

### FEATURES

- STACKED METALLIZED POLYESTER FILM CONSTRUCTION
- STANDARD EIA 1206, 1210, 1913 AND 2416 SIZES
- EXCELLENT MOISTURE RESISTANCE
- STABLE TEMPERATURE, FREQUENCY AND BIAS CHARACTERISTICS
- REFLOW SOLDERING APPLICABLE
- TAPE AND REEL PACKAGING

**NSWC IS  
RECOMMENDED  
FOR NEW DESIGNS**



**RoHS  
Compliant**  
includes all homogeneous materials

\*See Part Number System for Details

| SPECIFICATIONS                  | Case Sizes                                      |                  |                  |                  |
|---------------------------------|---|------------------|------------------|------------------|
|                                 | 1206  | 1210             | 1913             | 2416             |
| Capacitance Range               | 1000pF ~ 0.056μF                                | 1000pF ~ 0.056μF | 1000pF ~ 0.056μF | 1000pF ~ 0.056μF |
| Voltage Ratings*                | 16Vdc (12Vrms), 50Vdc (40Vrms), 100Vdc (75Vrms) |                  |                  |                  |
| Capacitance Tolerance           | ±5% (J)   |                  |                  |                  |
| Temperature Range               | -55°C ~ +105°C                                  |                  |                  |                  |
| Dissipation Factor (+20°C)      | 1.0% max. @ 1KHz                                |                  |                  |                  |
| Insulation Resistance (+20°C)   | 3 Gigohms Minimum                               |                  |                  |                  |
| Dielectric Withstanding Voltage | 175% of Rated Voltage (5 Seconds)               |                  |                  |                  |
|                                 | 150% of Rated Voltage (60 Seconds)              |                  |                  |                  |
| Temperature Characteristic      | ±4% ΔC Maximum Over Temperature Range           |                  |                  |                  |
| Dielectric Absorption           | 0.20 ~ 0.30% Typical                            |                  |                  |                  |

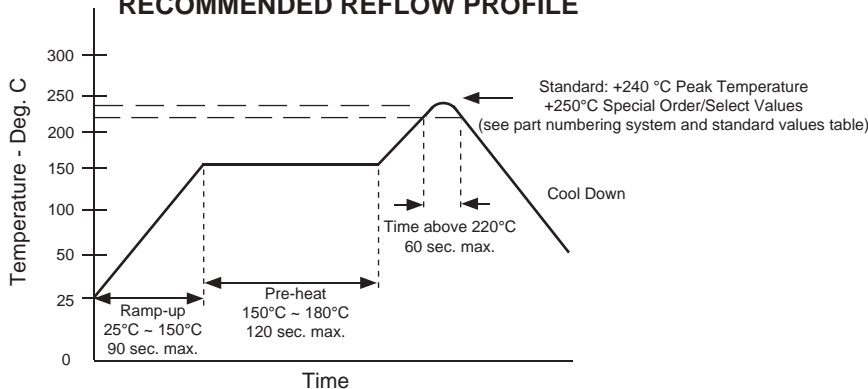
\* -AC Voltage Ratings (Vrms) From 60 hz to 10Khz. Contact NIC For Derating At Higher Frequencies.

### ENVIRONMENTAL CHARACTERISTICS

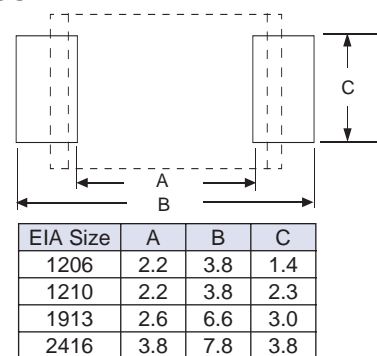
|  |   |                                 |                           |
|--|---|---------------------------------|---------------------------|
| Life Test At +105°C<br>1,000 Hours at 125% of<br>Rated Voltage                           | Capacitance Change  | Within +1%/-6% of Initial Value |                           |
|  | Dissipation Factor  | 1.1% Maximum                    |                           |
|  | Insulation Resistance   | 1 Gigohm Minimum                |                           |
| Resistance to Soldering Heat:<br>+260°C Peak for 5 Seconds<br>After 90 Seconds at +155°C | Capacitance Change  | Within ±5% of Initial Value     |                           |
|  | Dissipation Factor  | 1.1% Maximum                    |                           |
|  | Insulation Resistance   | 1 Gigohm Minimum                |                           |
| Humidity Load Life*:<br>(1) 1,000 Hours, +40°C<br>(2) 500 Hours, +60°C                   | Capacitance Change  | (1) +8%/-5%                     | (2) ±10% of Initial Value |
|  | Dissipation Factor  | (1) 1.5% Max.                   | (2) 2.0% Max.             |
|  | Insulation Resistance   | (1) 100 Megohm Min.             | (2) 10 Megohm Min.        |
| Solderability with<br>10% Wt Rosin-Methanol Flux   | 90% Minimum Coverage After 5 Second Dip Into 235°C Solder Pot |                                 |                           |

