

Surface Mount Aluminum Electrolytic Capacitors NAWU Series

FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- HIGH TEMPERATURE, EXTEND LIFE (5000 HOURS @ 105°C)
- 4X6.3mm ~ 16X17mm CASE SIZES
- DESIGNED FOR REFLOW SOLDERING

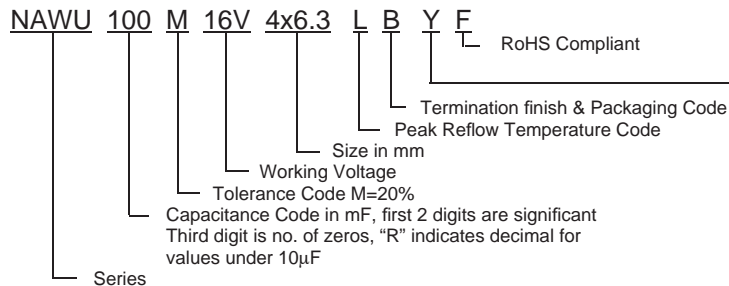


NEW
Expanded Voltage Range
100V ~ 400V

CHARACTERISTICS

Rated Voltage Range	6.3 ~ 400Vdc										
Rate Capacitance Range	0.1 ~ 220μF										
Operating Temp. Range	-40°C ~ +105°C										
Capacitance Tolerance	±20% (M)										
Max. Leakage Current After 2 Minutes @ 20°C	0.01CV or 3μA whichever is greater								0.03CV +15		
Tan δ @ 120Hz/20°C	W.V. (Vdc)	6.3	10	16	25	35	50	100	160	200	400
	S.V.(Vdc)	8	13	20	32	44	63	125	200	250	450
	Tan δ	0.30	0.24	0.20	0.16	0.14	0.14	0.18	0.2	0.2	0.25
Load Life Test @ 105°C 5,000hrs	Capacitance Change	Within ± 30% of initial measured value									
	Tan δ	Less than 300% of specified max. value									
	Leakage Current	Less than specified max. value									

PART NUMBER SYSTEM



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

PEAK REFLOW TEMPERATURE CODES

Code	Peak Reflow Temperature
L	250°C
K	245°C
J	240°C
H	235°C
G	230°C

TERMINATION FINISH & PACKAGING OPTIONS CODES

Code	Finish & Reel Size
B	Sn-Bi Finish & 13" Reel
LB	Sn-Bi Finish & 15" Reel
S	100% Sn Finish & 13" Reel
LS	100% Sn Finish & 15" Reel

PRECAUTIONS

Please review the notes on correct use, safety and precautions found on pages T10 & T11 of NIC's Electrolytic Capacitor catalog.
Also found at www.niccomp.com/precautions
If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: tpmg@niccomp.com



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STANDARD VALUES, PART NUMBERS AND MAXIMUM RIPPLE CURRENT

Part Number	W.V. (Vdc)	Cap. (µF)	Dissipation Factor (Tan δ)	Ripple Current Rating (mA @ 105°C/120Hz)	Load Life Hours @ +105°C	
NAWU330M6.3V5X6.3LBF	6.3	33	0.30	35	5,000	
NAWU470M6.3V5X6.3LBF		47	0.30	38	5,000	
NAWU101M6.3V6.3X6.3LBF		100	0.30	69	5,000	
NAWU221M6.3V6.3X8LBF		220	0.30	101	5,000	
NAWU220M10V5X6.3LBF	10	22	0.24	30	5,000	
NAWU330M10V5X6.3LBF		33	0.24	35	5,000	
NAWU470M10V6.3X6.3LBF		47	0.24	50	5,000	
NAWU101M10V6.3X8LBF		100	0.24	81	5,000	
NAWU100M16V4X6.3LBF	16	10	0.20	18	5,000	
NAWU220M16V5X6.3LBF		22	0.20	30	5,000	
NAWU330M16V6.3X6.3LBF		33	0.20	48	5,000	
NAWU470M16V6.3X6.3LBF		47	0.20	50	5,000	
NAWU101M16V6.3X8LBF		100	0.20	81	5,000	
NAWU100M25V5X6.3LBF	25	10	0.16	25	5,000	
NAWU220M25V6.3X6.3LBF		22	0.16	42	5,000	
NAWU330M25V6.3X6.3LBF		33	0.16	50	5,000	
NAWU470M25V6.3X8LBF		47	0.16	63	5,000	
NAWU4R7M35V4X6.3LBF	35	4.7	0.14	16	5,000	
NAWU100M35V5X6.3LBF		10	0.14	27	5,000	
NAWU220M35V6.3X6.3LBF		22	0.14	44	5,000	
NAWU330M35V6.3X8LBF		33	0.14	57	5,000	
NAWUR10M50V4X6.3LBF	50	0.1	0.14	1.0	5,000	
NAWUR22M50V4X6.3LBF		0.22	0.14	2.6	5,000	
NAWUR33M50V4X6.3LBF		0.33	0.14	3.2	5,000	
NAWUR47M50V4X6.3LBF		0.47	0.14	4.0	5,000	
NAWU1R0M50V4X6.3LBF		1.0	0.14	8.0	5,000	
NAWU2R2M50V4X6.3LBF		2.2	0.14	11	5,000	
NAWU3R3M50V4X6.3LBF		3.3	0.14	14	5,000	
NAWU4R7M50V5X6.3LBF		4.7	0.14	19	5,000	
NAWU100M50V6.3X6.3LBF		10	0.14	32	5,000	
NAWU220M50V6.3X8LBF		22	0.14	49	5,000	
NAWU100M100V8X10.8JBF		100	10	0.18	55	5,000
NAWU100M160V10X10.8JBF		160	10	0.20	43	5,000
NAWU220M160V12.5X14HBF			22	0.20	112	5,000
NAWU330M160V12.5X14HBF	33		0.20	137	5,000	
NAWU470M160V16X17GSF	47		0.20	180	5,000	
NAWU680M160V16X17GSF	68		0.20	215	5,000	
NAWU820M160V16X17GSF	82		0.20	235	5,000	
NAWU220M200V12.5X14HBF	200	22	0.20	112	5,000	
NAWU330M200V12.5X14HBF		33	0.20	137	5,000	
NAWU470M200V16X17GSF		47	0.20	180	5,000	
NAWU680M200V16X17GSF		68	0.20	215	5,000	
NAWU2R2M400V8X10.8JBF	400	2.2	0.25	25	5,000	
NAWU3R3M400V10X10.8JBF		3.3	0.25	36	5,000	
NAWU4R7M400V10X10.8JBF		4.7	0.25	38	5,000	
NAWU100M400V12.5X14HBF		10	0.25	57	5,000	
NAWU220M400V16X17GSF		22	0.25	115	5,000	

