

# NAZH Series

## Surface Mount Aluminum Electrolytic Capacitors Series



### FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
  - REDUCED SIZE
  - AVAILABLE WITH ANTI-VIBRATION TERMINATIONS (6.3mm ~ 18mm 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 ~ 63Vdc							
Rated Capacitance Range	10 ~ 4,700µF							
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	63
	S.V. (Vdc)	8.0	13	20	32	44	63	79
	Tan δ @ 120Hz/20°C	0.26	0.19	0.16	0.14	0.12	0.10	0.08
	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	63
	Z-25°C/Z+20°C	2	2	2	2	2	2	2
	Z-40°C/Z+20°C	3	3	3	3	3	3	3
	Z-55°C/Z+20°C	4	4	4	3	3	3	3
Load Life Test @ 105°C 6.3 ~ 10x10.5 = 2,000 hours 10x14 = 3,000 hours 16mm & 18mm Dia. = 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	63	
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	10X14	
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	10X14	-	
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	-	-	-	-	-	-	
2400	242	-	-	-	-	18x17.5	-	-	
2700	272	-	-	-	16x17	16x22	-	-	
3000	302	-	-	-	-	18x22	-	-	
3600	362	-	-	-	18x17.5	-	-	-	
3900	392	-	-	-	16x22	-	-	-	
4700	472	-	-	-	18x22	-	-	-	

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

### Performance Passives By Design

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

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# NAZH Series

## Surface Mount Aluminum Electrolytic Capacitors 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	
NAZH101M6.3V4X6.1NLBF	100	6.3	0.26	0.85	160	2,000	
NAZH221M6.3V5X6.1NLBF	220		0.26	0.36	240	2,000	
NAZH331M6.3V6.3X6.1NLBF	330		0.26	0.26	300	2,000	
NAZH471M6.3V6.3X8NLBF	470		0.26	0.16	600	2,000	
NAZH681M6.3V6.3X8NLBF	680		0.26	0.16	600	2,000	
NAZH122M6.3V8X10.5NLBF	1200		0.26	0.08	850	2,000	
NAZH152M6.3V8X10.5NLBF	1500		0.26	0.08	850	2,000	
NAZH222M6.3V10X10.5NLBF	2200		0.28	0.06	1190	2,000	
NAZH680M10V4X6.1NLBF	68	10	0.19	0.85	160	2,000	
NAZH151M10V5X6.1NLBF	150		0.19	0.36	240	2,000	
NAZH221M10V6.3X6.1NLBF	220		0.19	0.26	300	2,000	
NAZH331M10V6.3X8NLBF	330		0.19	0.16	600	2,000	
NAZH471M10V6.3X8NLBF	470		0.19	0.16	600	2,000	
NAZH102M10V8X10.5NLBF	1000		0.19	0.08	850	2,000	
