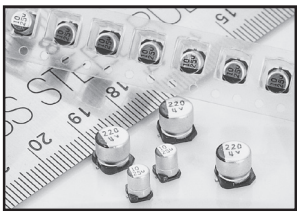
NSPE-HX Series
Hybrid Aluminum Electrolytic Capacitors

FEATURES
- -55°C TO +105°C OPERATING RANGE
- MEETS THE REQUIREMENTS OF AEC-Q200*
- ULTRA LOW ESR & HIGH RIPPLE CURRENT
- EXTENDED LIFETIME: 10,000 HOURS @ +105°C
- CASE SIZES 8x10.8mm ~ 10x12.8mm
- 'W' WIDE TERMINAL OPTION FOR HIGH VIBRATION APPLICATIONS

*Contact NIC for supporting test data

Available with Wide Anti-Vibration Terminations



CHARACTERISTICS

Rated Voltage Range	25 ~ 35VDC		
Rated Capacitance Range	150 ~ 470µF		
Operating Temp. Range	-55 ~ +105°C		
Capacitance Tolerance	±20% (M)		
Max. Leakage Current After 2 Minutes @ 20°C	0.01CV		
Working Voltage & Surge Voltage Ratings	W.V. (Vdc)	25	35
	S.V. (Vdc)	32	44
Tan δ @ 120Hz/20°C		0.14	0.12
Temperature Stability Impedance Ratio @ 120Hz	Z -55°C/Z +20°C	1.0 ~ 2.5	
	Z +105°C/Z +20°C	0.6 ~ 1.0	
Load Life Test at W.V. @ +105°C All Case Sizes: 10,000 Hours	Capacitance Change	Within ±30% of initial measured value	
	ESR, Tan δ	Less than 200% of specified max. value	
	Leakage Current	Less than specified max. value	

STANDARD PRODUCT AND CASE SIZE Dϕ xL (mm)

Cap.(µF)	Code	Working Voltage (Vdc)	
		25	35
150	151	-	8x10.8
220	221	8x10.8	-
270	271	-	10x10.8
330	331	10x10.8	10x12.8
470	471	10x12.8	-

PART NUMBER SYSTEM

NSPE-HX 331 M 25V 10x10.8 N LB W Y F

- F — RoHS Compliant
- Y — Suitable for automotive equipment, sourced to special production and inspection at IATF-16949 certified production site
- W — Wide Termination Option
- LB — Termination & Packaging Code: LB = Sn-Bi / 15" reel
- N — Reflow Code: N = +260°C
- 10x10.8 — Size in mm
- 25V — Working Voltage
- M — Tolerance Code M=20%
- 331 — Capacitance Code in µF, first 2 digits are significant. Third digit is no. of zeros.
- NSPE-HX — Series

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**

STANDARD VALUES, CASE SIZES & SPECIFICATIONS

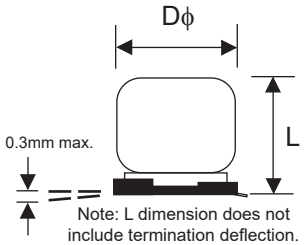
Part Number	Cap. (µF)	Working Voltage	Dissipation Factor @120Hz/+20°C	Max. ESR (Ω) AT 100KHz/+20°C	Max. Ripple Current (mA rms) AT 100KHz/+105°C	Load Life Hours @ +105°C
NSPE-HX221M25V8X10.8NLBYF	220	25	0.14	0.020	4500	10,000
NSPE-HX331M25V10X10.8NLBYF	330		0.14	0.018	5000	10,000
NSPE-HX471M25V10X12.8NLBYF	470		0.14	0.014	5500	10,000
NSPE-HX151M35V8X10.8NLBYF	150	35	0.12	0.020	4500	10,000
NSPE-HX271M35V10X10.8NLBYF	270		0.12	0.018	5000	10,000
NSPE-HX331M35V10X12.8NLBYF	330		0.12	0.014	5500	10,000

