

# Surface Mount Aluminum Electrolytic Capacitors NACY Series

## FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- LOW IMPEDANCE AT 100KHz (Up to 20% lower than NACZ)
- WIDE TEMPERATURE RANGE (-55 +105°C)
- DESIGNED FOR AUTOMATIC MOUNTING AND 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

**Available with Wide Anti-Vibration Terminations**



## CHARACTERISTICS

Rated Capacitance Range		2.2 ~ 6800 $\mu$ F										
Operating Temperature Range		- 55°C + 105°C										
Capacitance Tolerance		$\pm$ 20% (120Hz/+20°C)										
Max. Leakage Current after 2 minutes at 20°C		0.01CV or 3 $\mu$ A										
Max. Tan $\delta$ at 120Hz & 20°C	W.V.(Vdc)	6.3	10	16	25	35	50	63	80	100		
	S.V.(Vdc)	8	13	20	32	44	63	80	100	125		
	Tan $\delta$	$\phi$ 4 to $\phi$ 6.3	0.24	0.20	0.16	0.14	0.12	0.12	0.10	0.08	0.07	
		$\phi$ 8 ~ $\phi$ 16	C $\leq$ 1500 $\mu$ F	0.28	0.24	0.20	0.16	0.14	0.14	0.12	0.10	0.08
			C=2200 $\mu$ F	-	0.26	-	0.18	-	-	-	-	-
			C=3300 $\mu$ F	0.32	-	0.24	-	-	-	-	-	-
C=4700 $\mu$ F	-		0.30	-	-	-	-	-	-	-		
	C=6800 $\mu$ F	0.36	-	-	-	-	-	-	-	-		
Low Temperature Stability (Impedance Ratio at 120 Hz)	Z -40°C/Z +20°C	3	2	2	2	2	2	2	2	2		
	Z -55°C/Z +20°C	5	4	4	3	3	3	3	3	3		
Load Life Test AT 105°C 4 ~ 6.3mm Dia 1,000 Hours 8 ~ 12.5mm Dia 2,000 Hours	Capacitance Change	Within $\pm$ 25% of initial measured value										
	Tan $\delta$	Less than 200% of the specified value										
	Leakage Current	Less than the specified maximum value										

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

Cap ( $\mu$ F)	Code	Working Voltage (Vdc)									
		6.3	10	16	25	35	50	63	80	100	
2.2	2R2	-	-	-	-	-	-	-	-	6.3x6.3	
3.3	3R3	-	-	-	-	-	-	-	-	6.3x6.3	
4.7	4R7	-	-	-	-	4x6.3	4x6.3	5x6.3	6.3x6.3	6.3x6.3	
10	100	-	-	-	4x6.3	5x6.3	6.3x6.3	6.3x6.3	6.3x8	6.3x8	
15	150	-	-	4x6.3	5x6.3	5x6.3	-	-	-	-	
22	220	-	4x6.3	5x6.3	5x6.3	5x6.3	6.3x6.3	6.3x8	8x10.5	8x10.5	
27	270	4x6.3	-	-	-	-	-	-	-	-	
33	330	-	5x6.3	-	6.3x6.3	6.3x6.3	6.3x8	8x10.5	8x10.5	10x10.5	
47	470	5x6.3	-	6.3x6.3	6.3x6.3	6.3x6.3	6.3x8	8x10.5	10x10.5	12.5x14	
56	560	5x6.3	-	-	6.3x6.3	-	-	-	-	-	
68	680	-	6.3x6.3	6.3x6.3	6.3x6.3	6.3x8	-	-	12.5x14	12.5x14	
100	101	6.3x6.3	-	6.3x6.3	6.3x8	8x10.5	8x10.5	10x10.5	12.5x14	16x17	
150	151	6.3x6.3	6.3x6.3	6.3x8	8x10.5	8x10.5	-	-	12.5x14	16x17	
220	221	6.3x6.3	6.3x8	6.3x8	8x10.5	8x10.5	10x10.5	12.5x14	-	-	
330	331	6.3x8	8x10.5	8x10.5	8x10.5	10x10.5	12.5x14	-	16x17	-	
470	471	8x10.5	8x10.5	8x10.5	10x10.5	12.5x14	-	16x17	-	-	
680	681	8x10.5	-	10x10.5	-	12.5x14	-	-	-	-	
1000	102	8x10.5	10x10.5	-	12.5x14	16x17	16x17	-	-	-	
1500	152	10x10.5	-	12.5x14	-	16x17	-	-	-	-	
2200	222	-	12.5x14	-	16x17	-	-	-	-	-	
3300	332	12.5x14	-	16x17	-	-	-	-	-	-	
4700	472	-	16x17	-	-	-	-	-	-	-	
6800	682	16x17	-	-	-	-	-	-	-	-	



