

NAZH Series

Surface Mount Aluminum Electrolytic Capacitors



FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- REDUCED SIZE
- AVAILABLE WITH ANTI-VIBRATION TERMINATIONS (6.3mm ~ 16mm diameter)
- SUIT FOR HIGH TEMPERATURE REFLOW SOLDERING (UP TO 260°C)
- UP TO 5,000 HOUR LOAD LIFE @ +105°C
- DESIGNED FOR AUTOMATIC MOUNTING AND REFLOW SOLDERING
- MEETS THE REQUIREMENTS OF AEC-Q200* (See Highlighted Items in Standard Values Table)

*Contact NIC for supporting test data

SAC Alloy Compatible
260°C



CHARACTERISTICS

Rated Voltage Rating	6.3 ~ 50Vdc						
Rated Capacitance Range	10 ~ 2,700μF						
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						
Tan δ @ 120Hz/20°C	W.V. (Vdc)	6.3	10	16	25	35	50
	S.V. (Vdc)	8.0	13	20	32	44	63
	Tan δ @ 120Hz/20°C	0.26	0.19	0.16	0.14	0.12	0.10
	When rated capacitance exceeds 1,000μF add 0.02 for each additional 1,000μF						
Low Temperature Stability Impedance Ratio @ 120Hz	W.V. (Vdc)	6.3	10	16	25	35	50
	Z-25°C/Z+20°C	2	2	2	2	2	2
	Z-40°C/Z+20°C	3	3	3	3	3	3
	Z-55°C/Z+20°C	4	4	4	3	3	3
Load Life Test @ 105°C 6.3 ~ 10x10.5 = 2,000 hours 10x14 = 3,000 hours 16x17 = 5,000 hours	Capacitance Change	Within ±30% of initial measured value					
	Tan δ	Less than ±200% of the specified maximum value					
	Leakage Current	Less than the specified maximum value					

STANDARD VALUES AND CASE SIZES (mm)

Cap. (μF)	Code	Working Voltage (Vdc)					
		6.3	10	16	25	35	50
10	100	-	-	-	-	-	4x6.1 5x6.1
22	220	-	-	-	4x6.1	4x6.1	5x6.1
33	330	-	-	-	4x6.1	5x6.1	-
47	470	-	-	4x6.1	5x6.1	5x6.1	6.3x6.1
68	680	-	4x6.1	5x6.1	5x6.1	6.3x6.1	-
100	101	4x6.1	-	5x6.1	6.3x6.1	6.3x6.1	6.3x8
150	151	-	5x6.1	6.3x6.1	6.3x8	6.3x8	-
220	221	5x6.1	6.3x6.1	6.3x6.1	6.3x8	-	8x10.5
330	331	6.3x6.1	6.3x8	6.3x8	-	8x10.5	10x10.5
390	391	-	-	-	-	8x10.5	-
470	471	6.3x8	6.3x8	-	8x10.5	10x10.5	-
560	561	-	-	-	8x10.5	10x10.5	-
680	681	6.3x8	-	8x10.5	-	10x10.5	-
820	821	-	-	8x10.5	10x10.5	10x14	-
1000	102	-	8x10.5	10x10.5	10x10.5	-	-
1200	122	8x10.5	-	10x10.5	10x14	-	-
1500	152	8x10.5	10x10.5	-	-	-	-
1800	182	-	-	-	-	16x17	-
2200	222	10x10.5	-	-	-	-	-
2700	272	-	-	-	16x17	-	-

Items in highlighted cells are available in automotive grade

PEAK REFLOW TEMPERATURE CODES

Code	Peak Reflow Temperature
N	260°C
K	245°C

TERMINATION FINISH & PACKAGING OPTIONS CODES

Code	Finish & Reel Size
LBF	Sn-Bi Finish & 15" Reel
LSF	100% Sn Finish & 15" Reel

