NSPE-TS Series
Hybrid Aluminum Electrolytic Capacitors

FEATURES
- -55°C TO +125°C OPERATING RANGE
- ULTRA HIGH RIPPLE CURRENT RATING
- EXTENDED LIFETIME: 2000 HOURS @ +125°C
- 6.3x6.3mm ~ 10x10.8mm CASE SIZES
- 'W' WIDE TERMINAL OPTION FOR HIGH VIBRATION APPLICATIONS
- MEETS THE REQUIREMENTS OF AEC-Q200*

*Contact NIC for supporting test data

NSPE-S	NSPE-TS
-55C to +105C Legacy Status: EOL	-55C to +125C Upgrade Status: NEW

CHARACTERISTICS

10mm size is available with Wide Anti-Vibration Terminations

Rated Voltage Range	6.3 ~ 10VDC		
Rated Capacitance Range	100 ~ 1,000µF		
Operating Temp. Range	-55 ~ +125°C		
Capacitance Tolerance	±20% (M)		
Max. Leakage Current After 2 Minutes @ 20°C	0.05CV or 100µA whichever is greater		
Working Voltage & Surge Voltage Ratings	W.V. (Vdc)	6.3	10
	S.V. (Vdc)	8.2	13
Tan δ @ 120Hz/20°C		0.18	0.16
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	
	Z +125°C/Z +20°C		
Load Life Test at W.V. @ 125°C All Case Sizes: 2,000 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	
Load Life Test at W.V. @ 105°C All Case Sizes: 5,000 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	
Biased Humidity Test at W.V. +85°C/85% RH	Test Duration	6.3mm: 1000 hrs., 8~10mm 2000 hrs.	
	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	
Resistance to Soldering Heat	After reflow stablize at +20°C capacitors shall meet the following limits		
	Capacitance Change	Within ±10% of initial measured value	
	ESR	Less than 130% of specified max. value	
	Tan δ and Leakage Current	Less than specified max. value	

PART NUMBER SYSTEM

NSPE-TS 821 M 10V 10x10.8 N LB W Y F

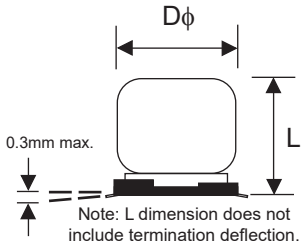
- F — RoHS Compliant
- Y — Suitable for automotive equipment, sourced to special production and inspection at IATF-16949 certified production site
- W — Wide Termination Option 10mm size
- LB = Sn-Bi Finish and 15" Reel
- N — Reflow Temp. Code (N=+260°C)
- 10x10.8 — Size in mm
- 10V — Working Voltage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

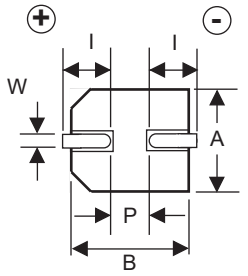
PRECAUTIONS

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**

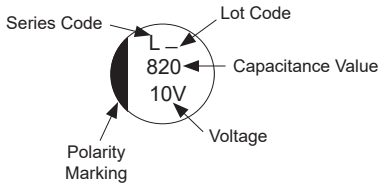
STANDARD PRODUCT AND CASE SIZE Dϕ xL (mm)

Cap.(μF)	Code	Working Voltage (Vdc)	
		6.3	10
100	101	-	6.3x6.3
150	151	6.3x6.3	6.3x8
220	221	6.3x8	-
470	471	-	8x10.8
560	561	8x10.8	-
820	821	-	10x10.8
1000	102	10x10.8	-





Part Marking



DIMENSIONS (mm)

Case Size	Dϕ ±0.5	L max.	A, B ±0.2	(I)	(P)	W
6.3x6.3	6.3	6.3	6.6	2.5	2.2	0.5 ~ 0.8
6.3x8	6.3	8.0	6.6	2.5	2.2	0.5 ~ 0.8
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

