

The X2 (LS style) and X1 & Y2/X1 (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 (dependent on style).

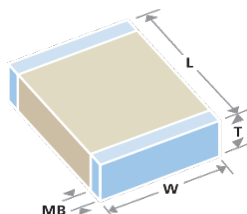
Note – This is now a legacy range planned for obsolescence. Not for new designs. Superseded by Syfer brand safety certified capacitors. See cross reference tables below.

Certification numbers

Dielectric	COG					X7R				
Certificate number (TUV)	R 60145518					R 60150400				
	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 PME safety certified capacitors

	Novacap™ Brand					Syfer™ Brand PME					
Dielectric	C0G					C0G					
Certificate number (TUV)	R 60145518					R 60144895					
	Type	Class	Impulse Voltage	Size	Range	Type	Class	Impulse Voltage	Size	Range	Minimum Creepage
	ES1808	X1	4kV	1808	4.7pF to 390pF	PY2	X1	4kV	1808	4.7pF to 390pF	3.0mm (0.118")
	ES2211	Y2 / X1	5kV	2211	4.7pF to 1nF	SP	Y2 / X1	5kV	2211	4.7pF to 1nF	4.0mm (0.158")
	ES2215	Y2 / X1	5kV	2215	820pF to 1nF	SP	Y2 / X1	5kV	2215	820pF to 1nF	4.0mm (0.158")
	LS1808	X2	2.5kV	1808	4.7pF to 1.5nF	SP	X2	2.5kV	1808	4.7pF to 1.5nF	3.0mm (0.118")
	LS1812	X2	2.5kV	1812	1nF to 2.2nF						
						PY2	X1	4kV	1812	4.7pF to 390pF	3.0mm (0.118")

	Novacap™ Brand					Syfer™ Brand PME					
Dielectric	X7R					X7R					
Certificate number (TUV)	R 60150400					R 60150396					
	Type	Class	Impulse Voltage	Size	Range	Type	Class	Impulse Voltage	Size	Range	Minimum Creepage
	ES1808	X1	4kV	1808	150pF to 1.5nF	PY2	X1	4kV	1808	150pF to 1.5nF	3.0mm (0.118")
	LS1808	X2	2.5kV	1808	150pF to 4.7nF	SP	X2	2.5kV	1808	150pF to 4.7nF	3.0mm (0.118")
						PY2	X1	4kV	1812	150pF to 4.7nF	3.0mm (0.118")
						SP	Y2 / X1	5kV	2211	100pF to 3.9nF	4.0mm (0.158")
						SP	Y2 / X1	5kV	2215	2.7nF to 3.9nF	4.0mm (0.158")
						B16	Y2 / X1	5kV	2220	150pF to 10nF	4.0mm (0.158")
						B17	X2	2.5kV	2220	150pF to 22nF	4.0mm (0.158")

Cross reference Novacap™ brand to Syfer™ brand BME safety certified capacitors

	Novacap™ Brand					Syfer™ Brand BME					
Dielectric	C0G					C0G					
Certificate number (TUV)	R 60145518					R 60153659 (Types SYX and S2X) R 60153663 (Type SYS)					
	Type	Class	Impulse Voltage	Size	Range	Type	Class	Impulse Voltage	Size	Range	Minimum Creepage
	ES1808	X1	4kV	1808	4.7pF to 390pF	SYX	Y2 / X1	5kV	1808	5.6pF to 220pF	4.0mm (0.158")
						SYS	Y2 / X1	5kV	1808	5.6pF to 220pF	3.5mm (0.138")
	ES2211	Y2 / X1	5kV	2211	4.7pF to 1nF	SYX	Y2 / X1	5kV	2211	4.7pF to 1nF	4.0mm (0.158")
	ES2215	Y2 / X1	5kV	2215	820pF to 1nF	SYX	Y2 / X1	5kV	2215	820pF to 1nF	4.0mm (0.158")
	LS1808	X2	2.5kV	1808	4.7pF to 1.5nF	S2X	X2	2.5kV	1808	10pF to 1.0nF	3.0mm (0.118")
	LS1812	X2	2.5kV	1812	1nF to 2.2nF						
						SYX	Y2 / X1	5kV	1812	5.6pF to 820pF	4mm (0.158")
						SYS	Y2 / X1	5kV	1812	5.6pF to 680pF	3.5mm (0.138")

	Novacap™ Brand					Syfer™ Brand BME					
Dielectric	X7R					X7R					
Certificate number (TUV)	R 60150400					R 60156291 (Type SYX) R 60153664 (Types SYS and S3X)					
	Type	Class	Impulse Voltage	Size	Range	Type	Class	Impulse Voltage	Size	Range	Minimum Creepage
	ES1808	X1	4kV	1808	150pF to 1.5nF	SYX	Y2 / X1	5kV	1808	82pF to 1.8nF	4.0mm (0.158")
						SYS	Y2 / X1	5kV	1808	82pF to 1.8nF	3.5mm (0.138")
	LS1808	X2	2.5kV	1808	150pF to 4.7nF						
						SYX	Y2 / X1	5kV	1812	100pF to 4.7nF	4.0mm (0.158")
						SYS	Y2 / X1	5kV	1812	100pF to 3.9nF	3.5mm (0.138")
						SYX	Y2 / X1	5kV	2211	100pF to 3.9nF	4.0mm (0.158")
						SYX	Y2 / X1	5kV	2215	2.7nF to 6.8nF	4.0mm (0.158")
						SYX	Y2 / X1	5kV	2220	150pF to 10nF	4.0mm (0.158")
						S3X	X2	2.5kV	2220	10nF to 56nF	4.0mm (0.158")

Part number breakdown – Novacap™ Certified Safety Capacitors

LS	1808	N	122	K	302	N	-	T	M
STYLE LS = X2 ES = X1 or Y2/X1	SIZE See Dimensions table	DIELECTRIC N = C0G/NP0 B = X7R	CAPACITANCE Value in Picofarads. Two significant figures, followed by number of zeros: 121 = 120pF	TOLERANCE J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	302 = LS (X2) 502 = ES (X1 or Y2/X1)	TERMINATION N = Nickel Barrier	THICKNESS OPTION Blank = Standard thickness	PACKING No suffix = Bulk T = Tape & Reel	MARKING Parts marked: NLS (X2) NY2 (X1 & Y2/X1)

For part number breakdown information on Syfer brand safety capacitors, refer to the following family datasheets on the Knowles website:

[Syfer Brand PME Capacitors - Legacy 250Vac Safety Certified range](#)

[Syfer Brand BME Capacitors – Enhanced 250Vac and 305Vac Safety Certified range](#)

Datasheets for individual Syfer brand parts can be generated using the [Part Builder](#) and [Part Search](#) applications on the Knowles website.