SEE PAGE 3 FOR NAZH PART NUMBERING SYSTEM

NAZH Series

Surface Mount Aluminum Electrolytic Capacitors



STANDARD VALUES, CASE SIZES AND SPECIFICATIONS

NIC Part Number	Cap. (μF)	W.V. (Vdc)	Dissipation Factor (Tan δ)	Max. ESR (Ω) +20°C/100KHz	Max. Ripple Current (mA) +105°C/100KHz	Load Life Hours @ +105°C
NAZH101M6.3V4X6.1N1BF	100	6.3	0.26	0.85	160	2,000
NAZH221M6.3V5X6.1N1BF	220		0.26	0.36	240	2,000
NAZH331M6.3V6.3X6.1N1BF	330		0.26	0.26	300	2,000
NAZH471M6.3V6.3X8N1BF	470		0.26	0.16	600	2,000
NAZH681M6.3V6.3X8N1BF	680		0.26	0.16	600	2,000
NAZH122M6.3V8X10.5N1BF	1200		0.26	0.08	850	2,000
NAZH152M6.3V8X10.5N1BF	1500		0.26	0.08	850	2,000
NAZH222M6.3V10X10.5N1BF	2200		0.28	0.06	1190	2,000
NAZH680M10V4X6.1N1BF	68	10	0.19	0.85	160	2,000
NAZH151M10V5X6.1N1BF	150		0.19	0.36	240	2,000
NAZH221M10V6.3X6.1N1BF	220		0.19	0.26	300	2,000
NAZH331M10V6.3X8N1BF	330		0.19	0.16	600	2,000
NAZH471M10V6.3X8N1BF	470		0.19	0.16	600	2,000
NAZH102M10V8X10.5N1BF	1000		0.19	0.08	850	2,000
NAZH152M10V10X10.5N1BF	1500		0.19	0.06	1190	2,000
NAZH470M16V4X6.1N1BF	47	16	0.16	0.85	160	2,000
NAZH680M16V5X6.1N1BF	68		0.16	0.36	240	2,000
NAZH101M16V5X6.1N1BF	100		0.16	0.36	240	2,000
NAZH151M16V6.3X6.1N1BF	150		0.16	0.26	300	2,000
NAZH221M16V6.3X6.1N1BF	220		0.16	0.26	300	2,000
NAZH331M16V6.3X8N1BF	330		0.16	0.16	600	2,000
NAZH681M16V8X10.5N1BF	680		0.16	0.08	850	2,000
NAZH821M16V8X10.5N1BF	820		0.16	0.08	850	2,000
NAZH102M16V10X10.5N1BF	1000		0.16	0.06	1190	2,000
NAZH122M16V10X10.5N1BF	1200		0.16	0.06	1190	2,000
NAZH220M25V4X6.1N1BF	22	25	0.14	0.85	160	2,000
NAZH330M25V4X6.1N1BF	33		0.14	0.85	160	2,000
NAZH470M25V5X6.1N1BF	47		0.14	0.36	240	2,000
NAZH680M25V5X6.1N1BF	68		0.14	0.36	240	2,000
NAZH101M25V6.3X6.1N1BF	100		0.14	0.26	300	2,000
NAZH151M25V6.3X8N1BF	150		0.14	0.16	600	2,000
NAZH221M25V6.3X8N1BF	220		0.14	0.16	600	2,000
NAZH471M25V8X10.5N1BF	470		0.14	0.08	850	2,000
NAZH561M25V8X10.5N1BF	560		0.14	0.08	850	2,000
NAZH821M25V10X10.5N1BF	820		0.14	0.06	1190	2,000
NAZH102M25V10X10.5N1BF	1000		0.14	0.06	1190	2,000
NAZH122M25V10X14N1BF	1200		0.14	0.06	1500	3,000
NAZH272M25V16X17KLSF	2700		0.16	0.035	1800	5,000
NAZH220M35V4X6.1N1BF	22	35	0.12	0.85	160	2,000
NAZH330M35V5X6.1N1BF	33		0.12	0.36	240	2,000
NAZH470M35V5X6.1N1BF	47		0.12	0.36	240	2,000
NAZH680M35V6.3X6.1N1BF	68		0.12	0.26	300	2,000
NAZH101M35V6.3X6.1N1BF	100		0.12	0.26	300	2,000
NAZH151M35V6.3X8N1BF	150		0.12	0.16	600	2,000
NAZH331M35V8X10.5N1BF	330		0.12	0.08	850	2,000
NAZH391M35V8X10.5N1BF	390		0.12	0.08	850	2,000
NAZH471M35V10X10.5N1BF	470		0.12	0.06	1190	2,000
NAZH561M35V10X10.5N1BF	560		0.12	0.06	1190	2,000
NAZH681M35V10X10.5N1BF	680		0.12	0.06	1190	2,000
NAZH821M35V10X14N1BF	820		0.12	0.06	1500	3,000
NAZH182M35V16X17KLSF	1800		0.12	0.035	1800	5,000
NAZH100M50V4X6.1N1BF	10	50	0.1	2.3	85	2,000
NAZH100M50V5X6.1N1BF	10		0.1	0.88	165	2,000
NAZH220M50V5X6.1N1BF	22		0.1	0.88	165	2,000
NAZH470M50V6.3X6.1N1BF	47		0.1	0.68	195	2,000
NAZH101M50V6.3X8N1BF	100		0.1	0.34	350	2,000
NAZH221M50V8X10.5N1BF	220		0.1	0.18	670	2,000
NAZH331M50V10X10.5N1BF	330		0.1	0.12	900	2,000