NAZH152M10V10X10.5NLBF	1500		0.19	0.06	1190	2,000	
NAZH470M16V4X6.1NLBF	47		16	0.16	0.85	160	2,000
NAZH680M16V5X6.1NLBF	68	0.16		0.36	240	2,000	
NAZH101M16V5X6.1NLBF	100	0.16		0.36	240	2,000	
NAZH151M16V6.3X6.1NLBF	150	0.16		0.26	300	2,000	
NAZH221M16V6.3X6.1NLBF	220	0.16		0.26	300	2,000	
NAZH331M16V6.3X8NLBF	330	0.16		0.16	600	2,000	
NAZH681M16V8X10.5NLBF	680	0.16		0.08	850	2,000	
NAZH821M16V8X10.5NLBF	820	0.16		0.08	850	2,000	
NAZH102M16V10X10.5NLBF	1000	0.16		0.06	1190	2,000	
NAZH122M16V10X10.5NLBF	1200	0.16		0.06	1190	2,000	
NAZH220M25V4X6.1NLBF	22	25		0.14	0.85	160	2,000
NAZH330M25V4X6.1NLBF	33			0.14	0.85	160	2,000
NAZH470M25V5X6.1NLBF	47			0.14	0.36	240	2,000
NAZH680M25V5X6.1NLBF	68			0.14	0.36	240	2,000
NAZH101M25V6.3X6.1NLBF	100		0.14	0.26	300	2,000	
NAZH151M25V6.3X8NLBF	150		0.14	0.16	600	2,000	
NAZH221M25V6.3X8NLBF	220		0.14	0.16	600	2,000	
NAZH471M25V8X10.5NLBF	470		0.14	0.08	850	2,000	
NAZH561M25V8X10.5NLBF	560		0.14	0.08	850	2,000	
NAZH821M25V10X10.5NLBF	820		0.14	0.06	1190	2,000	
NAZH102M25V10X10.5NLBF	1000		0.14	0.06	1190	2,000	
NAZH122M25V10X14NLBF	1200		0.14	0.06	1500	3,000	
NAZH272M25V16X17KLSF	2700		0.16	0.035	1800	5,000	
NAZH362M25V18X17.5KLSF	3600		0.18	0.033	2060	5,000	
NAZH392M25V16X22KLSF	3900		0.18	0.034	2540	5,000	
NAZH472M25V18X22KLSF	4700		0.20	0.025	2640	5,000	
NAZH220M35V4X6.1NLBF	22	35	0.12	0.85	160	2,000	
NAZH330M35V5X6.1NLBF	33		0.12	0.36	240	2,000	
NAZH470M35V5X6.1NLBF	47		0.12	0.36	240	2,000	
NAZH680M35V6.3X6.1NLBF	68		0.12	0.26	300	2,000	
NAZH101M35V6.3X6.1NLBF	100		0.12	0.26	300	2,000	
NAZH151M35V6.3X8NLBF	150		0.12	0.16	600	2,000	
NAZH331M35V8X10.5NLBF	330		0.12	0.08	850	2,000	
NAZH391M35V8X10.5NLBF	390		0.12	0.08	850	2,000	
NAZH471M35V10X10.5NLBF	470		0.12	0.06	1190	2,000	
NAZH561M35V10X10.5NLBF	560		0.12	0.06	1190	2,000	
NAZH681M35V10X10.5NLBF	680		0.12	0.06	1190	2,000	
NAZH821M35V10X14NLBF	820		0.12	0.06	1500	3,000	
NAZH182M35V16X17KLSF	1800		0.12	0.035	1800	5,000	
NAZH242M35V18X17.5KLSF	2400		0.14	0.033	2060	5,000	
NAZH272M35V16X22KLSF	2700		0.14	0.034	2540	5,000	
NAZH302M35V18X22KLSF	3000		0.16	0.025	2640	5,000	