For Automotive Equipment see part number system



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RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

Frequency Hz	60(50)	120	500	1K	10K<
0.1 ~ 1.0 μ F	0.50	1.00	1.20	1.30	1.50
2.2 ~ 4.7 μ F	0.65	1.00	1.20	1.30	1.50
10 ~ 47 μ F	0.80	1.00	1.20	1.30	1.50
100 ~ 220 μ F	0.80	1.00	1.10	1.15	1.20

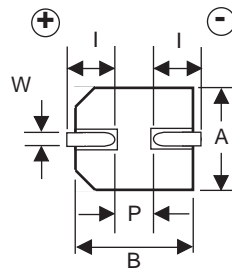
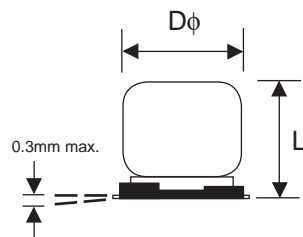
STANDARD PRODUCTS AND CASE SIZE TABLE D x L (mm)

Cap (μ F)	Code	Working Voltage (Vdc)									
		6.3	10	16	25	35	50	100	160	200	400
0.1	R10	-	-	-	-	-	4X6.3	-	-	-	-
0.22	R22	-	-	-	-	-	4X6.3	-	-	-	-
0.33	R33	-	-	-	-	-	4X6.3	-	-	-	-
0.47	R47	-	-	-	-	-	4X6.3	-	-	-	-
1.0	1R0	-	-	-	-	-	4X6.3	-	-	-	-
2.2	2R2	-	-	-	-	-	4X6.3	-	-	-	8X10.8
3.3	3R3	-	-	-	-	-	4X6.3	-	-	-	10X10.8
4.7	4R7	-	-	-	-	4X6.3	5X6.3	-	-	-	10X10.8
10	100	-	-	4X6.3	5X6.3	5X6.3	6.3X6.3	8X10.8	10X10.8	-	12.5X14
22	220	-	5X6.3	5X6.3	5X6.3	6.3X6.3	6.3X8	-	12.5X14	12.5X14	16X17
33	330	5X6.3	5X6.3	6.3X6.3	6.3X6.3	6.3X8	-	-	12.5X14	12.5X14	-
47	470	5X6.3	6.3X6.3	6.3X6.3	6.3X8	-	-	-	16X17	16X17	-
68	680	-	-	-	-	-	-	-	16X17	16X17	-
82	820	-	-	-	-	-	-	-	16X17	-	-
100	101	6.3X6.3	6.3X8	6.3X8	-	-	-	-	-	-	-
220	221	6.3X8	-	-	-	-	-	-	-	-	-

New Values

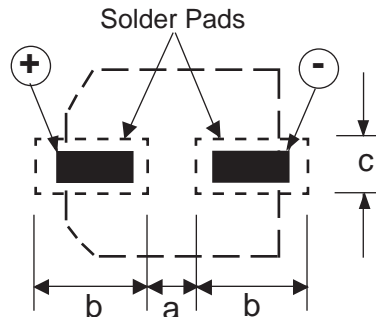
DIMENSIONS D x L (mm)

