NAZR Series
Surface Mount Aluminum Electrolytic Capacitors

FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- LOW IMPEDANCE AND WIDE TEMPERATURE
- LONG LIFE (5,000 HOURS @ 105°C)
- AVAILABLE WITH ANTI-VIBRATION WIDE TERMINATIONS
- DESIGNED FOR AUTOMATIC MOUNTING AND REFLOW SOLDERING
- MEETS THE REQUIREMENTS OF AEC-Q200*

*Contact NIC for supporting test data

CHARACTERISTICS

Rated Voltage Range	6.3 ~ 100Vdc									
Rated Capactance Range	47 ~ 10,000µF									
Operating Temperature Range	-55°C ~ +105°C									
Capacitance Tolerance	±20%(M)									
Maximum Leakage Current after 2 minutes @ 20°C	0.01CV or 3µA whichever is greater									
Surge Voltage Rating & Maximum 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	See Specifications Table								
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 5,000 Hours	Capacitance Change	Within ±30% of initial measured value								
	Tanδ	Less than 200% of specified value								
	Leakage Current	Less than specified maximum value								
Shelf Life Test @ 105°C 1,000 Hours	Capacitance Change	Within ±25% of initial measured value								
	Tanδ	Less than 200% of specified value								
	Leakage Current	Less than specified maximum value								
Resistance to Soldering Heat Within Recommended (Hot plate +240°C for 30 seconds)	Capacitance Change	Within ±10% of initial measured value								
	Tanδ	Less than specified maximum value								
	Leakage Current	Less than specified maximum value								

STANDARD PRODUCT AND CASE SIZE Dϕ xL (mm)

Cap (µF)	Code	Working Voltage (Vdc)								
		6.3	10	16	25	35	50	63	80	100
47	470	-	-	-	-	-	-	-	-	12.5x14
68	680	-	-	-	-	-	-	-	12.5x14	-
100	101	-	-	-	-	-	-	-	12.5x14	16x17
110	111	-	-	-	-	-	-	-	-	12.5x14
150	151	-	-	-	-	-	-	12.5x14	-	12.5x16.5
180	181	-	-	-	-	-	-	-	12.5x14	-
200	201	-	-	-	-	-	-	-	-	16x17
220	221	-	-	-	-	-	-	12.5x14	12.5x16.5	18x17
270	271	-	-	-	-	-	-	-	-	18x17
330	331	-	-	-	-	-	12.5x14	12.5x16.5	16x17	16x22
390	391	-	-	-	-	-	12.5x14	-	-	-
470	471	-	-	-	-	12.5x14	12.5x16.5 16x17	16x17	18x17	18x22
560	561	-	-	-	-	-	16x17	-	16x22	-
680	681	-	-	-	-	12.5x14	16x17	18x17 16x22	18x22	-
820	821	-	-	-	-	-	18x17	-	-	-
1000	102	-	-	-	12.5x14	16x17	18x17 16x22	18x22	-	-
1300	132	-	-	-	-	-	16x22	-	-	-
1500	152	-	-	12.5x14	16x17	18x17	18x22	-	-	-
2200	222	12.5x14	12.5x16.5	16x17	18x17	16x22	-	-	-	-
3300	332	12.5x16.5	16x17	18x17	18x22	-	-	-	-	-
4700	472	16x17	18x17	16x22	-	-	-	-	-	-
6800	682	16x22	18x17	-	-	-	-	-	-	-
10000	103	18x22	-	-	-	-	-	-	-	-