RIPPLE CURRENT FREQUENCY CORRECTION FACTORS Items in highlighted cells are available in automotive grade

Frequency	120Hz	1KHz	10KHz	100KHz~
10μF ~ 470μF	0.65	0.85	0.95	1.00
560μF ~ 2,700μF	0.70	0.90	0.95	1.00

Performance Passives By Design

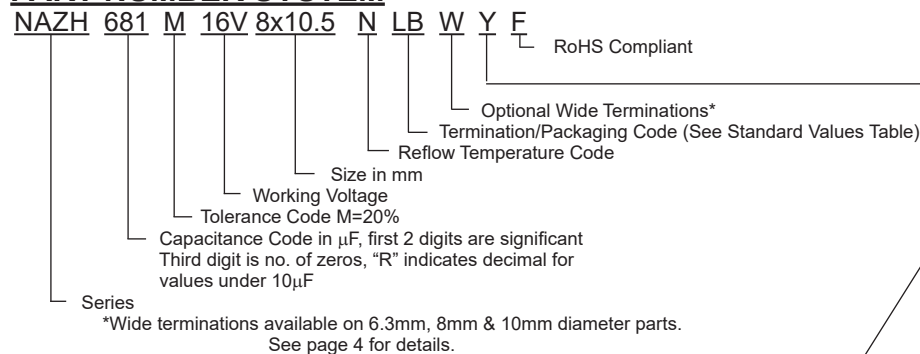
NIC Components Corp.
100 Baylis Road. Melville, NY 11747

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www.niccomp.com

Last Updated 06-15-2023 Specification subject to change without notice. Please check web site for latest information.

PART NUMBER SYSTEM



Optional: Suitable for automotive equipment, sourced to special production and inspection at IATF-16949 certified production site.

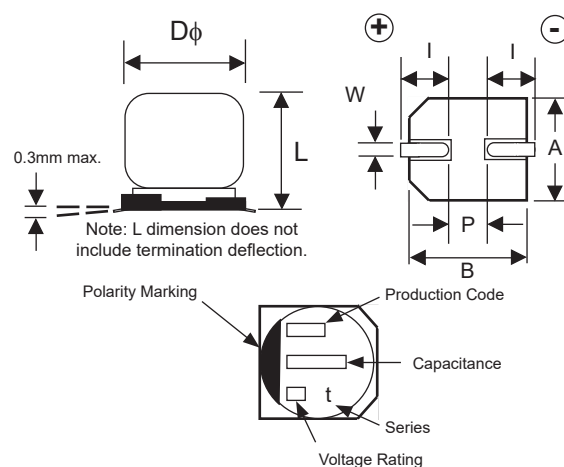
COMPONENT MARKING

COMPONENT DIMENSIONS (mm)

