

NSHC Series

Surface Mount Stack Film Capacitor



FEATURES

- STACKED METALLIZED POLYPHENYLENE SULFIDE (PPS) FILM
- STANDARD EIA 0603, 0805, 1206, 1210, 1913 AND 2416 SIZES
- WIDE TEMPERATURE RANGE UP TO +125°C (100pF ~ 0.1μF)
- HIGH HEAT AND MOISTURE RESISTANT
- VERY STABLE TEMPERATURE, FREQUENCY AND VOLTAGE BIAS CHARACTERISTICS
- SUITABLE FOR REFLOW SOLDERING
- TAPE AND REEL PACKAGING

**NSHC IS
RECOMMENDED
FOR NEW DESIGNS**

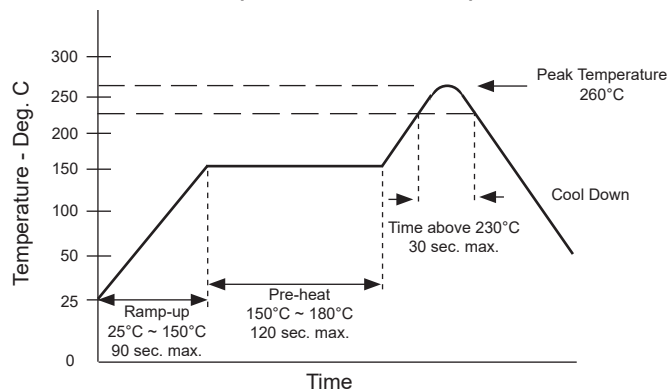


SPECIFICATIONS	Case Sizes					
	0603	0805	1206	1210	1913	2416
Capacitance Range	100pF ~ 0.0027μF	100pF ~ .01μF	3300pF ~ .047μF	.012μF ~ .1μF	.047μF ~ .1μF	.12μF ~ .22μF
Voltage Ratings	16Vdc (12Vrms), 50Vdc (40Vrms)					
Capacitance Tolerance	±5% Std, ±2% Opt.					
Temperature Range	-55°C ~ +125°C (0.12μF ~ 0.22μF voltage derated above +105°C)					
Dissipation Factor (20°C)	0.6% max. @ 1KHz					
Insulation Resistance (20°C)	3 Gigohms Minimum					
Dielectric Withstanding Voltage	150% of Rated Voltage 60 Seconds or 175% of Rated Voltage for 5 Seconds (except 1913 and 2416 case sizes)					
Temperature Characteristic	±3% ΔC Maximum Over Temperature Range					

ENVIRONMENTAL CHARACTERISTICS

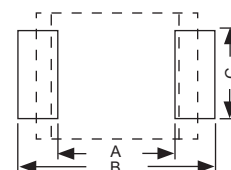
Life Test At +125°C 1,000 Hours at 125% of Rated Voltage	Capacitance Change	Within ±2% of Initial Value
	Dissipation Factor	0.68% Maximum
	Insulation Resistance	1 Gigohm Minimum
Resistance to Soldering Heat +260°C Peak	Capacitance Change	Within ±3% of Initial Value
	Dissipation Factor	0.66% Maximum
	Insulation Resistance	1 Gigohm Minimum
Humidity Load Life: (1) 1000 Hours, +40°C (2) 500 Hours, +60°C (3) 500 Hours +85°C/85% RH	Capacitance Change	(1) & (2) Within ±2% of Initial value (3) Within ±10% of initial value
	Dissipation Factor	(1) & (2) 0.90% Maximum (3) 1.2% maximum
	Insulation Resistance	(1) 1 Gigohm Minimum (2) 0.5 Gigohm Minimum (3) 0.01 Gigohm min.
Solderability with 25% Wt Rosin-Methanol Flux	90% Minimum Coverage After 2.5 Second Dip into 255°C Solder Pot	

RECOMMENDED REFLOW PROFILE (maximum 2 times)



RECOMMENDED LAND PATTERN (mm)