Items in highlighted cells are available in automotive grade

### Performance Passives By Design

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100 Baylis Road. Melville, NY 11747

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# NAZH Series

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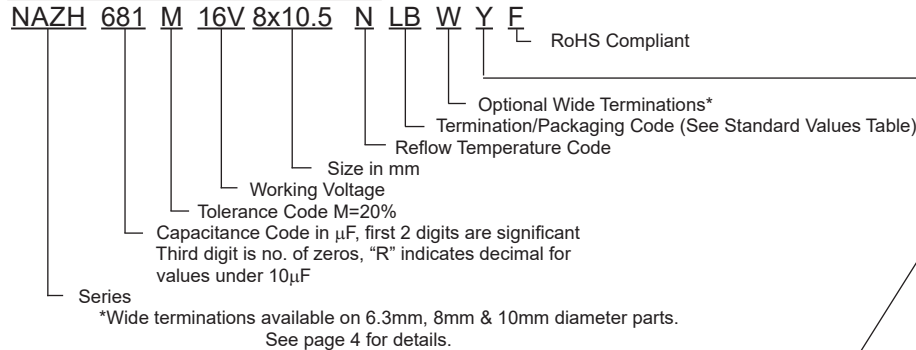


NIC Part Number	Cap. (μF)	W.V. (Vdc)	Dissipation Factor (Tan δ)	Max. ESR (Ω) +20°C/100KHz	Max. Ripple Current (mA) +105°C/100KHz	Load Life Hours @ +105°C
NAZH100M50V4X6.1NLBF	10	50	0.1	2.3	85	2,000
NAZH100M50V5X6.1NLBF	10		0.1	0.88	165	2,000
NAZH220M50V5X6.1NLBF	22		0.1	0.88	165	2,000
NAZH470M50V6.3X6.1NLBF	47		0.1	0.68	195	2,000
NAZH101M50V6.3X8NLBF	100		0.1	0.34	350	2,000
NAZH221M50V8X10.5NLBF	220		0.1	0.18	670	2,000
NAZH331M50V10X10.5NLBF	330		0.1	0.12	900	2,000
NAZH471M50V10X14NLBF	470	63	0.1	0.12	750	2,000
NAZH221M63V10X14KLB	220		0.08	0.14	600	2,000

### RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

Frequency	120Hz	1KHz	10KHz	100KHz~
10μF ~ 470μF	0.44	0.80	0.95	1.00
560μF ~ 2,700μF	0.70	0.90	0.95	1.00

### PART NUMBER SYSTEM



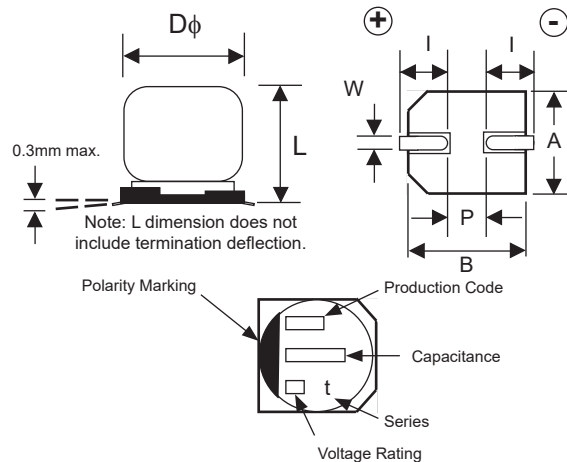
**Optional: Suitable for automotive equipment, sourced to special production and inspection at IATF-16949 certified production site**

### COMPONENT DIMENSIONS (mm)

Case Size	φD±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
16X22*	16.0	22.0	16.3	16.3	5.2	1.7~2.1	7.0
18X17.5*	18.0	17.5	19.0	19.0	6.5	1.7~2.1	7.0
18X22*	18.0	22.0	19.0	19.0	6.5	1.7~2.1	7.0

\*See page 4 wide termination component dimensions.  
( ) indicates reference dimension

### COMPONENT MARKING



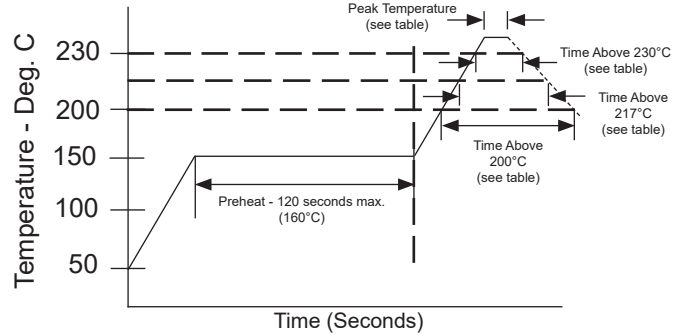
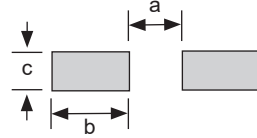
# NAZH Series

## Surface Mount Aluminum Electrolytic Capacitors Series



### RECOMMENDED LAND PATTERN DIMENSIONS (mm)

Case Dia.	a	b	c
4.0	1.0	2.5	1.6
5.0	1.5	2.8	1.6
6.3	1.8	3.2	1.6
8.0	2.8	4.1	2.1
10	4.3	4.4	2.5
16	6.6	6.5	5.0
18	6.6	7.7	5.0



### RATED VOLTAGE: 6.3 ~ 50VDC

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 $\phi$	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 $\phi$	260°C	Time $\geq 250^{\circ}\text{C}$ , 5 sec.				1			
	245°C	Time $\geq 240^{\circ}\text{C}$ , 10 sec.				2			
16 ~ 18mm $\phi$	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.