# Surface Mount Aluminum Electrolytic Capacitors NACY 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. Z (Ω) +20°C/100kHz	Load Life Hours @ +105°C
NACY270M6.3V4X6.3TR_F	27	6.3	0.24	90	1.45	1,000
NACY470M6.3V5X6.3TR_F	47		0.24	170	0.7	1,000
NACY560M6.3V5X6.3TR_F	56		0.24	170	0.7	1,000
NACY101M6.3V6.3X6.3TR_F	100		0.24	250	0.39	1,000
NACY151M6.3V6.3X6.3TR_F	150		0.24	250	0.39	1,000
NACY221M6.3V6.3X6.3TR_F	220		0.24	250	0.39	1,000
NACY331M6.3V6.3X8TR_F	330		0.24	300	0.3	1,000
NACY471M6.3V8X10.5TR_F	470		0.28	600	0.15	2,000
NACY681M6.3V8X10.5TR_F	680		0.28	600	0.15	2,000
NACY102M6.3V8X10.5TR_F	1000		0.28	600	0.15	2,000
NACY152M6.3V10X10.5TR_F	1500		0.28	850	0.08	2,000
NACY332M6.3V12.5X14TR_F	3300		0.32	1150	0.058	2,000
NACY682M6.3V16X17TR_F	6800		0.36	1800	0.035	2,000
NACY220M10V4X6.3TR_F	22	10	0.20	90	1.45	1,000
NACY330M10V5X6.3TR_F	33		0.20	170	0.7	1,000
NACY680M10V6.3X6.3TR_F	68		0.20	250	0.39	1,000
NACY151M10V6.3X6.3TR_F	150		0.20	250	0.39	1,000
NACY221M10V6.3X8TR_F	220		0.20	300	0.3	1,000
NACY331M10V8X10.5TR_F	330		0.24	600	0.15	2,000
NACY471M10V8X10.5TR_F	470		0.24	600	0.15	2,000
NACY102M10V10X10.5TR_F	1000		0.24	850	0.08	2,000
NACY222M10V12.5X14TR_F	2200		0.26	1150	0.058	2,000
NACY472M10V16X17TR_F	4700		0.30	1800	0.035	2,000
NACY150M16V4X6.3TR_F	15	16	0.16	90	1.45	1,000
NACY220M16V5X6.3TR_F	22		0.16	170	0.7	1,000
NACY470M16V6.3X6.3TR_F	47		0.16	250	0.39	1,000
NACY680M16V6.3X6.3TR_F	68		0.16	250	0.39	1,000
NACY101M16V6.3X6.3TR_F	100		0.16	250	0.39	1,000
NACY151M16V6.3X8TR_F	150		0.16	300	0.3	1,000
NACY221M16V6.3X8TR_F	220		0.16	300	0.3	1,000
NACY331M16V8X10.5TR_F	330		0.20	600	0.15	2,000
NACY471M16V8X10.5TR_F	470		0.20	600	0.15	2,000
NACY681M16V10X10.5TR_F	680		0.20	850	0.08	2,000
NACY152M16V12.5X14TR_F	1500		0.20	1150	0.058	2,000
NACY332M16V16X17TR_F	3300		0.24	1800	0.035	2,000
NACY100M25V4X6.3TR_F	10		25	0.14	90	1.45
NACY150M25V5X6.3TR_F	15	0.14		170	0.7	1,000
NACY220M25V5X6.3TR_F	22	0.14		170	0.7	1,000
NACY330M25V6.3X6.3TR_F	33	0.14		250	0.39	1,000
NACY470M25V6.3X6.3TR_F	47	0.14		250	0.39	1,000
NACY560M25V6.3X6.3TR_F	56	0.14		250	0.39	1,000
NACY680M25V6.3X6.3TR_F	68	0.14		250	0.39	1,000
NACY101M25V6.3X8TR_F	100	0.14		300	0.3	1,000
NACY151M25V8X10.5TR_F	150	0.16		600	0.15	2,000
NACY221M25V8X10.5TR_F	220	0.16		600	0.15	2,000
NACY331M25V8X10.5TR_F	330	0.16		600	0.15	2,000
NACY471M25V10X10.5TR_F	470	0.16		850	0.08	2,000
NACY102M25V12.5X14TR_F	1000	0.16		1150	0.058	2,000
NACY222M25V16X17TR_F	2200	0.18		1800	0.035	2,000
NACY4R7M35V4X6.3TR_F	4.7	35	0.12	90	1.45	1,000
NACY100M35V5X6.3TR_F	10		0.12	170	0.7	1,000
NACY150M35V5X6.3TR_F	15		0.12	170	0.7	1,000
NACY220M35V5X6.3TR_F	22		0.12	170	0.7	1,000
NACY330M35V6.3X6.3TR_F	33		0.12	250	0.39	1,000
NACY470M35V6.3X6.3TR_F	47		0.12	250	0.39	1,000
NACY680M35V6.3X8TR_F	68		0.12	300	0.30	1,000
NACY101M35V8X10.5TR_F	100		0.14	600	0.15	2,000
NACY151M35V8X10.5TR_F	150		0.14	600	0.15	2,000
NACY221M35V8X10.5TR_F	220		0.14	600	0.15	2,000

