

SURFACE MOUNT TYPE LOW IMPEDANCE LONG LIFE ALUMINUM ELECTROLYTIC CAPACITORS, POLARIZED

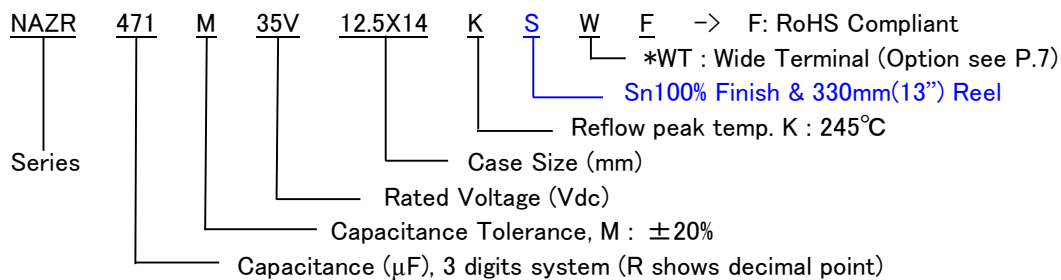
G RoHS COMPLIANT

- VERY LOW IMPEDANCE
- WIDE TEMPERATURE RANGE (-55~+105°C)
- LONG LIFE (5000 HOURS @ 105°C)
- AVAILABLE WITH ANTI-VIBRATION WIDE TERMINATIONS

CHARACTERISTICS

Rated Voltage Range		6.3 ~ 100 Vdc								
Capacitance Range		47 ~ 10000 μF								
Operating Temperature Range		-55 ~ +105 °C								
Capacitance Tolerance		±20%(M)								
Max. Leakage Current After 2 minutes @20°C		0.01CV or 3μA, whichever is greater								
Max. Tan δ at 120Hz & 20°C	R.V. (Vdc)	6.3	10	16	25	35	50	63	80	100
	S.V. (Vdc)	8	13	20	32	44	63	79	100	125
	Tan δ @120Hz/20°C	0.26	0.19	0.16	0.14	0.12	0.10	0.09	0.09	0.08
	When nominal capacitance is over 1000μF, tan δ shall be added 0.02 to the listed									
Low Temperature Stability Impedance Ratio @ 120Hz	R.V. (Vdc)	6.3	10	16	25	35	50	63	80	100
	Z-25°C/Z+20°C	2	2	2	2	2	2	2	2	2
	Z-40°C/Z+20°C	3	3	3	3	3	3	3	3	3
	Z-55°C/Z+20°C	4	4	4	3	3	3	3	3	3
Load Life Test 105°C With Rated Voltage	Test	5000 hrs.								
	Capacitance Change	Within ±30% of initial measured value								
	Tan δ	Less than 200% of specified value								
	Leakage Current	Less than specified value								
Shelf Life Test 1000 hours at 105°C	Capacitance Change	Within ±25% of initial measured value								
	Tan δ	Less than 200% of specified value								
	Leakage Current	Less than specified value								
Resistance to soldering heat	Capacitors placed on a 240°C hot plate for 30 seconds with their electrode terminals facing downward will fulfill the following conditions after being cooled to room temperature.									
	Capacitance Change	Within ±10% of the initial measured value								
	Tan δ	Less than the specified value								
	Leakage Current	Less than the specified value								

PART NUMBER SYSTEM



STANDARD PRODUCT TABLE (ΦDXL mm)

R.V.(Vdc) Cap.(μF)	6.3	10	16	25	35	50	63	80	100
47									12.5X14
68								12.5X14	
100								12.5X14	16X17
110									12.5X14
150							12.5X14		12.5X16.5
180								12.5X14	
200									16X17
220							12.5X14	12.5X16.5	18X17
270									18X17
330						12.5X14	12.5X16.5	16X17	16X22
390						12.5X14			
470					12.5X14	12.5X16.5 16X17	16X17	18X17	18X22
560						16X17		16X22	
680					12.5X14	16X17	18X17 16X22	18X22	
820						18X17			
1000				12.5X14	16X17	18X17 16X22	18X22		
1300						16X22			
1500			12.5X14	16X17	18X17	18X22			
2200	12.5X14	12.5X16.5	16X17	18X17	16X22				
3300	12.5X16.5	16X17	18X17	18X22					
4700	16X17	18X17	16X22						
6800	16X22	18X22							
10000	18X22								

