	68	25	0.14	345	0.220	6,000
NRSH151M25V6.3x11F	150		0.14	540	0.094	6,000
NRSH331M25V8x11.5F	330		0.14	945	0.056	8,000
NRSH391M25V8x16F	390		0.14	1250	0.045	8,000
NRSH471M25V10x12.5F	470		0.14	1330	0.039	10,000
NRSH561M25V8x20F	560		0.14	1500	0.029	8,000
NRSH681M25V10x16F	680		0.14	1760	0.028	10,000
NRSH821M25V10x20F	820		0.14	1960	0.020	10,000
NRSH102M25V10x23F	1,000		0.14	2250	0.018	10,000
NRSH152M25V12.5x20F	1,500		0.14	2480	0.017	10,000
NRSH182M25V12.5x25F	1,800		0.14	2900	0.015	10,000
NRSH222M25V12.5x30F	2,200		0.16	3450	0.013	10,000
NRSH222M25V16x20F			0.16	3250	0.015	10,000
NRSH272M25V12.5x35F	2,700		0.16	3570	0.012	10,000
NRSH332M25V16x25F	3,300		0.18	3630	0.013	10,000

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STANDARD VALUES, SPECIFICATIONS AND CASE SIZES (mm)

Part Number	Cap. (µF)	W.V. (Vdc)	Dissipation Factor +20°C/120Hz	Ripple Current Rating (mA) +105°C/100KHz	Max. ESR (Ω) +20°C/100KHz	Load Life Hours @+105°C
NRSH470M35V5x11F	47	35	0.12	345	0.220	6,000
NRSH101M35V6.3x11F	100		0.12	540	0.094	6,000
NRSH221M35V8x11.5F	220		0.12	945	0.056	8,000
NRSH271M35V8x16F	270		0.12	1250	0.045	8,000
NRSH331M35V10x12.5F	330		0.12	1330	0.039	10,000
NRSH391M35V8x20F	390		0.12	1500	0.029	8,000
NRSH471M35V10x16F	470		0.12	1760	0.028	10,000
NRSH561M35V10x20F	560		0.12	1960	0.020	10,000
NRSH681M35V10x23F	680		0.12	2250	0.018	10,000
NRSH102M35V12.5x20F	1,000		0.12	2480	0.017	10,000
NRSH122M35V12.5x25F	1,200		0.12	2900	0.015	10,000
NRSH152M35V12.5x30F	1,500		0.12	3450	0.013	10,000
NRSH152M35V16x20F			0.12	3250	0.015	10,000
NRSH182M35V12.5x35F	1,800		0.12	3570	0.012	10,000
NRSH222M35V16x25F	2,200		0.14	3630	0.013	10,000
NRSH270M50V5x11F	27	50	0.10	238	0.340	6,000
NRSH560M50V6.3x11F	56		0.10	385	0.140	6,000
NRSH101M50V8x11.5F	100		0.10	724	0.074	8,000
NRSH121M50V8x16F	120		0.10	950	0.061	8,000
NRSH151M50V10x12.5F	150		0.10	979	0.061	10,000
NRSH181M50V8x20F	180		0.10	1190	0.046	8,000
NRSH221M50V10x16F	220		0.10	1370	0.042	10,000
NRSH271M50V10x20F	270		0.10	1580	0.030	10,000
NRSH331M50V10x23F	330		0.10	1870	0.028	10,000
NRSH471M50V12.5x20F	470		0.10	2050	0.027	10,000
NRSH561M50V12.5x25F	560		0.10	2410	0.023	10,000
NRSH681M50V12.5x30F	680		0.10	2860	0.021	10,000
NRSH821M50V12.5x35F	820		0.10	2960	0.019	10,000
NRSH821M50V16x20F			0.10	2730	0.023	10,000
NRSH102M50V16x25F	1,000		0.10	3010	0.021	10,000
NRSH180M63V5x11F	18	63	0.09	173	0.88	6,000
NRSH470M63V6.3x11F	47		0.09	278	0.35	6,000
NRSH820M63V8x11.5F	82		0.09	525	0.22	8,000
NRSH101M63V8x16F	100		0.09	688	0.16	8,000
NRSH121M63V10x12.5F	120		0.09	725	0.15	10,000
NRSH151M63V8x20F	150		0.09	861	0.12	8,000
NRSH181M63V10x16F	180		0.09	998	0.11	10,000
NRSH271M63V10x20F	270		0.09	1200	0.078	10,000
NRSH271M63V12.5x16F	270		0.09	1200	0.082	10,000
NRSH331M63V10x23F	330		0.09	1410	0.069	10,000
NRSH391M63V12.5x20F	390		0.09	1570	0.060	10,000
NRSH471M63V12.5x25F	470		0.09	1990	0.043	10,000
NRSH561M63V12.5x30F	560		0.09	2410	0.035	10,000
NRSH561M63V16x20F	560		0.09	2100	0.043	10,000
NRSH681M63V12.5x35F	680		0.09	2620	0.033	10,000
NRSH821M63V12.5x40F	820		0.09	2940	0.027	10,000
NRSH821M63V16x25F	820		0.09	2730	0.032	10,000
NRSH821M63V18x20F	820		0.09	2500	0.038	10,000
NRSH122M63V16x31.5F	1200		0.09	2990	0.024	10,000
NRSH122M63V18x25F	1200		0.09	2800	0.031	10,000
NRSH152M63V16x35.5F	1500		0.09	3040	0.021	10,000
NRSH152M63V18x31.5F	1500		0.09	3300	0.025	10,000
NRSH182M63V16x40F	1800		0.09	3570	0.019	10,000
NRSH182M63V18x35.5F	1800		0.09	3570	0.020	10,000
NRSH222M63V18x40F	2200		0.11	3670	0.018	10,000