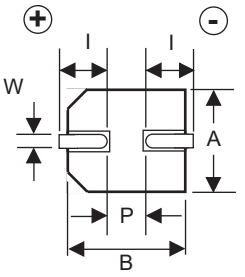
RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

Frequency	100 ≤ f <1K	1K ≤ f <10K	10K ≤ f <10K	100K ≤ f 500K
C ≤ 150µF	0.10	0.40	0.70	1.00
>150µF	0.15	0.45	0.75	1.00

DIMENSIONS (mm)

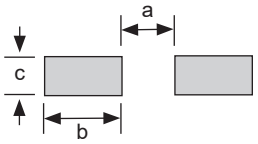
Case Size	Dϕ ±0.5	L max.	A, B ±0.2	(I)	(P)	W
8x10.8	8.0	10.8	8.3	2.9	3.2	0.7 ~ 1.0
10x10.8	10.0	10.8	10.3	3.2	4.6	1.0 ~ 1.4
10x12.8	10.0	12.8	10.3	3.2	4.6	1.0 ~ 1.4



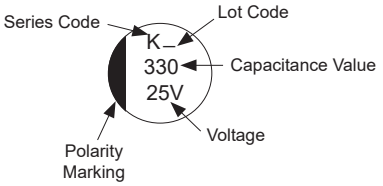


LAND PATTERN DIMENSIONS (mm)

Case Size	a	b	c
8x10.8	2.8	4.1	2.1
10x10.8	4.3	4.4	2.5
10x12.8	4.3	4.4	2.5



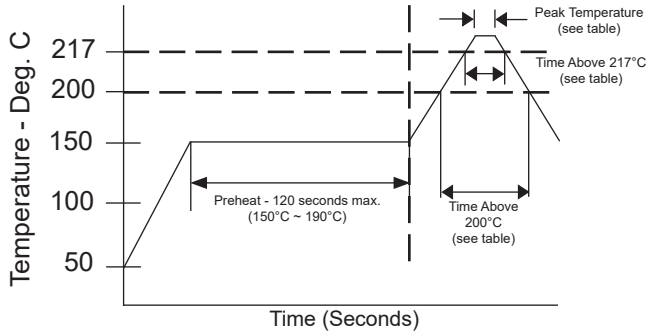
Part Marking



25V ~ 35V PEAK REFLOW TEMPERATURES AND DURATION

Diameter	Peak Temperature	Time above +200°C	Time above +217°C	Time above +230°C	Number of Reflow Cycles
ϕ8.0 & ϕ10mm	+260°C	Within 70 sec.	Within 40 sec.	Within 30 sec.	1
	+245°C	Within 70 sec.	Within 50 sec.	Within 40 sec.	2

Capacitors can withstand two reflow passes under the specified conditions. A one hour natural cooling period to room temperature is required before the second pass through the reflow process.

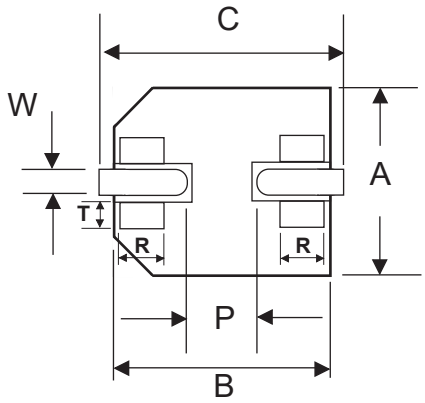


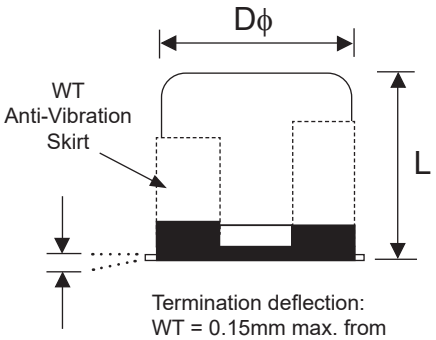
W (WIDE TERMINATIONS) COMPONENT DIM. (mm)