IMPEDANCE (Ω MAX./100kHz & 20°C)

R.V.(Vdc) Cap.(μF)	6.3	10	16	25	35	50	63	80	100
47									0.28
68								0.28	
100								0.28	0.17
110									0.28
150							0.17		0.21
180								0.28	
200									0.17
220							0.17	0.21	0.15
270									0.15
330						0.12	0.14	0.17	0.11
390						0.12			
470					0.065	0.10 0.075	0.12	0.15	0.091
560						0.075		0.11	
680					0.065	0.075	0.11 0.08	0.091	
820						0.07			
1000				0.065	0.045	0.07 0.05	0.07		
1300						0.05			
1500			0.065	0.045	0.044	0.045			
2200	0.065	0.055	0.045	0.044	0.029				
3300	0.055	0.045	0.044	0.028					
4700	0.045	0.044	0.029						
6800	0.029	0.028							
10000	0.028								

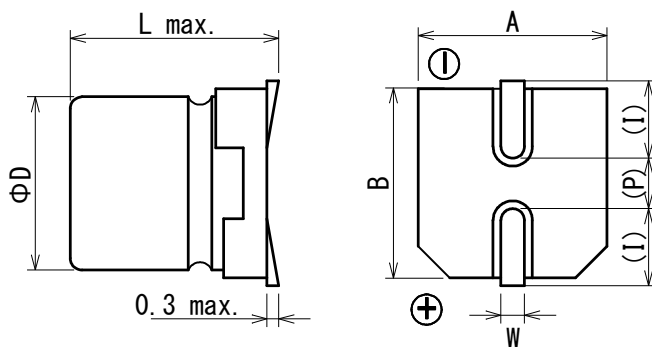
PERMISSIBLE RIPPLE CURRENT (mA r.m.s/100kHz & 105°C)

R.V.(Vdc) Cap.(μF)	6.3	10	16	25	35	50	63	80	100
47									740
68								740	
100								740	1090
110									740
150							800		900
180								740	
200									1090
220							800	900	1280
270									1280
330						900	1000	1090	1580
390						900			
470					1100	1200	1410	1280	1690
560						1610		1580	
680					1100	1610	1690	1690	
820						1700			
1000				1100	1800	1700	1960		
1300						2000			
1500			1100	1800	2060	2200			
2200	1100	1400	1800	2060	2330				
3300	1400	1800	2060	2640					
4700	1800	2060	2330						
6800	2330	2640							
10000	2640								

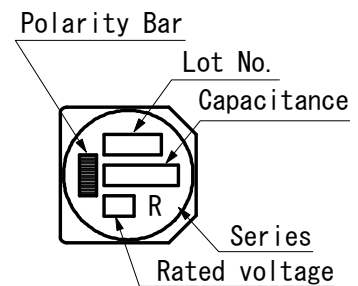
MULTIPLIER FOR RIPPLE CURRENT (Frequency coefficient)

Frequency Capacitance(μF)	120	1k	10k	100k≤
47 ~ 200	0.50	0.80	0.95	1.00
220 ~ 10000	0.60	0.85	0.95	1.00

DIMENSIONS (mm)



MARKING



Case Size	φ D±0.5	L max.	A±0.2	B±0.2	(I)	W	(P)
12.5X14	12.5	14	13.0	13.0	4.9	0.8~1.1	4.5
12.5X16.5	12.5	16.5	13.0	13.0	4.9	0.8~1.1	4.5
16X17	16	17	17.0	17.0	6.0	1.0~1.6	6.8
16X22	16	22	17.0	17.0	6.0	1.0~1.6	6.8
18X17	18	17	19.0	19.0	7.0	1.0~1.6	6.8
18X22	18	22	19.0	19.0	7.0	1.0~1.6	6.8

