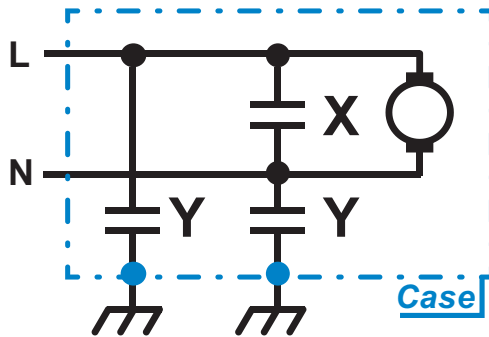


### Safety-Rated RFI Capacitors From Vishay

#### Typical Circuit

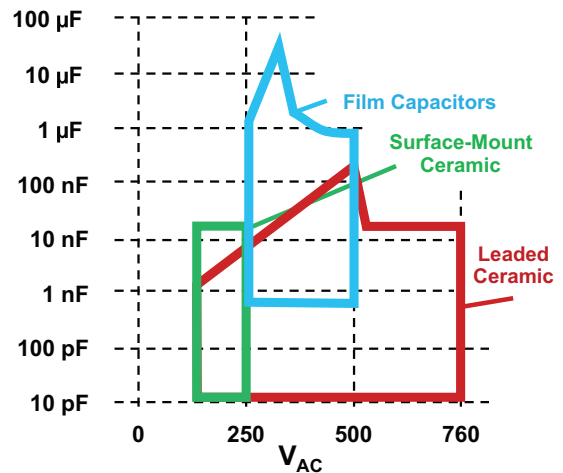


#### CLASS X

Differential Mode Filtering  
Across the Line

Sub Class	Peak Impulse Voltage	Typical Application
X1	4.0 kV	High Pulse
X2	2.5 kV	General Purpose
X3	1.2 kV	General Purpose

#### Safety Capacitor Environment



#### CLASS Y

Common Mode Filtering  
Line to Ground

Sub Class	Peak Impulse Voltage	Typical Application
Y1	8.0 kV	High Pulse
Y2	5.0 kV	General Purpose
Y3	Not pulse rated	General Purpose
Y4	2.5 kV	General Purpose

### BENEFITS FROM VISHAY

- All three capacitor technologies available from one source
- Wide product range
  - X2 from 10 pF up to 40 μF
- C0G (NP0) material available up to 1 nF nominal capacitance value in surface-mount capacitor
- Surface-mount product meets IEC 60384-14 min. 4 mm creepage at 1 nF in X1 / Y2 with COG (NP0)
- Y1 leaded ceramic up to 10 kV pulse strength guaranteed
- AEC-Q200 qualification available for film and leaded ceramic
  - AY2 leaded ceramic 3000 temp cycles from -55 °C to +125 °C
- F1772S withstands THB testing: 85 °C / 85 % RH / 240 V<sub>AC</sub> / 1000 h
- VY1+C withstands THB testing: 85 °C / 85 % RH / 500 V<sub>AC</sub> / 1000 h

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# RFI CAPACITORS FROM VISHAY

## Safety Capacitors

RFI X and Y Film Capacitors								
Series	Rated AC Voltage (V)	Capacitance Min. (µF)	Capacitance Max. (µF)	Rated Temperature (°C)	Construction	Agency Approvals	Pitch	
<b>F1772SX2</b>	310	0.01	2.2	110	Series	IEC / EN / UL / CSA	15 mm to 27.5 mm	
X2 and series impedance applications; 85 °C / 85 % RH, 240 V <sub>AC</sub> for 1000 h								
<b>MKP339X2</b>	310	0.001	4.7	110	Mono	IEC / EN / UL / CSA / CQC	7.5 mm to 27.5 mm	
AEC-Q200 Automotive Grade X2 class capacitor								
<b>F340X2</b>	305	1	20	105	Mono	IEC / EN / UL / CSA	27.5 mm to 52.5 mm	
X2 class capacitor for high robustness under high humidity. THB grade III B-SOP Q3 2017								
<b>F340Y2</b>	305	0.001	1	105	Mono	IEC / EN / UL / CSA / CQC	10 mm to 37.5 mm	
Y2 class capacitor for high robustness under high humidity. THB grade III B-SOP, Q3 2017								
<b>F340X1</b>	480	0.22	8.2	105	Mono	IEC / EN / UL / CSA / CQC	22.5 mm to 52.5 mm	
X1 class capacitor for high robustness under high humidity. THB grade III B-SOP, Q3 2017								
<b>F339X1 480 V<sub>AC</sub></b>	480	0.001	1	110	Series	IEC / EN / UL / CSA / CQC	10 mm to 27.5 mm	
X1 capacitor for high capacitance stability; 85 °C / 85 % RH, 400 V <sub>AC</sub> for 500 h								
<b>MKP3386Y2</b>	300	0.001	0.47	105	Series	IEC / EN / UL / CSA	7.5 mm to 27.5 mm	
AEC-Q200 Automotive Grade Y2 class capacitor								
<b>F1773X2</b>	253	0.01	2.2	100	Series	IEC / EN / UL / CSA	-	
Axial X2 capacitor for low building height applications								