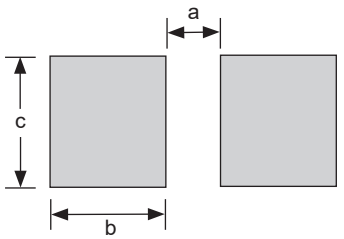
Case Size	Dϕ ±0.5	L max.	A, B ±0.2	C ±0.2	P	W	R	T
8x10.8	8.0	11.2	8.3	9.0	(3.2)	0.7 ~ 1.0	(0.7)	(1.3)
10x10.8	10.0	11.2	10.3	11.0	(4.6)	1.0 ~ 1.4	(2.1)	(1.1)
10x12.8	10.0	13.0	10.3	11.0	(4.6)	1.0 ~ 1.4	(2.1)	(1.1)

W (WIDE TERMINATIONS) LAND PATTERN DIM. (mm)

Case Size	a	b	c
8x10.8	2.5	4.5	4.7
10x10.8	3.8	4.8	4.7
10x12.8	3.8	4.8	4.7





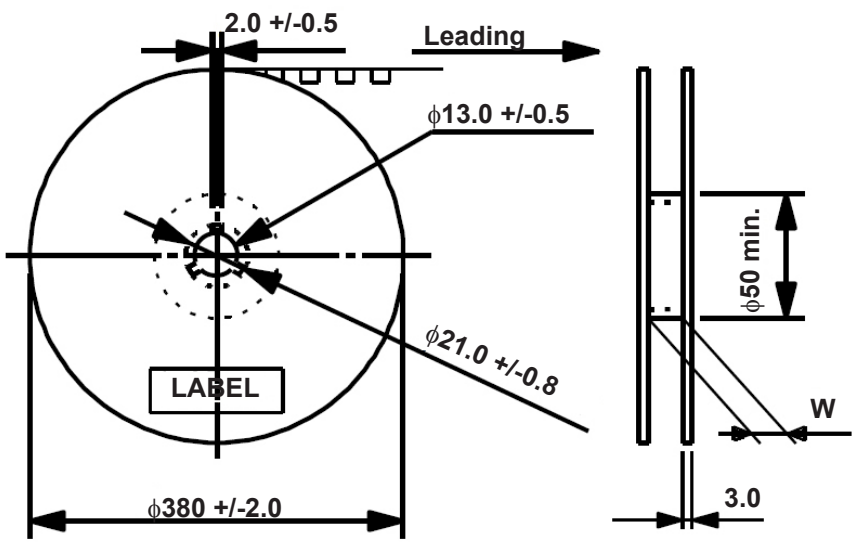


W (Wide Terminations) Anti-Vibration Test	
Test Method	Direction: X, Y, Z axis Frequency & Duration: 5 to 2000Hz reciprocation for 20 minutes, 2 hours total in each direction Peak to Peak Amplitude: 5mm Peak Acceleration: 30G Sweep Type: Log Thickness of Solder Paste: 0.20mm ± 0.03mm
Capacitance	During test measured value to be stabilized
Appearance	No remarkable abnormality

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

V-Chip 15" (380mm) Reels (LB suffix)

Dimensions (mm)



Reel Quantity

Case Size	W $^{+3}$ / $_{-1}$	Qty per Reel 15" (380mm)
8x10.8	26	500
10x10.8	26	500
10x12.8	26	400

CARRIER TAPE

Case Size	A ±0.2	B ±0.2	C ±0.3	D ±0.1	P ±0.1	T ±0.2	t max.
8x10.8	8.7	8.7	24.0	11.5	16.0	11.1	0.6
10x10.8	10.7	10.7	24.0	11.5	16.0	11.2	0.6
10x12.8	10.7	10.7	24.0	11.5	16.0	13.3	0.6

TAPING SPECIFICATIONS (mm)

1. Both Leader and Trailer tape: Minimum 10 empty carrier tape pockets.
2. Leader tape: Approximately 20cm of cover tape at leader.
3. Connection: Maximum 3 connections (slices) per reel.

CARRIER