

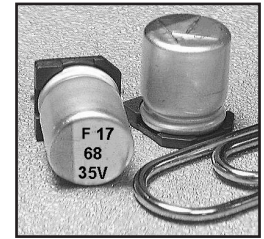
# Hybrid Aluminum Electrolytic Capacitors

NSPE-TF Series

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- EXTENDED LOAD LIFE AT HIGH TEMPERATURE (4,000 HOURS @ +125°C)
- HIGH VOLTAGE RATINGS (25 ~ 100VDC)
- HIGH RIPPLE CURRENT RATINGS
- 6.3x6.1mm ~ 10x12.5mm CASE SIZES
- HIGH REFLOW SOLDERING TEMPERATURES (+260°C)
- MEETS THE REQUIREMENTS OF AEC-Q200\*

\*Contact NIC for supporting test data

Available with Wide  
Anti-Vibration  
Terminations



## CHARACTERISTICS

Rated Voltage Range	25 ~ 100Vdc	
Rated Capacitance Range	10 ~ 470 $\mu$ F	
Operating Temp. Range	-55 ~ +125°C	
Capacitance Tolerance	$\pm$ 20% (M)	
Max. Leakage Current After 2 Minutes @ 20°C	25V ~ 100V	0.01CV
Working and Surge Voltage Ratings	W.V. (Vdc)	25    35    50    63    80    100
	S.V. (Vdc)	32    44    63    79    100    125
Tan $\delta$ @ 120Hz/+20°C	0.14    0.12    0.10    0.08    0.08    0.08	
Impedance Ratio @ 120Hz	Z -55°C/Z +20°C	1.0 ~ 2.5
	Z +125°C/Z +20°C	0.6 ~ 1.0
Load Life Test @ +125°C and Rated Voltage	Hour	4,000 hrs.
	Capacitance Change	Within $\pm$ 30% of initial measured value
	Tan $\delta$ and ESR	Less than 200% of specified max. value
	Leakage Current	Less than specified max. value

## STANDARD PRODUCTS AND CASE SIZES D $\phi$ x L (mm)

PART NUMBER	Cap. ( $\mu$ F)	Working Voltage	Case Size (D X L) mm	Max. ESR (m $\Omega$ ) AT 100KHz/+20°C	Max. Ripple Current (mA rms) @100KHz/+125°C	Load Life Hours @ +125°C
NSPE-TF560M25V6.3X6.1NLBYF	56	25	6.3X6.1	50	900	4000
NSPE-TF101M25V6.3X8NLBYF	100		6.3X8	30	1400	4000
NSPE-TF221M25V8X10.5NLBYF	220		8X10.5	27	1600	4000
NSPE-TF331M25V10X10.5NLBYF	330		10X10.5	20	2000	4000
NSPE-TF471M25V10X12.5NLBYF	470		10X12.5	16	2260	4000
NSPE-TF470M35V6.3X6.1NLBYF	47	35	6.3X6.1	60	900	4000
NSPE-TF680M35V6.3X8NLBYF	68		6.3X8	35	1400	4000
NSPE-TF151M35V8X10.5NLBYF	150		8X10.5	27	1600	4000
NSPE-TF271M35V10X10.5NLBYF	270		10X10.5	20	2000	4000
NSPE-TF331M35V10X12.5NLBYF	330		10X12.5	17	2260	4000
NSPE-TF220M50V6.3X6.1NLBYF	22	50	6.3X6.1	80	750	4000
NSPE-TF330M50V6.3X8NLBYF	33		6.3X8	40	1100	4000
NSPE-TF680M50V8X10.5NLBYF	68		8X10.5	30	1250	4000
NSPE-TF101M50V10X10.5NLBYF	100		10X10.5	28	1600	4000
NSPE-TF121M50V10X10.5NLBYF	120		10X10.5	28	1600	4000
NSPE-TF151M50V10X12.5NLBYF	150		10X12.5	19	1820	4000
NSPE-TF100M63V6.3X6.1NLBYF	10	63	6.3X6.1	120	700	4000
NSPE-TF150M63V6.3X6.1NLBYF	15		6.3X6.1	120	700	4000
NSPE-TF150M63V6.3X8NLBYF	15		6.3X8	80	900	4000
NSPE-TF220M63V6.3X8NLBYF	22		6.3X8	80	900	4000
NSPE-TF330M63V8X10.5NLBYF	33		8X10.5	40	1100	4000
NSPE-TF470M63V8X10.5NLBYF	47		8X10.5	40	1100	4000
NSPE-TF560M63V10X10.5NLBYF	56		10X10.5	30	1400	4000
NSPE-TF680M63V10X10.5NLBYF	68		10X10.5	30	1400	4000
NSPE-TF680M63V10X12.5NLBYF	68		10X12.5	22	1650	4000
NSPE-TF820M63V10X10.5NLBYF	82		10X10.5	30	1400	4000
NSPE-TF101M63V10X12.5NLBYF	100		10X12.5	22	1650	4000