Case Size	$\phi D \pm 0.5$	L max.	A ± 0.2	B ± 0.2	(l)	W	P ± 0.3
4x6.1	4.0	6.1	4.3	4.3	1.8	0.5~0.8	1.0
5x6.1	5.0	6.1	5.3	5.3	2.2	0.5~0.8	1.5
6.3x6.1	6.3	6.1	6.6	6.6	2.6	0.5~0.8	1.8
6.3x8	6.3	8	6.6	6.6	2.6	0.5~0.8	1.8
8x10.5*	8.0	10.5	8.3	8.3	3.4	0.7~1.1	3.1
10x10.5*	10.0	10.5	10.3	10.3	3.5	0.7~1.4	4.6
10x14*	10.0	14.0	10.3	10.3	3.5	0.7~1.4	4.6
16x17*	16.0	17.0	16.3	16.3	5.2	1.7~2.1	7.0

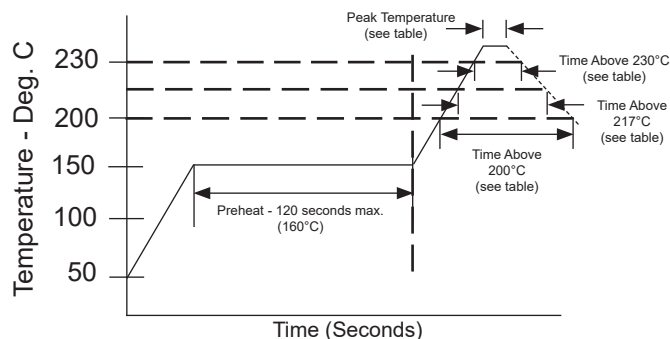
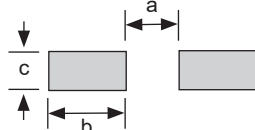
*See page 4 wide termination component dimensions.

() indicates reference dimension



RECOMMENDED LAND PATTERN DIMENSIONS (mm)

Case Size	a	b	c
4x6.1	1.0	2.5	1.6
5x6.1	1.5	2.8	1.6
6x3x6.1	1.8	3.2	1.6
6.3x8	1.8	3.2	1.6
8x10.5	2.8	4.1	2.1
10x10.5	4.3	4.4	2.5
10x14	4.3	4.4	2.5
16x17	6.6	6.5	5.0



PEAK REFLOW TEMPERATURE AND DURATION

Diameter	Peak Temperature	Duration	Time $\geq 230^\circ\text{C}$	Time $\geq 217^\circ\text{C}$	Time $\geq 200^\circ\text{C}$	Number of Reflow Passes*
4 ~ 6.3mm ϕ	260°C	Time $\geq 250^\circ\text{C}$, 5 sec.	30 sec.	40 sec.	70 sec.	2
	255°C	Time $\geq 250^\circ\text{C}$, 10 sec.				1
8 ~ 10mm ϕ	260°C	Time $\geq 250^\circ\text{C}$, 5 sec.	30 sec.	40 sec.	50 sec.	2
	245°C	Time $\geq 240^\circ\text{C}$, 10 sec.				1
16mm ϕ	245°C	Time $\geq 240^\circ\text{C}$, 5 sec.	30 sec.	40 sec.	50 sec.	1
	240°C	Time $\geq 235^\circ\text{C}$, 10 sec.	20 sec.	40 sec.	50 sec.	2

*Second reflow shall be at least one hour after natural cool to room temperature.

