

Surface Mount Aluminum Electrolytic Capacitors NACZF Series

FEATURES

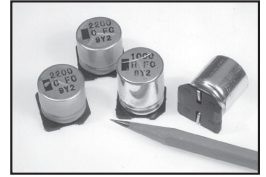
- CYLINDRICAL LEADLESS TYPE FOR SURFACE MOUNTING
- HIGH CAPACITANCE VALUES (UP TO 6800 μ F)
- LOW IMPEDANCE/HIGH RIPPLE CURRENT AT 100KHz
- 12.5mm x 17mm ~ 18mm x 22mm CASE SIZES
- WIDE TERMINATION STYLE FOR HIGH VIBRATION APPLICATIONS
- LONG LIFE (5000 HOURS AT +105°C)
- DESIGNED FOR REFLOW SOLDERING
- **MEETS THE REQUIREMENTS OF AEC-Q200***

*Contact NIC for supporting test data

**RoHS
Compliant**

includes all homogeneous materials

*See Part Number System for Details



CHARACTERISTICS

Rated Voltage Range		6.3 ~ 100Vdc							
Rated Capacitance Range		47 ~ 6,800 μ F							
Operating Temperature Range		-40°C ~ +105°C							
Capacitance Tolerance		$\pm 20\%$ (M)							
Max. Leakage Current After 2 Minutes		0.01CV or 3 μ A whichever is greater							
Working Voltage		6.3Vdc	10Vdc	16Vdc	25Vdc	35Vdc	50Vdc	63Vdc	100Vdc
Surge Voltage		8.0Vdc	13Vdc	20Vdc	32Vdc	44Vdc	63Vdc	79Vdc	125Vdc
Max. Tan δ at 120Hz & 20°C	C $\leq$ 1000 μ F	-	0.19	0.16	0.14	0.12	0.10	0.08	0.07
	C = 2200 μ F	0.24	0.21	0.18	0.16	0.14	-	-	-
	C = 3300 μ F	0.26	0.23	0.20	0.18	-	-	-	-
	C = 4700 μ F	0.28	0.25	-	-	-	-	-	-
	C = 6800 μ F	0.32	0.29	-	-	-	-	-	-
Low Temperature Stability (Impedance Ratio @ 120Hz)	Z-25°C/Z+20°C	2	2	2	2	2	2	2	2
	Z-40°C/Z+20°C	3	3	3	3	3	3	3	3
High Temperature Load Life 5,000 Hours at +105°C Rated WVDC	Capacitance Change	Within $\pm 20\%$ of initial measured value							
	Tan δ	Less than 200% of specified value							
	Leakage Current	Less than the specified maximum value							
Resistance to Soldering Heat Within the Recommended Reflow Conditions	Capacitance Change	Within $\pm 10\%$ of initial measured value							
	Tan δ	Less than the specified maximum value							
	Leakage Current	Less than the specified maximum value							

STANDARD PRODUCT AND CASE SIZE TABLE D ϕ xL (mm)

Cap (μ F)	Code	Working Voltage (Vdc)							
		6.3	10	16	25	35	50	63	100
47	470	-	-	-	-	-	-	-	12.5 x 17
68	680	-	-	-	-	-	-	12.5 x 17	12.5 x 17
100	101	-	-	-	-	-	-	12.5 x 17	16 x 17
220	221	-	-	-	-	-	12.5 x 17	16 x 17	18 x 17
330	331	-	-	-	-	12.5 x 17	16 x 17	18 x 17	18 x 22
470	471	-	-	-	12.5 x 17	16 x 17	18 x 17	18 x 22	-
1000	102	-	12.5 x 17	16 x 17	18 x 17	18 x 17	18 x 22	-	-
2200	222	16 x 17	16 x 17	18 x 17	18 x 22	18 x 22	-	-	-
3300	332	18 x 17	18 x 17	18 x 22	18 x 22	-	-	-	-
4700	472	18 x 22	18 x 22	-	-	-	-	-	-
6800	682	18 x 22	18 x 22	-	-	-	-	-	-

Shading denotes parts available with "Y" option (for Automotive Equipment)

PART NUMBER SYSTEM

NACZF 102 M 16V 16x17 TR 15 P WT Y F

RoHS Compliant

Optional WT = Wide Terminal

Optional plastic reel (standard material is cardboard). See page 4 & 5
13 = 13" (330mm), 15 = 15" (380mm) Reel

Tape & Reel

Size in mm

Working Voltage

Tolerance Code M=20%

Capacitance Code in mF, first 2 digits are significant
Third digit is no. of zeros, "R" indicates decimal for
values under 10 μ F

