

Surface Mount Aluminum Electrolytic Capacitors NAZH Series

FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- REDUCED SIZE
- AVAILABLE WITH ANTI-VIBRATION TERMINATIONS (8 & 10mm DIAMETER)
- SUIT FOR HIGH TEMPERATURE REFLOW SOLDERING (UP TO 260°C)
- 2,000 HOUR LOAD LIFE @ +105°C
- DESIGNED FOR AUTOMATIC MOUNTING AND REFLOW SOLDERING
- **MEETS THE REQUIREMENTS OF AEC-Q200***

*Contact NIC for supporting test data

CHARACTERISTICS

Rated Voltage Rating	6.3 ~ 50Vdc						
Rated Capacitance Range	10 ~ 2,200μF						
Operating Temp. Range	-55 ~ +105°C						
Capacitance Tolerance	±20% (M)						
Max. Leakage Current After 2 Miuntes @ 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
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 All Case Sizes = 2,000 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					

SAC Alloy Compatible
260°C

RoHS Compliant

includes all homogeneous materials



*See Part Number System for Details

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
470	471	6.3x8	6.3x8	-	8x10.5	-	-
560	561	-	-	-	-	10x10.5	-
680	681	6.3x8	-	8x10.5	-	-	-
820	821	-	-	-	10x10.5	-	-
1000	102	-	8x10.5	10x10.5	-	-	-
1200	122	8x10.5	-	-	-	-	-
1500	152	8x10.5	10x10.5	-	-	-	-
2200	222	10x10.5	-	-	-	-	-

PART NUMBER SYSTEM

NAZH	681	M	16V	8x10.5	N	LB	W	Y	F
Series	Capacitance Code in μF, first 2 digits are significant Third digit is no. of zeros, "R" indicates decimal for values under 10μF	Tolerance Code M=±20%	Working Voltage	Size in mm	Termination/Packaging Code	Reflow Temperature Code	Optional Wide Terminations*	RoHS Compliant	

*Wide terminations available on 8mm & 10mm diameter parts. See page 4 for details.

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

PEAK REFLOW TEMPERATURE CODES

Code	Peak Reflow Temperature
N	260°C

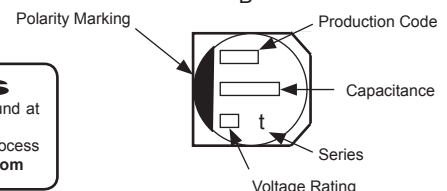
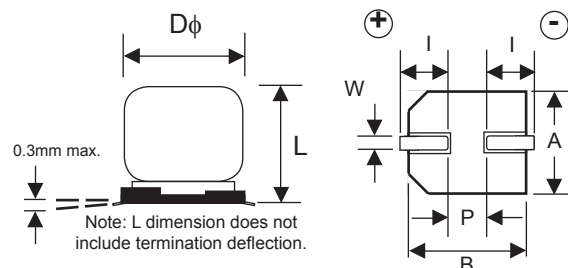
TERMINATION FINISH & PACKAGING OPTIONS CODES

Code	Finish & Reel Size
B	Sn-Bi Finish & 13" Reel
LB	Sn-Bi Finish & 15" Reel

COMPONENT DIMENSIONS (mm)

Case Size	φD±0.5	L max.	A±0.2	B±0.2	I±0.3	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

*See page 3 wide termination component dimensions.



PRECAUTIONS

Please review the notes on correct use, safety and precautions found at 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



