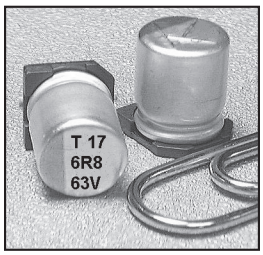
NSPE-T Series
Hybrid Aluminum Electrolytic Capacitors

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- EXTENDED LOAD LIFE AT HIGH TEMPERATURE (1,500 ~ 3,000 HOURS @ +125°C)
- HIGH VOLTAGE RATINGS (16 ~ 125VDC)
- LOW ESR AND HIGH RIPPLE CURRENT RATINGS
- 6.3x6.3mm ~ 10x12.8mm CASE SIZES
- REFLOW SOLDERING RATED TO +260°C (+250°C 80V & 125V)
- MEETS THE REQUIREMENTS OF AEC-Q200*

*Contact NIC for supporting test data

Available with Wide Anti-Vibration Terminations



CHARACTERISTICS

Rated Voltage Range	16 ~ 125Vdc									
Rated Capacitance Range	6.8 ~ 560µF									
Operating Temp. Range	-55 ~ +125°C									
Capacitance Tolerance	±20% (M)									
Max. Leakage Current After 2 Minutes @ 20°C	16 ~ 63Vdc	0.01CV								
	80 ~ 125Vdc	Less than 0.05CV or 100µA whichever is greater								
Working and Surge Voltage Ratings	W.V. (Vdc)	16	25	35	40	50	63	80	100	125
	S.V. (Vdc)	20	32	44	50	63	79	100	125	157
Tan δ @ 120Hz/20°C		0.16								
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	40	50	63	80	100	125
	Case Dia. 16V	φ6.3 = 1,500 hrs, φ8 & 10 = 2500 hrs.								
	Case Dia. 25V & up	6.3X6.3 = 1500 hrs, 6.3X8 = 2000 hrs, φ8 & 10 = 3000 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								
	ESR	Less than 200% of specified max. value								
Resistance to Soldering Heat	Hot Plate at +250°C for 30 seconds with electrodes facing downward									
	Capacitance Change	Within ±10% of the initial measured value								
	Dissipation Factor	Less than the initial limit								
	Leakage Current	Less then the initial limit								
	ESR	Less than 130% of specified value								

STANDARD PRODUCTS AND CASE SIZES Dϕ x L (mm)

PART NUMBER	Cap. (µF)	Working Voltage	Case Size (D X L) mm	Max. Tan δ 120Hz/20°C	Max. ESR (mΩ) AT 100kHz/20°C	Max. Ripple Current (mA rms) AT 100KHz/125°C	Load Life Hours (+125°C)
NSPE-T121M16V6.3X8NLBYF	120	16	6.3X8	0.16	40	1160	1500
NSPE-T271M16V8X10.8NLBYF	270		8X10.8	0.16	26	1540	2500
NSPE-T471M16V10X10.8NLBYF	470		10X10.8	0.16	21	2010	2500
NSPE-T561M16V10X12.8NLBYF	560		10X12.8	0.16	15	2320	2500
NSPE-T470M25V6.3X6.3NLBYF	47	25	6.3X6.3	0.16	60	890	1500
NSPE-T680M25V6.3X8NLBYF	68		6.3X8	0.16	45	980	2000
NSPE-T151M25V8X10.8NLBYF	150		8X10.8	0.16	27	1330	3000
NSPE-T271M25V10X10.8NLBYF	270		10X10.8	0.16	22	1520	3000
NSPE-T331M25V10X12.8NLBYF	330		10X12.8	0.16	16	1740	3000
NSPE-T270M35V6.3X6.3NLBYF	27	35	6.3X6.3	0.16	100	760	1500
NSPE-T470M35V6.3X8NLBYF	47		6.3X8	0.16	60	910	2000
NSPE-T101M35V8X10.8NLBYF	100		8X10.8	0.16	30	1260	3000
NSPE-T151M35V10X10.8NLBYF	150		10X10.8	0.16	23	1480	3000
NSPE-T221M35V10X12.8NLBYF	220		10X12.8	0.16	17	1700	3000
NSPE-T180M40V6.3X6.3NLBYF	18	40	6.3X6.3	0.16	110	720	1500
NSPE-T270M40V6.3X8NLBYF	27		6.3X8	0.16	70	870	2000
NSPE-T560M40V8X10.8NLBYF	56		8X10.8	0.16	32	1220	3000
NSPE-T101M40V10X10.8NLBYF	100		10X10.8	0.16	24	1440	3000
NSPE-T121M40V10X12.8NLBYF	120		10X12.8	0.16	18	1650	3000