Series

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



Surface Mount Aluminum Electrolytic Capacitors NACZF Series

STANDARD VALUES, CASE SIZES AND SPECIFICATIONS

NIC Part Number*	Cap. (μ F)	W.V. (Vdc)	Dissipation Factor (Tan δ)	Max. Ripple Current (mA) +105°C, 100KHz	Max. Impedance (Ω) +20°C, 100KHz	Load Life Hours @ +105°C
NACZF222M6.3V16X17TR15T2F	2200	6.3	0.24	1690	0.043	5,000
NACZF332M6.3V18X17TR13T2F	3300		0.26	2000	0.038	5,000
NACZF472M6.3V18X22TR13T2F	4700		0.28	2205	0.029	5,000
NACZF682M6.3V18X22TR13T2F	6800		0.32	2490	0.028	5,000
NACZF102M10V12.5X17TR13T2F	1000	10	0.19	1205	0.065	5,000
NACZF222M10V16X17TR15T2F	2200		0.21	1690	0.043	5,000
NACZF332M10V18X17TR13T2F	3300		0.23	2000	0.038	5,000
NACZF472M10V18X22TR13T2F	4700		0.25	2490	0.028	5,000
NACZF682M10V18X22TR13T2F	6800	16	0.29	2490	0.028	5,000
NACZF102M16V16X17TR15T2F	1000		0.16	1690	0.043	5,000
NACZF222M16V18X17TR13T2F	2200		0.18	2000	0.038	5,000
NACZF332M16V18X22TR13T2F	3300		0.20	2490	0.028	5,000
NACZF471M25V12.5X17TR13T2F	470	25	0.14	1205	0.065	5,000
NACZF102M25V18X17TR13T2F	1000		0.14	2000	0.038	5,000
NACZF222M25V18X22TR13T2F	2200		0.16	2490	0.028	5,000
NACZF332M25V18X22TR13T2F	3300		0.18	2490	0.028	5,000
NACZF331M35V12.5X17TR13T2F	330	35	0.12	1205	0.065	5,000
NACZF471M35V16X17TR15T2F	470		0.12	1690	0.043	5,000
NACZF102M35V18X17 TR13T2F	1000		0.12	2000	0.038	5,000
NACZF222M35V18X22TR13T2F	2200		0.14	2490	0.028	5,000
NACZF221M50V12.5X17TR13T2F	220	50	0.10	1150	0.110	5,000
NACZF331M50V16X17TR15T2F	330		0.10	1610	0.080	5,000
NACZF471M50V18X17TR13T2F	470		0.10	1900	0.068	5,000
NACZF102M50V18X22TR13T2F	1000		0.10	2420	0.042	5,000
NACZF680M63V12.5X17TR13T2F	68	63	0.08	1020	0.150	5,000
NACZF101M63V12.5X17TR13T2F	100		0.08	1020	0.150	5,000
NACZF221M63V16X17TR15T2F	220		0.08	1410	0.090	5,000
NACZF331M63V18X17TR13T2F	330		0.08	1690	0.086	5,000
NACZF471M63V18X22TR13T2F	470	100	0.08	2290	0.055	5,000
NACZF470M100V12.5X17TR13T2F	47		0.07	511	0.300	5,000
NACZF680M100V12.5X17TR13T2F	68		0.07	511	0.300	5,000
NACZF101M100V16X17TR15T2F	100		0.07	793	0.180	5,000
NACZF221M100V18X17TR13T2F	220		0.07	917	0.155	5,000
NACZF331M100V18X22TR13T2F	330		0.07	1230	0.083	5,000

Available for Automotive Equipment,
see part numbering system

*See part numbering system for how to denote WT termination style

RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

Capacitance (μ F)	Frequency				
	50Hz, 60Hz	120Hz	1KHz	10KHz	100KHz
47 ~ 6800	0.70	0.75	0.90	0.95	1.00

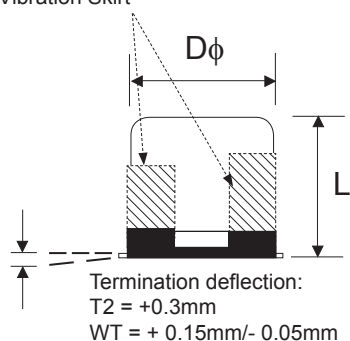


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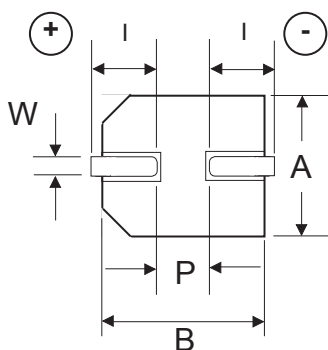
DIMENSIONS (mm)

