

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, VOLTAGE, BIAS AND DIELECTRIC ABSORPTION CHARACTERISTICS
- SUITABLE FOR REFLOW SOLDERING
- TAPE AND REEL PACKAGING

**NSHC IS
RECOMMENDED
FOR NEW DESIGNS**



**RoHS
Compliant**
includes all homogeneous materials

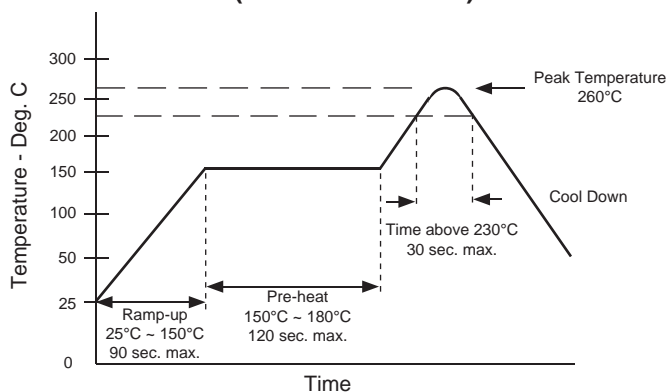
*See Part Number System for Details

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					
Dielectric Absorption	0.05 ~ 0.10% Typical					

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	

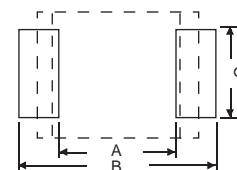
RECOMMENDED REFLOW PROFILE (maximum 2 times)



Solder within 1 year. Storage at +30°C and 60% RH

RECOMMENDED LAND PATTERN (mm)

EIA Size	A	B	C
0603	0.6	2.0	0.7
0805	0.8	2.4	1.1
1206	1.8	3.6	1.4
1210	1.8	3.6	2.3
1913	3.0	5.6	3.0
2416	4.0	7.0	3.8



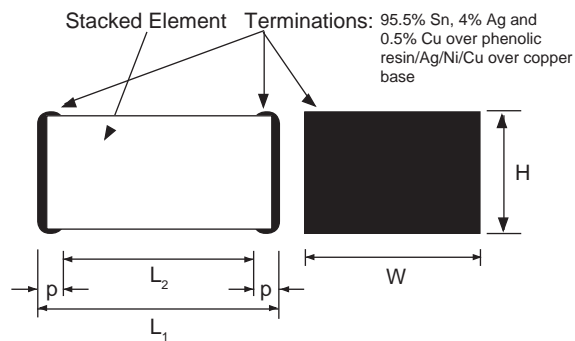
STANDARD PRODUCTS AND SIZE CODE

Cap.	Code	Working Voltage (Vdc)	
		16	50
100pF	101	J1	A1
120	121	J1	A1
150	151	J1	A1
180	181	J1	A1
220	221	J1	A1
270	271	J1	A1
330	331	J1	A1
390	391	J1	A1
470	471	J1	A1
560	561	J1	A1
680	681	J1	A1
820	821	J1	A1
0.001	102	J1	A1
0.0012	122	J1	A1
0.0015	152	J1	A1
0.0018	182	J1	A1
0.0022	222	J1	A1
0.0027	272	J1	A1
0.0033	332	A1	B1
0.0039	392	A1	B1
0.0047	472	A1	B1
0.0056	562	A1	B1
0.0068	682	A1	B1
0.0082	822	A2	B2
0.010	103	A2	B2
0.012	123	B1	C1
0.015	153	B1	C1
0.018	183	B1	C2
0.022	223	B1	C2
0.027	273	B2	C2
0.033	333	B2	C3
0.039	393	B3	C3
0.047	473	B3	D5
0.056	563	C2	D5
0.068	683	C2	D5
0.082	823	C3	D6
0.10	104	C3	D6
0.12	124	-	E6
0.15	154	-	E6
0.18	184	-	E7
0.22	224	-	E8