Surface Mount Aluminum Electrolytic Capacitors NAZH Series

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
NAZH101M6.3V4X6.1NBF	100	6.3	0.26	0.85	160	2,000
NAZH221M6.3V5X6.1NBF	220		0.26	0.36	240	2,000
NAZH331M6.3V6.3X6.1NBF	330		0.26	0.26	300	2,000
NAZH471M6.3V6.3X8NBF	470		0.26	0.16	600	2,000
NAZH681M6.3V6.3X8NBF	680		0.26	0.16	600	2,000
NAZH122M6.3V8X10.5NBF	1200		0.26	0.08	850	2,000
NAZH152M6.3V8X10.5NBF	1500		0.26	0.08	850	2,000
NAZH222M6.3V10X10.5NBF	2200		0.28	0.06	1190	2,000
NAZH680M10V4X6.1NBF	68	10	0.19	0.85	160	2,000
NAZH151M10V5X6.1NBF	150		0.19	0.36	240	2,000
NAZH221M10V6.3X6.1NBF	220		0.19	0.26	300	2,000
NAZH331M10V6.3X8NBF	330		0.19	0.16	600	2,000
NAZH471M10V6.3X8NBF	470		0.19	0.16	600	2,000
NAZH102M10V8X10.5NBF	1000		0.19	0.08	850	2,000
NAZH152M10V10X10.5NBF	1500		0.19	0.06	1190	2,000
NAZH470M16V4X6.1NBF	47	16	0.16	0.85	160	2,000
NAZH680M16V5X6.1NBF	68		0.16	0.36	240	2,000
NAZH101M16V5X6.1NBF	100		0.16	0.36	240	2,000
NAZH151M16V6.3X6.1NBF	150		0.16	0.26	300	2,000
NAZH221M16V6.3X6.1NBF	220		0.16	0.26	300	2,000
NAZH331M16V6.3X8NBF	330		0.16	0.16	600	2,000
NAZH681M16V8X10.5NBF	680		0.16	0.08	850	2,000
NAZH102M16V10X10.5NBF	1000		0.16	0.06	1190	2,000
NAZH220M25V4X6.1NBF	22	25	0.14	0.85	160	2,000
NAZH330M25V4X6.1NBF	33		0.14	0.85	160	2,000
NAZH470M25V5X6.1NBF	47		0.14	0.36	240	2,000
NAZH680M25V5X6.1NBF	68		0.14	0.36	240	2,000
NAZH101M25V6.3X6.1NBF	100		0.14	0.26	300	2,000
NAZH151M25V6.3X8NBF	150		0.14	0.16	600	2,000
NAZH221M25V6.3X8NBF	220		0.14	0.16	600	2,000
NAZH471M25V8X10.5NBF	470		0.14	0.08	850	2,000
NAZH821M25V10X10.5NBF	820		0.14	0.06	1190	2,000
NAZH220M35V4X6.1NBF	22	35	0.12	0.85	160	2,000
NAZH330M35V5X6.1NBF	33		0.12	0.36	240	2,000
NAZH470M35V5X6.1NBF	47		0.12	0.36	240	2,000
NAZH680M35V6.3X6.1NBF	68		0.12	0.26	300	2,000
NAZH101M35V6.3X6.1NBF	100		0.12	0.26	300	2,000
NAZH151M35V6.3X8NBF	150		0.12	0.16	600	2,000
NAZH331M35V8X10.5NBF	330		0.12	0.08	850	2,000
NAZH561M35V10X10.5NBF	560		0.12	0.06	1190	2,000
NAZH100M50V4X6.1NBF	10	50	0.1	2.3	85	2,000
NAZH100M50V5X6.1NBF	10		0.1	0.88	165	2,000
NAZH220M50V5X6.1NBF	22		0.1	0.88	165	2,000
NAZH470M50V6.3X6.1NBF	47		0.1	0.68	195	2,000
NAZH101M50V6.3X8NBF	100		0.1	0.34	350	2,000
NAZH221M50V8X10.5NBF	220		0.1	0.18	670	2,000
NAZH331M50V10X10.5NBF	330		0.1	0.12	900	2,000

RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

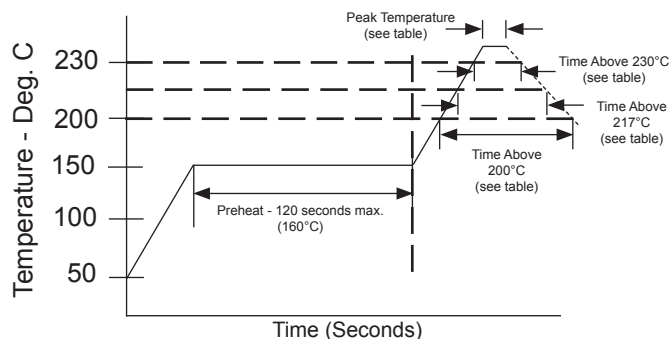
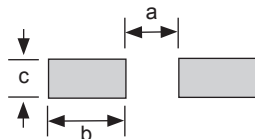
Frequency	120Hz	1KHz	10KHz	100KHz~
10 ~ 470μF	0.65	0.85	0.95	1.00
560 ~ 2200μF	0.70	0.90	0.95	1.00