STANDARD VALUES, CASE SIZES & SPECIFICATIONS

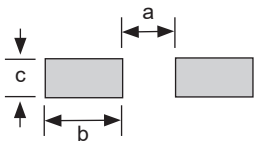
Part Number	Cap. (μF)	Working Voltage	Dissipation Factor @120Hz/+20°C	Max. ESR (Ω) AT 100KHz/+20°C	Max. Ripple Current (mA rms) AT 100KHz		Load Life Hours @ +125°C	
					+105°C	+125°C	+105°C	+125°C
NSPE-TS151M6.3V6.3X6.3NLBYF	150	6.3	0.18	0.036	1700	950	5000	2000
NSPE-TS221M6.3V6.3X8NLBYF	220		0.18	0.032	2100	1150	5000	2000
NSPE-TS561M6.3V8X10.8NLBYF	560		0.18	0.016	3200	1800	5000	2000
NSPE-TS102M6.3V10X10.8NLBYF	1000		0.18	0.015	3900	2200	5000	2000
NSPE-TS101M10V6.3X6.3NLBYF	100	10	0.16	0.036	1700	950	5000	2000
NSPE-TS151M10V6.3X8NLBYF	150		0.16	0.032	2100	1150	5000	2000
NSPE-TS471M10V8X10.8NLBYF	470		0.16	0.016	3200	1800	5000	2000
NSPE-TS821M10V10X10.8NLBYF	820		0.16	0.015	3900	2200	5000	2000

RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

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

LAND PATTERN DIMENSIONS (mm)

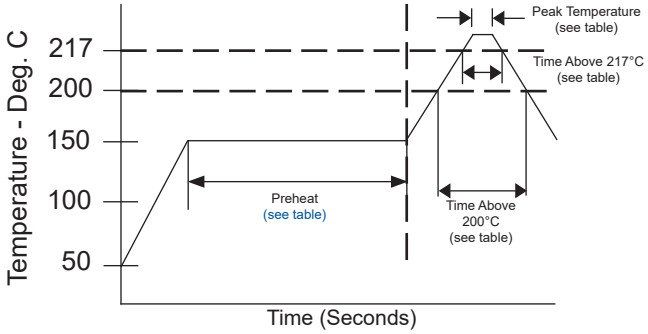
Case Size	a	b	c
6.3x6.3	1.8	3.6	1.8
6.3x8	1.8	3.6	1.8
8x10.8	2.8	4.1	2.1
10x10.8	4.3	4.4	2.5



PEAK REFLOW TEMPERATURES AND DURATION

Diameter	Pre-Heat	Peak Temperature less than 5 sec.	Time above +200°C	Time above +217°C	Time above +230°C	Number of Reflow Cycles
ϕ6.3mm	160°C 120 sec. max.	+260°C	Within 70 sec.	Within 40 sec.	Within 30 sec.	2
ϕ8 & ϕ10mm		+260°C		Within 40 sec.	Within 30 sec.	1
		+245°C		Within 50 sec.	Within 40 sec.	2

Capacitors can withstand two reflow passes under the specified conditions. Second reflow after one hour natural cooling and return to room temperature.

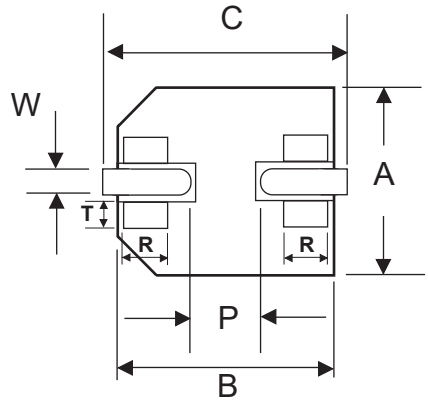


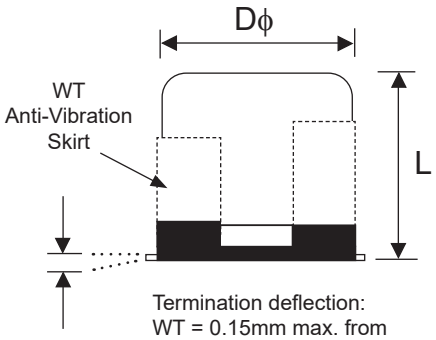
W (WIDE TERMINATIONS) COMPONENT DIM. (mm)