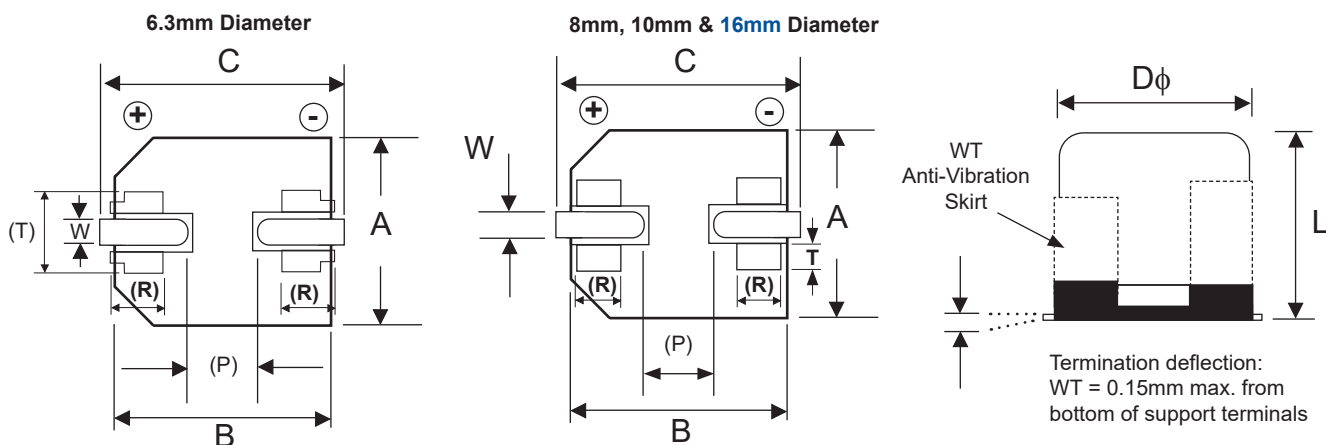
Review & Compare Reflow Soldering Heat Limits
V-chip SMT Aluminum Electrolytic Capacitors
www.niccomp.com/RSL

Resistance to Soldering Heat	After reflow soldering the capacitor shall be stabilized at room temperature prior to measuring.	
	Capacitance Change	Within $\pm 10\%$ of initial measured value
	Tan δ	Less than specified maximum value
	Leakage Current	Less than specified maximum value
	Appearance	No significant change can be observed

WIDE TERMINATION (WT) DIM. (mm)

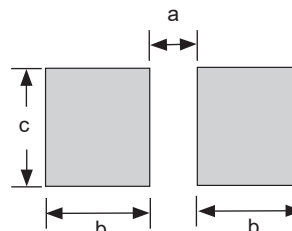
Case Size	$D\phi \pm 0.5$	L max.	A, B ± 0.2	C max.	P ref.	W	R ± 0.2	T ± 0.2
6.3x6.1	6.3	6.4	6.6	7.8	(2.2)	0.55 ~ 0.75	(1.3)	(3.0)
6.3x8	6.3	8.3	6.6	7.8	(2.2)	0.55 ~ 0.75	(1.3)	(3.0)
8x10.5	8.0	11.2	8.3	10.0	(3.1)	0.7 ~ 1.1	0.7	1.3
10x10.5	10.0	11.2	10.3	12.0	(4.6)	0.7 ~ 1.4	0.7	1.3
10x14	10.0	14.5	10.3	12.0	(4.6)	0.7 ~ 1.4	0.7	1.3
16x17	16.0	17.5	17.0	18.5	(7.0)	1.7 ~ 2.1	(3.0)	(2.0)

() is reference dimension



WT LAND PATTERN DIM. (mm)

Case Size	a	b	c
6.3x6.1	1.2	3.6	3.2
6.3x8	1.2	3.6	3.2
8x10.5	2.5	4.5	4.7
10x10.5	3.8	4.8	4.7
10x14	3.8	4.8	4.7
16x17	5.0	8.0	9.5



W (Wide Terminations) Anti-Vibration Test	
Test Method	Direction: X, Y, Z axis
	Frequency & Duration: 5 to 2000Hz reciprocation for 20 minutes, 2 hours each direction
	Peak to Peak Amplitude: 5mm
	Peak Acceleration: 30G
Δ Capacitance	Sweep Type: Log
	Within $\pm 10\%$ of initial value
	≤ Specified value
Tangent of Loss	≤ Specified value
Leakage Current	≤ Specified value

