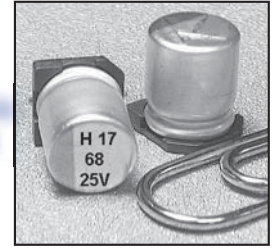


# Hybrid Aluminum Electrolytic Capacitors

NSPE-H Series

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- EXTENDED LOAD LIFE AT HIGH TEMPERATURE (2000 ~ 10,000 HOURS @ +105°C)
- HIGH VOLTAGE RATINGS (16 ~ 125VDC)
- LOW ESR AND HIGH RIPPLE CURRENT RATINGS
- 6.3x4.8mm ~ 10x12.8mm CASE SIZES
- REFLOW SOLDERING RATED UP TO +260°C
- MEETS THE REQUIREMENTS OF AEC-Q200\*

**Anti-Vibration, Wide Terminations  
(8mm & 10mm Diameter Parts)**



\*Contact NIC for supporting test data

## CHARACTERISTICS

Rated Voltage Range	16 ~ 125Vdc										
Rated Capacitance Range	6.8 ~ 560μF										
Operating Temp. Range	-55 ~ +105°C										
Capacitance Tolerance	±20% (M)										
Max. Leakage Current After 2 Minutes @ 20°C	16 ~ 63Vdc										
	80 ~ 125Vdc										
Working and Surge Voltage Ratings	Less than 0.01CV or 3μA whichever is greater										
	Less than 0.05CV or 100μA whichever is greater										
	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										
	Z +105°C/Z +20°C										
	W.V. (Vdc)	16	25	35	40	50	63	80	100	125	
	Case Dia.	6.3x4.8mm	-	2000 hrs.	-	-	-	-	-	-	-
Load Life Test @ 105°C and Rated Voltage	Case Dia.	φ6.3mm	3000 hrs.	5000 hrs.				-	-	-	-
	Case Dia.	φ8 & 10mm	7000 hrs.	10000 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									

## 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/105°C	Load Life Hours (+105°C)
NSPE-H820M16V6.3X6.3NBF	82	16	6.3X6.3	0.16	55	1330	3000
NSPE-H121M16V6.3X8NBF	120		6.3X8	0.16	40	1500	3000
NSPE-H271M16V8X10.8NBF	270		8X10.8	0.16	26	2000	7000
NSPE-H471M16V10X10.8NBF	470		10X10.8	0.16	21	2600	7000
NSPE-H561M16V10X12.8NBF	560		10X12.8	0.16	15	3000	7000
NSPE-H270M25V6.3X4.8LBF	27	25	6.3X4.8	0.16	95	800	2000
NSPE-H470M25V6.3X6.3NBF	47		6.3X6.3	0.16	60	1270	5000
NSPE-H680M25V6.3X8NBF	68		6.3X8	0.16	45	1400	5000
NSPE-H151M25V8X10.8NBF	150		8X10.8	0.16	27	1900	10000
NSPE-H271M25V10X10.8NBF	270		10X10.8	0.16	22	2530	10000
NSPE-H331M25V10X12.8NBF	330		10X12.8	0.16	16	2900	10000
NSPE-H120M35V6.3X4.8LBF	12	35	6.3X4.8	0.16	150	640	2000
NSPE-H270M35V6.3X6.3NBF	27		6.3X6.3	0.16	100	1080	5000
NSPE-H470M35V6.3X8NBF	47		6.3X8	0.16	60	1300	5000
NSPE-H101M35V8X10.8NBF	100		8X10.8	0.16	30	1800	10000
NSPE-H151M35V10X10.8NBF	150		10X10.8	0.16	23	2470	10000
NSPE-H221M35V10X12.8NBF	220		10X12.8	0.16	17	2830	10000
NSPE-H180M40V6.3X6.3NBF	18	40	6.3X6.3	0.16	110	1030	5000
NSPE-H270M40V6.3X8NBF	27		6.3X8	0.16	70	1250	5000
NSPE-H560M40V8X10.8NBF	56		8X10.8	0.16	32	1750	10000
NSPE-H101M40V10X10.8NBF	100		10X10.8	0.16	24	2400	10000
NSPE-H121M40V10X12.8NBF	120		10X12.8	0.16	18	2750	10000
NSPE-H5R6M50V6.3X6.3NBF	5.6	50	6.3X6.3	0.16	120	980	5000
NSPE-H100M50V6.3X6.3NBF	10		6.3X6.3	0.16	120	980	5000