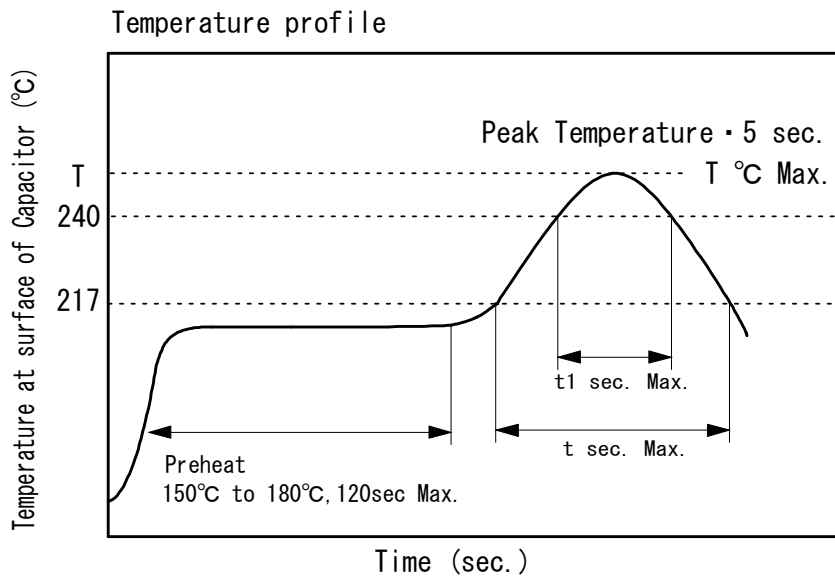
() : Reference value



STANDARD PRODUCTS AND SPECIFICATIONS

Part number	Size	R.V. (μ F)	Cap. (μ F)	Tan δ	MAX.IMP (Ω) +20°C,100kHz	Ripple current (mA) 105°C,100kHz	Life
NAZR222M6.3V12.5X14KSF	12.5X14	6.3V	2200	0.28	0.065	1100	5000
NAZR332M6.3V12.5X16.5KSF	12.5X16.5		3300	0.30	0.055	1400	5000
NAZR472M6.3V16X17KSF	16X17		4700	0.32	0.045	1800	5000
NAZR682M6.3V16X22KSF	16X22		6800	0.36	0.029	2330	5000
NAZR103M6.3V18X22KSF	18X22		10000	0.44	0.028	2640	5000
NAZR222M10V12.5X16.5KSF	12.5X16.5	10V	2200	0.21	0.055	1400	5000
NAZR332M10V16X17KSF	16X17		3300	0.23	0.045	1800	5000
NAZR472M10V18X17KSF	18X17		4700	0.25	0.044	2060	5000
NAZR682M10V18X22KSF	18X22		6800	0.29	0.028	2640	5000
NAZR152M16V12.5X14KSF	12.5X14	16V	1500	0.16	0.065	1100	5000
NAZR222M16V16X17KSF	16X17		2200	0.18	0.045	1800	5000
NAZR332M16V18X17KSF	18X17		3300	0.20	0.044	2060	5000
NAZR472M16V16X22KSF	16X22		4700	0.22	0.029	2330	5000
NAZR102M25V12.5X14KSF	12.5X14	25V	1000	0.14	0.065	1100	5000
NAZR152M25V16X17KSF	16X17		1500	0.14	0.045	1800	5000
NAZR222M25V18X17KSF	18X17		2200	0.16	0.044	2060	5000
NAZR332M25V18X22KSF	18X22		3300	0.18	0.028	2640	5000
NAZR471M35V12.5X14KSF	12.5X14	35V	470	0.12	0.065	1100	5000
NAZR681M35V12.5X14KSF	12.5X14		680	0.12	0.065	1100	5000
NAZR102M35V16X17KSF	16X17		1000	0.12	0.045	1800	5000
NAZR152M35V18X17KSF	18X17		1500	0.12	0.044	2060	5000
NAZR222M35V16X22KSF	16X22		2200	0.14	0.029	2330	5000
NAZR331M50V12.5X14KSF	12.5X14	50V	330	0.10	0.12	900	5000
NAZR391M50V12.5X14KSF	12.5X14		390	0.10	0.12	900	5000
NAZR471M50V12.5X16.5KSF	12.5X16.5		470	0.10	0.10	1200	5000
NAZR471M50V16X17KSF	16X17		470	0.10	0.075	1610	5000
NAZR561M50V16X17KSF	16X17		560	0.10	0.075	1610	5000
NAZR681M50V16X17KSF	16X17		680	0.10	0.075	1610	5000
NAZR821M50V18X17KSF	18X17		820	0.10	0.07	1700	5000
NAZR102M50V18X17KSF	18X17		1000	0.10	0.07	1700	5000
NAZR102M50V16X22KSF	16X22		1000	0.10	0.05	2000	5000
NAZR132M50V16X22KSF	16X22		1300	0.10	0.05	2000	5000
