

NSPE-TC Series

Hybrid Aluminum Electrolytic Capacitors



- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- EXTENDED LOAD LIFE AT HIGH TEMPERATURE (UP TO 4,000 HOURS @ +125°C)
- INCREASED CAPACITANCE VALUE PER CASE SIZE
- LOW ESR AND HIGH RIPPLE CURRENT RATINGS
- 5x6.1mm ~ 10x12.5mm CASE SIZES
- HIGH REFLOW SOLDERING RATED TO +260°C
- MEETS THE REQUIREMENTS OF AEC-Q200*

*Contact NIC for supporting test data



10mm size is available
with Wide
Anti-Vibration
Terminations



CHARACTERISTICS

Rated Voltage Range		16 ~ 35Vdc		
Rated Capacitance Range		33 ~ 820μF		
Operating Temp. Range		-55 ~ +125°C		
Capacitance Tolerance		±20% (M)		
Max. Leakage Current After 2 Minutes @ 20°C		0.01CV max.		
Working and Surge Voltage Ratings	W.V. (Vdc)	16	25	35
	S.V. (Vdc)	20	32	44
Tan δ @ 120Hz/20°C		0.16	0.14	0.12
Impedance Ratio	Z -55°C/Z +20°C	1 ~ 2.5		
	Z +125°C/Z +20°C	0.6 ~ 1.0		
Load Life Test @ 125°C and Rated Voltage	W.V. (Vdc)	16	25	35
	φ8mm & φ10mm Dia.	4000 hrs.		
	Capacitance Change	Within ±30% of initial measured value		
	Tan δ and ESR	Less than 200% of specified max. value		
	Leakage Current	Less than specified max. value		
Resistance to Soldering Heat	After reflow soldering and stabilizing at +20°C capacitors shall meet the following limits.			
	Capacitance Change	Within ±10% of the initial measured value		
	Dissipation Factor	Less than specified value		
	Leakage Current	Less than specified value		
	ESR	Less than 130% of specified value		

PART NUMBER SYSTEM

NSPE-TC 271 M 25V 10x10.5 N LB W Y F

Series

Capacitance Code in μF, first 2 digits are significant
Third digit is no. of zeros, "R" indicates decimal for values under 10μF

Tolerance Code M=20%

Working Voltage

Size in mm

Reflow Temp. Code (N=+260°C)

LB = Sn-Bi Finish & 15" Reel, LS = 100% Sn & 15" Reel

Wide Termination Option (see page 3)

RoHS Compliant

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

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 PRODUCTS AND CASE SIZES $D\phi \times L$ (mm)

PART NUMBER	Cap. (μ F)	Working Voltage	Case Size (D X L) mm	Max. ESR ($m\Omega$) AT 100kHz/20°C	Max. Ripple Current (mA rms) AT 100kHz/125°C	Load Life Hours (+125°C)
NSPE-TC221M16V6.3X8NLBYF	220	16	6.3X8	30	1800	4000
NSPE-TC471M16V8X10.5NLBYF	470		8X10.5	27	2000	4000
NSPE-TC821M16V10X10.5NLBYF	820		10X10.5	20	2800	4000
NSPE-TC560M35V5x6.1NLBYF	56	25	5x6.1	80	850	4000
NSPE-TC101M25V6.3x6.1NLBYF	100		6.3x6.1	50	1300	4000
NSPE-TC151M25V6.3X8NLBYF	150		6.3X8	30	1800	4000
NSPE-TC271M25V8x10.5NLBYF	270		8x10.5	27	2000	4000
NSPE-TC471M25V10x10.5NLBYF	470		10x10.5	20	2800	4000
NSPE-TC561M25V10x12.5NLBYF	560		10x12.5	16	3000	4000
NSPE-TC330M35V5x6.1NLBYF	33	35	5x6.1	100	750	4000
NSPE-TC560M35V6.3x6.1NLBYF	56		6.3x6.1	60	1200	4000
NSPE-TC101M35V6.3X8NLBYF	100		6.3X8	35	1700	4000
NSPE-TC181M35V8x10.5NLBYF	180		8x10.5	27	2000	4000
NSPE-TC331M35V10x10.5NLBYF	330		10x10.5	20	2800	4000
NSPE-TC391M35V10x12.5NLBYF	390		10x12.5	17	3000	4000

