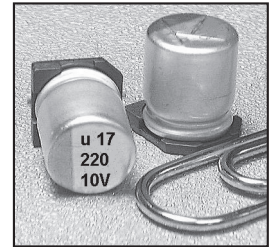


# NSPE-U Series Hybrid Aluminum Electrolytic Capacitors



- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
  - HIGH TEMPERATURE RANGE (+125°C)
  - ULTRA LOW ESR AND HIGH RIPPLE CURRENT
  - 8x10.8 ~ 10x10.8mm CASE SIZES
  - REFLOW SOLDERING RATED TO +260°C (see reflow specifications)
  - MEETS THE REQUIREMENTS OF AEC-Q200\*
- \*Contact NIC for supporting test data



## CHARACTERISTICS

Rated Voltage Range	6.3 ~ 16Vdc			
Rated Capacitance Range	22 ~ 560μF			
Operating Temp. Range	-55 ~ +125°C			
Capacitance Tolerance	±20% (M)			
Max. Leakage Current After 2 Minutes @ 20°C	See Specifications Tables			
Working and Surge Voltage Ratings	W.V. (Vdc)	6.3	10	16
	S.V. (Vdc)	8.2	13	20
Tan δ @ 120Hz/20°C		0.18	0.16	0.14
Impedance Ratio	Z -55°C/Z +20°C	1 ~ 2.5		
	Z +125°C/Z +20°C	0.5 ~ 1.0		
Load Life Test @ 125°C and Rated Voltage	W.V. (Vdc)	6.3	10	16
	Case Dia. φ8 & 10mm	2000 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		

## 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. LC (mA) AFTER 2 MIN.*	Max. ESR (mΩ) AT 100KHz/20°C	Max. Ripple Current (mA rms) AT 100KHz/125°C	Load Life Hours (+125°C)
NSPE-U391M6.3V8X10.8LLBF	390	6.3	8X10.8	0.18	492	17	1780	2000
NSPE-U471M6.3V10X10.8LLBF	470		10X10.8	0.18	593	16	2190	2000
NSPE-U561M6.3V10X10.8LLBF	560		10X10.8	0.18	706	16	2190	2000
NSPE-U101M10V8X10.8LLBF	100	10	8X10.8	0.16	200	20	1680	2000
NSPE-U221M10V8X10.8LLBF	220		8X10.8	0.16	440	18	1680	2000
NSPE-U391M10V10X10.8LLBF	390		10X10.8	0.16	780	17	2060	2000
NSPE-U220M16V8X10.8LLBF	22	16	8X10.8	0.14	100	28	1380	2000
NSPE-U330M16V8X10.8LLBF	33		8X10.8	0.14	106	26	1380	2000
NSPE-U470M16V8X10.8LLBF	47		8X10.8	0.14	151	24	1380	2000
NSPE-U680M16V8X10.8LLBF	68		8X10.8	0.14	218	22	1380	2000
NSPE-U101M16V10X10.8LLBF	100		10X10.8	0.14	320	19	1850	2000

For Automotive Applications See Part Numbering System

\*Please review typical leakage current performance, as shown on NIC load life endurance test report.

## RIPPLE CURRENT FREQUENCY

### CORRECTION FACTORS

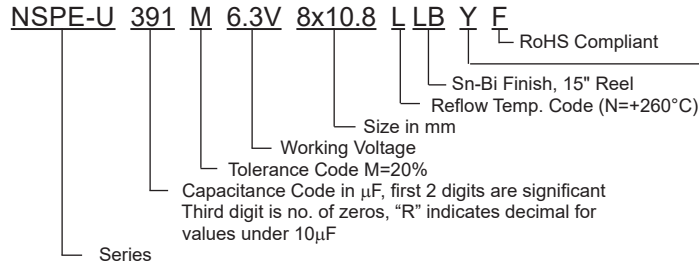
Cap. μF	100Hz	1KHz	10KHz	100KHz
C < 10	0.05	0.20	0.50	1.00