### RATED VOLTAGE: 63VDC

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*
10mm $\phi$	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.

For  $\Phi 4$  to  $\Phi 6.3$ , our recommended reflow condition is either of following two conditions.

1. Peak temperature 260°C, 5s(temp. $\geq 250^{\circ}\text{C}$ ) 2 time reflow
2. Peak temperature 255°C, 10s(temp. $\geq 250^{\circ}\text{C}$ ) 2 time reflow

For  $\Phi 8$  to  $\Phi 10$ , our recommended reflow condition is either of following two conditions.

1. Peak temperature 260°C, 5s(temp. $\geq 250^{\circ}\text{C}$ ) 1 time reflow
2. Peak temperature 245°C, 10s(temp. $\geq 240^{\circ}\text{C}$ ) 2 time reflow

For " $\Phi 10$  (63Vdc)" and " $\Phi 16$  to  $\Phi 18$ ", our recommended reflow condition is either of following two conditions.

1. Peak temperature 245°C, 5s(temp. $\geq 240^{\circ}\text{C}$ ) 1 time reflow
2. Peak temperature 240°C, 10s(temp. $\geq 235^{\circ}\text{C}$ ) 2 time reflow

Two times of reflow - The 2nd reflow must be done when the capacitor becomes normal condition regarding temperature.)

Soldering Method : I.R. or I.R. + heated air (VPS Method is not allowed).

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 $\delta$	Less than specified maximum value
	Leakage Current	Less than specified maximum value
	Appearance	No significant change can be observed

# NAZH Series

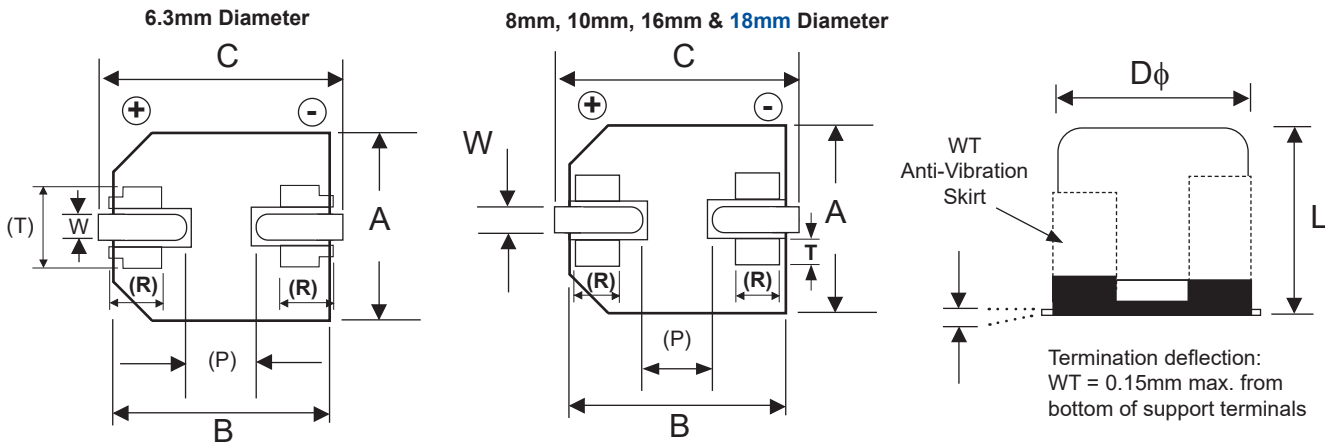
## Surface Mount Aluminum Electrolytic Capacitors Series