STANDARD PRODUCTS AND CASE SIZES CONTINUE ON NEXT PAGE

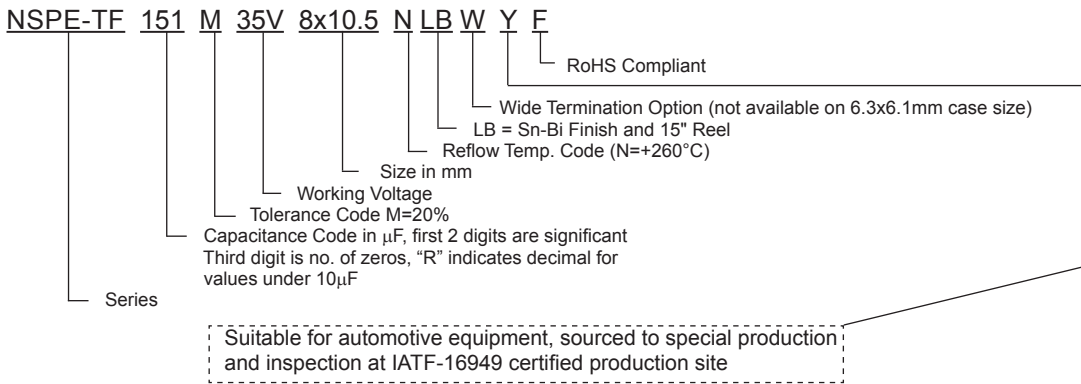
### STANDARD PRODUCTS AND CASE SIZES D $\phi$ x L (mm)

PART NUMBER	Cap. ( $\mu$ F)	Working Voltage	Case Size (D X L) mm	Max. ESR (m $\Omega$ ) AT 100KHz/+20°C	Max. Ripple Current (mA rms) @100KHz/+125°C	Load Life Hours @ +125°C
NSPE-TF220M80V8X10.5NLBYF	22	80	8X10.5	45	1030	4000
NSPE-TF270M80V8X10.5NLBYF	27		8X10.5	45	1030	4000
NSPE-TF330M80V10X10.5NLBYF	33		10X10.5	36	1270	4000
NSPE-TF390M80V10X12.5NLBYF	39		10X12.5	32	1360	4000
NSPE-TF470M80V10X10.5NLBYF	47		10X10.5	36	1270	4000
NSPE-TF560M80V10X12.5NLBYF	56		10X12.5	32	1360	4000
NSPE-TF100M100V8X10.5NLBYF	10	100	8X10.5	60	900	4000
NSPE-TF150M100V10X10.5NLBYF	15		10X10.5	45	1120	4000
NSPE-TF180M100V10X12.5NLBYF	18		10X12.5	40	1220	4000

### RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

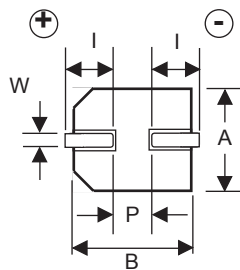
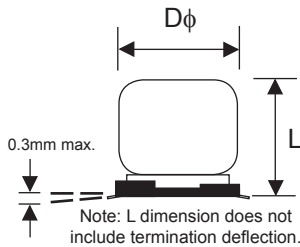
Cap. $\mu$ F	100Hz $\leq$ F < 1KHz	1KHz $\leq$ F < 10KHz	10KHz $\leq$ F < 100KHz	100KHz $\leq$ F < 500KHz
C $\leq$ 33	0.05	0.32	0.67	1.00
33 < C	0.10	0.35	0.70	1.00

### PART NUMBER SYSTEM

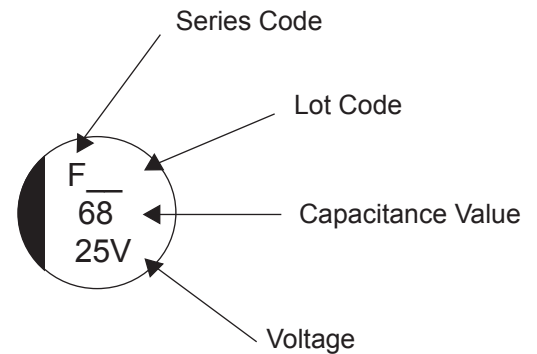


### DIMENSIONS (mm)

Case Size	D $\phi$ $\pm$ 0.5	L max.	A, B $\pm$ 0.2	W	I $\pm$ 0.3	(P)
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	8.0	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