See Part Numbering System on Page 2

## 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)

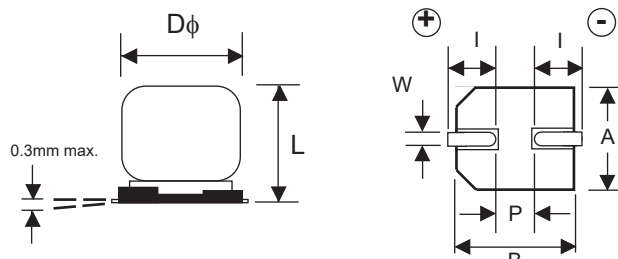
**PART NUMBER SYSTEM**



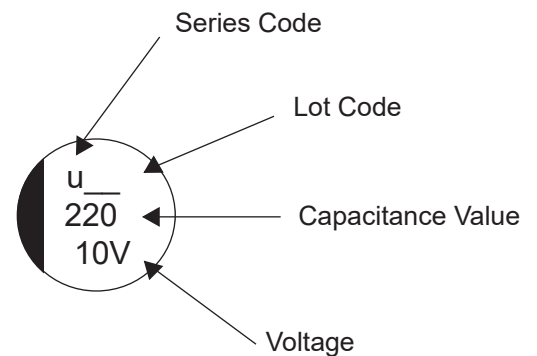
Optional: Suitable for automotive equipment, sourced to special production and inspection at TS-16949 certified production site

**DIMENSIONS (mm)**

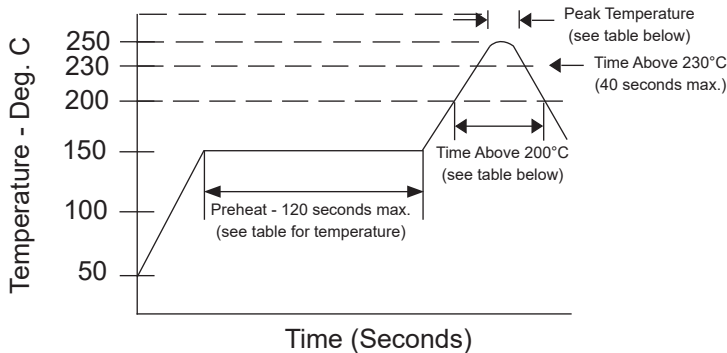
Case Size	D $\phi$ $\pm 0.5$	L max.	A, B $\pm 0.2$	W	I $\pm 0.2$	P $\pm 0.2$
8x10.8	8.0	10.8	8.3	0.7 ~ 1.0	2.9	3.2
10x10.8	10	10.8	10.3	1.0 ~ 1.4	3.2	4.6



**Part Marking**

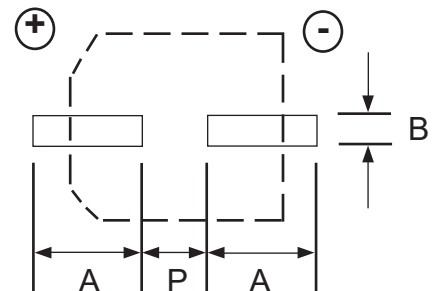


**RECOMMENDED REFLOW SOLDERING PROFILE**



**LAND PATTERN DIM. (mm)**

Case Dia.	A	B	P
8	4.1	2.1	2.8
10	4.4	2.5	4.3



**PEAK TEMPERATURE AND DURATION**

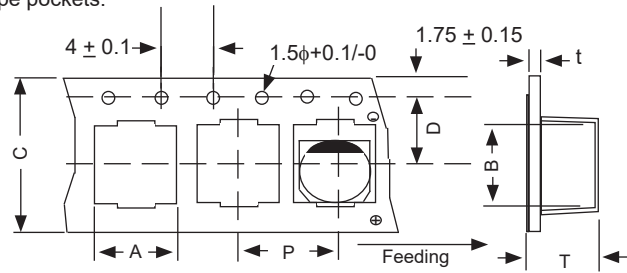
Diameter	Preheat (120 sec. max.)	Time above 200°C	Time above 230°C	Peak Temperature	Number of Reflow Passes
6.3 ~ 10mm	150°C ~ 190°C	90 sec. max.	40 sec. max.	250°C/5 sec.	2x*
	150°C ~ 180°C	60 sec. max.	40 sec. max.	260°C/5 sec.	1x

\*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	B	C	D	P	T	t
8x10.8	±0.5	±0.5	±0.3	±0.1	±0.1	±0.2	max.
10x10.8	10.7	10.7	24.0	11.5	16.0	11.0	0.6



**REEL DIMENSIONS (mm)**

Case Size	W	Qty per Reel
		15" (380mm)
8x10.8	26	500
10x10.8	26	500

