Surface Mount Aluminum Electrolytic Capacitors NAWS Series

FEATURES

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- LOW PROFILE 4MM HEIGHT
- LOAD LIFE (1,000 HOURS @ +105°C)
- DESIGNED FOR AUTOMATIC MOUNTING AND REFLOW SOLDERING

SAC Alloy Compatible 240°C

RoHS Compliant
includes all homogeneous materials

*See Part Number System for Details

CHARACTERISTICS

Rated Voltage Rating	6.3 ~ 50Vdc						
Rated Capacitance Range	1.0 ~ 100μF						
Operating Temp. Range	-40 ~ +105°C						
Capacitance Tolerance	±20% (M)						
Max. Leakage Current After 2 Miuntes @ 20°C	0.01CV or 3μA whichever is greater						
Dissipation Factor	W.V. (Vdc)	6.3	10	16	25	35	50
	S.V. (Vdc)	8.0	13	20	32	44	63
	Tan δ @ 120Hz/20°C	0.38	0.32	0.20	0.16	0.14	0.14
Low Temperature Stability Impedance Ratio @ 120Hz	W.V. (Vdc)	6.3	10	16	25	35	50
	Z-25°C/Z+20°C	4	3	2	2	2	2
	Z-40°C/Z+20°C	10	8	6	4	4	4
Load Life Test @ 105°C 1,000 hours	Capacitance Change	Within ±30% of initial measured value					
	Tan δ	Less than ±300% of the specified maximum value					
	Leakage Current	Less than the specified maximum value					

STANDARD VALUES AND CASE SIZES (mm)

Cap. (μF)	Code	Working Voltage (Vdc)					
		6.3	10	16	25	35	50
1.0	1R0	-	-	-	-	-	5X4
2.2	2R2	-	-	-	-	-	5X4
3.3	3R3	-	-	-	-	-	5X4
4.7	4R7	-	-	-	5X4	5X4	5X4
10	100	-	-	5X4	5X4	5X4	6.3X4
22	220	5X4	5X4	5X4 6.3X4	6.3X4	6.3X4	-
33	330	5X4	5X4 6.3X4	6.3X4	6.3X4	-	-
47	470	5X4 6.3X4	6.3X4	6.3X4	-	-	-
68	680	6.3X4	-	-	-	-	-
100	101	6.3X4	-	-	-	-	-

PEAK REFLOW TEMPERATURE CODES

Code	Peak Reflow Temperature
J	240°C

TERMINATION FINISH & PACKAGING OPTIONS CODES

Code	Finish & Reel Size
B	Sn-Bi Finish & 13" Reel

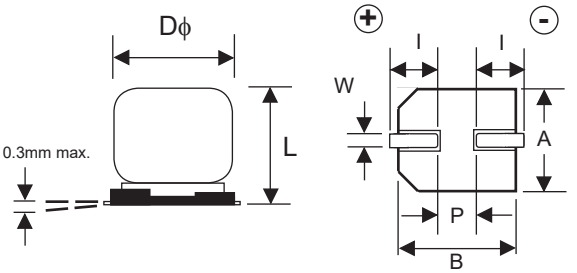
PART NUMBER SYSTEM

NAWS 101 M 6.3V 6.3x4 J B F

- F — RoHS Compliant
- B — Termination/Packaging Code
- J — Reflow Temperature Code
- 6.3x4 — Size in mm
- 6.3V — Working Voltage
- M — Tolerance Code M=20%
- 101 — Capacitance Code in μF, first 2 digits are significant Third digit is no. of zeros, "R" indicates decimal for values under 10μF
- NAWS — Series

DIMENSIONS (mm) AND REEL QUANTITIES

Case Size	ϕD±0.5	L max.	A±0.2	B±0.2	I±0.3	W	P±0.2	Qty/Reel
5x4	5.0	4.0	5.3	5.3	2.3	0.5 ~ 0.8	1.4	1,000
6.3x4	6.3	4.0	6.6	6.6	2.6	0.5 ~ 0.8	2.2	1,000