NAZR152M50V18X22KSF	18X22		1500	0.10	0.045	2200	5000
NAZR151M63V12.5X14KSF	12.5X14		63V	150	0.09	0.17	800
NAZR221M63V12.5X14KSF	12.5X14	220		0.09	0.17	800	5000
NAZR331M63V12.5X16.5KSF	12.5X16.5	330		0.09	0.14	1000	5000
NAZR471M63V16X17KSF	16X17	470		0.09	0.12	1410	5000
NAZR681M63V18X17KSF	18X17	680		0.09	0.11	1690	5000
NAZR681M63V16X22KSF	16X22	680		0.09	0.08	1790	5000
NAZR102M63V18X22KSF	18X22	1000		0.09	0.07	1960	5000
NAZR680M80V12.5X14KSF	12.5X14	80V	68	0.09	0.28	740	5000
NAZR101M80V12.5X14KSF	12.5X14		100	0.09	0.28	740	5000
NAZR181M80V12.5X14KSF	12.5X14		180	0.09	0.28	740	5000
NAZR221M80V12.5X16.5KSF	12.5X16.5		220	0.09	0.21	900	5000
NAZR331M80V16X17KSF	16X17		330	0.09	0.17	1090	5000
NAZR471M80V18X17KSF	18X17		470	0.09	0.15	1280	5000
NAZR561M80V16X22KSF	16X22		560	0.09	0.11	1580	5000
NAZR681M80V18X22KSF	18X22		680	0.09	0.091	1690	5000
NAZR470M100V12.5X14KSF	12.5X14	100V	47	0.08	0.28	740	5000
NAZR101M100V16X17KSF	16X17		100	0.08	0.17	1090	5000
NAZR111M100V12.5X14KSF	12.5X14		110	0.08	0.28	740	5000
NAZR151M100V12.5X16.5KSF	12.5X16.5		150	0.08	0.21	900	5000
NAZR201M100V16X17KSF	16X17		200	0.08	0.17	1090	5000
NAZR221M100V18X17KSF	18X17		220	0.08	0.15	1280	5000
NAZR271M100V18X17KSF	18X17		270	0.08	0.15	1280	5000
NAZR331M100V16X22KSF	16X22		330	0.08	0.11	1580	5000
NAZR471M100V18X22KSF	18X22	470	0.08	0.091	1690	5000	

PERMISSIBLE REFLOW TEMPERATURE PROFILE

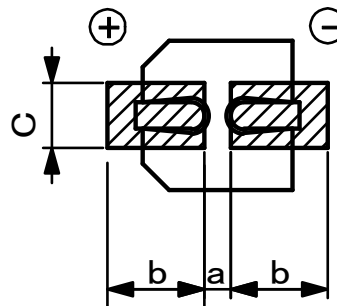


Size	Rated Voltage	Peak temperature (T) (Within 5 sec.)	Time for more than 240°C (t1)	Time for more than 217°C (t)	Reflow cycle
Φ12.5~Φ18	6.3~35V	245°C	Within 30sec.	Within 90sec.	2
	50~63V	245°C	Within 5sec.	Within 30sec.	2
	80~100V	245°C	Within 5sec.	Within 30sec.	1

Capacitor can withstand two reflow processes on the above conditions.
 Second reflow shall be taken after more than one hour natural cooling time
 and taken after the return to normal temperatures of PCB board and components.