Case Code	EIA Size	A	B	C
J1	0603	0.6	2.0	0.7
A1, A2	0805	0.8	2.4	1.1
B1, B2, B3	1206	1.8	3.6	1.4
C2, C3	1210	1.8	3.6	2.3
D5, D6	1913	3.0	5.6	3.0
E6, E7, E8	2416	4.0	7.0	3.8



1. Avoid high temperatures/high humidity and store it at 35°C and 85% RH or lower.

2. A capacitor kept in storage for a longer period will have an oxidized lead surface, resulting in lower solderability. The recommended storage period is about 6 months. For storage longer than the recommended period, please check solderability before using.

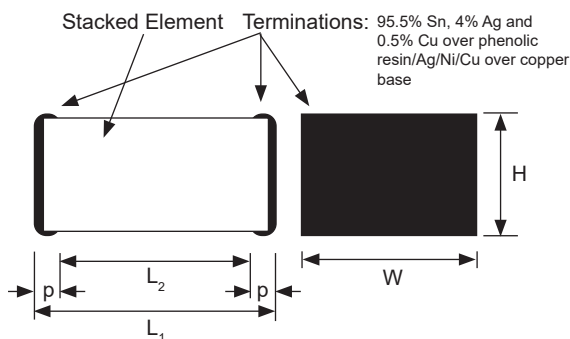
NSHC Series

Surface Mount Stack Film Capacitor



Part Number	Cap. Value	Cap. Code	Size Code	Length L ±0.2	Width W	Height H ±0.2	p	EIA	
NSHC101J16TRJ1F	100pF	101	J1	1.6	0.8 ± 0.15	0.7 ± 0.15	0.35 ± 0.20	0603	
NSHC121J16TRJ1F	120	121	J1						
NSHC151J16TRJ1F	150	151	J1						
NSHC181J16TRJ1F	180	181	J1						
NSHC221J16TRJ1F	220	221	J1						
NSHC271J16TRJ1F	270	271	J1						
NSHC331J16TRJ1F	330	331	J1						
NSHC391J16TRJ1F	390	391	J1						
NSHC471J16TRJ1F	470	471	J1						
NSHC561J16TRJ1F	560	561	J1						
NSHC681J16TRJ1F	680	681	J1						
NSHC821J16TRJ1F	820	821	J1						
NSHC102J16TRJ1F	0.001	102	J1						
NSHC122J16TRJ1F	0.0012	122	J1						
NSHC152J16TRJ1F	0.0015	152	J1						
NSHC182J16TRJ1F	0.0018	182	J1						
NSHC222J16TRJ1F	0.0022	222	J1						
NSHC272J16TRJ1F	0.0027	272	J1						
NSHC332J16TRA1F	0.0033	332	A1	2.0	1.25 ± 0.2	0.9	0.45 ± 0.25	0805	
NSHC392J16TRA1F	0.0039	392	A1						
NSHC472J16TRA1F	0.0047	472	A1						
NSHC562J16TRA1F	0.0056	562	A1						
NSHC682J16TRA1F	0.0068	682	A1			1.1			
NSHC822J16TRA2F	0.0082	822	A2						
NSHC103J16TRA2F	0.010	103	A2						
NSHC123J16TRB1F	0.012	123	B1	3.2	1.6 ± 0.2	0.9	0.65 ± 0.35	1206	
NSHC153J16TRB1F	0.015	153	B1						
NSHC183J16TRB1F	0.018	183	B1						
NSHC223J16TRB1F	0.022	223	B1						
NSHC273J16TRB2F	0.027	273	B2			1.1			
NSHC333J16TRB2F	0.033	333	B2						
NSHC393J16TRB3F	0.039	393	B3						1.5
NSHC473J16TRB3F	0.047	473	B3						
NSHC563J16TRC2F	0.056	563	C2	3.2	2.5 ± 0.2	1.5	0.65 ± 0.35	1210	
NSHC683J16TRC2F	0.068	683	C2						
NSHC823J16TRC3F	0.082	823	C3			2.1			
NSHC104J16TRC3F	0.10	104	C3						