STANDARD VALUES, CASE SIZES AND SPECIFICATIONS

NIC Part Number	Cap. (µF)	W.V. (Vdc)	Dissipaton Factor (Tan δ)	Max. ESR (Ω) 120Hz, +20°C	Max. Ripple Current (mA) +105°C, 120Hz	Load Life Hours @ +105°C
NAWS220M6.3V5X4JBF	22	6.3	0.38	28.65	23	1000
NAWS330M6.3V5X4JBF	33		0.38	19.10	28	1000
NAWS470M6.3V5X4JBF	47		0.38	13.41	34	1000
NAWS470M6.3V6.3X4JBF			0.38	13.41	42	1000
NAWS680M6.3V6.3X4JBF	68		0.38	9.27	49	1000
NAWS101M6.3V6.3X4JBF	100		0.38	6.30	52	1000
NAWS220M10V5X4JBF	22	10	0.32	24.13	25	1000
NAWS330M10V5X4JBF	33		0.32	16.08	30	1000
NAWS330M10V6.3X4JBF			0.32	16.08	35	1000
NAWS470M10V6.3X4JBF	47		0.32	11.29	38	1000
NAWS100M16V5X4JBF	10	16	0.20	33.17	18	1000
NAWS220M16V5X4JBF	22		0.20	15.08	26	1000
NAWS220M16V6.3X4JBF			0.20	15.08	31	1000
NAWS330M16V6.3X4JBF	33		0.20	10.05	35	1000
NAWS470M16V6.3X4JBF	47		0.20	7.06	38	1000
NAWS4R7M25V5X4JBF	4.7	25	0.16	56.47	13	1000
NAWS100M25V5X4JBF	10		0.16	26.54	21	1000
NAWS220M25V6.3X4JBF	22		0.16	12.06	35	1000
NAWS330M25V6.3X4JBF	33		0.16	8.04	42	1000
NAWS4R7M35V5X4JBF	4.7	35	0.14	49.41	13	1000
NAWS100M35V5X4JBF	10		0.14	23.22	22	1000
NAWS220M35V6.3X4JBF	22		0.14	10.56	34	1000
NAWS1R0M50V5X4JBF	1.0	50	0.14	232.22	6	1000
NAWS2R2M50V5X4JBF	2.2		0.14	105.55	10	1000
NAWS3R3M50V5X4JBF	3.3		0.14	70.37	12	1000
NAWS4R7M50V5X4JBF	4.7		0.14	49.41	16	1000
NAWS100M50V6.3X4JBF	10		0.14	23.22	23	1000

RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

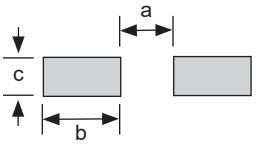
Frequency	120Hz	1KHz	10KHz	100KHz ~
1.0 ~ 3.3µF	1.0	1.30	1.50	1.80
>4.7 ~ 33µF	1.0	1.20	1.30	1.45
>33µF	1.0	1.10	1.20	1.30

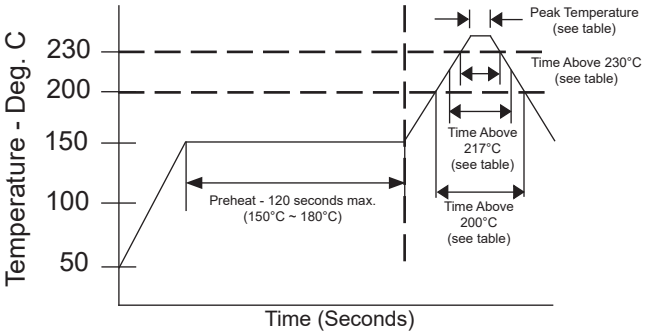
PEAK REFLOW TEMPERATURE, DURATION AND NUMBER OF REFLOW PASSES ALLOWED

Diameter	Peak Temperature	Duration	Time above 200°C	Time above 217°C	Time above 230°C	Number of Reflow Passes
5 ~ 6.3mm ϕ	+240°C	Time ≥ 240°C 5 sec.	50 sec.	40 sec.	20 sec.	2

