

# Surface Mount Aluminum Electrolytic Capacitors NACVF Series

## FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNT
- HIGH VOLTAGE (160VDC AND 450VDC)
- 10mm x 14mm ~ 18mm x 22mm CASE SIZES
- LONG LIFE (5000 HOURS AT +105°C)
- DESIGNED FOR REFLOW SOLDERING

**RoHS  
Compliant**  
includes all homogeneous materials

\*See Part Number System for Details

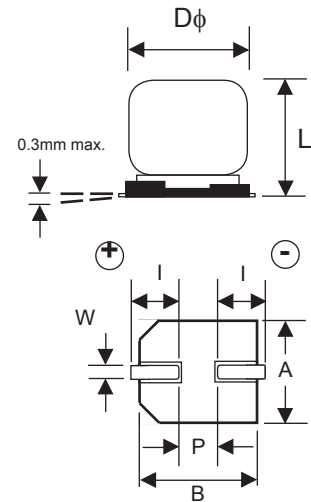


## CHARACTERISTICS

Rated Voltage Range		160 ~ 450Vdc					
Rated Capacitance Range		2.2 ~ 100 $\mu$ F					
Operating Temperature Range		-25°C ~ +105°C					
Capacitance Tolerance		$\pm$ 20% (M)					
Max. Leakage Current After 2 Minutes		0.06CV + 10 $\mu$ A					
Max. Tan $\delta$ at 120Hz & 20°C		160Vdc	200Vdc	250Vdc	350Vdc	400Vdc	450Vdc
		0.15			0.20	0.24	
Low Temperature Stability (Impedance Ratio @ 120Hz)	Z -25°C/+20°C	2	2	3	5	6	6
Load Life @ 105°C & Rated Voltage 10x14mm 3,000 hours 10x18mm 4,000 hours 12.5 ~ 18mm Dia 5,000 hours	Capacitance Change	Within $\pm$ 20% of initial measured value					
	Tan $\delta$	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 $\delta$	Less than the specified maximum value					
	Leakage Current	Less than the specified maximum value					

## STANDARD PRODUCT AND CASE SIZE TABLE D $\phi$ xL (mm)

Cap ( $\mu$ F)	Code	Working Voltage (Vdc)					
		160	200	250	350	400	450
2.2	2R2	-	-	-	-	-	10 x 14
3.3	3R3	-	-	-	10 x 14	10 x 14	10 x 18
4.7	4R7	-	-	-	10 x 18	10 x 18	12.5 x 17
10	100	10 x 14	10 x 18	10 x 18	16 x 17	16 x 17	18 x 17
22	220	-	12.5 x 17	16 x 17	18 x 17	16 x 22	18 x 22
33	330	12.5 x 17	16 x 17	18 x 17	16 x 22	18 x 22	-
47	470	16 x 17	18 x 17	16 x 22	18 x 22	-	-
68	680	18 x 17	16 x 22	18 x 22	-	-	-
		16 x 22			-	-	-
100	101	18 x 22	18 x 22	-	-	-	-

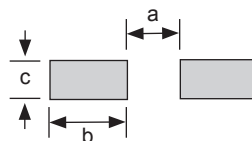


## DIMENSIONS (mm)

Case Size	D $\phi$ $\pm$ 0.5	L max.	A $\pm$ 0.2	B $\pm$ 0.2	l $\pm$ 0.2	W	P $\pm$ 0.2
10 x 14T2	10.0	14.0	10.3	10.3	3.5	0.7 ~ 1.4	4.6
10 x 18T2	10.0	18.5	10.3	10.3	3.5	1.1 ~ 1.4	4.6
12.5 x 17T2	12.5	17.5	13.5	13.5	4.7	0.6 ~ 1.2	4.4
16 x 17T2	16.0	17.5	17.0	17.0	5.5	0.9 ~ 1.5	6.7
18 x 17T2	18.0	17.5	19.0	19.0	6.5	0.9 ~ 1.5	6.7
18 x 22T2	18.0	22.5	19.0	19.0	6.5	0.9 ~ 1.5	6.7

## RECOMMENDED LAND PATTERN DIMENSIONS (mm)

Case Size	a	b	c
10 $\phi$	4.0	4.5	2.0
12.5 $\phi$	4.0	5.7	2.0
16 $\phi$	6.0	6.5	2.5
18 $\phi$	6.0	7.5	2.5