STANDARD VALUES, CASE SIZES AND SPECIFICATIONS

NIC Part Number*	Cap. (µF)	W.V. (Vdc)	Dissipaton Factor (Tan δ)	Max. Ripple Current (mA) +105°C/100KHz	Max. Impedance (Ω) +20°C/100KHz	Load Life Hours @ +105°C
NAZR222M6.3V12.5X14KSF	2200	6.3	0.28	1100	0.065	5000
NAZR332M6.3V12.5X16.5KSF	3300		0.30	1400	0.055	5000
NAZR472M6.3V16X17KSF	4700		0.32	1800	0.045	5000
NAZR682M6.3V16X22KSF	6800		0.36	2330	0.029	5000
NAZR103M6.3V18X22KSF	10000		0.44	2640	0.028	5000
NAZR222M10V12.5X16.5KSF	2200	10	0.21	1400	0.055	5000
NAZR332M10V16X17KSF	3300		0.23	1800	0.045	5000
NAZR472M10V18X17KSF	4700		0.25	2060	0.044	5000
NAZR682M10V18X22KSF	6800		0.29	2640	0.028	5000
NAZR152M16V12.5X14KSF	1500	16	0.16	1100	0.065	5000
NAZR222M16V16X17KSF	2200		0.18	1800	0.045	5000
NAZR332M16V18X17KSF	3300		0.20	2060	0.044	5000
NAZR472M16V16X22KSF	4700		0.22	2330	0.029	5000
NAZR102M25V12.5X14KSF	1000	25	0.14	1100	0.065	5000
NAZR152M25V16X17KSF	1500		0.14	1800	0.045	5000
NAZR222M25V18X17KSF	2200		0.16	2060	0.044	5000
NAZR332M25V18X22KSF	3300		0.18	2640	0.028	5000
NAZR471M35V12.5X14KSF	470	35	0.12	1100	0.065	5000
NAZR681M35V12.5X14KSF	680		0.12	1100	0.065	5000
NAZR102M35V16X17KSF	1000		0.12	1800	0.045	5000
NAZR152M35V18X17KSF	1500		0.12	2060	0.044	5000
NAZR222M35V16X22KSF	2200		0.14	2330	0.029	5000
NAZR331M50V12.5X14KSF	330	50	0.10	900	0.120	5000
NAZR391M50V12.5X14KSF	390		0.10	900	0.120	5000
NAZR471M50V12.5X16.5KSF	470		0.10	1200	0.100	5000
NAZR471M50V16X17KSF	470		0.10	1610	0.075	5000
NAZR561M50V16X17KSF	560		0.10	1610	0.075	5000
NAZR681M50V16X17KSF	680		0.10	1610	0.075	5000
NAZR821M50V18X17KSF	820		0.10	1700	0.070	5000
NAZR102M50V18X17KSF	1000		0.10	1700	0.070	5000
NAZR102M50V16X22KSF	1000		0.10	2000	0.050	5000
NAZR132M50V16X22KSF	1300		0.10	2000	0.050	5000
NAZR152M50V18X22KSF	1500		0.10	2200	0.045	5000
NAZR151M63V12.5X14KSF	150	63	0.09	800	0.170	5000
NAZR221M63V12.5X14KSF	220		0.09	800	0.170	5000
NAZR331M63V12.5X16.5KSF	330		0.09	1000	0.140	5000
NAZR471M63V16X17KSF	470		0.09	1410	0.120	5000
NAZR681M63V18X17KSF	680		0.09	1690	0.110	5000
NAZR681M63V16X22KSF	680		0.09	1790	0.080	5000
NAZR102M63V18X22KSF	1000		0.09	1960	0.070	5000
NAZR680M80V12.5X14KSF	68	80	0.09	740	0.280	5000
NAZR101M80V12.5X14KSF	100		0.09	740	0.280	5000
NAZR181M80V12.5X14KSF	180		0.09	740	0.280	5000
NAZR221M80V12.5X16.5KSF	220		0.09	900	0.210	5000
NAZR331M80V16X17KSF	330		0.09	1090	0.170	5000
NAZR471M80V18X17KSF	470		0.09	1280	0.150	5000
NAZR561M80V16X22KSF	560		0.09	1580	0.110	5000
NAZR681M80V18X22KSF	680		0.09	1690	0.091	5000
NAZR470M100V12.5X14KSF	47	100	0.08	740	0.280	5000
NAZR101M100V16X17KSF	100		0.08	1090	0.170	5000
NAZR111M100V12.5X14KSF	110		0.08	740	0.280	5000
NAZR151M100V12.5X16.5KSF	150		0.08	900	0.210	5000
NAZR201M100V16X17KSF	200		0.08	1090	0.170	5000
NAZR221M100V18X17KSF	220		0.08	1280	0.150	5000
NAZR271M100V18X17KSF	270		0.08	1280	0.150	5000
NAZR331M100V16X22KSF	330		0.08	1580	0.110	5000
NAZR471M100V18X22KSF	470		0.08	1690	0.091	5000

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**

RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

Capacitance	120Hz	1KHz	10KHz	100KHz~
47 ~ 200µF	0.50	0.80	0.95	1.00
220 ~ 10,000µF	0.60	0.85	0.95	1.00