OUTLINE DRAWING



NSHC Series

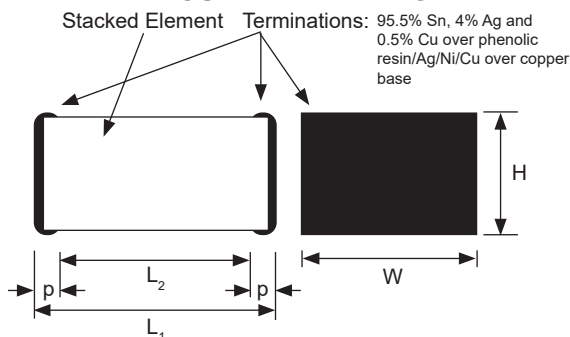
Surface Mount Stack Film Capacitor



50V STANDARD PRODUCTS AND CASE SIZES

Part Number	Cap. Value	Cap. Code	Size Code	Length L ±0.2	Width W	Height H ±0.2	p	EIA				
NSHC101J50TRA1F	100pF	101	A1	2.0	1.25 ± 0.2	0.9	0.45 ± 0.25	0805				
NSHC121J50TRA1F	120	121	A1									
NSHC151J50TRA1F	150	151	A1									
NSHC181J50TRA1F	180	181	A1									
NSHC221J50TRA1F	220	221	A1									
NSHC271J50TRA1F	270	271	A1									
NSHC331J50TRA1F	330	331	A1									
NSHC391J50TRA1F	390	391	A1									
NSHC471J50TRA1F	470	471	A1									
NSHC561J50TRA1F	560	561	A1									
NSHC681J50TRA1F	680	681	A1									
NSHC821J50TRA1F	820	821	A1									
NSHC102J50TRA1F	0.001	102	A1									
NSHC122J50TRA1F	0.0012	122	A1									
NSHC152J50TRA1F	0.0015	152	A1									
NSHC182J50TRA1F	0.0018	182	A1									
NSHC222J50TRA1F	0.0022	222	A1									
NSHC272J50TRA1F	0.0027	272	A1									
NSHC332J50TRB1F	0.0033	332	B1	3.2	1.6 ± 0.2	0.9	0.65 ± 0.35	1206				
NSHC392J50TRB1F	0.0039	392	B1									
NSHC472J50TRB1F	0.0047	472	B1									
NSHC562J50TRB1F	0.0056	562	B1									
NSHC682J50TRB1F	0.0068	682	B1			1.1						
NSHC822J50TRB2F	0.0082	822	B2									
NSHC103J50TRB2F	0.010	103	B2									
NSHC123J50TRC1F	0.012	123	C1									
NSHC153J50TRC1F	0.015	153	C1	3.2	2.5 ± 0.2	1.1	0.65 ± 0.35	1210				
NSHC183J50TRC2F	0.018	183	C2									
NSHC223J50TRC2F	0.022	223	C2									
NSHC273J50TRC2F	0.027	273	C2									
NSHC333J50TRC3F	0.033	333	C3									
NSHC393J50TRC3F	0.039	393	C3									
NSHC473J50TRD5F	0.047	473	D5			4.8			3.3 ± 0.3	1.5	0.80 ± 0.30	1913
NSHC563J50TRD5F	0.056	563	D5									
NSHC683J50TRD5F	0.068	683	D5									
NSHC823J50TRD6F	0.082	823	D6									
NSHC104J50TRD6F	0.10	104	D6									
NSHC124J50TRE6F	0.12	124	E6	6.0	4.1 ± 0.3	1.9	0.80 ± 0.30	2416				
NSHC154J50TRE6F	0.15	154	E6									
NSHC184J50TRE7F	0.18	184	E7									
NSHC224J50TRE8F	0.22	224	E8									