Case Size	D ϕ ± 0.5	L max.	A ± 0.2	B ± 0.2	l typical	W	P typical	R	S	T
12.5 x 17T2	12.5	17.0	13.5	13.5	4.7	0.6 ~ 1.2	4.4	-	-	-
12.5 x 17WT	12.5	17.3	13.5	13.5	4.7	0.9 ~ 1.5	4.4	2.2	7.1	2.4
16 x 17T2	16.0	17.0	16.7 ± 0.6	16.7 ± 0.6	5.2	0.9 ~ 2.1	6.8	-	-	-
16 x 17WT	16.0	17.5	17.0	17.0	5.5	1.2 ~ 2.1	6.8	3.0	9.0	1.9
16 x 22T2	16.0	22.0	17.0	17.0	5.5	0.9 ~ 1.5	6.7	-	-	-
16 x 22WT	16.0	22.3	17.0	17.0	5.5	1.2 ~ 1.6	6.7	3.0	9.0	1.9
18 x 17T2	18.0	17.0	19.0	19.0	6.7	0.9 ~ 1.5	6.7	-	-	-
18 x 17WT	18.0	17.3	19.0	19.0	6.7	1.2 ~ 1.6	6.7	3.0	11.0	1.9
18 x 22T2	18.0	22.0	19.0	19.0	6.7	0.9 ~ 1.5	6.7	-	-	-
18 x 22WT	18.0	22.3	19.0	19.0	6.7	1.2 ~ 1.6	6.7	3.0	11.0	1.9

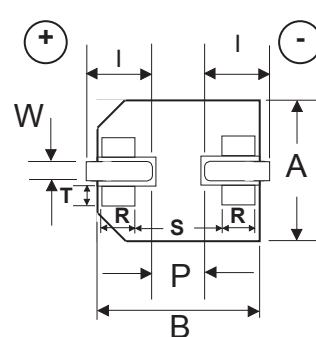
Anti-Vibration Skirt



T2 STYLE



WT STYLE



WT (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

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



Surface Mount Aluminum Electrolytic Capacitors NACZF Series

CARRIER TAPE

Case Size	A $\pm$ 0.5	B $\pm$ 0.2	C $\pm$ 0.3	D $\pm$ 0.1	P $\pm$ 0.1	S $\pm$ 0.1	T $\pm$ 0.2
12.5x17T2	14.0	14.0	32.0	14.2	24.0	28.4	17.5
12.5x17WT	14.0	14.0	32.0	14.2	24.0	28.4	17.5
16x17T2	17.5	17.5	44.0	20.2	28.0	40.4	17.5
16x17WT	17.5	17.5	44.0	20.2	28.0	40.4	17.5
16x22T2	17.5	17.5	44.0	20.2	28.0	40.4	22.5
16x22WT	17.5	17.5	44.0	20.2	28.0	40.4	22.5
18x17T2	19.5	19.5	44.0	20.2	32.0	40.4	17.5
18x17WT	19.5	19.5	44.0	20.2	32.0	40.4	17.5
18x22T2	19.5	19.5	44.0	20.2	32.0	40.4	22.5
18x22WT	19.5	19.5	44.0	20.2	32.0	40.4	22.5

TR13 330mm (13") CARDBOARD REEL

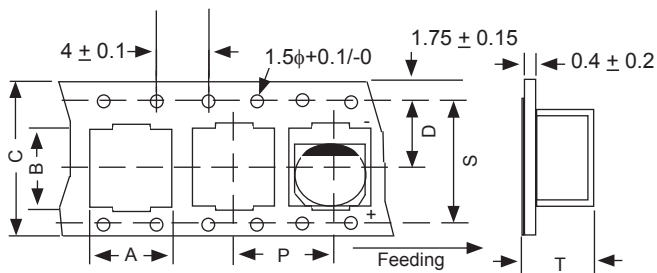
TR15 380mm (15") CARDBOARD REEL

(See page 4 for plastic reel dimensions)

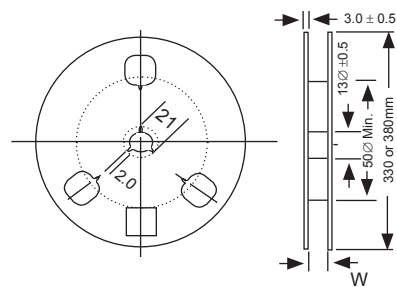
Case Size	W ±1.0	Quantity Per Reel	
		13" Reel (Std)	15" Reel (Opt.)
12.5x17	34.0	150 pcs	200 pcs
12.5x22	34.0	125 pcs	150 pcs
16x17	46.0	125 pcs	150 pcs
16x22	46.0	75 pcs	100 pcs
18x17	46.0	125 pcs	150 pcs
18x22	46.0	75 pcs	100 pcs

TAPING SPECIFICATIONS (mm)

1. Leader and ending tape: Minimum 10 empty pockets and 20 cm of cover tape.
2. Connection: within 3 connection per reel.