### WIDE TERMINATION (WT) DIM. (mm)

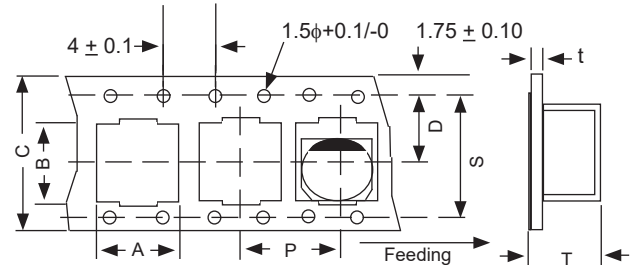
Case Size	D $\phi$ $\pm$ 0.5	L max.	A, B $\pm$ 0.2	C max.	P ref.	W	R $\pm$ 0.2	T $\pm$ 0.2
6.3x6.1	6.3	6.4	6.6	7.8	(2.2)	0.55 ~ 0.75	(1.3)	(3.0)
6.3x8	6.3	8.3	6.6	7.8	(2.2)	0.55 ~ 0.75	(1.3)	(3.0)
8x10.5	8.0	11.2	8.3	10.0	(3.1)	0.7 ~ 1.1	0.7	1.3
10x10.5	10.0	11.2	10.3	12.0	(4.6)	0.7 ~ 1.4	0.7	1.3
10x14	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)
16X22	16.0	22.5	17.0	18.2	(7.0)	1.7 ~ 2.1	(3.0)	(2.0)
18X17.5	18.0	17.5	19.0	20.2	(7.0)	1.7 ~ 2.1	(3.0)	(2.0)
18X22	18.0	22.5	19.0	20.2	(7.0)	1.7 ~ 2.1	(3.0)	(2.0)

( ) is reference dimension



### CARRIER TAPE DIMENSIONS

Case Size	A $\pm$ 0.2	B $^{+0.3}/_{-0.2}$	C $\pm$ 0.3	D $\pm$ 0.1	P $\pm$ 0.1	T $\pm$ 0.2	t $\pm$ 0.1	S $\pm$ 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		
16X22	17.5	17.5	44.0	20.2	28.0	22.8		
18X17.5	19.5	19.5	44.0	20.2	32.0	17.8		
18X22	19.5	19.5	44.0	20.2	32.0	22.5		



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.

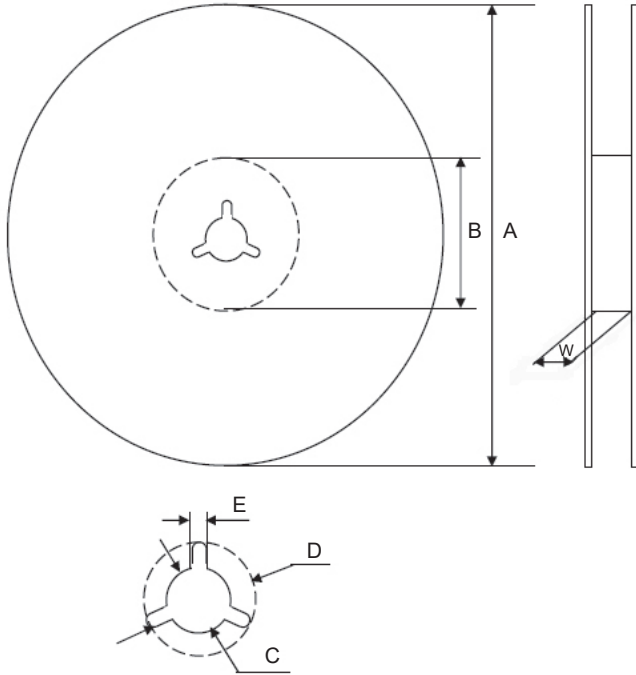
# NAZH Series

## Surface Mount Aluminum Electrolytic Capacitors Series



### 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, 6.3x6.1, 6.3x8	$\phi 380 \pm 2.0$	$\phi 80 \sim 105$	$\phi 13 \pm 0.5$	$\phi 21 \pm 1.0$	$2.0 \pm 0.5$

Case Size	Tape Width	W
8x10.5, 10x10.5, 10x14	24.0	26.0
16x17, 16x22, 18x17.5, 18x22	44.0	46.0

Case Size	A	B	C	D	E
8x10.5, 10x10.5, 10x14, 16x17, 16x22, 18x17.5, 18x22	$\phi 380 \pm 2$	$\phi 80 \sim 105$	$\phi 13 \pm 0.5$	$\phi 21 \pm 1.0$	$2.0 \pm 0.5$

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
16X22	150
18X17.5	175
18X22	125