Hybrid Aluminum Electrolytic Capacitors

NSPE-S Series

- CYLINDRICAL V-CHIP CONSTRUCTION FOR SURFACE MOUNTING
- EXTENDED LOAD LIFE (3,000 ~ 5,000 HOURS)
- ULTRA LOW ESR, HIGH RIPPLE CURRENT
- CAPACITANCE VALUES UP TO 1000µF
- 6.3x6.3mm ~ 10x10.8mm CASE SIZES
- REFLOW SOLDERING RATED TO +250°C (ALL SIZES)

RoHS Compliant
includes all homogeneous materials

*See Part Number System for Details

CHARACTERISTICS

Rated Voltage Range	6.3 ~ 16Vdc			
Rated Capacitance Range	10 ~ 1000µF			
Operating Temp. Range	-55 ~ +105°C			
Capacitance Tolerance	±20% (M)			
Max. Leakage Current After 2 Minutes @ 20°C	Less than 0.2CV or 100µA whichever is greater			
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 +105°C/Z +20°C	0.6 ~ 1.0		
Load Life Test @ 105°C 6.3mm Dia. = 3,000 Hours 8mm ~ 10mm Dia. parts = 5,000 Hours	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)

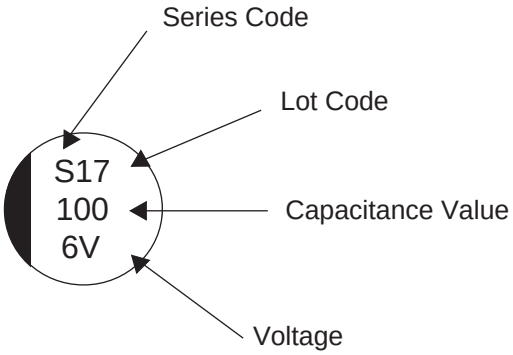
PART NUMBER	Cap. (µF)	Working Voltage	Case Size (D X L) mm	Max. ESR (mΩ) AT 100kHz/20°C	Max. Ripple Current (mA rms) AT 100kHz/105°C
NSPE-S101M6.3V6.3X6.3TR13F	100	6.3	6.3X6.3	36	1630
NSPE-S151M6.3V6.3X6.3TR13F	150		6.3X6.3	36	1630
NSPE-S181M6.3V6.3X8TR13F	180		6.3X8	32	2020
NSPE-S221M6.3V6.3X8TR13F	220		6.3X8	32	2020
NSPE-S221M6.3V8X10.8TR13F			8X10.8	16	3150
NSPE-S331M6.3V8X10.8TR13F	330		8X10.8	16	3150
NSPE-S471M6.3V8X10.8TR13F	470		8X10.8	16	3150
NSPE-S561M6.3V8X10.8TR13F	560		8X10.8	16	3150
NSPE-S681M6.3V10X10.8TR13F	680		10X10.8	15	3890
NSPE-S102M6.3V10X10.8TR13F	1000		10X10.8	15	3890
NSPE-S330M10V6.3X6.3TR13F	33	10	6.3X6.3	40	1510
NSPE-S470M10V6.3X6.3TR13F	47		6.3X6.3	40	1510
NSPE-S680M10V6.3X6.3TR13F	68		6.3X6.3	40	1510
NSPE-S101M10V6.3X8TR13F	100		6.3X8	35	1910
NSPE-S101M10V8X10.8TR13F			8x10.8	18	2800
NSPE-S151M10V8X10.8TR13F	150		8X10.8	18	2800
NSPE-S221M10V8X10.8TR13F	220		8X10.8	18	2800
NSPE-S271M10V6.3X8TR13F	270		8x10.8	18	2800
NSPE-S331M10V8X10.8TR13F	330		8X10.8	18	2800
NSPE-S471M10V10X10.8TR13F	470		10X10.8	16	3650
NSPE-S561M10V10X10.8TR13F	560		10X10.8	16	3650
NSPE-S100M16V6.3X6.3TR13F	10	16	6.3X6.3	54	1130
NSPE-S220M16V6.3X6.3TR13F	22		6.3X6.3	54	1130
NSPE-S330M16V6.3X6.3TR13F	33		6.3X6.3	54	1130
NSPE-S470M16V6.3X8TR13F	47		6.3X8	45	1480
NSPE-S470M16V8X10.8TR13	47		8X10.8	22	2290
NSPE-S680M16V8X10.8TR13	68		8X10.8	22	2290
NSPE-S820M16V8X10.8TR13F	82		8X10.8	22	2290
NSPE-S101M16V8X10.8TR13	100		8X10.8	22	2290
NSPE-S151M16V10X10.8TR13F	150		10X10.8	20	2920

PART NUMBER SYSTEM

NSPE-S 471 M 6.3V 8x10.8 TR 13 F

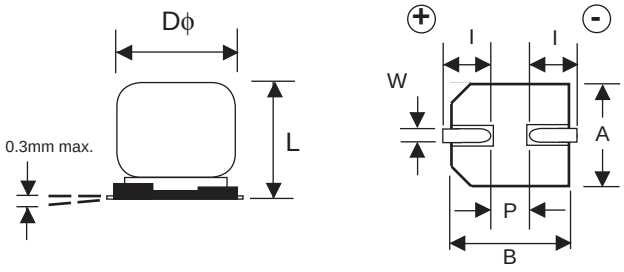
- F — RoHS Compliant 97% Sn (min.), 3% Bi (max.)
- 13 — 330mm (13") Reel
- TR — Tape & Reel
- 8x10.8 — Size in mm
- 6.3V — Working Voltage
- M — Tolerance Code M=20%
- 471 — Capacitance Code in µF, first 2 digits are significant. Third digit is no. of zeros, "R" indicates decimal for values under 10µF
- NSPE-S — Series

Part Marking

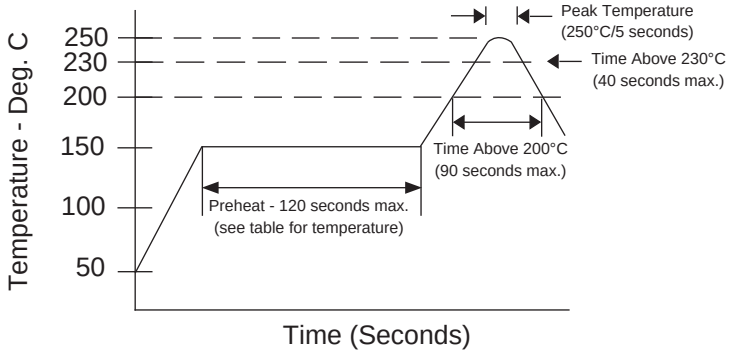


DIMENSIONS (mm)

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

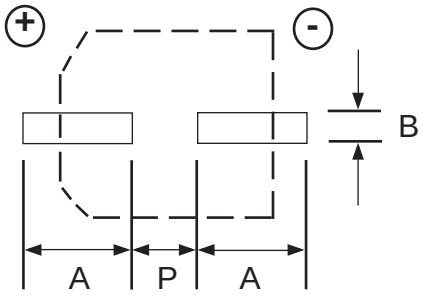


RECOMMENDED REFLOW SOLDERING PROFILE*



LAND PATTERN DIM. (mm)

Case Dia.	A	B	P
6.3	3.5	1.8	2.1
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
6.3 ~ 10mm	150°C ~ 190°C	90 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.