Part Number Suffix Where \_\_: Preferred (15" reel) = 15, Legacy (13" reel) = 13 (check with NIC for availability)

For Automotive Equipment, see part number system



# Surface Mount Aluminum Electrolytic Capacitors NACY 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. Z (Ω) +20°C/100kHz	Load Life Hours @ +105°C
NACY331M35V10X10.5TR_F	330	35	0.14	850	0.08	2,000
NACY471M35V12.5X14TR_F	470		0.14	1150	0.058	2,000
NACY681M35V12.5X14TR_F	680		0.14	1150	0.058	2,000
NACY102M35V16X17TR_F	1000		0.14	1800	0.035	2,000
NACY152M35V16X17TR_F	1500		0.14	1800	0.035	2,000
NACY4R7M50V4X6.3TR_F	4.7	50	0.12	64	2.55	1,000
NACY100M50V6.3X6.3TR_F	10		0.12	215	0.52	1,000
NACY220M50V6.3X6.3TR_F	22		0.12	215	0.52	1,000
NACY330M50V6.3X8TR_F	33		0.12	243	0.44	1,000
NACY470M50V6.3X8TR_F	47		0.12	243	0.44	1,000
NACY101M50V8X10.5TR_F	100		0.14	400	0.22	2,000
NACY221M50V10X10.5TR_F	220		0.14	585	0.13	2,000
NACY331M50V12.5X14TR_F	330		0.14	800	0.10	2,000
NACY102M50V16X17TR_F	1000		0.14	1610	0.065	2,000
NACY4R7M63V5X6.3TR_F	4.7		63	0.10	55	2.00
NACY100M63V6.3X6.3TR_F	10	0.10		90	1.00	1,000
NACY220M63V6.3X8TR_F	22	0.10		135	0.80	1,000
NACY330M63V8X10.5TR_F	33	0.12		280	0.35	2,000
NACY470M63V8X10.5TR_F	47	0.12		280	0.35	2,000
NACY101M63V10X10.5TR_F	100	0.12		480	0.20	2,000
NACY221M63V12.5X14TR_F	220	0.12		800	0.14	2,000
NACY471M63V16X17TR_F	470	0.12		1410	0.065	2,000
NACY4R7M80V6.3X6.3TR_F	4.7	80	0.08	45	2.40	1,000
NACY100M80V6.3X8TR_F	10		0.08	65	2.00	1,000
NACY220M80V8X10.5TR_F	22		0.10	140	0.90	2,000
NACY330M80V8X10.5TR_F	33		0.10	140	0.90	2,000
NACY470M80V10X10.5TR_F	47		0.10	220	0.50	2,000
NACY680M80V12.5X14TR_F	68		0.10	500	0.24	2,000
NACY101M80V12.5X14TR_F	100		0.10	500	0.24	2,000
NACY151M80V12.5X14TR_F	150		0.10	500	0.24	2,000
NACY331M80V16X17TR_F	330	0.10	800	0.14	2,000	
NACY2R2M100V6.3X6.3TR_F	2.2	100	0.07	42	2.70	1,000
NACY3R3M100V6.3X6.3TR_F	3.3		0.07	45	2.40	1,000
NACY4R7M100V6.3X6.3TR_F	4.7		0.07	45	2.40	1,000
NACY100M100V6.3X8TR_F	10		0.07	65	2.00	1,000
NACY220M100V8X10.5TR_F	22		0.08	140	0.90	2,000
NACY330M100V10X10.5TR_F	33		0.08	220	0.50	2,000
NACY470M100V12.5X14TR_F	47		0.08	500	0.24	2,000
NACY680M100V12.5X14TR_F	68		0.08	500	0.24	2,000
NACY101M100V16X17TR_F	100		0.08	800	0.14	2,000
NACY151M100V16X17TR_F	150		0.08	800	0.14	2,000

