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

UPGRADE

NSPE-TF → NSPE-TC

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 stablizing 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

- F — RoHS Compliant
- Y — Suitable for automotive equipment, sourced to special production and inspection at IATF-16949 certified production site
- W — Wide Termination Option (see page 3)
- LB — LB = Sn-Bi Finish & 15" Reel, LS = 100% Sn & 15" Reel
- N — Reflow Temp. Code (N=+260°C)
- 10x10.5 — Size in mm
- 25V — Working Voltage
- M — Tolerance Code M=20%
- 271 — Capacitance Code in µF, first 2 digits are significant. Third digit is no. of zeros, "R" indicates decimal for values under 10µF
- NSPE-TC — 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 PRODUCTS AND CASE SIZES Dϕ x L (mm)

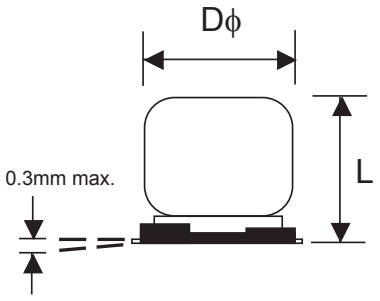
PART NUMBER	Cap. (µF)	Working Voltage	Case Size (D X L) mm	Max. ESR (mΩ) AT 100kHz/20°C	Max. Ripple Current (mA rms) AT 100KHz/125°C	Load Life Hours (+125°C)
NSPE-TC221M16V6.3X8NLBYF	220	16	6.3X8	30	1800	4000
NSPE-TC471M16V8X10.5NLBYF	470		8X10.5	27	2000	4000
NSPE-TC821M16V10X10.5NLBYF	820		10X10.5	20	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

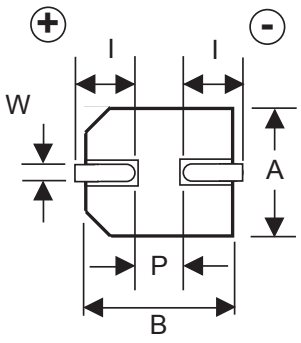
Frequency	100Hz ≤ 1KHz	1KHz ≤ 10KHz	1KHz ≤ 50KHz	10KHz ≤ 100KHz	100K ≤ 500KHz
Correction Factor	0.10	0.35	0.65	0.90	1.00

DIMENSIONS (mm)

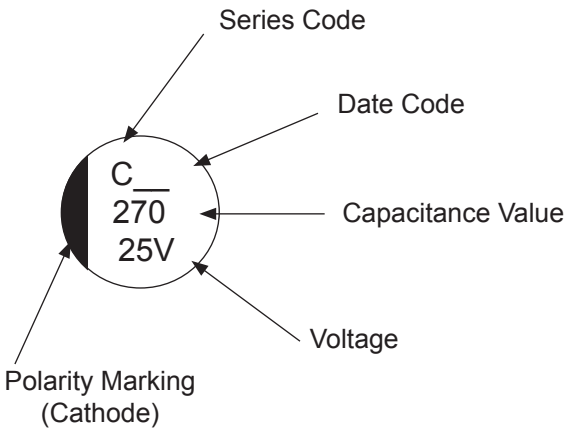
Case Size	Dϕ ±0.5	L max.	A, B ±0.2	W	(I)	(P)
5x6.1	5.0	6.1	5.3	0.5 ~ 0.8	2.3	1.4
6.3x6.1	6.3	6.1	6.6	0.5 ~ 0.8	2.5	2.2
6.3X8	6.3	8.0	6.6	0.5 ~ 0.8	2.5	2.2
8x10.5	8	10.5	8.3	0.7 ~ 1.0	2.9	3.2
10x10.5	10	10.5	10.3	1.0 ~ 1.4	3.2	4.6
10x12.5	10	12.5	10.3	1.0 ~ 1.4	3.2	4.6



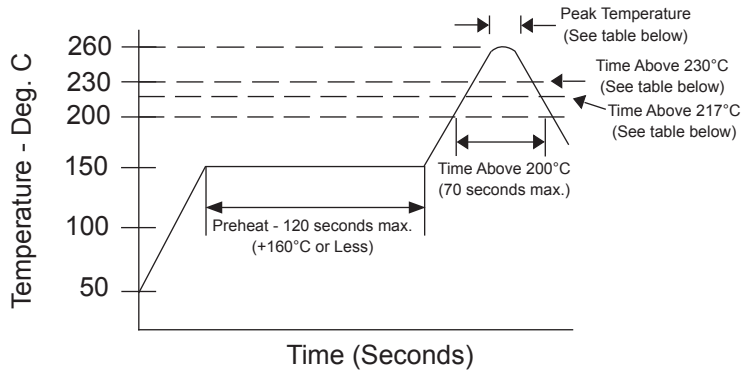
Note: L dimension does not include termination deflection