For Automotive Applications See Part Numbering System. For non-Y legacy parts contact NIC for availability

STANDARD PRODUCTS AND CASE SIZES Dϕ x L (mm)

PART NUMBER	Cap. (µF)	Working Voltage	Case Size (D X L) mm	Max. Tan δ 120Hz/20°C	Max. ESR (mΩ) AT 100kHz/20°C	Max. Ripple Current (mA rms) AT 100KHz/125°C	Load Life Hours (+125°C)
NSPE-T100M50V6.3X6.3NLBYF	10	50	6.3X6.3	0.16	120	690	1500
NSPE-T150M50V6.3X8NLBYF	15		6.3X8	0.16	80	840	2000
NSPE-T330M50V8X10.8NLBYF	33		8X10.8	0.16	35	1170	3000
NSPE-T560M50V10X10.8NLBYF	56		10X10.8	0.16	25	1390	3000
NSPE-T820M50V10X12.8NLBYF	82		10X12.8	0.16	19	1590	3000
NSPE-T6R8M63V6.3X6.3NLBYF	6.8	63	6.3X6.3	0.16	150	670	1500
NSPE-T100M63V6.3X8NLBYF	10		6.3X8	0.16	100	740	2000
NSPE-T220M63V8X10.8NLBYF	22		8X10.8	0.16	40	1090	3000
NSPE-T330M63V8X10.8NLBYF	33		8X10.8	0.16	40	1090	3000
NSPE-T330M63V10X10.8NLBYF	33		10X10.8	0.16	30	1260	3000
NSPE-T470M63V10X10.8NLBYF	47		10X10.8	0.16	30	1260	3000
NSPE-T560M63V10X12.8NLBYF	56		10X12.8	0.16	22	1440	3000
NSPE-T120M80V10X10.8LLBYF	12	80	10X10.8	0.16	70	900	3000
NSPE-T150M80V10X10.8LLBYF	15		10X10.8	0.16	70	900	3000
NSPE-T180M80V10X12.8LLBYF	18		10X12.8	0.16	50	1100	3000
NSPE-T100M100V10X10.8LLBYF	10	100	10X10.8	0.16	80	870	3000
NSPE-T120M100V10X10.8LLBYF	12		10X10.8	0.16	80	870	3000
NSPE-T150M100V10X12.8LLBYF	15		10X12.8	0.16	60	1000	3000
NSPE-T100M125V10X10.8LLBYF	10	125	10X10.8	0.16	90	750	3000

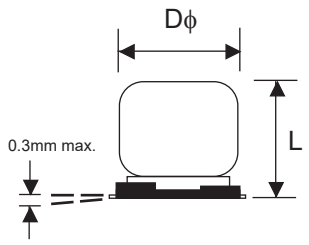
For Automotive Applications See Part Numbering System. For non-Y legacy parts contact NIC for availability

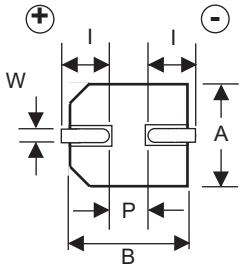
RIPPLE CURRENT FREQUENCY CORRECTION FACTOR

Frequency	100Hz	1KHz	10KHz	100KHz
6.8 ~ 33µF	0.05	0.32	0.67	1.0
47 ~ 560µF	0.10	0.35	0.70	1.0

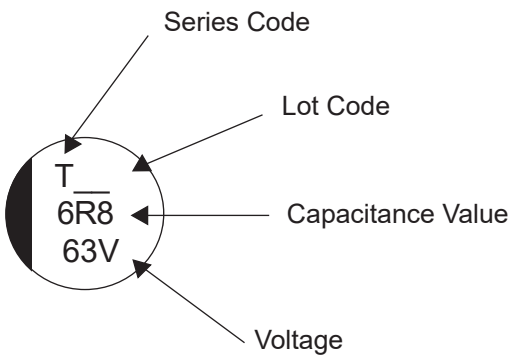
DIMENSIONS (mm)

Case Size	Dϕ ±0.5	L max.	A, B ±0.2	W	I ±0.2	P ±0.2
6.3x6.3	6.3	6.3	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
8x10.8	8.0	10.8	8.3	0.7 ~ 1.0	2.9	3.2
10x10.8	10	10.8	10.3	1.0 ~ 1.4	3.2	4.6
10x12.8	10	12.8	10.3	1.0 ~ 1.4	3.2	4.6