\* At 90 ~ 95% Relative Humidity and Rated Voltage

### RECOMMENDED REFLOW PROFILE



### RECOMMENDED LAND PATTERN



### PART NUMBER SYSTEM

NSFC 103 J 50 TR B2 N E

- NSFC: Series
- 103: Capacitance in pF, 1st two digits are significant, 3rd digit is no. of zeros
- J: Tolerance Code: J=±5%
- 50: Voltage
- TR: Tape & Reel
- B2: Size Code
- N: Optional High Temperature Reflow (+250°C)\*
- E: RoHS Compliant

\*Special packaging and handling required. Available on select values.  
(See standard values tables)



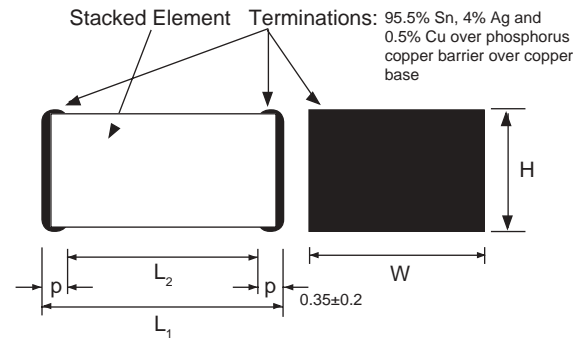
## STANDARD VALUES SIZE CODE

| Cap. $\mu$ F | Code | Voltage (Vdc) |     |     |
|--------------|------|---------------|-----|-----|
|              |      | 16            | 50  | 100 |
| 0.001        | 102  | -             | -   | B2  |
| 0.0012       | 122  | -             | -   | B2  |
| 0.0015       | 152  | -             | -   | B2  |
| 0.0018       | 182  | -             | -   | B2  |
| 0.0022       | 222  | -             | -   | B2  |
| 0.0027       | 272  | -             | -   | B2  |
| 0.0033       | 332  | -             | B1  | B3  |
| 0.0039       | 392  | -             | B1  | B3  |
| 0.0047       | 472  | -             | B1  | B3  |
| 0.0056       | 562  | -             | B1  | C2  |
| 0.0068       | 682  | -             | B1  | C2  |
| 0.0082       | 822  | -             | B2  | C3  |
| 0.01         | 103  | -             | B2  | C3  |
| 0.012        | 123  | B2            | C1  | D1* |
| 0.015        | 153  | B2            | C1  | D1* |
| 0.018        | 183  | B2            | C2  | D1* |
| 0.022        | 223  | B2            | C2  | D1* |
| 0.027        | 273  | B2            | C2  | D1* |
| 0.033        | 333  | B3            | C3  | D1* |
| 0.039        | 393  | B3            | C3  | D1* |
| 0.047        | 473  | B3            | C3  | D2* |
| 0.056        | 563  | C2            | D2* | -   |
| 0.068        | 683  | C2            | D2* | -   |
| 0.082        | 823  | C3            | D3* | -   |
| 0.1          | 104  | C3            | D4* | -   |
| 0.12         | 124  | D1*           | E1* | -   |
| 0.15         | 154  | D2*           | E2* | -   |
| 0.18         | 184  | D2*           | E3* | -   |
| 0.22         | 224  | D3*           | E4* | -   |
| 0.27         | 274  | E1*           | -   | -   |
| 0.33         | 334  | E2*           | -   | -   |
| 0.39         | 394  | E3*           | -   | -   |
| 0.47         | 474  | E4*           | -   | -   |