Part Marking

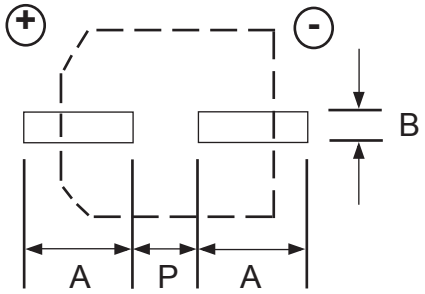


RECOMMENDED REFLOW SOLDERING PROFILE*



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*

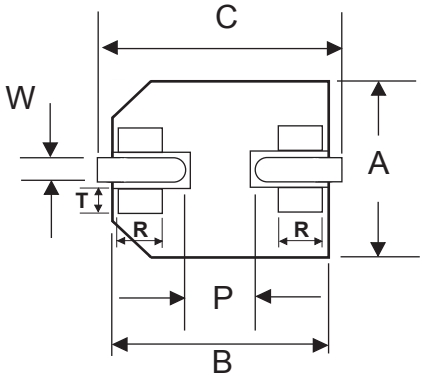
*Two reflow passes are permissible with a natural cool down to room temperature required between the first and second pass.

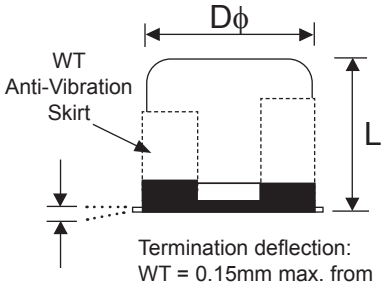
W (WIDE TERMINATIONS) COMPONENT DIM. (mm)

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)

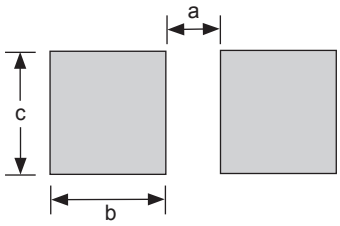
W (WIDE TERMINATIONS) LAND PATTERN DIM. (mm)

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





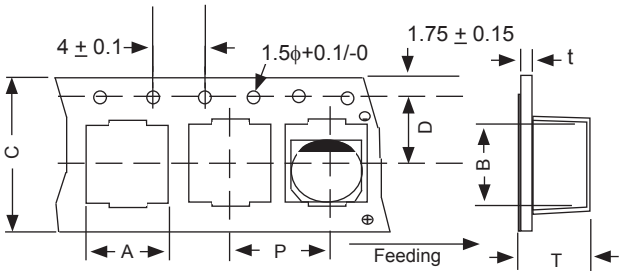
Termination deflection:
WT = 0.15mm max. from bottom of support terminals



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)

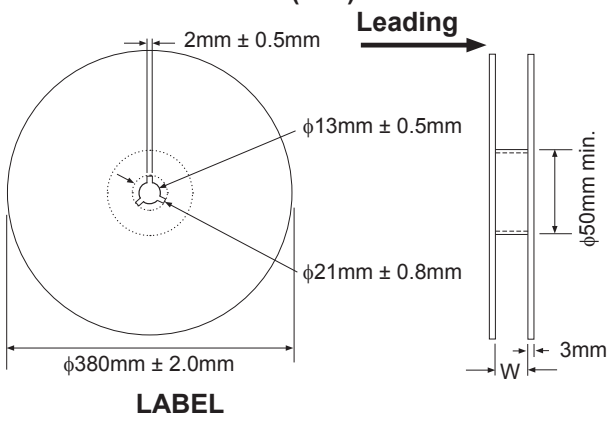
1. Both Leader and Trailer tape: Minimum 40mm (1.57") empty carrier tape pockets.
2. Leader tape: Approximately 20cm of cover tape at leader.
3. Connection: Maximum 3 connections (slices) per reel.



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)

Dimensions (mm)



LABEL

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

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NIC Components:

NEXC473Z5.5V10.5X5.5TRF NMC-P1206X7R103K500TRPLPF NTR10B1002CTRF NMC0402NPO300J50TRPF NRC06F2741TRF NRC06J681TRF NRC100J751TRF NRC10J332TRF NMC0402X7R103K50TRPF NMC0402X7R152J10TRPF NRC04J470TRF NRC10F1003TRF NRE-JL101M63V10X12.5F NSPE-HF150M63V6.3X6.1NLBYF NRC100F2002TRF NRC10J1R0TRF NRC50F5620TRF NRC12F61R9TRF NSPE-HF470M35V6.3X6.1NLBYF NTR04B1502CTRF NRSZ101M50V10X12.5F NSPE-HF331M35V10X12.5NLBYF NMC0402X7R104K10TRPF NMC0805X7R225K25TRPLPF NPIM75B4R7MTRF NRC06J201TRF NAZT471M25V10X10.5LBF NRC04F3162TRF NSPE-HF820M63V10X10.5NLBYF NACZ331M6.3V6.3X8TR13F