

EMI/RFI Suppression Capacitors

EMI suppression capacitors are used to suppress any noise from an electronic device by reducing the input impedance of the device.

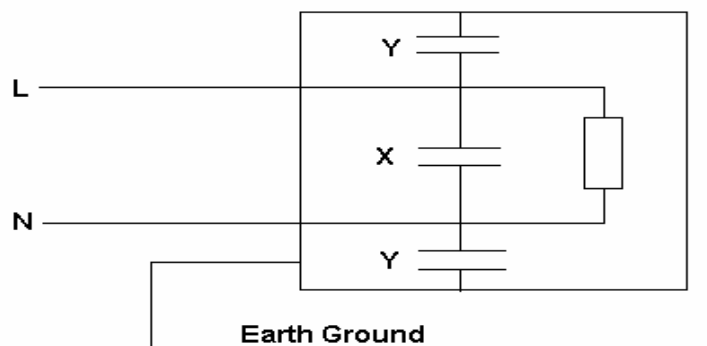
These capacitors are divided into 2 classifications, X and Y. X class capacitors are capacitors that are connected line to line and in the event of failure of the capacitor the potential for electrical shock is not present. X capacitors are further subdivided into three subcategories X1, X2 and X3. X1 capacitors are used where the peak voltage the capacitors will be greater than 2500 volts and less than 4000V. Class X2 capacitors are in applications where the peak voltage is equal to below 2500 volts. X3 capacitors are used where the peak voltage is less than or equal to 1200 volts. X2 capacitors are the most common.

Y capacitors on the other hand are connected from line to ground. They are typically a very low capacitance value. In the event a Y capacitor fails the potential for electrical shock is present. Y capacitors are also subdivided into four subcategories, Y1, Y2, Y3 and Y4. Y1 capacitors are used with voltages up 500Vac, Y2 are used with voltages up to 300Vac, Y3 are used with voltages up to 250Vac and Y4 capacitors are used up to 150Vac.

X class capacitors are rated up to 660Vac and Y capacitors are manufactured with voltage ratings up to 440Vac.

X class capacitors are manufactured with a variety of dielectric materials. This includes polyester, polypropylene, ceramic and paper while Y capacitors are typically produced out of ceramic and paper dielectrics. With the exception of ceramics the capacitors are produced using metallized materials and may be impregnated with epoxy or mineral oils.

EMI/RFI Suppression





ILLINOIS CAPACITOR, INC.

3757 W. Touhy Ave., Lincolnwood, IL 60712 • (847) 675-1760 • Fax (847) 673-2850 • www.illcap.com



X class capacitors

Subgroup	Peak service voltage	Peak test voltage
X1	>2500V ≤4000V	4kV, C≤1.0uF 4/√C kV, C>1.0uF
X2	≤2500V	2.5kV, C≤1.0uF 2.5/√C kV, C>1.0uF
X3	≤1200V	None

Y class capacitors

Subgroup	Rated Voltage	Peak Test Voltage
Y1	≤ 500V	8 kV
Y2	150 ≤ V < 300	5 kV
Y3	≤ 250V	None
Y4	≤150 V	2.5 kV

International standards

UL 1414	American standard
UI 1283	American standard
CSA C22.2 No.1	Canadian standard
CSA C22.2 No.8	Canadian standard
EN 132400	European standard
IEC 60384-14	International standard



3757 W. Touhy Ave., Lincolnwood, IL 60712 • (847)675-1760 • Fax (847) 675-2850 • www.illcap.com