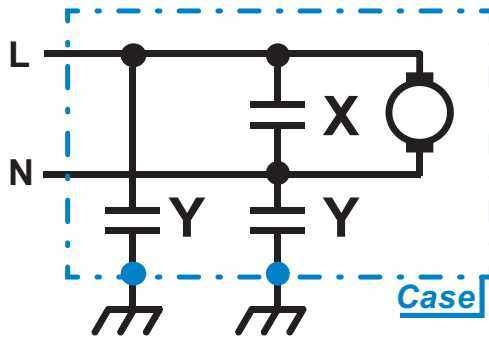


Safety-Rated RFI Capacitors From Vishay

Typical Circuit

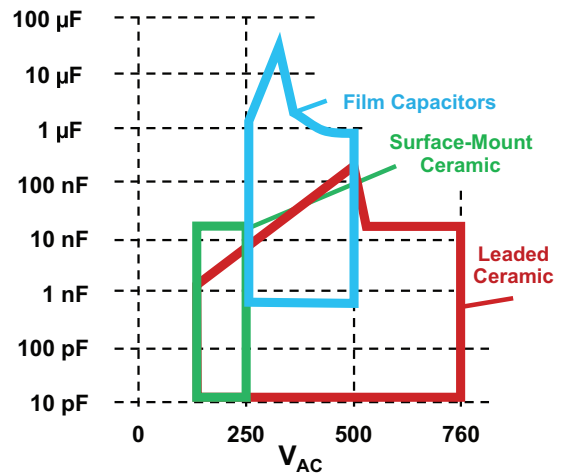


CLASS X

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_{AC} / 1000 h
- VY1+C withstands THB testing: 85 °C / 85 % RH / 500 V_{AC} / 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 | |
| F1772SX2 | 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 _{AC} for 1000 h | | | | | | | | |
| MKP339X2 | 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 | | | | | | | | |
| F340X2 | 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 | | | | | | | | |
| F340Y2 | 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 | | | | | | | | |
| F340X1 | 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 | | | | | | | | |
| F339X1 480 V_{AC} | 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 _{AC} for 500 h | | | | | | | | |
| MKP3386Y2 | 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 | | | | | | | | |
| F1773X2 | 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 | | | | |
| YY1 Series | 500 V _{AC} | 760 V _{AC} | 10 pF to 4.7 nF | ± 10 % / ± 20 % | U2J / Y5S / Y5U / Y5V | |
| AC-line rated ceramic disc capacitors; class X1: 760 V _{AC} ; class Y1: 500 V _{AC} ; this series includes mini sized YY1...Y5V | | | | | | |
| YY1 Compact Series | 500 V _{AC} | 760 V _{AC} | 470 pF to 4.7 nF | ± 20 % | Y5U | |
| Compact size and high pulse strength; AC-line rated ceramic disc capacitors; class X1: 760 V _{AC} ; class Y1: 500 V _{AC} | | | | | | |
| YY2 Series | 300 V _{AC} | 440 V _{AC} | 10 pF to 10 nF | ± 10 % / ± 20 % | U2J / Y5S / Y5U / Y5V | |
| AC-line rated ceramic disc capacitors; class X1: 440 V _{AC} ; class Y2: 300 V _{AC} ; this series includes mini sized YY2...Y5V | | | | | | |
| AY1 Series | 500 V _{AC} | 760 V _{AC} | 470 pF to 4.7 nF | ± 20 % | Y5U | |
| AC-line rated ceramic disc capacitors for automotive applications; class X1: 760 V _{AC} ; class Y1: 500 V _{AC} | | | | | | |
| AY2 Series | 300 V _{AC} | 440 V _{AC} | 10 pF to 10 nF | ± 10 % / ± 20 % | U2J / Y5S / Y5U | |
| AC-line rated ceramic disc capacitors for automotive applications; class X1: 440 V _{AC} ; class Y2: 300 V _{AC} | | | | | | |
| WKP Series | 500 V _{AC} | 760 V _{AC} | 33 pF to 4.7 nF | ± 10 % / ± 20 % | U2J / Y5S / Y5T / Y5U | |
| AC-line rated ceramic disc capacitors; class X1: 760 V _{AC} ; class Y1: 500 V _{AC} | | | | | | |
| WYO Series | 250 V _{AC} | 440 V _{AC} | 1.0 nF to 12 nF | ± 20 % | Y5U | |
| AC-line rated ceramic disc capacitors; class X1: 440 V _{AC} ; class Y2: 300 V _{AC} | | | | | | |
| 440L Series | 500 V _{AC} | 760 V _{AC} | 10 pF to 20 nF | ± 10 % / ± 20 % | C0G / U2J / P3K / R3L | |
| AC-line rated ceramic disc capacitors; class X1: 760 V _{AC} ; class Y1: 500 V _{AC} | | | | | | |

| 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 | | | |
| | X2 | | 2008 | 100 | 2700 | | |
| | | | 2012 | 150 | 5600 | | |
| | | | 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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[YP102271K050B20C6P](#) [YP102391K050BAND5P](#) [YP501101K040BAND5P](#) [YP102681K060B20C6P](#) [YP501121K040B20C6P](#)
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