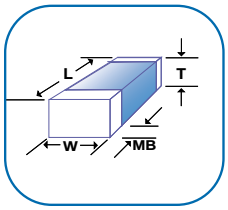
# Y3 - CERTIFIED SAFETY CAPACITORS

NOVACAP offers a line of MLC chip capacitors, sizes LS 1808, LS 1812, $X^2, Y^3$ Class Compliant* specifically designed for use in modem, facsimile, telephone and other electronic equipment where lightning or overvoltage surges can occur. These parts are rated at 3,000 Vdc ($Y^3$) and 250 Vac safety approved and certified to EN 60950. The product is compliant to Standards EN 132400: 1994/A2: 1998/IEC60384-14, Second Edition: 1993/A1:1995, and meet the requirements of EN61000-4-5, IEC1000-4-5, and IEC801-4-5. Capacitors are available in COG (NP0) and X7R dielectrics.

| SIZE | LS 1808 ($Y^3$) | LS 1812 ($Y^3$) |
|---|---|---|
| LENGTH L | .180 (4.57) | .180 (4.57) |
| WIDTH W | .080 (2.03) | .125 (3.18) |
| T MAX | See Chart | See Chart |
| MB | .024 (.609) Typical | .024 (.609) Typical |
| CREEPAGE | .102 (2.60) Min | .102 (2.60) Min |

Dimensions are in inches, bracketed dimensions in millimeters.
Tolerances for length and width are .015" (0.38 mm).




| | |
|---|---|
| TUV | (LS 1808N) R9972698.01,.02,.03 (LS1808B) R2272835.01,.02<br>(LS1812N) R9972698.05 |
| STANDARDS | EN 132400, EN 60950, IEC 60384-14 Second Edition, Class $X^2 Y^3$. |
| UL | NWGQ2.E208336 and NWGQ8.E208336 |

Maximum Thickness of .065".
No "X065" required in the part number. ie: LS1808N151K302NT

Maximum Thickness of .080".
"X080" required in the part number. ie: LS1808N102K302NX080T

Maximum Thickness of .100".
"X100" required in the part number. ie: LS1812N202K302NX100T

| Cap (EIA) | LS 1808 COG/NPO | LS 1808 X7R | LS 1812 COG/NPO |
|---|---|---|---|
| 5R0 | | | |
| 6R8 | | | |
| 8R2 | | | |
| 100 | | | |
| 120 | | | |
| 150 | | | |
| 180 | | | |
| 220 | | | |
| 270 | | | |
| 330 | | | |
| 390 | | | |
| 470 | | | |
| 560 | | | |
| 680 | | | |
| 820 | | | |
| 101 | | | |
| 121 | | | |
| 151 | | | |
| 181 | | | |
| 221 | | | |
| 271 | | | |
| 331 | | | |
| 391 | | | |
| 471 | | | |
| 561 | | | |
| 681 | | | |
| 821 | | | |
| 102 | | | |
| 122 | | | |
| 152 | | | |
| 182 | | | |
| 222 | | | |

## HOW TO ORDER

| LS1808 | N | 102 | K | 302 | N | X080 | T | M |
|---|---|---|---|---|---|---|---|---|
| **SIZE**<br>LS 1808<br>LS 1812 | **DIELECTRIC**<br>N = COG<br>B = X7R | **CAPACITANCE**<br>Value in Picofarads<br>Two significant figures, followed by number of zeros:<br>102 = 1000 pF | **TOLERANCE**<br>J = +/- 5 %<br>K = +/- 10 %<br>M = +/- 20 % | **VOLTAGE-VDCW**<br>Two significant figures, followed by number of zeros:<br>302 = 3000 VDC | **TERMINATION**<br>N = Nickel Barrier (100% Tin) | **THICKNESS OPTION**<br>Not required for .065"Max Thickness, X080 or X100 required for thickness >.065"<br>See Chart | **PACKING OPTION**<br>T=Reeled | **MARKING OPTION**<br>M = Marked (See Marking Specification) |

*Compliant with Robustness of Termination (cl 4.3) test according to IEC 60384-1 amendment 3 cl 4.34 and 4.35 Resistance to Soldering Heat (cl 4.4) tested according to IEC 60384-1 amendment 3 cl. 4.14.2, Impulse Test made with 2.5 KV or 5.0KV as required according to 6.4.2.1 in EN 60950. The creepage distance between live parts of different polarity meets the requirements of IEC 60950.

# Y2 - CERTIFIED SAFETY CAPACITORS

NOVACAP offers a line of MLC chip capacitors, sizes ES 2211, ES 2215 and ES2225, $Y^2$ Class Compliant specifically designed for use in modem, facsimile, telephone and other electronic equipment where lightning or overvoltage surges can occur. These parts are rated at 5000 Vdc and 250 Vac safety approved and certified to IEC60384-14, Second Edition: 1993/A1:1995. The product is compliant to Standards EN 132400: 1994/A2:1998 and meet the requirements of EN61000-4-5, IEC1000-4-5, and IEC801-4-5. Capacitors are available in COG (NP0) dielectric only.

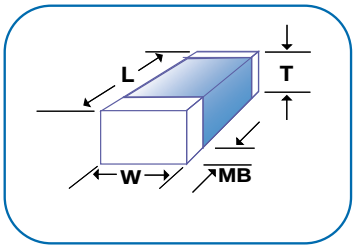
| SIZE | ES 2211 ($Y^2$) | ES 2215 ($Y^2$) | ES2225 ($Y^2$) |
|---|---|---|---|
| LENGTH L | .220 (5.58) | .220 (5.58) | .220 (5.58) |
| WIDTH W | .110 (2.79) | .150 (3.81) | .250 (6.35) |
| T MAX | .110 (2.79) | .150 (3.81) | .080 (2.03) |
| MB | .030 (.762) Typical | .030 (.762) Typical | .030 (.762) Typical |
| CREEPAGE | .157 (4.00) Min | .157 (4.00) Min | .157 (4.00) Min |
| CAP RANGE | 5-680pF | 1000pF | 1000pF |

Dimensions are in inches, bracketed dimensions in millimeters. Tolerances for length and width are .015" (0.38 mm)..

## CERTIFICATION NUMBERS

| | |
|---|---|
| TUV | (ES2211, ES2215) R2072738.01 (ES2225) R2072738.02 |
| STANDARDS | EN 132400, IEC 60384-14 Second Edition, Class $X^1Y^2$ |

Part Identification Marking will be placed on the reel.




## HOW TO ORDER

| ES2225 | N | 102 | K | 502 | N | X | T | M |
|---|---|---|---|---|---|---|---|---|
| SIZE<br>ES 2211<br>ES 2215<br>ES 2225 | DIELECTRIC<br>N = COG | CAPACITANCE<br>Value in Picofarads<br>Two significant figures, followed by number of zeros:<br>102 = 1000 pF | TOLERANCE<br>J = +/- 5 %<br>K = +/- 10 %<br>M = +/- 20 % | VOLTAGE-VDCW<br>Two significant figures, followed by number of zeros:<br>502 = 5000 VDC | TERMINATION<br>N = Nickel Barrier (100% Tin) | THICKNESS OPTION<br>X = Non-standard thickness. Specify in Mils. if non-standard is required. Standard items are any thickness to Maximum shown in charts. | PACKING OPTION<br>T = Reeled | MARKING OPTION<br>M = Marked (See Marking Specification) |