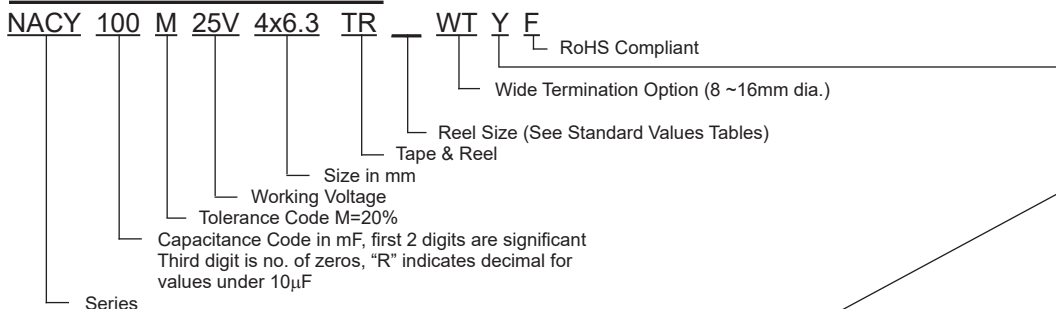
Part Number Suffix Where **\_** : Preferred (15" reel) = 15, Legacy (13" reel) = 13 (check with NIC for availability)  
 For Automotive Equipment, see part number system

### RIPPLE CURRENT

### FREQUENCY CORRECTION FACTOR

Frequency	≤ 120Hz	≤ 1KHz	≤ 10KHz	≤ 100KHz
Correction Factor	0.75	0.85	0.95	1.00

### PART NUMBER SYSTEM



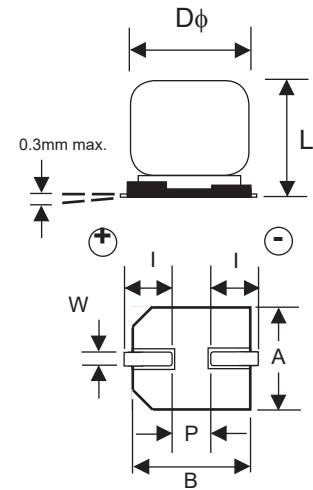
Optional: Suitable for automotive equipment, sourced to special production and inspection at IATF-16949 certified production site



# Surface Mount Aluminum Electrolytic Capacitors NACY Series

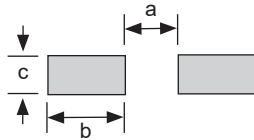
## DIMENSIONS (mm)

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
4x6.3	4.0	6.3	4.3	4.3	1.8	0.5 ~ 0.8	1.0
5x6.3	5.0	6.3	5.3	5.3	2.2	0.5 ~ 0.8	1.5
6.3x6.3	6.3	6.3	6.6	6.6	2.5	0.5 ~ 0.8	2.2
6.3x8	6.3	8.0	6.6	6.6	2.5	0.5 ~ 0.8	2.2
8x10.5	8.0	10.5	8.3	8.3	2.9	0.7 ~ 1.1	3.2
10x10.5	10.0	10.5	10.3	10.3	3.2	0.7 ~ 1.4	4.6
12.5x14	12.5	14.0	12.8	12.8	4.5	1.0 ~ 1.4	4.6
16x17	16.0	17	16.3	16.3	5.0	1.7 ~ 2.1	7.0