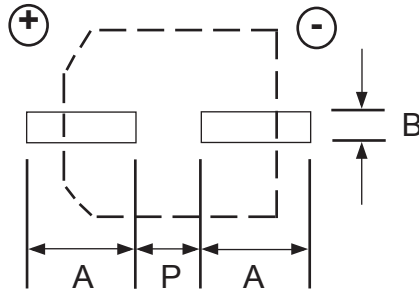


### PRECAUTIONS

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](mailto:tpmg@niccomp.com)

## STANDARD TERMINATION 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

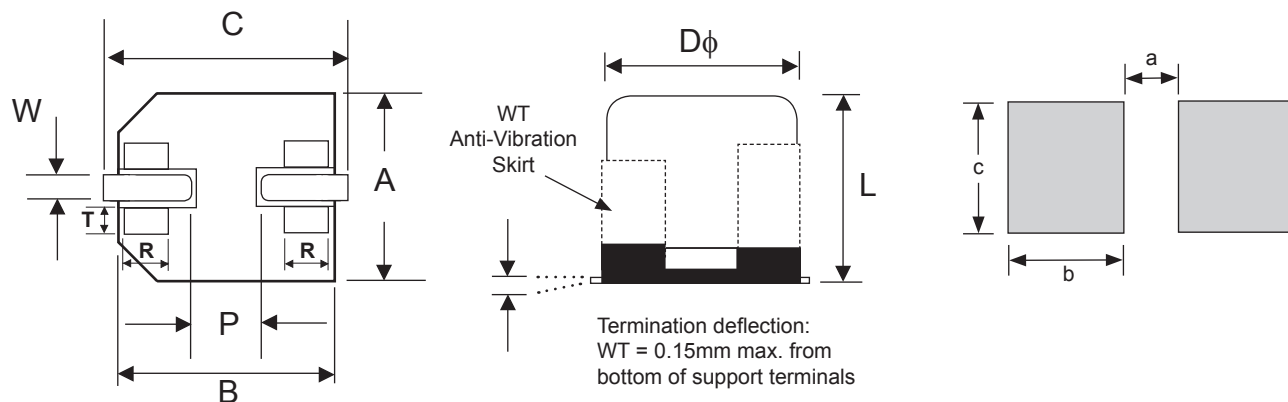


## WIDE TERMINATION DIM. (mm)

Case Size	Dφ ±0.5	L max.	A, B	C ±0.2	P	W	R	T
6.3x8WT	6.3	8.2	6.6 ± 0.2	7.3	(2.2)	0.5 ~ 0.8	(1.7)	(0.7)
8x10.5WT	8.0	11.2	8.3 ± 0.2	9.0	(3.2)	0.7 ~ 1.0	(0.7)	(1.3)
10x10.5WT	10.0	11.2	10.3 ± 0.2	11.0	(4.6)	1.0 ~ 1.4	(0.7)	(1.3)
10x12.5WT	10.0	13.5	10.3 ± 0.2	11.0	(4.6)	1.0 ~ 1.4	(0.7)	(1.3)

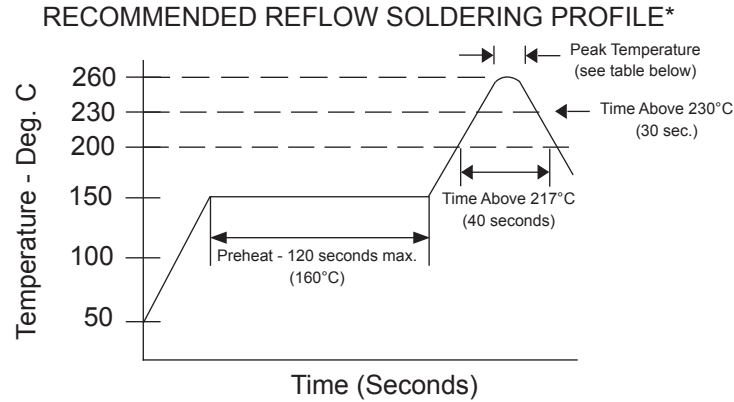
## WIDE TERMINATION LAND PATTERN DIM. (mm)

Case Size	a	b	c
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 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