## 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](mailto:tpmg@niccomp.com)



# Surface Mount Aluminum Electrolytic Capacitors NACVF Series

## STANDARD VALUES, CASE SIZES AND SPECIFICATIONS

NIC Part Number	Cap. (μF)	W.V. (Vdc)	Dissipation Factor (Tan δ)	Max. Ripple Current (mA) +105°C/100KHz	Max. ESR (Ω) +20°C/120Hz	Load Life Hours @ +105°C
NACVF100M160V10X14TR13T2F	10	160	0.15	70	24.9	3,000
NACVF330M160V12.5X17TR13T2F	33		0.15	470	7.55	5,000
NACVF470M160V16X17TR13T2F	47		0.15	600	5.30	5,000
NACVF680M160V18X17TR13T2F	68		0.15	750	3.66	5,000
NACVF680M160V16X22TR13T2F						
NACVF101M160V18X22TR13T2F	100		0.15	1060	2.49	5,000
NACVF100M200V10X18TR13T2F	10	200	0.15	80	24.9	4,000
NACVF220M200V12.5X17TR13T2F	22		0.15	470	11.3	5,000
NACVF330M200V16X17TR13T2F	33		0.15	600	7.55	5,000
NACVF470M200V18X17TR13T2F	47		0.15	600	5.30	5,000
NACVF680M200V16X22TR13T2F	68		0.15	750	3.66	5,000
NACVF101M200V18X22TR13T2F	100		0.15	1060	2.49	5,000
NACVF100M250V10X18TR13T2F	10	250	0.15	88	24.9	4,000
NACVF220M250V16X17TR13T2F	22		0.15	560	11.3	5,000
NACVF330M250V18X17TR13T2F	33		0.15	560	7.55	5,000
NACVF470M250V16X22TR13T2F	47		0.15	710	5.30	5,000
NACVF680M250V18X22TR13T2F	68		0.15	990	3.66	5,000
NACVF3R3M350V10X14TR13T2F	3.3		350	0.20	38	101
NACVF4R7M350V10X18TR13T2F	4.7	0.20		50	70.7	3,000
NACVF100M350V16X17TR13T2F	10	0.20		270	33.2	5,000
NACVF220M350V18X17TR13T2F	22	0.20		350	15.1	5,000
NACVF330M350V16X22TR13T2F	33	0.20		480	10.1	5,000
NACVF470M350V18X22TR13T2F	47	0.20		670	7.07	5,000
NACVF3R3M400V10X14TR13T2F	3.3	400	0.24	40	121	3,000
NACVF4R7M400V10X18TR13T2F	4.7		0.24	50	84.8	4,000
NACVF100M400V16X17TR13T2F	10		0.24	250	39.9	5,000
NACVF220M400V16X22TR13T2F	22		0.24	410	18.1	5,000
NACVF330M400V18X22TR13T2F	33		0.24	600	12.1	5,000
NACVF2R2M450V10X14TR13T2F	2.2		450	0.24	29	181
NACVF3R3M450V10X18TR13T2F	3.3	0.24		41	121	4,000
NACVF4R7M450V12.5X17TR13T2F	4.7	0.24		49	84.8	5,000
NACVF100M450V18X17TR13T2F	10	0.24		310	39.9	5,000
NACVF220M450V18X22TR13T2F	22	0.24		560	18.1	5,000

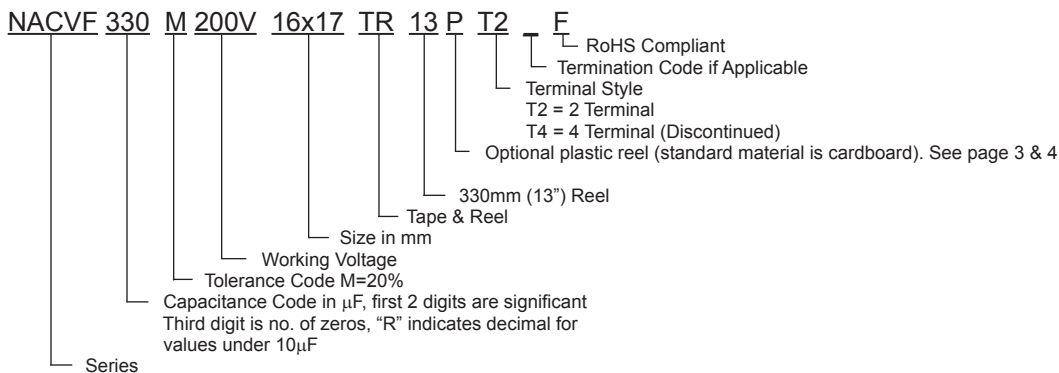
## RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

Voltage (Vdc)	Frequency (Hz)			
	120	1K	10K ~ 30K	31K ~ 100K
160V ~ 250V	0.55	0.85	0.90	1.00
350V ~ 450V	0.50	0.80	0.90	1.00

## TERMINATION CODES

Case Diameter	Termination Material	Termination Code
10 ~ 12.5mm φ	97% Sn, 3% Bi	None
	100% Sn	S
16 ~ 18mm φ	100% Sn	None

## PART NUMBER SYSTEM



Review & Compare Reflow Soldering Heat Limits  
V-chip SMT Aluminum Electrolytic Capacitors  
[www.niccomp.com/RSL](http://www.niccomp.com/RSL)



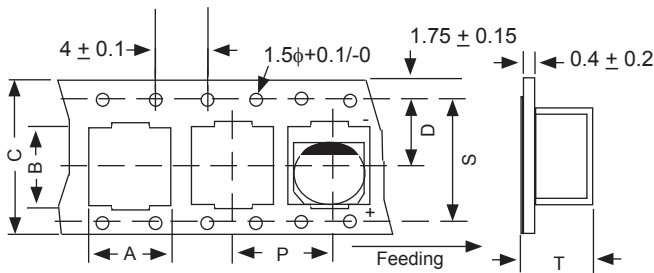
# Surface Mount Aluminum Electrolytic Capacitors NACVF Series