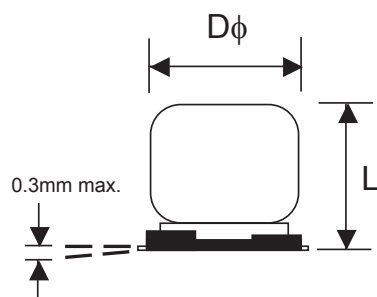
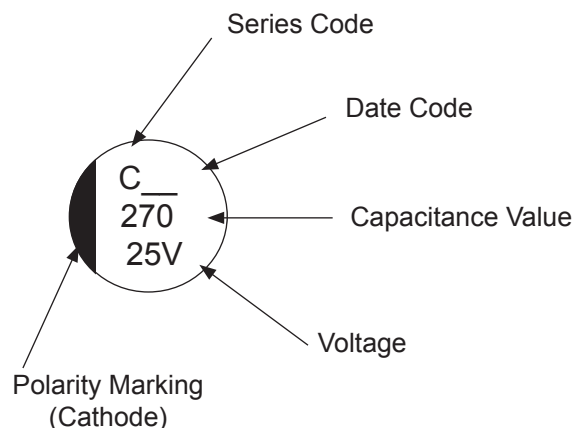
RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

Frequency	100Hz $\leq$ 1KHz	1KHz $\leq$ 10KHz	1KHz $\leq$ 50KHz	10KHz $\leq$ 100KHz	100K $\leq$ 500KHz
Correction Factor	0.10	0.35	0.65	0.90	1.00

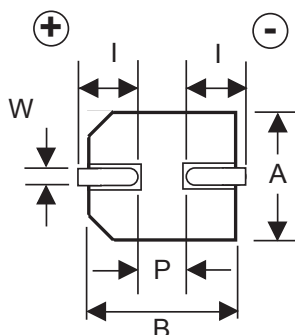
DIMENSIONS (mm)

Case Size	$D\phi \pm 0.5$	L max.	A, B ± 0.2	W	(I)	(P)
5x6.1	5.0	6.1	5.3	0.5 ~ 0.8	2.3	1.4
6.3x6.1	6.3	6.1	6.6	0.5 ~ 0.8	2.5	2.2
6.3X8	6.3	8.0	6.6	0.5 ~ 0.8	2.5	2.2
8x10.5	8	10.5	8.3	0.7 ~ 1.0	2.9	3.2
10x10.5	10	10.5	10.3	1.0 ~ 1.4	3.2	4.6
10x12.5	10	12.5	10.3	1.0 ~ 1.4	3.2	4.6

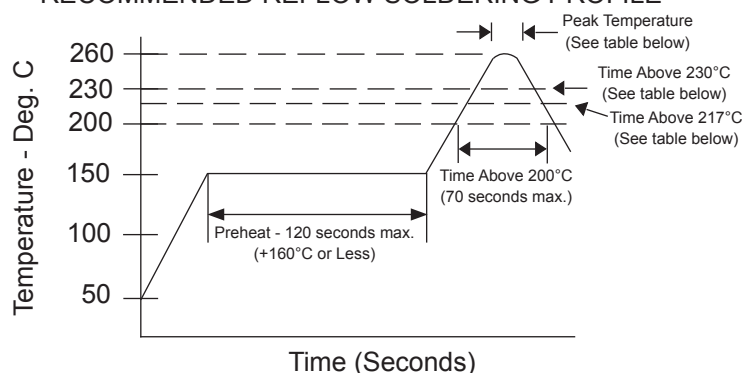
Part Marking



Note: L dimension does not include termination deflection

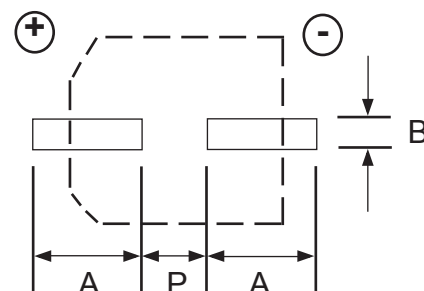


RECOMMENDED REFLOW SOLDERING PROFILE*



LAND PATTERN DIM. (mm)

Case Dia.	A	B	P
5	3.0	1.8	1.4
6.3	3.6	1.8	1.8
8	4.1	2.1	2.8
10	4.4	2.5	4.3



PEAK TEMPERATURE AND DURATION

Rated Voltage/Diameter	Time Above +200°C	Time Above +217°C	Time Above +230°C	Peak Temperature	Reflow Cycles
5 ~ 10mm	70 sec. max.	40 sec. max.	30 sec. max.	+260°C	2*