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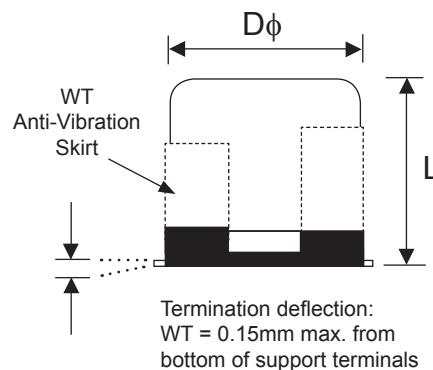
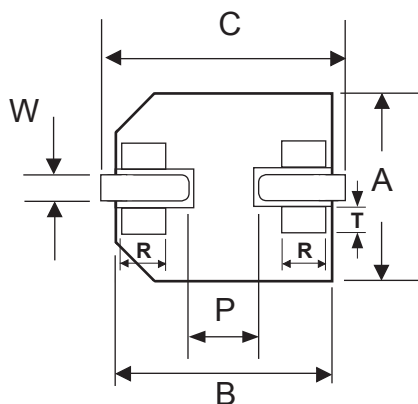
RECOMMENDED LAND PATTERN DIMENSIONS (mm)

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



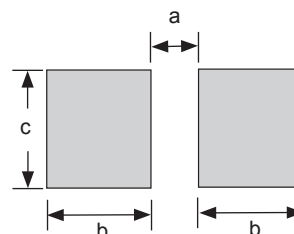
WIDE TERMINATION (WT) DIM. (mm)

Case Size	$D\phi \pm 0.5$	L max.	A, B ± 0.2	C max.	P ref.	W	R ± 0.2	T ± 0.2
8x10.5	8.0	11.2	8.3	10.0	(3.1)	0.7 ~ 1.4	0.7	1.3
10x10.5	10.0	11.2	10.3	12.0	(4.6)	1.0 ~ 1.4	0.7	1.3



WT LAND PATTERN DIM. (mm)

Case Size	a	b	c
8x10.5	2.5	4.5	4.7
10x10.5	3.8	4.8	4.7



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 Sweep Type: Log
Δ Capacitance	Within $\pm 10\%$ of initial value
Tangent of Loss	$\leq$ Specified value
Leakage Current	$\leq$ Specified value

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



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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 $^{\circ}\text{C}$	Time $\geq 250^{\circ}\text{C}$, 5 sec.	30 sec.	40 sec.	70 sec.	2
	255 $^{\circ}\text{C}$	Time $\geq 250^{\circ}\text{C}$, 10 sec.				1
8 ~ 10mm ϕ	260 $^{\circ}\text{C}$	Time $\geq 250^{\circ}\text{C}$, 5 sec.				1
	245 $^{\circ}\text{C}$	Time $\geq 240^{\circ}\text{C}$, 10 sec.				2

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

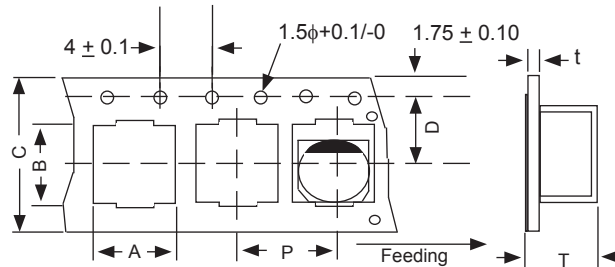
RESISTANCE TO SOLDERING HEAT

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

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
4x6.1	4.7	4.6 $^{+0.2}/_{-0.1}$	12.0	5.5	8.0	6.2	0.6
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	

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.



REEL DIMENSIONS & REEL QTY

Case Size	W ± 1.0	Reel Quantity	
		TR 13" (330mm)	TR 15" (380mm)
4x6.1	14	1,200	-
5x6.1	14	800	-
6.3x6.1	18	800	-
6.3x8	18	500	-
8x10.5*	26	300	500
10x10.5*	26	300	500

*See Standard Values tables for standard reel size. Contact NIC regarding availability of optional reel size/quantity.