Case Size	ϕ D	L max.	A \pm 0.2	B \pm 0.2	I \pm 0.2	W	P \pm 0.2
4x6.3(6.1)	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	1.3
6.3x6.3	6.3	6.3	6.6	6.6	2.5	0.5 ~ 0.8	1.8
6.3x8	6.3	8.0	6.6	6.6	2.5	0.5 ~ 0.8	2.2
8x10.8	8.0	10.8	8.3	8.3	2.9	0.7 ~ 1.1	3.2
10x10.8	10.0	10.8	10.3	10.3	3.2	0.8 ~ 1.4	4.6
12.5x14	12.5	14	12.8	12.8	4.5	1.0 ~ 1.4	4.6
16x17	16	17	16.3	16.3	5.5	1.8 ~ 2.1	7.0



RECOMMENDED LAND PATTERN (mm)

Case Dia.	a	b	c
4	1.0	2.6	1.6
5	1.4	3.0	1.6
6.3	2.1	3.5	1.6
8	2.8	4.1	2.1
10	4.3	4.4	2.5
12.5	4.3	5.8	2.5
16	6.6	6.5	5.0

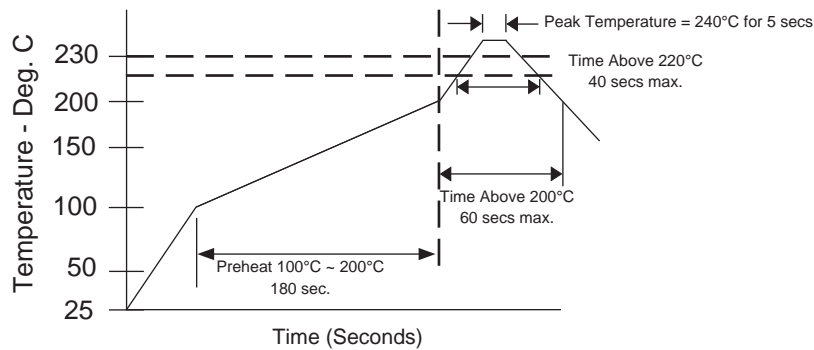


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PEAK REFLOW TEMPERATURE AND DURATION

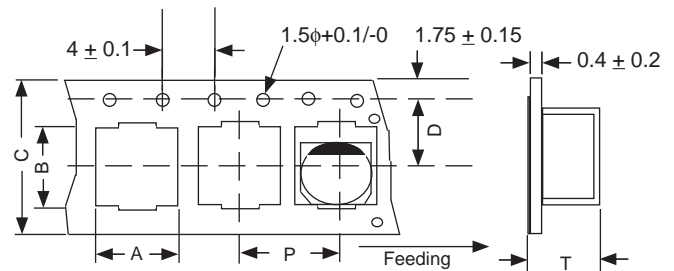
Voltage	Diameter	Time above 200°C	Time above 230°C	Peak Temperature 5 seconds
6.3 ~ 50V	4 ~ 6.3mm ϕ	70 sec. max.	40 sec. max.	250°C
100V	8mm ϕ	60 sec. max.	30 sec. max.	240°C
160 ~ 400V	8 ~ 10mm ϕ	50 sec. max.	20 sec. max.	240°C
	12.5mm ϕ	45 sec. max.	10 sec. max.	235°C
	16mm ϕ	30 sec. max.	-	230°C

Capacitors can withstand two times reflow at the above conditions. Second reflow shall be at least one hour after natural cool to room temperature.

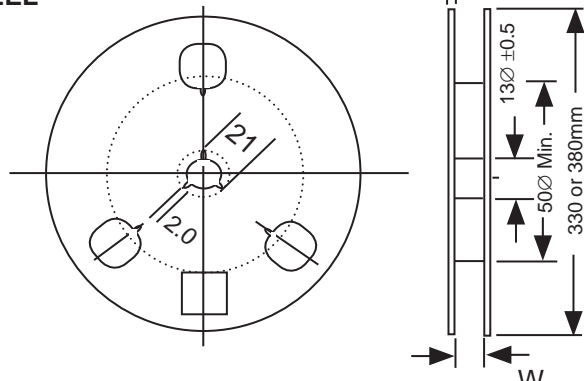


CARRIER TAPE DIMENSIONS & REEL QTY

Case Size	A ± 0.5	B ± 0.2	C ± 0.3	D ± 0.1	P ± 0.1	T ± 0.2	Qty
4 x 6.3(6.1)	4.7	4.7	12.0	5.5	8.0	6.2	1,200
5 x 6.3	5.7	5.7	12.0	5.5	12.0	6.2	800
6.3 x 6.3	7.0	7.0	16.0	7.5	12.0	6.2	800
6.3 x 8	7.0	7.0	16.0	7.5	12.0	8.2	500
8 x 10.8	8.7	8.7	24.0	11.5	16.0	11.1	300
10 x 10.8	10.7	10.7	24.0	11.5	16.0	11.2	300
12.5 x 14	13.2	13.2	32.0	14.2	24.0	14.3	200
16 x 17	17.5	17.5	44.0	20.2	28.0	17.3	125



REEL



Review & Compare Reflow Soldering Heat Limits
V-chip SMT Aluminum Electrolytic Capacitors
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