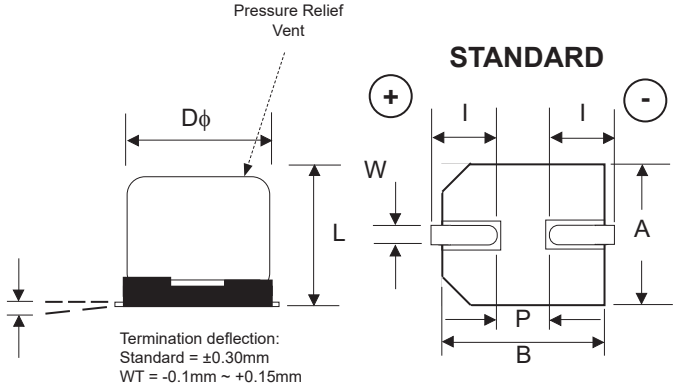
PART NUMBER SYSTEM

NAZR 471 M 35V 12.5x14 K LS W Y F

- F — RoHS Compliant
- Y — Optional: Suitable for automotive equipment, sourced to special production and inspection at IATF-16949 certified production site
- W — Optional Wide Terminations
- LS — 100% Sn Finish/15" (380mm Reel)
- K — Reflow Temperature Code (+245°C)
- 12.5x14 — Size in mm
- 35V — Working Voltage
- M — Tolerance Code M=20%
- 471 — Capacitance Code in µF, first 2 digits are significant. Third digit is no. of zeros, "R" indicates decimal for values under 10µF
- NAZR — Series

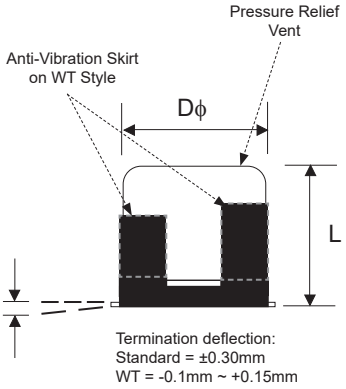
STANDARD TERMINATION PART DIMENSIONS (mm)

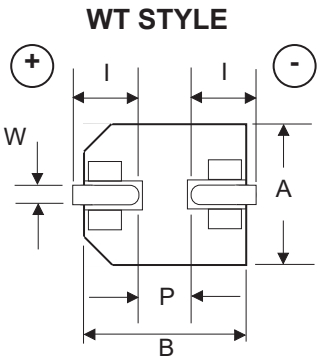
Case Size	Dϕ ±0.5	L max.	A, B ± 0.2	W	(I)	(P)
12.5 x 14	12.5	14.0	13.0	0.80 ~ 1.10	4.9	4.5
12.5 x 16.5	12.5	16.5	13.0	0.80 ~ 1.10	4.9	4.5
16 x 17	16.0	17.0	17.0	1.00 ~ 1.60	6.0	6.8
16 x 22	16.0	22.0	17.0	1.00 ~ 1.60	6.0	6.8
18 x 17	18.0	17.0	19.0	1.00 ~ 1.60	7.0	6.8
18 x 22	18.0	22.0	19.0	1.00 ~ 1.60	7.0	6.8



WIDE TERMINATION PART DIMENSIONS (mm)

Case Size	Dϕ ±0.5	L max.	A, B ± 0.2	W	(I)	(P)
12.5 x 14WT	12.5	14.5	13.0	0.80 ~ 1.40	4.9	4.5
12.5 x 16.5WT	12.5	17.0	13.0	0.80 ~ 1.40	4.9	4.5
16 x 17WT	16.0	17.5	17.0	0.80 ~ 1.40	6.0	6.8
16 x 22WT	16.0	22.5	17.0	0.80 ~ 1.40	6.0	6.8
18 x 17WT	18.0	17.5	19.0	0.80 ~ 1.40	7.0	6.8
18 x 22WT	18.0	22.5	19.0	0.80 ~ 1.40	7.0	6.8

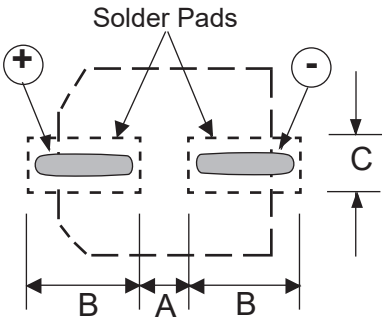




STANDARD TERMINATION LAND PATTERN DIMENSIONS (mm)