## RECOMMENDED LAND PATTERN DIMENSIONS (mm)

Case Size	a	b	c
4 $\phi$	1.0	2.6	1.8
5 $\phi$	1.4	3.0	1.8
6.3 $\phi$	1.8	3.6	1.8
8 $\phi$	2.8	4.1	2.1
10 $\phi$	4.3	4.4	2.5



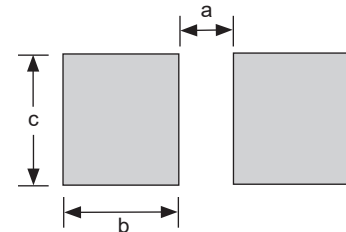
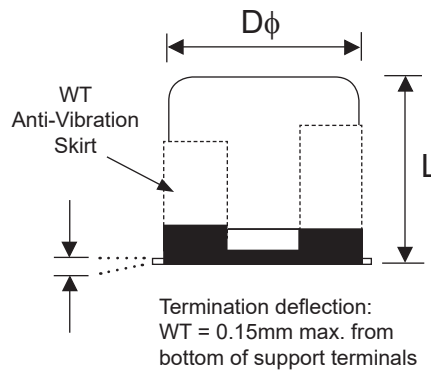
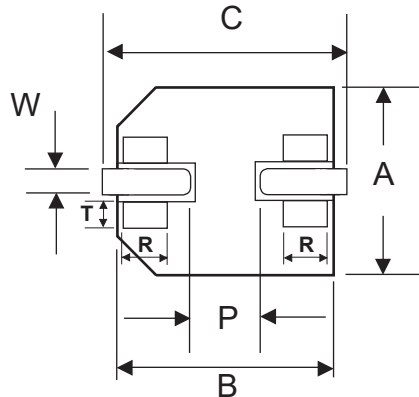
## WT (WIDE TERMINATIONS) COMPONENT DIM. (mm)

Case Size	a	b	c
8x10.5	2.5	4.5	4.7
10x10.5	3.8	4.8	4.7
12.5x14	3.8	6.1	6.9
16x17	5.0	8.0	9.5

## WT (WIDE TERMINATIONS) COMPONENT DIM. (mm)

Case Size	D $\phi$ $\pm$ 0.5	L max.	A, B $\pm$ 0.2	C $\pm$ 0.2	P	W	R	T
8x10.5	8.0	11.0	8.3	9.0	(3.2)	0.7 ~ 1.0	(0.7)	(1.3)
10x10.5	10.0	11.0	10.3	11.0	(4.6)	1.0 ~ 1.4	(0.7)	(1.3)
12.5x14	12.5	14.5	13.5	14.2	(4.6)	1.0 ~ 1.4	(2.2)	(2.4)
16x17	16.0	17.5	17.0	18.0	(7.0)	1.7 ~ 2.1	(3.0)	(2.0)

(Reference dimensions)

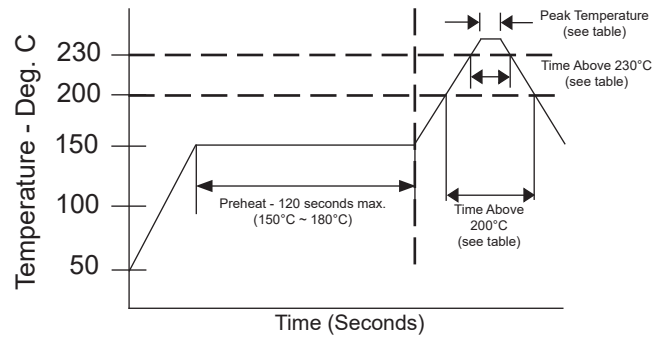


WT (Wide Terminations) Anti-Vibration Test	
Test Method	Direction: X, Y, Z axis Frequency & Duration: 5 to 2000Hz reciprocation for 20 minutes, 2 hours each direction Peak to Peak Amplitude: 5mm Peak Acceleration: 30G Sweep Type: Log
$\Delta$ Capacitance	Within $\pm$ 10% of initial value
Tangent of Loss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