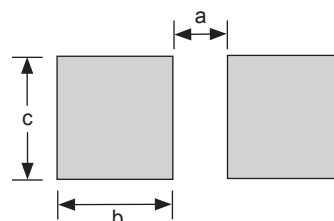
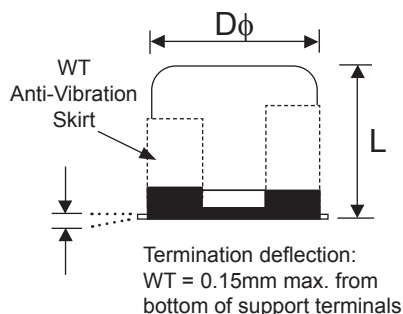
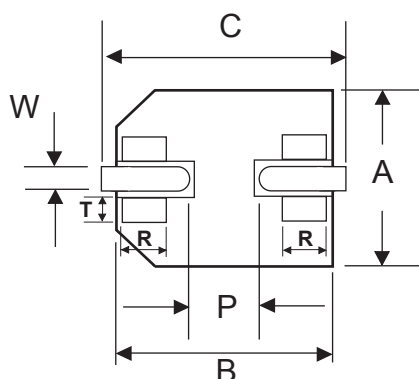
*Two reflow passes are permissible with a natural cool down to room temperature required between the first and second pass.

W (WIDE TERMINATIONS) COMPONENT DIM. (mm)

Case Size	Dφ ±0.5	L max.	A, B ±0.2	C ±0.2	P	W	R	T
6.3x6.1	6.3	6.5	6.6	7.3	(2.2)	0.5 ~ 0.8	(1.8)	(0.8)
6.3X8	6.3	8.2	6.6	7.3	(2.2)	0.5 ~ 0.8	(1.8)	(0.8)
8x10.5	8.0	11.2	8.3	9.0	(3.2)	0.7 ~ 1.0	(0.7)	(1.3)
10x10.5	10.0	11.2	10.3	11.0	(4.6)	1.0 ~ 1.4	(0.7)	(1.3)
10x12.5	10.0	13.5	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
6.3x6.1	1.6	4.0	3.0
6.3X8	1.6	4.0	3.0
8x10.5	2.5	4.5	4.7
10x10.5	3.8	4.8	4.7
10x12.5	3.8	4.8	4.7

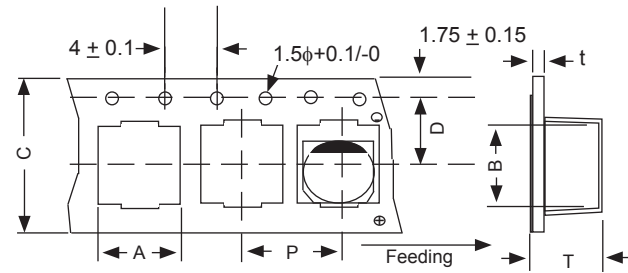


W (Wide Terminations) Anti-Vibration Test	
Test Method	Direction: X, Y, Z axis Frequency & Duration: 5 to 2000Hz reciprocation for 20 minutes, 2 hours total in each direction Peak to Peak Amplitude: 5mm Peak Acceleration: 30G Sweep Type: Log Thickness of Solder Paste: 0.20mm ± 0.03mm
Capacitance	During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

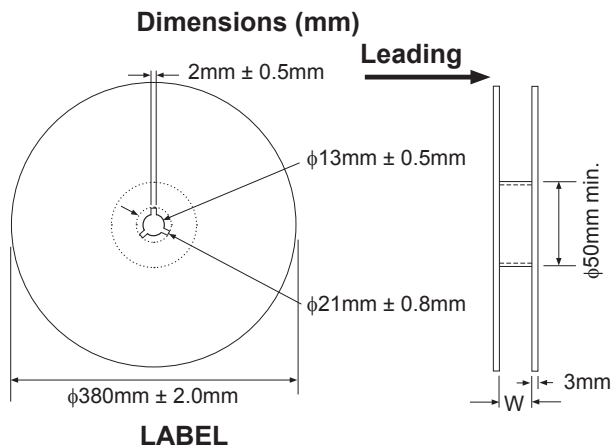
TAPING SPECIFICATIONS (mm)

- Both Leader and Trailer tape: Minimum 40mm (1.57") empty carrier tape pockets.
- Leader tape: Approximately 20cm of cover tape at leader.
- Connection: Maximum 3 connections (slices) per reel.

Case Size	A ±0.2	B ±0.2	C ±0.3	D ±0.1	P ±0.1	T ±0.2	t max.
5x6.1	5.7	5.7	12.0	5.5	12.0	6.4	0.6
6.3x6.1	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
8x10.5	8.7	8.7	24.0	11.5	16.0	11.1	0.6
10x10.5	10.7	10.7	24.0	11.5	16.0	11.2	0.6
10x12.5	10.7	10.7	24.0	11.5	16.0	13.3	0.6



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



Reel Quantity

Case Size	W ⁺³ / ₋₁	Qty per Reel 15" (380mm)
5x6.1	14	1200
6.3x6.1	18	1000
6.3x8	18	900
8x10.5	26	500
10x10.5	26	500
10x12.5	26	400