VALUES MEETING REQUIREMENTS OF AEC-Q200

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STANDARD VALUES, SPECIFICATIONS AND CASE SIZES (mm)

Part Number	Cap. (µF)	W.V. (Vdc)	Dissipation Factor +20°C/120Hz	Ripple Current Rating (mA) +105°C/100KHz	Max. ESR (Ω) +20°C/100KHz	Load Life Hours @+105°C
NRSH120M80V5x11F	12	80	0.08	163	1.40	6,000
NRSH330M80V6.3x11F	33		0.08	267	0.57	6,000
NRSH560M80V8x11.5F	56		0.08	462	0.36	8,000
NRSH680M80V8x16F	68		0.08	585	0.25	8,000
NRSH820M80V10x12.5F	82		0.08	624	0.96	10,000
NRSH101M80V8x20F	100		0.08	735	0.19	8,000
NRSH121M80V10x16F	120		0.08	780	0.17	10,000
NRSH181M80V10x20F	180		0.08	1040	0.12	10,000
NRSH181M80V12.5x16F	180		0.08	975	0.13	10,000
NRSH221M80V10x23F	220		0.08	1170	0.11	10,000
NRSH271M80V12.5x20F	270		0.08	1430	0.085	10,000
NRSH331M80V12.5x25F	330		0.08	1620	0.060	10,000
NRSH391M80V12.5x30F	390		0.08	1950	0.058	10,000
NRSH391M80V16x20F	390		0.08	1750	0.058	10,000
NRSH471M80V12.5x35F	470		0.08	2140	0.043	10,000
NRSH561M80V12.5x40F	560		0.08	2340	0.036	10,000
NRSH561M80V16x25F	560		0.08	2210	0.044	10,000
NRSH561M80V18x20F	560		0.08	1950	0.054	10,000
NRSH681M80V16x31.5F	680		0.08	2400	0.033	10,000
NRSH821M80V16x35.5F	820		0.08	2600	0.029	10,000
NRSH821M80V18x25F	820		0.08	2270	0.038	10,000
NRSH102M80V16x40F	1000		0.08	2860	0.027	10,000
NRSH102M80V18x31.5F	1000		0.08	2470	0.031	10,000
NRSH122M80V18x35.5F	1200		0.08	2860	0.027	10,000
NRSH152M80V18x40F	1500		0.08	3510	0.026	10,000
NRSH8R2M100V5x11F	8.2	100	0.08	163	1.40	6,000
NRSH180M100V6.3x11F	18		0.08	267	0.57	6,000
NRSH330M100V8x11.5F	33		0.08	462	0.36	8,000
NRSH470M100V8x16F	47		0.08	585	0.25	8,000
NRSH560M100V10x12.5F	56		0.08	624	0.23	10,000
NRSH680M100V8x20F	68		0.08	735	0.19	8,000
NRSH820M100V10x16F	82		0.08	780	0.17	10,000
NRSH101M100V10x20F	100		0.08	1040	0.12	10,000
NRSH101M100V12.5x16F	100		0.08	975	0.13	10,000
NRSH121M100V10x23F	120		0.08	1170	0.11	10,000
NRSH151M100V12.5x20F	150		0.08	1430	0.085	10,000
NRSH221M100V12.5x25F	220		0.08	1620	0.060	10,000
NRSH271M100V12.5x30F	270		0.08	1950	0.051	10,000
NRSH271M100V16x20F	270		0.08	1750	0.058	10,000
NRSH331M100V12.5x35F	330		0.08	2140	0.043	10,000
NRSH391M100V12.5x40F	390		0.08	2340	0.036	10,000
NRSH391M100V16x25F	390		0.08	2210	0.044	10,000
NRSH391M100V18x20F	390		0.08	1950	0.054	10,000
NRSH471M100V16x31.5F	470		0.08	2400	0.033	10,000
NRSH471M100V18x25F	470		0.08	2270	0.038	10,000
NRSH561M100V16x35.5F	560		0.08	2600	0.029	10,000
NRSH681M100V16x40F	680		0.08	2860	0.027	10,000
NRSH681M100V18x35.5F	680		0.08	2860	0.027	10,000
NRSH821M100V18x40F	820		0.08	3510	0.026	10,000

RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

Frequency (Hz)	120	1K	10K	≤100K
8.2 ~ 33µF	0.42	0.70	0.90	1.00
47 ~ 270µF	0.50	0.73	0.92	1.00
330 ~ 680µF	0.55	0.77	0.94	1.00
820 ~ 1800µF	0.60	0.80	0.96	1.00
2200 ~ 8200µF	0.70	0.85	0.98	1.00

VALUES MEETING REQUIREMENTS OF AEC-Q200