Leaded Ceramic Safety Capacitors						
Series	Voltage		Capacitance	Tolerance	Temperature Characteristics	
	Y Rating	X Rating				
<b>YY1 Series</b>	500 V <sub>AC</sub>	760 V <sub>AC</sub>	10 pF to 4.7 nF	± 10 % / ± 20 %	U2J / Y5S / Y5U / Y5V	
AC-line rated ceramic disc capacitors; class X1: 760 V <sub>AC</sub> ; class Y1: 500 V <sub>AC</sub> ; this series includes <b>mini sized YY1...Y5V</b>						
<b>YY1 Compact Series</b>	500 V <sub>AC</sub>	760 V <sub>AC</sub>	470 pF to 4.7 nF	± 20 %	Y5U	
Compact size and high pulse strength; AC-line rated ceramic disc capacitors; class X1: 760 V <sub>AC</sub> ; class Y1: 500 V <sub>AC</sub>						
<b>YY2 Series</b>	300 V <sub>AC</sub>	440 V <sub>AC</sub>	10 pF to 10 nF	± 10 % / ± 20 %	U2J / Y5S / Y5U / Y5V	
AC-line rated ceramic disc capacitors; class X1: 440 V <sub>AC</sub> ; class Y2: 300 V <sub>AC</sub> ; this series includes <b>mini sized YY2...Y5V</b>						
<b>AY1 Series</b>	500 V <sub>AC</sub>	760 V <sub>AC</sub>	470 pF to 4.7 nF	± 20 %	Y5U	
AC-line rated ceramic disc capacitors for automotive applications; class X1: 760 V <sub>AC</sub> ; class Y1: 500 V <sub>AC</sub>						
<b>AY2 Series</b>	300 V <sub>AC</sub>	440 V <sub>AC</sub>	10 pF to 10 nF	± 10 % / ± 20 %	U2J / Y5S / Y5U	
AC-line rated ceramic disc capacitors for automotive applications; class X1: 440 V <sub>AC</sub> ; class Y2: 300 V <sub>AC</sub>						
<b>WKP Series</b>	500 V <sub>AC</sub>	760 V <sub>AC</sub>	33 pF to 4.7 nF	± 10 % / ± 20 %	U2J / Y5S / Y5T / Y5U	
AC-line rated ceramic disc capacitors; class X1: 760 V <sub>AC</sub> ; class Y1: 500 V <sub>AC</sub>						
<b>WYO Series</b>	250 V <sub>AC</sub>	440 V <sub>AC</sub>	1.0 nF to 12 nF	± 20 %	Y5U	
AC-line rated ceramic disc capacitors; class X1: 440 V <sub>AC</sub> ; class Y2: 300 V <sub>AC</sub>						
<b>440L Series</b>	500 V <sub>AC</sub>	760 V <sub>AC</sub>	10 pF to 20 nF	± 10 % / ± 20 %	C0G / U2J / P3K / R3L	
AC-line rated ceramic disc capacitors; class X1: 760 V <sub>AC</sub> ; class Y1: 500 V <sub>AC</sub>						

Surface-Mount Ceramic Capacitors							
TCC	Rating	Rated AC Voltage	Body Size	Capacitance (pF)		Rated Temperature	Agency Approvals
				Min.	Max.		
C0G(NP0)	X1 / Y2	250	2008	10	220	-55 °C to +125 °C	IEC EN CAN/CSA cCSAus ANSI/UL
			2012	18	470		
	2220		47	1000			
	2008		10	390			
X7R	X1 / Y2	250	2012	18	470		
			2008	100	1000		
	2012		150	1200			
	2220		270	4700			
	2008		100	2700			
	2012		150	5600			
	X2		2220	270	12,000		

DIMENSIONS in inches (millimeters)							
	Body size	Length (L)	Width (W)	Maximum Thickness	Term. (P)		
					Min.	Max.	
					2008	0.200 ± 0.010 (5.08 ± 0.25)	0.080 ± 0.010 (2.03 ± 0.25)
2012	0.200 ± 0.010 (5.08 ± 0.25)	0.126 ± 0.008 (3.20 ± 0.20)	0.086 (2.18)	0.010 (0.25)	0.030 (0.76)		
2220	0.220 ± 0.008 (5.59 ± 0.20)	0.200 ± 0.010 (5.08 ± 0.25)	0.086 (2.18)	0.010 (0.25)	0.030 (0.76)		

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