Review & Compare Reflow Soldering Heat Limits  
V-chip SMT Aluminum Electrolytic Capacitors  
[www.niccomp.com/RSL](http://www.niccomp.com/RSL)



**PEAK TEMPERATURE AND DURATION RATED VOLTAGE: 25 ~ 50Vdc**

Diameter	Time above 200°C	Time above 217°C	Time above 230°C	Peak Temperature	Number of reflow passes allowed
6.3mm	70 sec. max.	40 sec. max.	30 sec. max.	260°C	2*
8mm & 10mm	70 sec. max.	50 sec. max.	40 sec. max.	245°C	2*
	70 sec. max.	40 sec. max.	30 sec. max.	260°C	1

**PEAK TEMPERATURE AND DURATION RATED VOLTAGE: 63 ~ 100Vdc**

Diameter	Time above 200°C	Time above 217°C	Time above 230°C	Peak Temperature	Number of reflow passes allowed
6.3 ~ 10mm	70 sec. max.	40 sec. max.	30 sec. max.	260°C	1
	70 sec. max.	40 sec. max.	30 sec. max.	245°C	2*

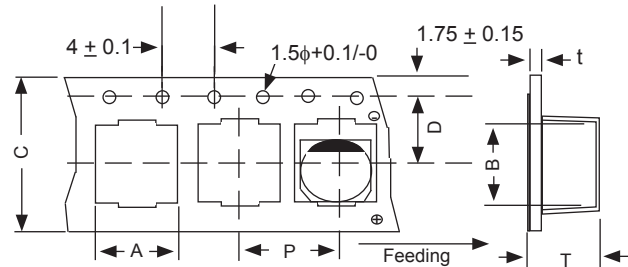
\*Two reflow passes are permissible with a cool down to room temperature required between the first and second pass.

**TAPING SPECIFICATIONS (mm)**

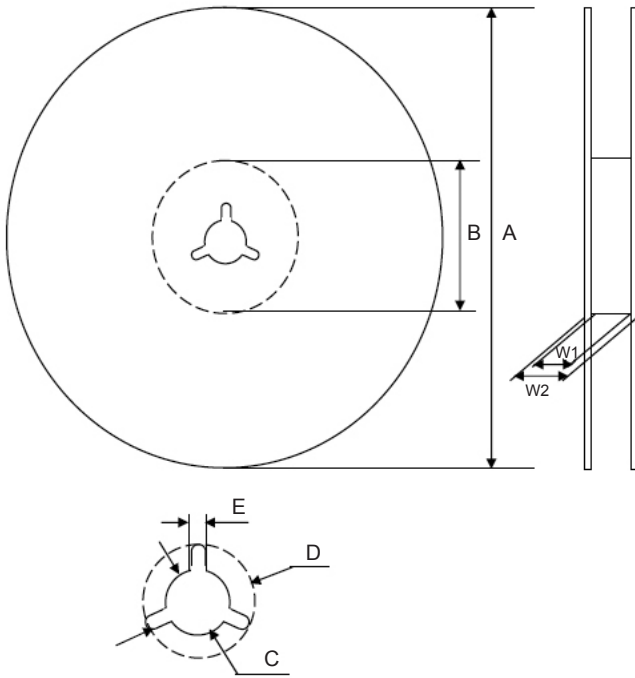
1. Both Leader and Trailer tape: Minimum 40mm (1.57") empty carrier tape pockets.
2. Leader tape: Approximately 20cm of cover tape at leader.
3. Connection: Maximum 3 connections (slices) per reel.

**CARRIER DIMENSIONS (mm)**

Case Size	A ±0.2	B ±0.2	C ±0.3	D ±0.1	P ±0.1	T ±0.2	t max.
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 (LBF suffix)



### Dimensions (mm)

Case Size	Tape Width	W1	W2
6.3x6.1, 6.3x8	16.0	16.5 ~ 18.5	19.5 ~ 24.0
8x10.5, 10x10.5, 10x12.5	24.0	24.5 ~ 26.5	27.5 ~ 32.0

Case Size	Tape Width	A	B	C	D	E
6.3x6.1, 6.3x8	16.0	$\phi 380$ $\pm 2$	$\phi 80 \sim 105$	$\phi 13$ $\pm 0.5$	$\phi 21$ $\pm 1.0$	2.0 $\pm 0.5$
8x10.5, 10x10.5, 10x12.5	24.0					

Color
Black

Case Size	Qty per Reel 15" (380mm)
6.3X6.1	1000
6.3X8	900
8X10.5	500
10X10.5	500
10X12.5	400