Part Marking



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**

PART NUMBER SYSTEM

NSPE-T 220 M 63V 8x10.8 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~12mm diameter)
- LB — LB=Sn-Bi Finish & 15" Reel
- N — Reflow Temp. Code (L=+250°C, N=+260°C)
- 8x10.8 — Size in mm
- 63V — Working Voltage
- M — Tolerance Code M=20%
- 220 — Capacitance Code in µF, first 2 digits are significant. Third digit is no. of zeros, "R" indicates decimal for values under 10µF
- NSPE-T — Series

Code	Plating	Termination Type	Automotive	Reel Size
LB	Sn-Bi	Standard	No	15" Reel
LBY	Sn-Bi	Standard	Yes	15" Reel
LBW	Sn-Bi	Wide Terminations	No	15" Reel
LBWY	Sn-Bi	Wide Terminations	Yes	15" Reel

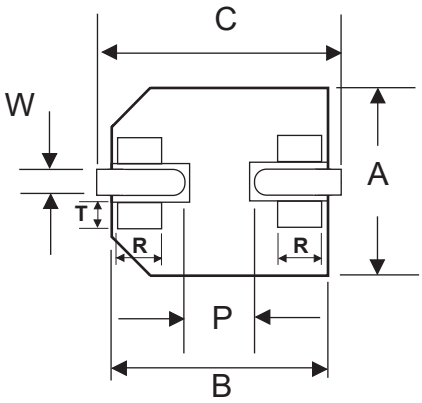
W (WIDE TERMINATIONS) COMPONENT DIM. (mm)

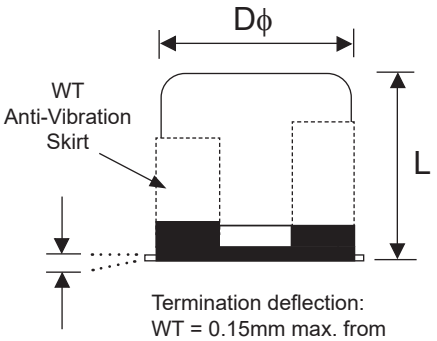
Case Size	Dϕ ±0.5	L max.	A, B ±0.2	C ±0.2	P	W	R	T
6.3x6.3	6.3	6.5	6.6 ± 0.2	7.3	(2.2)	0.5 ~ 0.8	(1.7)	(0.7)
6.3x8	6.3	8.2	6.6 ± 0.2	7.3	(2.2)	0.5 ~ 0.8	(1.7)	(0.7)
8x10.8	8.0	11.2	8.3	9.0	(3.2)	0.7 ~ 1.0	(0.7)	(1.3)
10x10.8	10.0	11.2	10.3	11.0	(4.6)	1.0 ~ 1.4	(0.7)	(1.3)
10x12.8	10.0	13.5	10.3	11.0	(4.6)	1.0 ~ 1.4	(0.7)	(1.3)

(Reference dimensions)

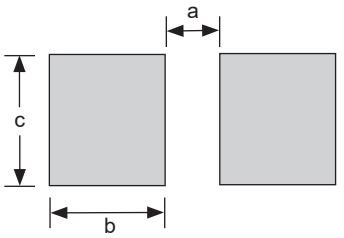
W (WIDE TERMINATIONS) LAND PATTERN DIM. (mm)

Case Size	a	b	c
6.3x6.3	1.6	4.0	3.0
6.3x8	2.5	4.5	4.7
8x10.8	2.5	4.5	4.7
10x10.8	3.8	4.8	4.7
10x12.8	3.8	4.8	4.7