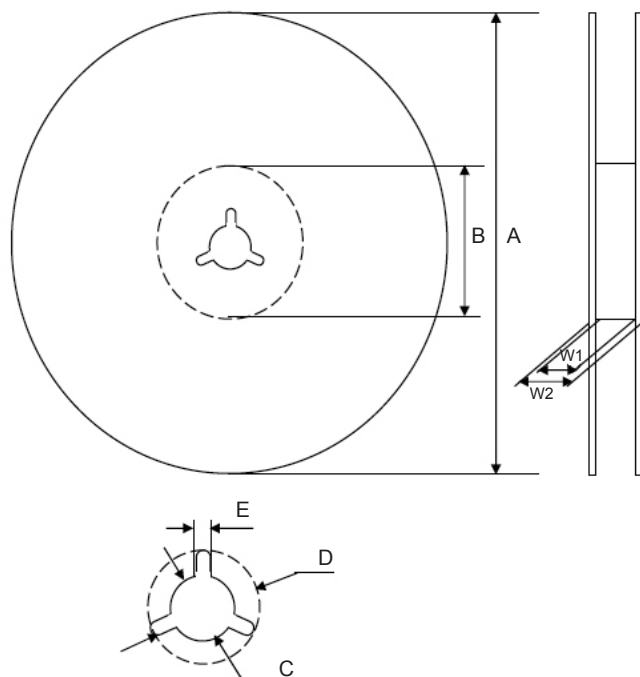


CARDBOARD REEL



Surface Mount Aluminum Electrolytic Capacitors NACZF Series

Optional V-Chip 13" (330mm) Plastic Reels (TR13P suffix)



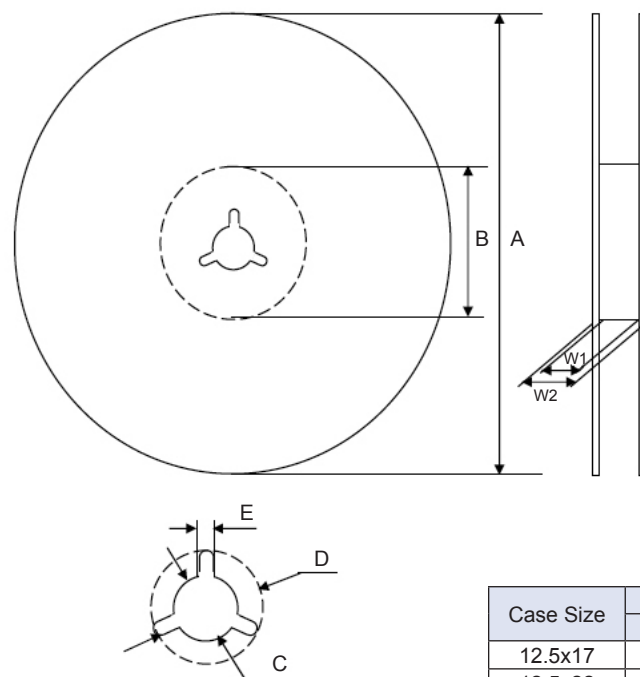
Dimensions (mm)

Case Size	Tape Width	W1	W2
12.5x17, 12.5x22	32.0	32.4 ~ 35.0	36.5 ~ 38.4
16x17, 16x22, 18x17, 18x22	44.0	44.4 ~ 47.0	48.2 ~ 50.4

Case Size	Tape Width	A	B	C	D	E
12.5x17, 12.5x22	32.0	$\phi 330 \pm 2$	$\phi 50 \sim 105$	$\phi 13 \pm 0.5$	$\phi 21 \pm 1.0$	2.0 ± 0.5
16x17, 16x22, 18x17, 18x22	44.0					

Color
Black or Blue

Optional V-Chip 15" (380mm) Plastic Reels (TR15P suffix)



Dimensions (mm)

Case Size	Tape Width	W1	W2
12.5x17, 12.5x22	32.0	33.0 ~ 34.0	36.5 ~ 38.5
16x17, 16x22, 18x17, 18x22	44.0	45.0 ~ 46.0	48.5 ~ 50.5

Case Size	Tape Width	A	B	C	D	E
12.5x17, 12.5x22	32.0	$\phi 380 \pm 2$	$\phi 80 \sim 105$	$\phi 13 \pm 0.5$	$\phi 21 \pm 1.0$	2.0 ± 0.5
16x17, 16x22, 18x17, 18x22	44.0					

Color
Black or Blue

Case Size	Quantity Per Reel	
	13" Reel (Std)	15" Reel (Opt.)
12.5x17	150 pcs	200 pcs
12.5x22	125 pcs	150 pcs
16x17	125 pcs	150 pcs
16x22	75 pcs	100 pcs
18x17	125 pcs	150 pcs
18x22	75 pcs	100 pcs