For Automotive Applications See Part Numbering System



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

PART NUMBER	Cap. ( $\mu$ F)	Working Voltage	Case Size (D X L) mm	Max. Tan $\delta$ 120Hz/20°C	Max. ESR (m $\Omega$ ) AT 100KHz/20°C	Max. Ripple Current (mA rms) AT 100KHz/105°C	Load Life Hours (+105°C)
NSPE-H100M50V6.3X8NBF	10	50	6.3X8	0.16	80	1200	5000
NSPE-H150M50V6.3X8NBF	15		6.3X8	0.16	80	1200	5000
NSPE-H330M50V8X10.8NBF	33		8X10.8	0.16	35	1670	10000
NSPE-H560M50V10X10.8NBF	56		10X10.8	0.16	25	2320	10000
NSPE-H820M50V10X12.8NBF	82		10X12.8	0.16	19	2650	10000
NSPE-H2R7M63V6.3X6.3NBF	2.7	63	6.3X6.3	0.16	150	960	5000
NSPE-H3R9M63V6.3X8NBF	3.9		6.3X8	0.16	100	1060	5000
NSPE-H6R8M63V6.3X6.3NBF	6.8		6.3X6.3	0.16	150	960	5000
NSPE-H100M63V6.3X8NBF	10		6.3X8	0.16	100	1060	5000
NSPE-H220M63V8X10.8NBF	22		8X10.8	0.16	40	1560	10000
NSPE-H330M63V8X10.8NBF	33		8X10.8	0.16	40	1560	10000
NSPE-H330M63V10X10.8NBF	33		10X10.8	0.16	30	2100	10000
NSPE-H470M63V10X10.8NBF	47		10X10.8	0.16	30	2100	10000
NSPE-H560M63V10X12.8NBF	56		10X12.8	0.16	22	2400	10000
NSPE-H120M80V10X10.8LBF	12		80	10X10.8	0.16	70	1600
NSPE-H150M80V10X10.8LBF	15	10X10.8		0.16	70	1600	10000
NSPE-H180M80V10X12.8LBF	18	10X12.8		0.16	50	1830	10000
NSPE-H100M100V10X10.8LBF	10	100	10X10.8	0.16	80	1450	10000
NSPE-H120M100V10X10.8LBF	12		10X10.8	0.16	80	1450	10000
NSPE-H150M100V10X12.8LBF	15		10X12.8	0.16	60	1660	10000
NSPE-H100M125V10X10.8LBF	10		125	10X10.8	0.16	90	1250

## RIPPLE CURRENT FREQUENCY CORRECTION FACTORS

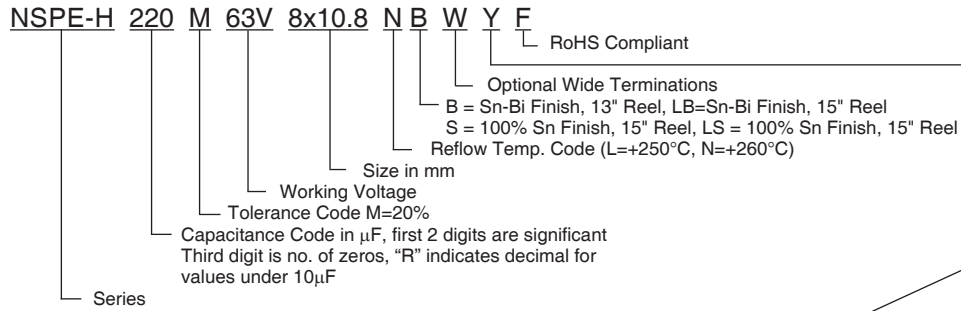
Cap. $\mu$ F	100Hz	1KHz	10KHz	100KHz
C $\leq$ 4.7	0.03	0.30	0.65	1.00
5.6 ~ 33	0.05	0.32	0.67	1.00
> 33	0.10	0.35	0.70	1.00

### PRECAUTIONS

Please review the notes on correct use, safety and precautions found on pages T10 & T11 of NIC's Electrolytic Capacitor catalog.  
 Also found at [www.niccomp.com/precautions](http://www.niccomp.com/precautions)  
 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)