RECOMMEND LAND PATTERN (mm)

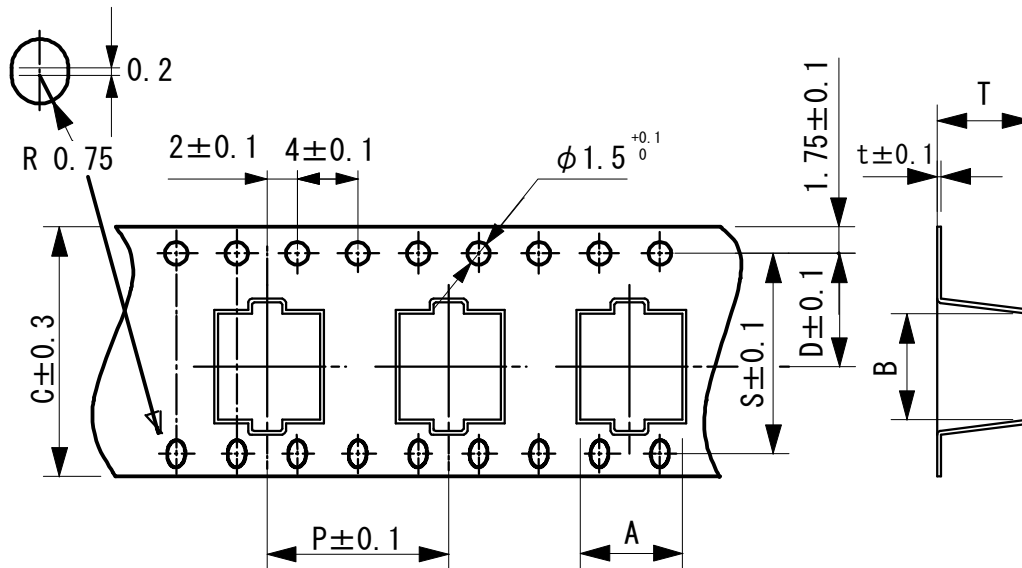
Case Size	a	b	c
Φ12.5	5.0	6.0	2.5
Φ16	8.0	6.5	3.0
Φ18	8.0	7.5	3.0



TAPING SPECIFICATIONS

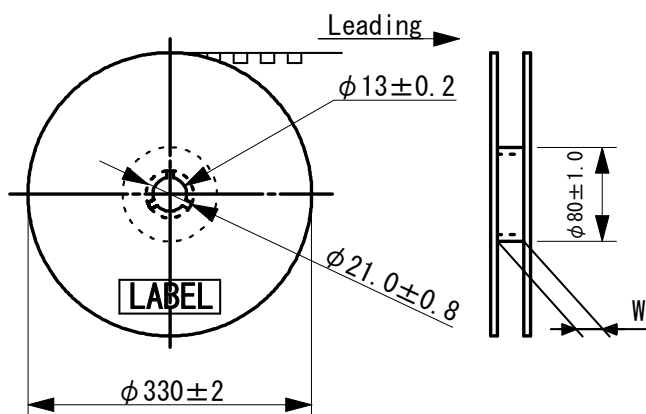
1. Leader and ending tape : Min. 10 empty pockets and 20 cm of cover tape.
2. Connection : Within 3 connections per reel.