## CARRIER TAPE

Case Size	A ±0.5	B ±0.2	C ±0.3	D ±0.1	P ±0.1	S ±0.1	T ±0.2
10x14	10.7	10.7	32.0	14.2	20.0	28.4	14.5
10x18	10.7	10.7	32.0	14.2	20.0	28.4	18.5
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

## 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.



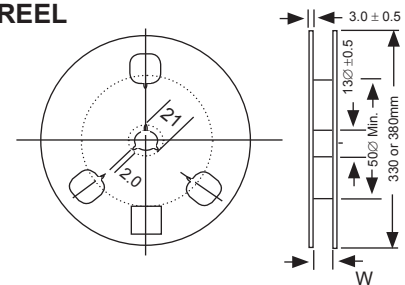
## TR13 330mm (13") CARDBOARD REEL

## TR15 380mm (15") CARDBOARD REEL

(See page 4 for plastic reel dimensions)

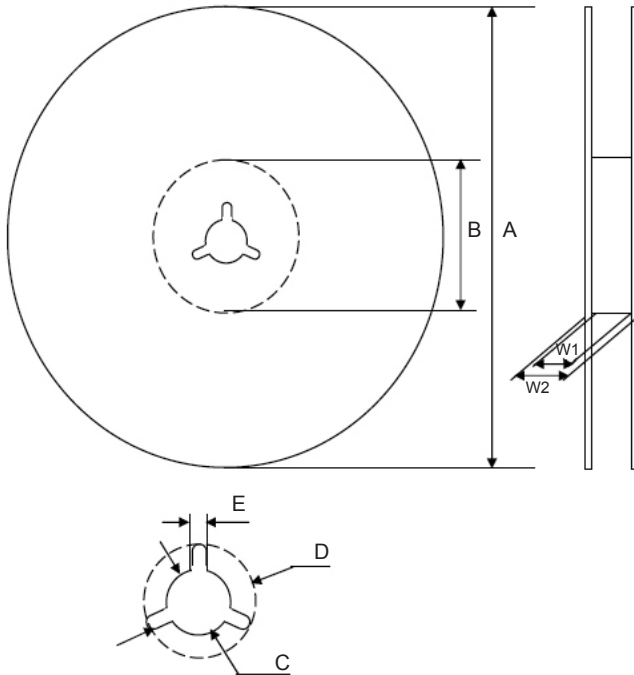
Case Size	W ±1.0	Quantity Per Reel	
		13" Reel (Std)	15" Reel (Opt.)
10x14	34.0	250 pcs	300 pcs
10x18	34.0	250 pcs	300 pcs
12.5x17	34.0	150 pcs	200 pcs
12.5x22	34.0	125 pcs	150 pcs
16x17	46.0	125 pcs	150 pcs
16x22	46.0	75 pcs	100 pcs
18x17	46.0	125 pcs	150 pcs
18x22	46.0	75 pcs	100 pcs

## REEL



# Surface Mount Aluminum Electrolytic Capacitors NACVF Series

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



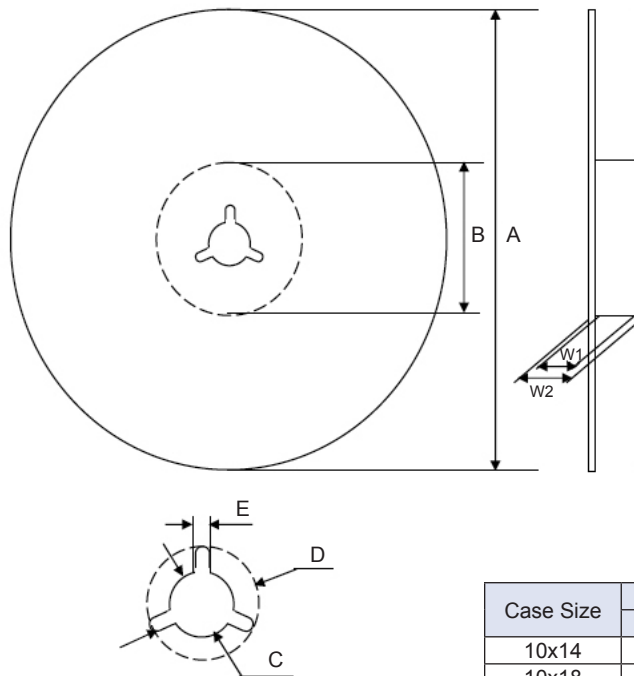
### Dimensions (mm)

Case Size	Tape Width	W1	W2
10x14, 10x18, 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
10x14, 10x18, 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 $\pm 0.5$
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
10x14, 10x18, 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
10x14, 10x18, 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 $\pm 0.5$
16x17, 16x22, 18x17, 18x22	44.0					

Color
Black or Blue

Case Size	Quantity Per Reel	
	13" Reel (Std)	15" Reel (Opt.)
10x14	250 pcs	300 pcs
10x18	250 pcs	300 pcs
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