### PART NUMBER SYSTEM

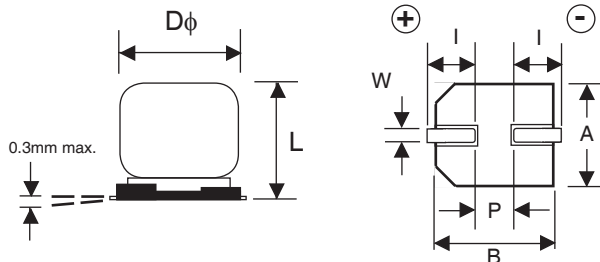


Optional: Suitable for automotive equipment, sourced to special production and inspection at TS-16949 certified production site

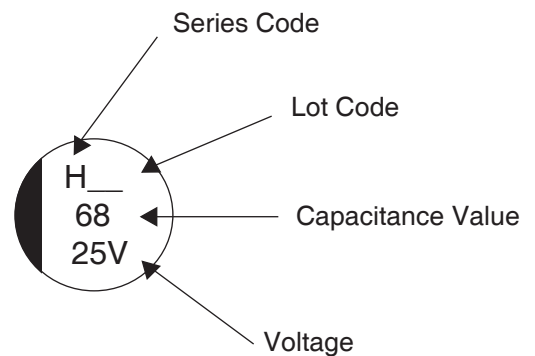
Code	Plating	Termination Type	Automotive	Reel Size
B	Sn-Bi	Standard	No	13" Reel
BW	Sn-Bi	Wide Terminations	No	13" Reel
BY	Sn-Bi	Standard	Yes	13" Reel
BWY	Sn-Bi	Wide Terminations	Yes	13" Reel
LB	Sn-Bi	Standard	No	15" Reel
LBW	Sn-Bi	Wide Terminations	No	15" Reel
LBY	Sn-Bi	Standard	Yes	15" Reel
LBWY	Sn-Bi	Wide Terminations	Yes	15" Reel
S	100% Sn	Standard	No	13" Reel
SW	100% Sn	Wide Terminations	No	13" Reel
SY	100% Sn	Standard	Yes	13" Reel
SWY	100% Sn	Wide Terminations	Yes	13" Reel
LS	100% Sn	Standard	No	15" Reel
LSW	100% Sn	Wide Terminations	No	15" Reel
LSY	100% Sn	Standard	Yes	15" Reel
LSWY	100% Sn	Wide Terminations	Yes	15" Reel

### DIMENSIONS (mm)

Case Size	$D\phi \pm 0.5$	L max.	A, B $\pm 0.2$	W	I $\pm 0.2$	P $\pm 0.2$
6.3X4.8	6.3	4.8	6.6	0.5 ~ 0.8	2.5	2.2
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

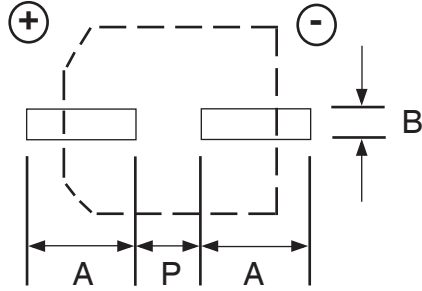


### Part Marking



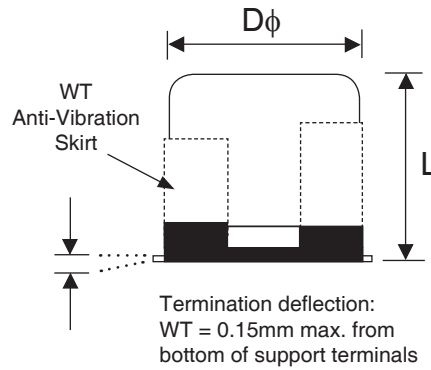
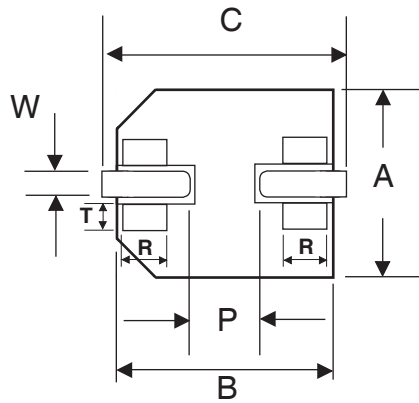
## STANDARD TERMINATION LAND PATTERN DIM. (mm)