CARRIER TAPE DIMENSIONS (mm) :



Case Size	A	B	C ± 0.3	D ± 0.1	P ± 0.1	T	t ± 0.1	S ± 0.1
12.5X14	13.4	13.4	32.0	14.2	24.0	14.4	0.5	28.4
12.5X16.5	13.4	13.4	32.0	14.2	24.0	16.3	0.5	28.4
16X17	17.5	17.5	44.0	20.2	28.0	17.4	0.5	40.4
16X22	17.5	17.5	44.0	20.2	28.0	22.4	0.5	40.4
18X17	19.5	19.5	44.0	20.2	32.0	17.4	0.5	40.4
18X22	19.5	19.5	44.0	20.2	32.0	22.4	0.5	40.4

REEL DIMENSIONS (mm) :

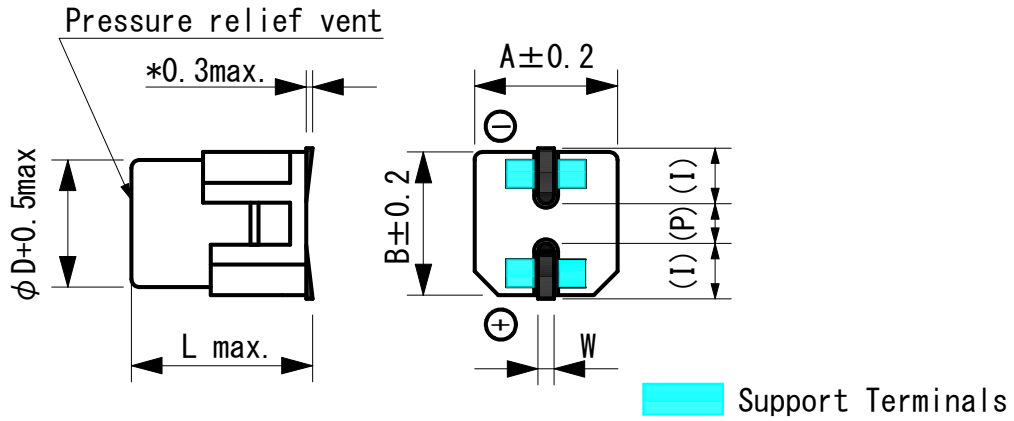


Case Size	W	Q'ty per reel (pcs) TR13 (330mm)
12.5X14	33.4	200
12.5X16.5	33.4	150
16X17	45.4	125
16X22	45.4	75
18X17	45.4	125
18X22	45.4	75

Anti-vibration type

Note : Regarding the vibration test of the anti-vibration package, we will respond to individual requests.

DIMENSIONS (mm)



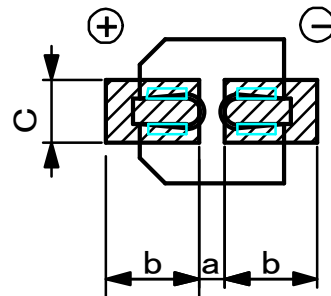
* distance from the bottom of the support terminals

Case Size	ΦD+0.5max	L max.	A±0.2	B±0.2	W	(I)	(P)
12.5X14WT	12.5	14.5	13.0	13.0	0.8~1.4	(4.9)	(4.5)
12.5X16.5WT	12.5	17.0	13.0	13.0	0.8~1.4	(4.9)	(4.5)
16X17WT	16	17.5	17.0	17.0	0.8~1.4	(6.0)	(6.8)
16X22WT	16	22.5	17.0	17.0	0.8~1.4	(6.0)	(6.8)
18X17WT	18	17.5	19.0	19.0	0.8~1.4	(7.0)	(6.8)
18X22WT	18	22.5	19.0	19.0	0.8~1.4	(7.0)	(6.8)

() : Reference value

RECOMMEND LAND PATTERN (mm)

Size	a	b	c
Φ12.5	3.9	6.2	6.4
Φ16	4.7	7.8	7.0
Φ18	4.7	8.8	7.0



TAPING SPECIFICATIONS

*Please refer to TAPING SPECIFICATIONS of NAZR series.