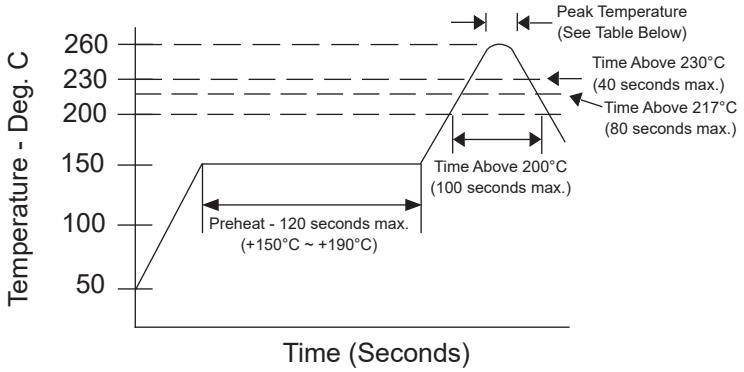


Termination deflection:
WT = 0.15mm max. from bottom of support terminals



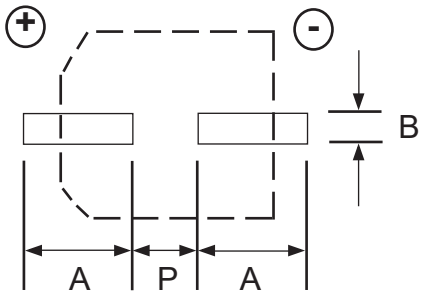
W (Wide Terminations) Anti-Vibration Test	
Test Method	Direction: X, Y, Z axis Frequency & Duration: 5 to 2000Hz reciprocation for 20 minutes, 2 hours each direction Peak to Peak Amplitude: 5mm Peak Acceleration: 30G Sweep Type: Log
Δ Capacitance	Within ± 10% of initial value
Tangent of Loss	≤ Specified value
Leakage Current	≤ Specified value

RECOMMENDED REFLOW SOLDERING PROFILE*



LAND PATTERN DIM. (mm)

Case Dia.	A	B	P
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

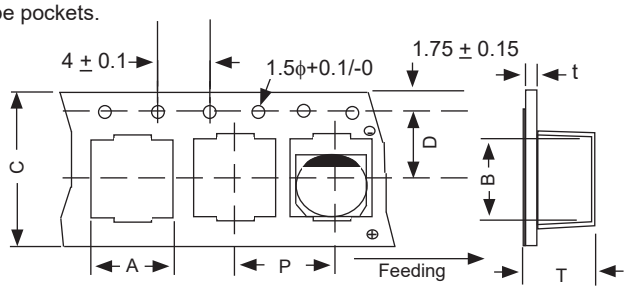
Rated Voltage/Diameter	Time Above +200°C	Time Above +217°C	Time Above +230°C	Peak Temperature
16V ~ 63V / 6.3mm ~ 10mm	100 sec. max.	80 sec. max.	40 sec. max.	+260°C (5 sec. max.)
80 ~ 125V / 10mm				+250°C (5 sec. max.)

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

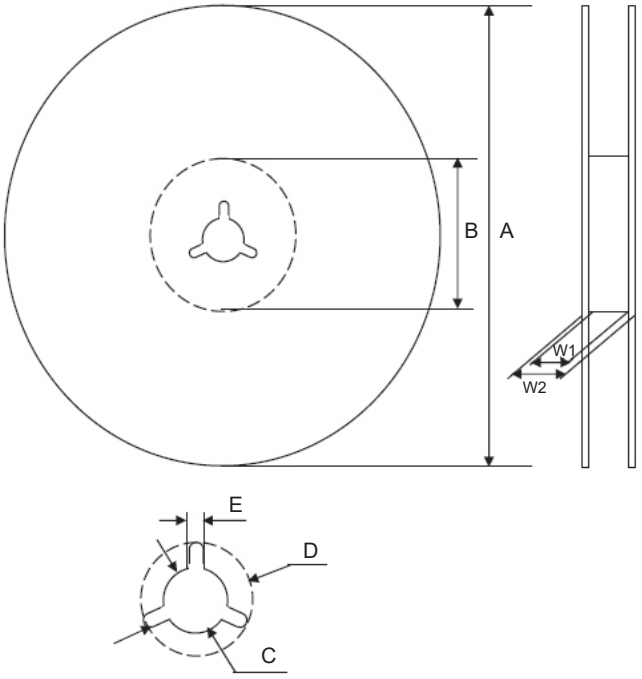
TAPING SPECIFICATIONS (mm)

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 ±0.5	B ±0.5	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	11.0	0.6
10x10.8	10.7	10.7	24.0	11.5	16.0	11.0	0.6
10x12.8	10.7	10.7	24.0	11.5	16.0	13.3	0.6



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



Dimensions (mm)

Case Size	Tape Width	W1	W2
6.3x6.3, 6.3x8	16.0	16.5 ~ 18.5	19.5 ~ 24.0
8x10.5, 10x10.5, 10x12.8	24.0	24.5 ~ 26.5	27.5 ~ 32.0

Case Size	Tape Width	A	B	C	D	E
6.3x6.3, 6.3x8	16.0	ϕ380 ±2	ϕ80~105	ϕ13 ±0.5	ϕ21 ±1.0	2.0 ±0.5
8x10.5, 10x10.5, 10x12.8	24.0					

Case Size	Qty per Reel
	15" (380mm)
6.3x6.3	1000
6.3x8	900
8x10.5	500
10x10.5	500
10x12.8	400