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



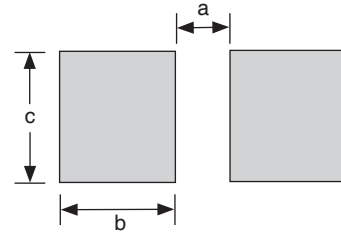
## WIDE TERMINATION DIM. (mm)

Case Size	Dφ ±0.5	L max.	A, B	C ±0.2	P ±0.2	W	R	T
8 x 10.8WT	8.0	11.0	8.3 ± 0.2	9.0	3.2	0.7 ~ 1.0	(0.7)	(1.3)
10 x 10.8WT	10.0	11.0	10.3 ± 0.2	11.0	4.6	1.0 ~ 1.4	(0.7)	(1.3)
10 x 12.8WT	10.0	13.5	10.3 ± 0.2	11.0	4.6	1.0 ~ 1.4	(0.7)	(1.3)

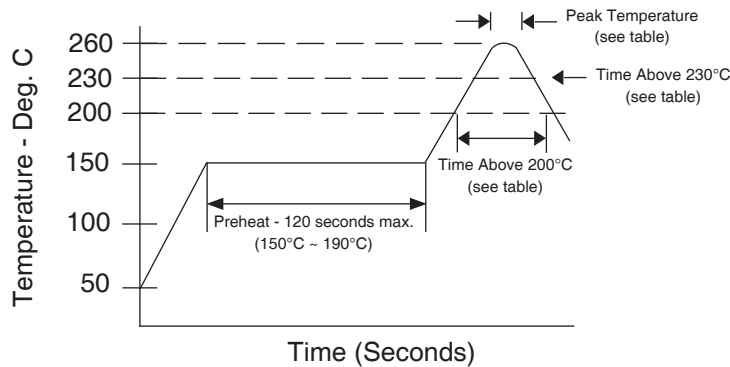


## WIDE TERMINATION LAND PATTERN DIM. (mm)

Case Size	a	b	c
8x10.8	2.5	4.5	4.7
10x10.8	3.8	4.8	4.7
10x12.8	3.8	4.8	4.7



## RECOMMENDED REFLOW SOLDERING PROFILE\*



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



### PEAK TEMPERATURE AND DURATION (16V ~ 63V)

Diameter	Time above 200°C	Time above 217°C	Time above 230°C	Peak Temperature
6.3X4.8mm	60 sec. max.	50 sec. max.	30 sec. max.	250°C/5 sec.
6.3 ~ 10mm	100 sec. max.	80 sec. max.	40 sec. max.	260°C/5 sec.

### PEAK TEMPERATURE AND DURATION (80V ~ 125V)

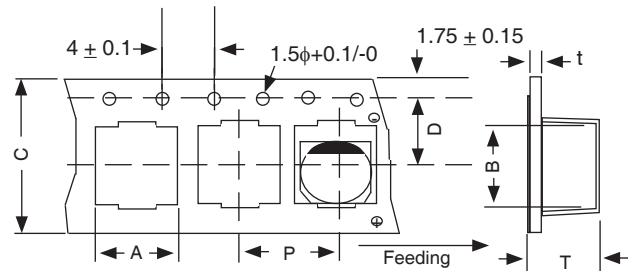
Diameter	Time above 200°C	Time above 217°C	Time above 230°C	Peak Temperature
10mm	100 sec. max.	80 sec. max.	40 sec. max.	250°C/5 sec.

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

### 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 ±0.5	B ±0.5	C ±0.3	D ±0.1	P ±0.1	T ±0.2	t max.
6.3X4.8	7.0	7.0	16.0	7.5	12.0	5.1	0.6
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



### REEL DIMENSIONS (mm)

Case Size	W ±1.0	Qty per Reel	
		13" (330mm)	15" (380mm)
6.3X4.8	18	1000	-
6.3X6.3	18	800	1000
6.3X8	18	500	900
8X10.8	26	300	500
10X10.8	26	300	500
10X12.8	26	300	400

