



**THE DATASHEET OF
ES2211N221K502NTM**



Novacap™ brand Safety Certified capacitors - X², X¹, Y²

The X² (LS style) and X¹ & X¹/Y² (ES style) Class Compliant chip capacitors specifically designed for use in modem, facsimile, telephone and other electronic equipment where lightning or overvoltage surges can occur.

Both styles are rated at 250 Vac safety approved with COG/NP0 and X7R dielectrics available (dependant on style).

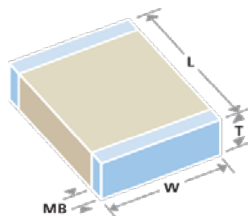
Note - Legacy range planned for obsolescence. Not for new designs. Superseded by Syfer brand safety certified capacitors. See cross reference below

Certification numbers

Dielectric	COG					X7R				
Certificate number (TUV)	R 60108952					R 60108951				
	Type	Class	Impulse Voltage	Size	Range	Type	Class	Impulse Voltage	Size	Range
	ES1808	X1	4kV	1808	4.7pF to 390pF	ES1808	X1	4kV	1808	150pF to 1.5nF
	ES2211	Y2 / X1	5kV	2211	4.7pF to 1nF	LS1808	X2	2.5kV	1808	150pF to 4.7nF
	ES2215	Y2 / X1	5kV	2215	820pF to 1nF					
	LS1808	X2	2.5kV	1808	4.7pF to 1.5nF					
	LS1812	X2	2.5kV	1812	1nF to 2.2nF					

Dimensions - inches/mm

Size		LS 1808	LS 1812	ES 1808	ES 2211	ES 2215
L	inches:	0.178±0.014	0.178±0.014	0.178±0.014	0.224±0.016	0.224±0.016
	mm:	4.50±0.35	4.50±0.35	4.50±0.35	5.70±0.40	5.70±0.40
W	inches:	0.079±0.012	0.126±0.012	0.079±0.012	0.110±0.012	0.150±0.014
	mm:	2.00±0.30	3.20±0.30	2.00±0.30	2.79±0.30	3.81±0.35
T	inches:	0.079 Max	0.100 Max	0.079 Max	0.100 Max	0.100 Max
	mm:	2.00 Max	2.54 Max	2.00 Max	2.54 Max	2.54 Max
MB	inches:	0.010 to 0.032	0.010 to 0.032	0.010 to 0.032	0.010 to 0.032	0.010 to 0.032
	mm:	0.25 to 0.80	0.25 to 0.80	0.25 to 0.80	0.25 to 0.80	0.25 to 0.80
Creepage	inches:	0.118 Min	0.118 Min	0.118 Min	0.158 Min	0.158 Min
	mm:	3.00 min	3.00 min	3.00 min	4.00 Min	4.00 Min



Cross reference Novacap brand to Syfer brand safety certified capacitors

	Novacap Brand					Syfer Brand				
Dielectric	COG					COG				
Certificate number (TUV)	R 60108952					R 60096338				
	Type	Class	Impulse Voltage	Size	Range	Type	Class	Impulse Voltage	Size	Range
	ES1808	X1	4kV	1808	4.7pF to 390pF	PY2	X1	4kV	1808	4.7pF to 390pF
	ES2211	Y2 / X1	5kV	2211	4.7pF to 1nF	SP	Y2 / X1	5kV	2211	4.7pF to 1nF
	ES2215	Y2 / X1	5kV	2215	820pF to 1nF	SP	Y2 / X1	5kV	2211	820pF to 1nF
	LS1808	X2	2.5kV	1808	4.7pF to 1.5nF	SP	X2	2.5kV	1808	4.7pF to 1.5nF
	LS1812	X2	2.5kV	1812	1nF to 2.2nF	-	-	-	-	-
	-	-	-	-	-	PY2	X1	4kV	1812	4.7pF to 390pF

	Novacap Brand					Syfer Brand				
Dielectric	X7R					X7R				
Certificate number (TUV)	R 60108951					R 60116280				
	Type	Class	Impulse Voltage	Size	Range	Type	Class	Impulse Voltage	Size	Range
	ES1808	X1	4kV	1808	150pF to 1.5nF	PY2	X1	4kV	1808	150pF to 1.5nF
	LS1808	X2	2.5kV	1808	150pF to 4.7nF	SP	X2	2.5kV	1808	150pF to 4.7nF
	-	-	-	-	-	PY2	X1	4kV	1812	150pF to 4.7nF
	-	-	-	-	-	SP	Y2 / X1	5kV	2211	100pF to 3.9nF
	-	-	-	-	-	SP	Y2 / X1	5kV	2215	2.7nF to 3.9nF
	-	-	-	-	-	B16	Y2 / X1	5kV	2220	150pF to 10nF
	-	-	-	-	-	B17	X2	2.5kV	2220	150pF to 22nF

Part number breakdown – Novacap™ Certified Safety Capacitors

LS	1808	N	122	K	302	N	-	T	M
STYLE LS = X ² ES (X ¹ or X ¹ , Y ²)	SIZE See Chart	DIELECTRIC N = COG/NPO B = X7R	CAPACITANCE Value in Picofarads. Two significant figures, followed by number of zeros: 121 = 120pF	TOLERANCE J = ± 5% K = ± 10% M = ± 20%	302 = LS (X ²) 502 = ES (X ¹ or (X ¹ , Y ²))	TERMINATION N = Nickel Barrier	THICKNESS OPTION Blank = Standard thickness	PACKING No suffix = Bulk T = Tape & Reel	MARKING Parts marked: NLS (X ²) NY2 (X ¹ & X ¹ , Y ²)