OUTLINE DRAWING



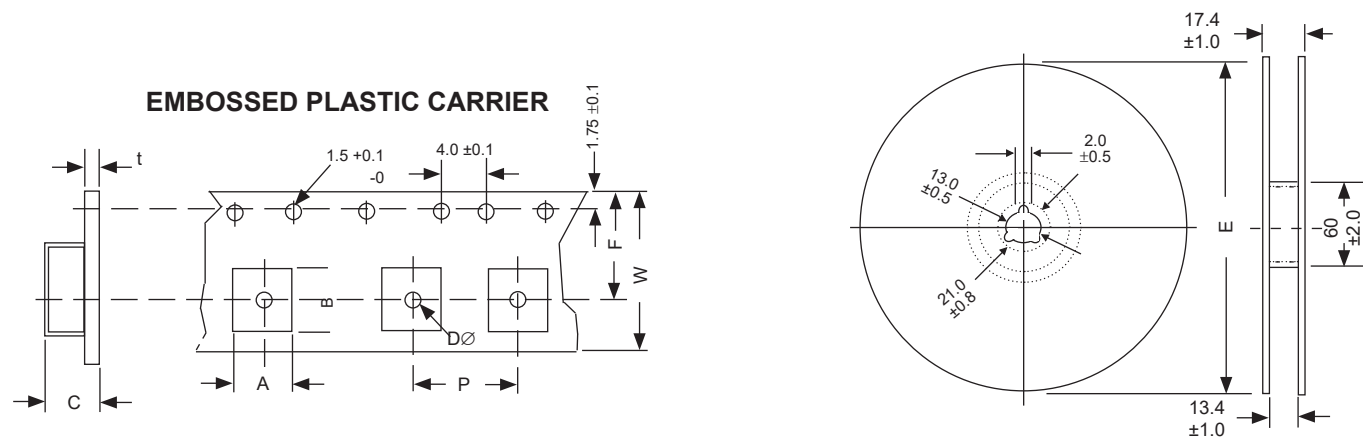
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TAPE AND REEL DIMENSIONS (mm)

Case Code	A ± 0.1	B ± 0.1	C ± 0.2	t ± 0.05	W ± 0.3	F ± 0.05	P ± 0.1	D $\pm 0.2/-0$	E ± 2.0	Qty/Reel
J1	1.00	1.85	1.0	0.20	8.0	3.50	4.0	-	180	4,000
A1	1.55	2.3	1.3	0.25	8.0	3.50	4.0	1.0	180	3,000
A2	1.55	2.3	1.3	0.25	8.0	3.50	4.0	1.0	180	3,000
B1	1.9	3.5	1.5	0.25	8.0	3.50	4.0	1.0	180	3,000
B2	1.9	3.5	1.5	0.25	8.0	3.50	4.0	1.0	180	3,000
B3	1.9	3.5	1.9	0.25	8.0	3.50	4.0	1.0	180	2,000
C2	2.8	3.5	1.9	0.25	8.0	3.50	4.0	1.0	180	2,000
C3	2.8	3.5	2.5	0.25	8.0	3.50	4.0	1.0	180	2,000
D5	3.8	5.1	2.0	0.30	12.0	5.50	8.0	1.5	330	3,000
D6	3.8	5.1	2.6	0.30	12.0	5.50	8.0	1.5	330	3,000
E6	4.6	6.3	2.7	0.30	12.0	5.50	8.0	-	330	3,000
E7	4.6	6.3	3.5	0.30	12.0	5.50	8.0	-	330	2,000
E8	4.6	6.3	3.5	0.30	12.0	5.50	8.0	-	330	2,000



PART NUMBER SYSTEM

NSHC 103 J 16 TR A2 E
 Series Capacitance in pF, 1st two digits are significant, 3rd digit is no. of zeros
 Tolerance Code: J= $\pm 5\%$, G= $\pm 2\%$
 Voltage
 Tape & Reel
 Size Code
 RoHS compliant