Case Diameter	A	B	C
ϕ12.5	5.0	6.0	2.5
ϕ16	8.0	6.5	3.0
ϕ18	8.0	7.5	3.0

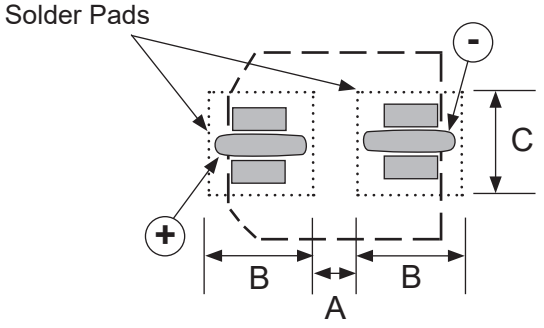
STANDARD TERMINATION



WIDE TERMINATION LAND PATTERN DIMENSIONS (mm)

Case Diameter	A	B	C
ϕ12.5	3.9	6.2	6.4
ϕ16	4.7	7.8	7.0
ϕ18	4.7	8.8	7.0

WT STYLE TERMINATION

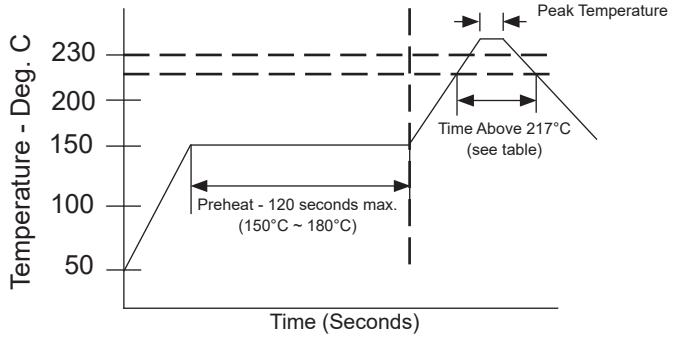


Review & Compare Reflow Soldering Heat Limits
V-chip SMT Aluminum Electrolytic Capacitors
www.niccomp.com/RSL

PEAK REFLOW TEMPERATURE AND DURATION

Diameter	Rated Voltage	Time above 217°C	Time above 240°C	Peak Temperature (within 5 sec.)	Max. Number of Reflow Passes
ϕ12.5~18	6.3V~35V	90 sec. max.	30 sec. max.	245°C max.	2*
	50V~63V	30 sec. max.	5 sec. max.	245°C max.	2*
	80V~100V	30 sec. max.	5 sec. max.	245°C max.	1

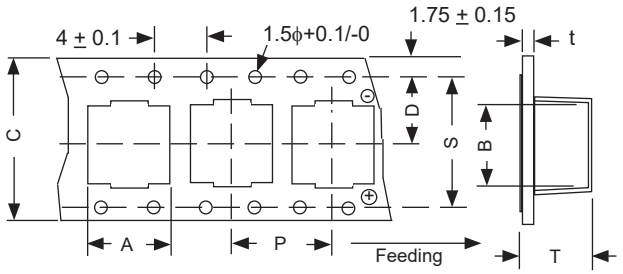
*Second reflow shall be at least one hour after natural cool to room temperature.
Note: VPS Soldering is not recommended



TAPING SPECIFICATIONS (mm)

1. Both Leader and Trailer tape: Minimum 40mm (1.57") empty carrier tape pockets.
2. Leader tape: Approximately 20cm of cover tape at leader.
3. Connection: Maximum 3 connections (slices) per reel.

Case Size	A	B	C ±0.3	D ±0.1	P ±0.1	T	t ±0.1	S ±0.1
12.5x14	13.4	13.4	32.0	14.2	24.0	14.4	0.5	28.4
12.5x16.5	13.4	13.4	32.0	14.2	24.0	16.3	0.5	28.4
16x17	17.5	17.5	44.0	20.2	28.0	17.4	0.5	40.4
16x22	17.5	17.5	44.0	20.2	28.0	22.4	0.5	40.4
18x17	19.5	19.5	44.0	20.2	32.0	17.4	0.5	40.4
18x22	19.5	19.5	44.0	20.2	32.0	22.4	0.5	40.4



REEL DIMENSIONS (mm)

Case Size	W	Qty per Reel 13" (330mm)
12.5x14	33.4	200
12.5x16.5	33.4	150
16x17	45.4	125
16x22	45.4	75
18x17	45.4	125
18x22	45.4	75