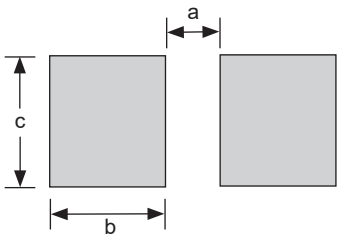
Case Size	Dϕ ±0.5	L max.	A, B ±0.2	C ±0.2	(P)	W	(R)	(T)
10x10.8	10.0	11.2	10.3	11.0	4.6	1.0 ~ 1.4	0.7	1.3

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

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



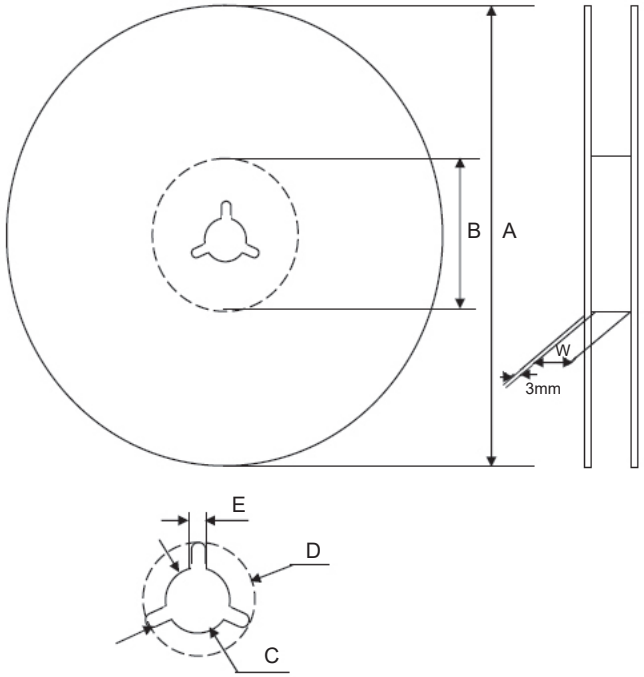




Review & Compare Reflow Soldering Heat Limits
V-chip SMT Aluminum Electrolytic Capacitors
www.niccomp.com/RSL

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

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



Dimensions (mm)

Case Size	Tape Width	W
6.3x6.3, 6.3x8	16.0	18.0
8x10.8, 10x10.8	24.0	26.0

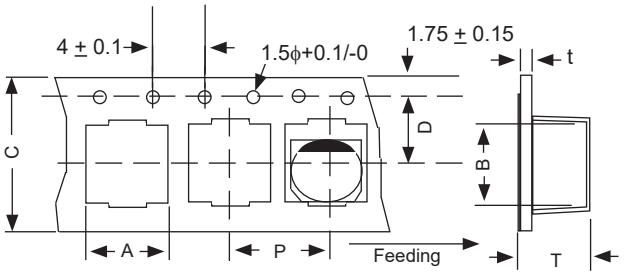
Case Size	Tape Width	A	B	C	D	E
6.3x6.3, 6.3x8	16.0	ϕ380±2	ϕ50 min.	ϕ13 ±0.5	ϕ21 ±0.8	2.0 ±0.5
8x10.8, 10x10.8	24.0					

Case Size	Qty per Reel 15" (380mm)
6.3x6.3	1,000
6.3x8	900
8x10.8	500
10x10.8	500

CARRIER TAPE

Case Size	A ±0.2	B ±0.2	C ±0.3	D ±0.1	P ±0.1	T ±0.2	t max.
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
8x10.8	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

CARRIER



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.