Ordering Information – Safety Certified capacitors – Syfer Brand Class SPU/SP ranges

1808	J	A25	0102	J	C	T	SP
Chip Size	Termination	Rated Voltage	Capacitance in Pico farads (pF)	Capacitance Tolerance	Dielectric Codes	Packaging	Suffix code
1808 2211 2215	<p>J = nickel barrier (100% matte tin plating). RoHS compliant</p> <p>Y = FlexiCap™ termination base with Ni barrier (100% matte tin plating). RoHS compliant. 2211/2215 only</p> <p>A = Ni barrier (Tin/lead plating with min. 10% lead). Not RoHS compliant.</p> <p>H = FlexiCap™ termination base with Ni barrier (Tin/lead plating with min. 10% lead). Not RoHS compliant.</p>	<p>A25 = 250Vac (SPU = 250Vac / 2500Vdc)</p>	<p>First digit is 0.</p> <p>Second and third digits are significant figures of capacitance code.</p> <p>The fourth digit is number of zeros following.</p> <p>Example: 0102 = 1.0nF</p>	<p><10pF</p> <p>B = ±0.10pF</p> <p>C = ±0.25pF</p> <p>D = ±0.50pF ≥ 10pF</p> <p>F = ±1%</p> <p>G = ±2%</p> <p>J = ±5%</p> <p>K = ±10%</p> <p>M = ±20%</p>	<p>C = COG/NP0</p> <p>X = X7R</p> <p>A = COG/NP0 AEC-Q200</p> <p>E = X7R (2B1) AEC-Q200</p>	<p>T = 178mm (7") reel</p> <p>R = 330mm (13") reel</p> <p>B = Bulk pack – tubs or trays</p>	<p>SP = Surge Protection capacitors (marked and approved)</p> <p>SPU = Surge Protection capacitors (un-marked parts are in accordance with, but not certified)</p>

Ordering Information – Safety Certified capacitors – Class PY2/SY2

1808	J	A25	0102	J	X	T	PY2
Chip Size	Termination	Rated Voltage	Capacitance in Pico farads (pF)	Capacitance Tolerance	Dielectric Codes	Packaging	Suffix code
1808 1812	<p>J = nickel barrier (100% matte tin plating). RoHS compliant</p> <p>Y = FlexiCap™ termination base with Ni barrier (100% matte tin plating). RoHS compliant.</p>	<p>A25 = 250Vac (SY2 = 250Vac / 2500Vdc)</p>	<p>First digit is 0.</p> <p>Second and third digits are significant figures of capacitance code.</p> <p>The fourth digit is number of zeros following.</p> <p>Example: 0102 = 1.0nF</p>	<p><10pF</p> <p>B = ±0.10pF</p> <p>C = ±0.25pF</p> <p>D = ±0.50pF ≥ 10pF</p> <p>F = ±1%</p> <p>G = ±2%</p> <p>J = ±5%</p> <p>K = ±10%</p> <p>M = ±20%</p>	<p>C = COG/NP0</p> <p>X = X7R</p> <p>A = COG/NP0 AEC-Q200</p> <p>E = X7R (2B1) AEC-Q200</p>	<p>T = 178mm (7") reel</p> <p>R = 330mm (13") reel</p> <p>B = Bulk pack – tubs or trays</p>	<p>PY2 = Safety tested Surge Protection capacitors (marked and approved)</p> <p>SY2 = Surge Protection capacitors (un-marked parts are in accordance with, but not certified)</p>

Ordering Information – Safety Certified capacitors – Class B16/B17 ranges

2220	J	A25	0102	J	X	T	B16
Chip Size	Termination	Rated Voltage	Capacitance in Pico farads (pF)	Capacitance Tolerance	Dielectric Codes	Packaging	Suffix code
2220	<p>J = nickel barrier (100% matte tin plating). RoHS compliant</p> <p>Y = FlexiCap™ termination base with Ni barrier (100% matte tin plating). RoHS compliant.</p> <p>A = Ni barrier (Tin/lead plating with min. 10% lead). Not RoHS compliant.</p> <p>H = FlexiCap™ termination base with Ni barrier (Tin/lead plating with min. 10% lead). Not RoHS compliant.</p>	<p>A25 = 250Vac (U16 = 250Vac / 2500Vdc)</p> <p>(U17 = 250Vac / 2500Vdc)</p>	<p>First digit is 0.</p> <p>Second and third digits are significant figures of capacitance code.</p> <p>The fourth digit is number of zeros following.</p> <p>Example: 0102 = 1.0nF</p>	<p>J = ±5%</p> <p>K = ±10%</p> <p>M = ±20%</p>	<p>X = X7R</p> <p>E = X7R (2B1) AEC-Q200</p> <p>J = X7R (BME)⁽⁴⁾</p>	<p>T = 178mm (7") reel</p> <p>R = 330mm (13") reel</p> <p>B = Bulk pack – tubs or trays</p>	<p>B16 = Type A: X1/Y2</p> <p>B17 = Type B: X2</p> <p>U16 = Type A: (In accordance with, but not certified to, class X1/Y2)</p> <p>U17 = Type B: (In accordance with, but not certified to, class X2)</p>

Dielectric code E (AEC-Q200 approved X7R Dielectric) available with terminations Y & H only

'J' dielectric code for B16 values ≤4.7nF only.

For full details of the Syfer brand safety capacitors, please refer to the website and safety capacitor family datasheet.

Individual datasheets can be generated direct from the part number generator

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View ES2211N221K502NTM on WIN SOURCE](#)

 [Knowles Novacap Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management