\*Available in +250°C reflow version.  
See part number system for details

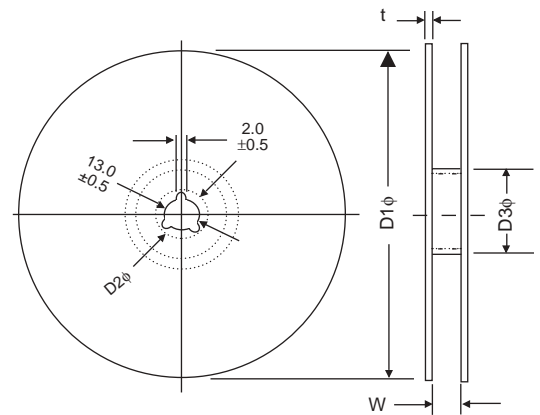
## DIMENSIONS AND CASE CODES (mm)

| Case Code | Length L $\pm 0.2$ | Width W       | Height H $\pm 0.2$ | EIA Size |
|-----------|--------------------|---------------|--------------------|----------|
| B1        | 3.2                | 1.6 $\pm 0.2$ | 0.8                | 1206     |
| B2        | 3.2                | 1.6 $\pm 0.2$ | 1.0                | 1206     |
| B3        | 3.2                | 1.6 $\pm 0.2$ | 1.4                | 1206     |
| C1        | 3.2                | 2.5 $\pm 0.2$ | 1.0                | 1210     |
| C2        | 3.2                | 2.5 $\pm 0.2$ | 1.4                | 1210     |
| C3        | 3.2                | 2.5 $\pm 0.2$ | 2.0                | 1210     |
| D1        | 4.8                | 3.3 $\pm 0.3$ | 1.4                | 1913     |
| D2        | 4.8                | 3.3 $\pm 0.3$ | 2.0                | 1913     |
| D3        | 4.8                | 3.3 $\pm 0.3$ | 2.4                | 1913     |
| D4        | 4.8                | 3.3 $\pm 0.3$ | 2.8                | 1913     |
| E1        | 6.0                | 4.1 $\pm 0.3$ | 1.8                | 2416     |
| E2        | 6.0                | 4.1 $\pm 0.3$ | 2.0                | 2416     |
| E3        | 6.0                | 4.1 $\pm 0.3$ | 2.4                | 2416     |
| E4        | 6.0                | 4.1 $\pm 0.3$ | 2.8                | 2416     |



## REEL DIMENSIONS (mm)/QUANTITY PER REEL

| Case Code      | D1 $\pm 2.0$ | D2 $\pm 0.8$ | D3 $\pm 2.0$ | W              | t $\pm 0.5$ | Qty/Reel |
|----------------|--------------|--------------|--------------|----------------|-------------|----------|
| B1             | 178          | 21           | 60.0         | 9.5 $\pm 0.5$  | 1.2         | 2,000    |
| B2             |              |              |              |                |             | 3,000    |
| B3             |              |              |              |                |             | 2,000    |
| C1, C2, C3     | 330          | 21           | 80.0         | 14.0 $\pm 1.5$ | 2.0         | 2,000    |
| D1, E1         |              |              |              |                |             | 3,000    |
| D2, E2         |              |              |              |                |             | 3,000    |
| D3, D4, E3, E4 |              |              |              |                |             | 2,000    |



## TAPE DIMENSIONS (mm)

| Case Code | A $\pm 0.1$ | B $\pm 0.1$ | C $\pm 0.2$ | t $\pm 0.5$ | W $\pm 0.3$ | F $\pm 0.5$ | P $\pm 0.1$ | D $\phi$ $\pm 0.2$ |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------------|
| B1        | 1.9         | 3.5         | 1.5         | 0.25        | 8.0         | 3.5         | 4.0         | 1.0                |
| B2        |             |             | 1.5         |             |             |             |             |                    |
| B3        |             |             | 1.9         |             |             |             |             |                    |
| C1        | 2.8         | 3.5         | 1.9         | 0.25        | 8.0         | 3.5         | 4.0         | 1.0                |
| C2        |             |             | 1.9         |             |             |             |             |                    |
| C3        |             |             | 2.5         |             |             |             |             |                    |
| D1        | 3.8         | 5.1         | 2.0         | 0.30        | 12.0        | 5.5         | 8.0         | 1.5                |
| D2        |             |             | 2.6         |             |             |             |             |                    |
| D3 & D4   |             |             | 3.4         |             |             |             |             |                    |
| E1        | 4.6         | 6.3         | 2.7         | 0.30        | 12.0        | 5.5         | 8.0         | -                  |
| E2        |             |             | 2.7         |             |             |             |             |                    |
| E3 & E4   |             |             | 3.5         |             |             |             |             |                    |

## EMBOSSED PLASTIC CARRIER