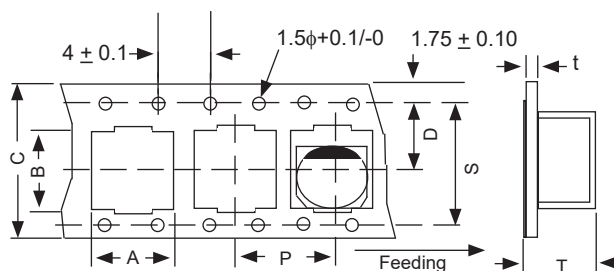
PRECAUTIONS

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

CARRIER TAPE DIMENSIONS

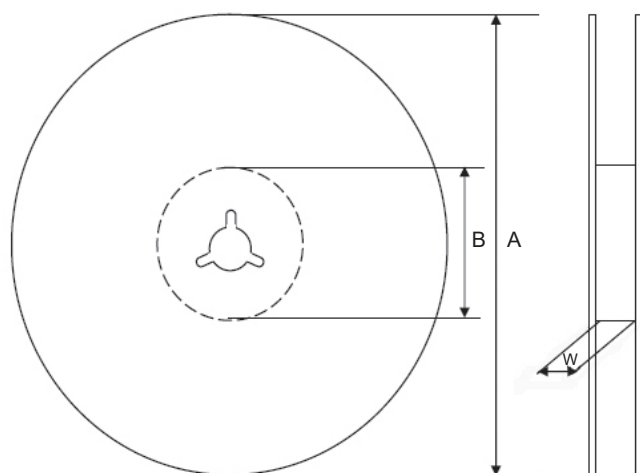
Case Size	A ±0.2	B ^{+0.3/-0.2}	C ±0.3	D ±0.1	P ±0.1	T ±0.2	t ±0.1	S ±0.1
4x6.1	4.7	4.6 ^{+0.2/-0.1}	12.0	5.5	8.0	6.2	0.6	n/a
5x6.1	5.7	5.7	12.0	5.5	12.0	6.4		
6.3x6.1	7.0	7.0	16.0	7.5	12.0	6.4		
6.3x8	7.0	7.0	16.0	7.5	12.0	8.4		
8x10.5	8.7	8.7	24.0	11.5	16.0	11.1		
10x10.5	10.7	10.7	24.0	11.5	16.0	11.2		
10x14	10.7	10.7	24.0	11.5	16.0	14.6		
16x17	17.5	17.5	44.0	20.2	28.0	17.3		40.4

1. Leader and trailer will have a minimum of 10 empty pockets and 20cm of extended cover tape.
2. A maximum of 3 connections (splices) per reel.



V-Chip 15" (380mm) Reels (LB suffix)

Dimensions (mm)

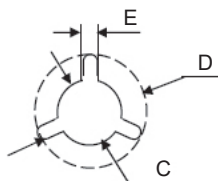


Case Size	Tape Width	W
4x6.1, 5x6.1	12.0	14
6.3x6.1, 6.3x8	16.0	18

Case Size	A	B	C	D	E
4x6.1, 5x6.1	φ380 ±2.0	φ80~105	φ13 ±0.5	φ21 ±1.0	2.0 ±0.5
6.3x6.1, 6.3x8					

Case Size	Tape Width	W
8x10.5, 10x10.5, 10x14	24.0	26.0
16x17	44.0	46.0

Case Size	A	B	C	D	E
8x10.5, 10x10.5, 10x14, 16x17	φ380 ±2	φ80~105	φ13 ±0.5	φ21 ±1.0	2.0 ±0.5



Case Size	Quantity per Reel 15" (380mm)
4x6.1	2000
5x6.1	1000
6.3x6.1	1000
6.3x8	900
8x10.5	500
10x10.5	500
10x14	400
16x17	200