RECOMMENDED LAND PATTERN DIMENSIONS (mm)

Case Size	a	b	c
5x4	1.4	3.0	1.8
6x3x4	1.8	3.6	1.8





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**

CARRIER TAPE

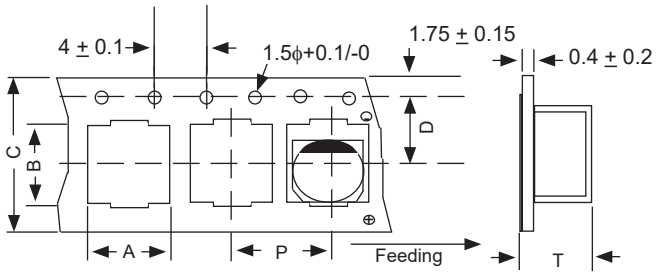
Case Size	A ±0.2	B ±0.2	C ±0.3	D ±0.1	P ±0.1	T ±0.2
5X4	5.7	5.7	12.0	5.5	12.0	4.5
6.3X4	7.0	7.0	16.0	7.5	12.0	4.5

TAPING SPECIFICATIONS (mm)

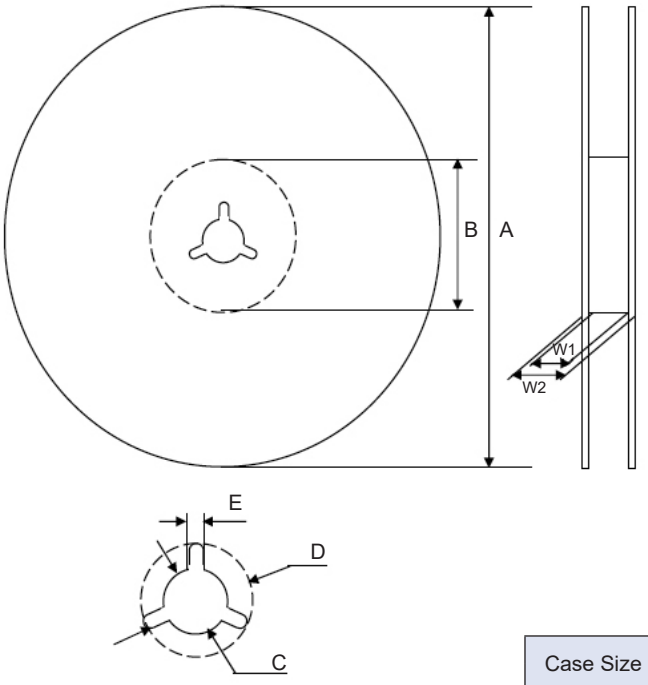
1. Both Leader and Trailer tape: Minimum 10 empty pockets and 20cm of cover tape.

3. Connection: Maximum 3 connections (slices) per reel.

CARRIER



V-Chip 13" (330mm) Reels (B suffix)



Dimensions (mm)

Case Size	Tape Width	W1	W2
5x4	12.0	12.4 ~ 14.4	15.5 ~ 20.0
6.3x4	16.0	16.4 ~ 18.4	19.5 ~ 24.0

Case Size	Tape Width	A	B	C	D	E
5x4	12.0	ϕ330 ±2.0	ϕ50~105	ϕ13 ±0.5	ϕ21 ±1.0	2.0 ±0.5
6.3x4	16.0					

Color
Black or Blue

Case Size	Quantity Per Reel
	13" Reel
5X4	1,000 pcs
6.3X4	1,000 pcs

Review & Compare Reflow Soldering Heat Limits
V-chip SMT Aluminum Electrolytic Capacitors
www.niccomp.com/RSL