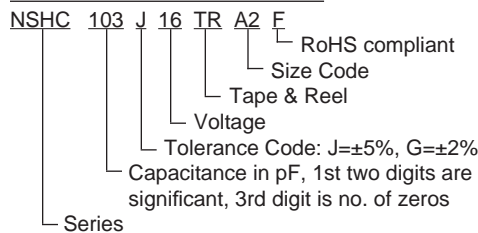
DIMENSION (mm) AND CASE CODE

Case Code	Length L ±0.2	Width W	Height H ±0.2	p	EIA
J1	1.6	0.8 ± 0.15	0.7 ± 0.15	0.35 ± 0.20	0603
A1	2.0	1.25 ± 0.2	0.9	0.45 ± 0.25	0805
A2			1.1		
B1	3.2	1.6 ± 0.2	0.9	0.65 ± 0.35	1206
B2			1.1		
B3			1.5		
C1	3.2	2.5 ± 0.2	1.1	0.80 ± 0.30	1210
C2			1.5		
C3			2.1		
D5	4.8	3.3 ± 0.3	1.5	0.80 ± 0.30	1913
D6			2.1		
E6	6.0	4.1 ± 0.3	1.9	0.80 ± 0.30	2416
E7			2.5		
E8			2.8		

OUTLINE DRAWING



PART NUMBER SYSTEM



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
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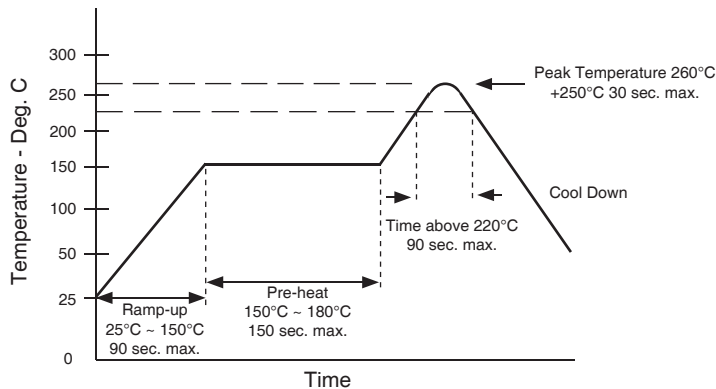
*See Part Number System for Details

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
	Dielectric Withstanding	130% of rated voltage for 60 seconds
Solderability with 25% Wt Rosin-Methanol Flux	90% Minimum Coverage After 2.5 Second Dip into 255°C Solder Pot	

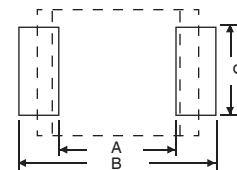
RECOMMENDED REFLOW PROFILE (maximum 2 times)



Solder within 6 year. Storage at +35°C and 85% RH

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



STANDARD PRODUCTS, SIZE CODE AND DIMENSIONS (mm)

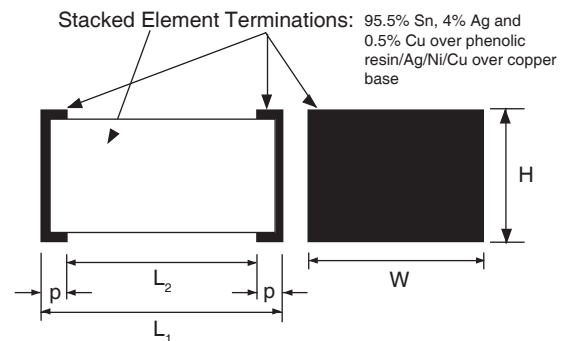
Cap.	Code	Working Voltage (VDC)	Length L	Width W	Height H	p	EIA Size Code	Reel Quantity
0.010	103	100V	4.8 ± 0.2	3.3 ± 0.3	1.4 ± 0.2	0.35 ± 0.2	1913	3000
0.012	123	D1			2.0 ± 0.2			
0.015	153	D2			2.4 ± 0.2			
0.018	183	D2			2.8 ± 0.2			
0.022	223	D3			1.8 ± 0.2			
0.027	273	D4	2.0 ± 0.2	2416	3000			
0.033	333	E1	2.4 ± 0.2					
0.039	393	E2	2.8 ± 0.2					
0.047	473	E3	3.2 ± 0.2					
0.056	563	E4	2.8 ± 0.3				2820	1500
0.068	683	E5	3.0 ± 0.3					
0.082	823	G2	3.4 ± 0.3					
0.10	104	G3	4.0 ± 0.3					
0.12	124	G5	4.8 ± 0.3					
0.15	154	H2	7.1 ± 0.4	6.3 ± 0.4	3.4 ± 0.3	2825	1000	
0.18	184	H4			4.0 ± 0.3			
0.22	224	H6			4.8 ± 0.3			

OUTLINE DRAWING

PART NUMBER SYSTEM

NSHC 103 J 100 TR D1 F

- 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



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