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

## REFLOW TEMPERATURES AND DURATION

Voltage	Diameter	Time above 200°C	Time above 217°C	Time above 230°C	Peak Temperature
6.3 ~ 63V	4 ~ 6.3mm $\phi$	70 sec. max.	60 sec. max.	40 sec. max.	250°C
	8mm $\phi$	60 sec. max.	50 sec. max.	30 sec. max.	245°C
	10mm ~ 12mm $\phi$	50 sec. max.	40 sec. max.	20 sec. max.	240°C
	16mm $\phi$	50 sec. max.	30 sec. max.	15 sec. max.	235°C
80V ~ 100V	6.3mm $\phi$	60 sec. max.	50 sec. max.	40 sec. max.	250°C
	8mm $\phi$	60 sec. max.	40 sec. max.	30 sec. max.	240°C
	10mm $\phi$	50 sec. max.	30 sec. max.	20 sec. max.	240°C
	12mm $\phi$	50 sec. max.	30 sec. max.	20 sec. max.	235°C
	16mm $\phi$	45 sec. max.	20 sec. max.	10 sec. max.	235°C



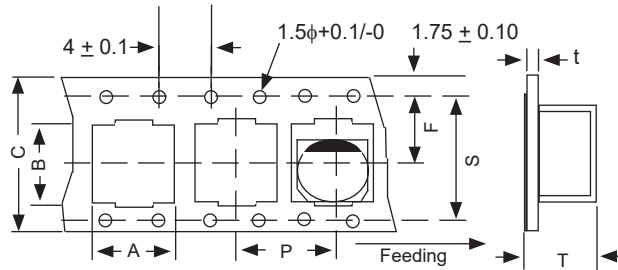
### PRECAUTIONS

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 NACY Series

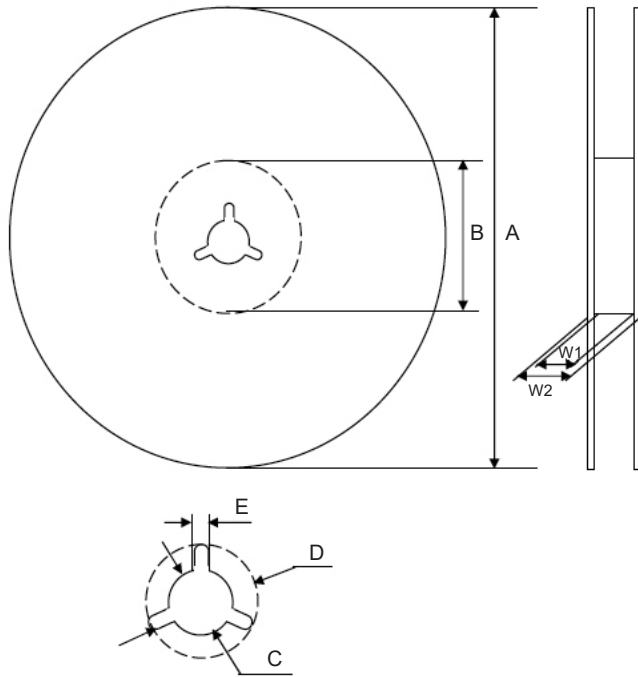
## CARRIER TAPE DIMENSIONS & REEL QTY

Case Size	A ±0.5	B ±0.5	C ±0.3	F ±0.1	P ±0.1	S ±0.1	T ±0.2	t ±0.1
4x6.3	4.7	4.7	12.0	5.5	8.0	-	6.4	0.6
5x6.3	5.7	5.7	12.0	5.5	12.0	-	6.4	0.6
6.3x6.3	7.0	7.0	16.0	7.5	12.0	-	6.5	0.6
6.3x8	7.0	7.0	16.0	7.5	12.0	-	8.2	0.6
8x10.5	8.7	8.7	24.0	11.5	16.0	-	11.1	0.6
10x10.5	10.7	10.7	24.0	11.5	16.0	-	11.2	0.6
12.5x14	13.2	13.2	32.0	14.3	24.0	28.4	14.3	0.6
16x17	17.5	17.5	44.0	20.2	28	40.4	17.3	0.6