NSHC Series

Surface Mount Stack Film Capacitor



FEATURES

- STACKED METALLIZED POLYPHENYLENE SULFIDE (PPS) FILM
- STANDARD EIA 1913, 2416, 2820 AND 2825 SIZES
- WIDE TEMPERATURE RANGE UP TO +105°C
- HIGH HEAT AND MOISTURE RESISTANT
- VERY STABLE TEMPERATURE, FREQUENCY, VOLTAGE, BIAS AND DIELECTRIC ABSORPTION CHARACTERISTICS
- SUITABLE FOR REFLOW SOLDERING
- TAPE AND REEL PACKAGING

**NSHC IS
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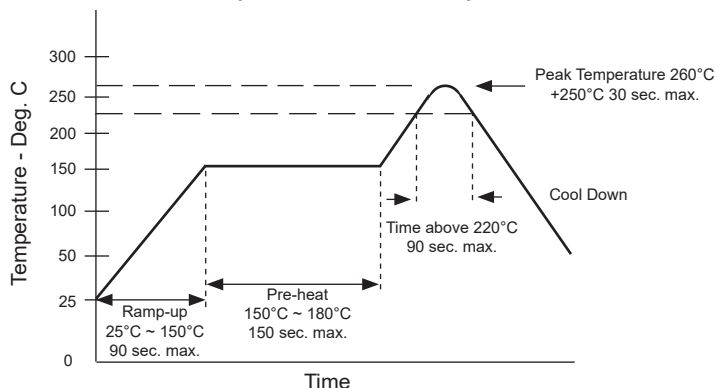


SPECIFICATIONS	Case Sizes			
	1913	2416	2820	2825
Capacitance Range	0.01 ~ 0.027 μ F	0.033 ~ .068 μ F	0.082 ~ 0.12 μ F	0.015 ~ 0.22 μ F
Voltage Ratings	100Vdc (40Vrms) max.			
Capacitance Tolerance	$\pm$ 5% Std, $\pm$ 2% Opt.			
Temperature Range	-55°C ~ +105°C			
Dissipation Factor (20°C)	0.6% max. @ 1KHz			
Insulation Resistance (20°C)	3 Gigohms Minimum			
Dielectric Withstanding Voltage	150% of Rated Voltage 60 Seconds			
Temperature Characteristic	$\pm$ 1% Δ C Maximum Over Temperature Range Typical			
Dielectric Absorption	0.05 ~ 0.10% Typical			

ENVIRONMENTAL CHARACTERISTICS

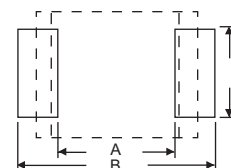
Life Test At +105°C 1,000 Hours at 125% of Rated Voltage	Capacitance Change	Within $\pm$ 2% of Initial Value
	Dissipation Factor	0.66% Maximum
	Insulation Resistance	1 Gigohm Minimum
Resistance to Soldering Heat +260°C Peak	Capacitance Change	Within $\pm$ 3% of Initial Value
	Dissipation Factor	0.66% Maximum
	Insulation Resistance	1 Gigohm Minimum
Humidity Load Life: 1000 Hours, +40°C/95% RH	Capacitance Change	Within $\pm$ 3% of initial value
	Dissipation Factor	0.90% maximum @ 1KHz
	Insulation Resistance	1 Gigohm minimum
Solderability with 25% Wt Rosin-Methanol Flux	Dielectric Withstanding	130% of rated voltage for 60 seconds
	90% Minimum Coverage After 2.5 Second Dip into 255°C Solder Pot	

RECOMMENDED REFLOW PROFILE (maximum 2 times)



RECOMMENDED LAND PATTERN (mm)

EIA Size	A	B	C
1913	2.6	6.6	3.0
2416	3.8	7.8	3.8
2820	4.5	9.0	4.6
2825	4.5	9.0	5.7

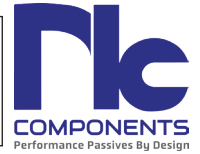


1. Avoid high temperatures/high humidity and store it at 35°C and 85% RH or lower.

2. A capacitor kept in storage for a longer period will have an oxidized lead surface, resulting in lower solderability. The recommended storage period is about 6 months. For storage longer than the recommended period, please check solderability before using.

NSHC Series

Surface Mount Stack Film Capacitor



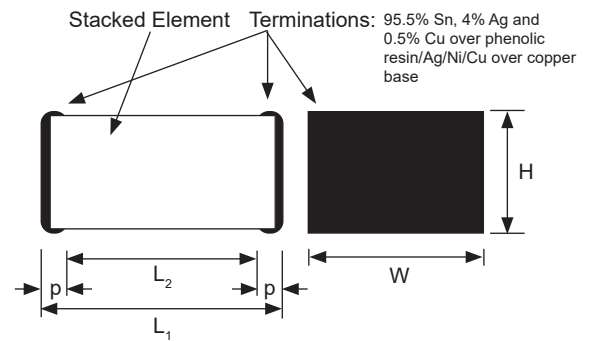
STANDARD PRODUCTS, SIZE CODE AND DIMENSIONS (mm)

Part Number	Cap.	Code	Working Voltage (VDC)	Length L	Width W	Height H	p	EIA Size Code	Reel Quantity		
			100V								
NSHC103J100TRD1F	0.010	103	D1	4.8 ± 0.2	3.3 ± 0.3	1.4 ± 0.2	0.35 ± 0.2	1913	3000		
NSHC123J100TRD1F	0.012	123	D1			2.0 ± 0.2					
NSHC153J100TRD2F	0.015	153	D2			2.4 ± 0.2					
NSHC183J100TRD2F	0.018	183	D2			2.8 ± 0.2					
NSHC223J100TRD3F	0.022	223	D3								
NSHC273J100TRD4F	0.027	273	D4					2000			
NSHC333J100TRE1F	0.033	333	E1	6.0 ± 0.2	4.1 ± 0.3	1.8 ± 0.2			0.35 ± 0.2	2416	3000
NSHC393J100TRE2F	0.039	393	E2			2.0 ± 0.2					
NSHC473J100TRE3F	0.047	473	E3			2.4 ± 0.2					
NSHC563J100TRE4F	0.056	563	E4			2.8 ± 0.2					
NSHC683J100TRE5F	0.068	683	E5			3.2 ± 0.2					
NSHC823J100TRG2F	0.082	823	G2	7.1 ± 0.4	5.0 ± 0.4	2.8 ± 0.3		0.35 ± 0.2		2820	1500
NSHC104J100TRG3F	0.10	104	G3			3.0 ± 0.3					
NSHC124J100TRG5F	0.12	124	G5			3.4 ± 0.3					
NSHC154J100TRH2F	0.15	154	H2			3.4 ± 0.3					
NSHC184J100TRH4F	0.18	184	H4			4.0 ± 0.3					
NSHC224J100TRH6F	0.22	224	H6		6.3 ± 0.4	4.8 ± 0.3				0.35 ± 0.2	2825

PART NUMBER SYSTEM

NSHC 103 J 100 TR D1 E
 Series | Capacitance in pF, 1st two digits are significant, 3rd digit is no. of zeros
 Tolerance Code: J=±5%, G=±2%
 Voltage
 Tape & Reel
 Size Code
 RoHS compliant

OUTLINE DRAWING



TAPE DIMENSIONS (mm)

Case Code	A±0.1	B±0.1	C±0.2	t	W±0.3	F	P±0.1	D+0.2/-0	Qty/Reel
D1	3.8	5.1	2.0	0.3 ±0.05	12.0	5.5 ±0.05	8.0	1.5	3,000
D2			2.6						3,000
D3, D4			3.4						2,000
E1, E2	4.6	6.3	2.7					-	3,000
E3, E4			3.5						2,000
E5			4.6						2,000
G2 ~ G5	5.5	7.5	4.7						1,500
H2 ~ H6	6.91	8.43	5.686	0.343 ± 0.013	16	7.5 ± 0.1	12	1.5	1,000

EMBOSSED PLASTIC CARRIER