# Surface Mount Aluminum Electrolytic Capacitors NACY Series

## Preferred V-Chip 15" (380mm) Reels (TR15 suffix)



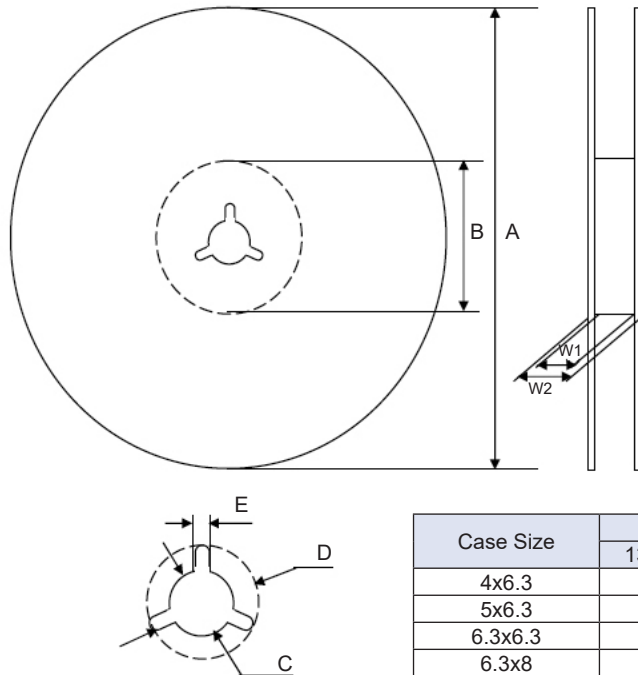
### Dimensions (mm)

Case Size	Tape Width	W1	W2
4x6.3, 5x6.3	12.0	12.5 ~ 14.0	15.5 ~ 20.0
6.3x6.3, 6.3x8	16.0	16.5 ~ 18.0	19.5 ~ 24.0
8x10.5, 10x10.5	24.0	24.5 ~ 26.0	27.5 ~ 32.0
12.5x14	32.0	33.0 ~ 34.0	36.5 ~ 38.5
16x17	44.0	45.0 ~ 46.0	48.5 ~ 50.5

Case Size	Tape Width	A	B	C	D	E
4x6.3, 5x6.3	12.0	$\phi 380$ $\pm 2$	$\phi 80 \sim 105$	$\phi 13$ $\pm 0.5$	$\phi 21$ $\pm 1.0$	2.0 $\pm 0.5$
6.3x6.3, 6.3x8	16.0					
8x10.5, 10x10.5	24.0					
12.5x14	32.0					
16x17	44.0					

Color
Black or Blue

## Optional V-Chip 13" (330mm) Reels (TR13 suffix)



### Dimensions (mm)

Case Size	Tape Width	W1	W2
4x6.3, 5x6.3	12.0	12.4 ~ 14.4	15.5 ~ 20.0
6.3x6.3, 6.3x8	16.0	16.4 ~ 18.4	19.5 ~ 24.0
8x10.5, 10x10.5	24.0	24.4 ~ 26.4	27.5 ~ 32.0

Case Size	Tape Width	A	B	C	D	E
4x6.3, 5x6.3	12.0	$\phi 330$ $\pm 2.0$	$\phi 50 \sim 105$	$\phi 13$ $\pm 0.5$	$\phi 21$ $\pm 1.0$	2.0 $\pm 0.5$
6.3x6.3, 6.3x8	16.0					
8x10.5, 10x10.5	24.0					

Color
Black or Blue

Case Size	Quantity Per Reel	
	13" (330mm) Reel	15" (380mm) Reel
4x6.3	1,200 pcs	2,000 pcs
5x6.3	800 pcs	1,000 pcs
6.3x6.3	800 pcs	1,000 pcs
6.3x8	500 pcs	900 pcs
8x10.5	300 pcs	500 pcs
10x10.5	300 pcs	500 pcs
12.5x14	N/A	250 pcs
16x17	N/A	200 pcs