

Type 940, Polypropylene Capacitors, for Pulse, Snubber

High dV/dt for Snubber Applications



Type 940 round, axial leaded film capacitors have polypropylene film and dual metallized electrodes for both self healing properties and high peak current carrying capability (dV/dt). This series features low ESR characteristics, excellent high frequency and high voltage capabilities.

Highlights

- High dV/dt
- High pulse current
- Low inductance
- Self healing

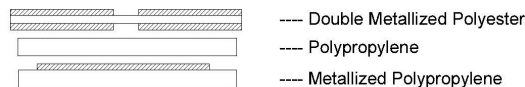
Specifications

| | |
|---|---|
| Capacitance Range | 0.01 to 4.7 μF |
| Capacitance Tolerance | $\pm 10\%$ (K) Standard; $\pm 5\%$ (J) Optional |
| Rated Voltage | 600 to 3000 Vdc (275 to 500 Vac, 60 Hz) |
| Operating Temperature Range | -55 °C to 105 °C* *Full rated voltage at 85 °C - derated linearly to 50% rated at 105 °C |
| Maximum rms Current | Check tables for values |
| Insulation Resistance | > 100,000 M Ω x μF |
| Test Voltage between Terminals @ 25 °C | 160% rated DC voltage for 60 s |
| Test Voltage between Terminals & Case @ 25 °C | 3 kVac @ 50/60 Hz for 60 s |
| Life Test | 2,000 h @ 85 °C, 125% rated DC voltage |
| Life Expectancy | 60,000 h @ rated Vdc, 70 °C 30,000 h @ rated Vac, 70 °C |

Regulatory Information

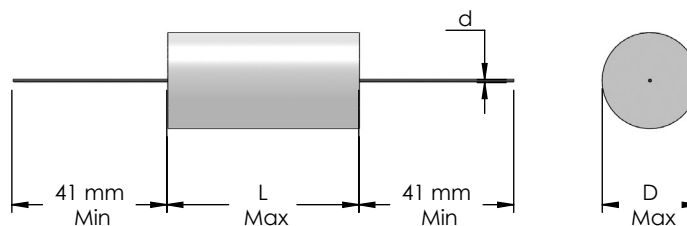
Dimensions

Construction Diagram



Construction Details

| | |
|-------------------|---------------------------|
| Case Material | UL510 Polyester Tape Wrap |
| Resin Material | UL94V-0 Epoxy Fill |
| Terminal Material | Tin Plated Copper |



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Part Numbering System

| | | | | | | |
|--------|--|--|---|--|---------------------------------|--------------------------|
| 940 | C | 6 | P | 22 | K | -F |
| Series | Termination Code | Voltage Code | Capacitance Decimal Point | Capacitance Significant figures in μF | Tolerance Code | RoHS Compliant Indicator |
| 940 | C = Tinned Copper Wire F = Insulated Stranded Wire H = Tinned Lugs | 6 = 600 Vdc 8 = 800 Vdc 10 = 1000 Vdc 12 = 1200 Vdc | 16 = 1600 Vdc 20 = 2000 Vdc 30 = 3000 Vdc | S = 0.0 P = 0. W = No decimal point | K = $\pm 10\%$ J = $\pm 5\%$ | |

NOTE: Other ratings, sizes and performance specifications are available. Contact us.

Ratings

| Cap. (μF) | Catalog Part Number | D mm | L mm | d mm | Typical ESR (m Ω) | Typical ESL (nH) | dV/dt V/ μs | I peak (A) | I _{RMS} 70 °C 100 kHz (A) |
|---------------------------|---------------------|------|------|------|---------------------------|------------------|------------------------|------------|------------------------------------|
| 600 Vdc (275 Vac) | | | | | | | | | |
| .10 | 940C6P1K-F | 9.0 | 34.0 | 0.8 | 28 | 19 | 196 | 20 | 2.5 |
| .15 | 940C6P15K-F | 10.5 | 34.0 | 0.8 | 13 | 20 | 196 | 29 | 4.0 |
| .22 | 940C6P22K-F | 11.5 | 34.0 | 0.8 | 12 | 20 | 196 | 43 | 4.4 |
| .33 | 940C6P33K-F | 13.5 | 34.0 | 0.8 | 9 | 21 | 196 | 65 | 5.6 |
| .47 | 940C6P47K-F | 15.5 | 34.0 | 1.0 | 7 | 22 | 196 | 92 | 6.9 |
| .68 | 940C6P68K-F | 18.0 | 34.0 | 1.0 | 6 | 23 | 196 | 134 | 8.1 |
| 1.00 | 940C6W1K-F | 21.0 | 34.0 | 1.0 | 6 | 24 | 196 | 196 | 8.9 |
| 1.50 | 940C6W1P5K-F | 25.0 | 34.0 | 1.2 | 5 | 26 | 196 | 295 | 10.9 |
| 2.00 | 940C6W2K-F | 23.5 | 46.0 | 1.2 | 5 | 31 | 128 | 255 | 11.8 |
| 3.30 | 940C6W3P3K-F | 27.0 | 54.0 | 1.2 | 4 | 36 | 105 | 346 | 15.3 |
| 4.70 | 940C6W4P7K-F | 31.5 | 54.0 | 1.2 | 4 | 38 | 105 | 492 | 16.8 |
| 850 Vdc (450 Vac) | | | | | | | | | |
| .15 | 940C8P15K-F | 13.0 | 34.0 | 0.8 | 8 | 21 | 713 | 107 | 5.8 |
| .22 | 940C8P22K-F | 15.5 | 34.0 | 1.0 | 8 | 22 | 713 | 157 | 6.4 |
| .33 | 940C8P33K-F | 18.0 | 34.0 | 1.0 | 7 | 23 | 713 | 235 | 7.5 |
| .47 | 940C8P47K-F | 21.0 | 34.0 | 1.0 | 5 | 24 | 713 | 335 | 9.8 |
| .68 | 940C8P68K-F | 24.5 | 34.0 | 1.2 | 4 | 26 | 713 | 485 | 12.0 |
| 1.00 | 940C8W1K-F | 22.5 | 46.0 | 1.2 | 5 | 30 | 400 | 400 | 11.5 |
| 1.50 | 940C8W1P5K-F | 27.0 | 46.0 | 1.2 | 4 | 32 | 400 | 600 | 14.3 |
| 2.00 | 940C8W2K-F | 30.5 | 46.0 | 1.2 | 3 | 34 | 400 | 800 | 17.9 |
| 2.20 | 940C8W2P2K-F | 32.0 | 46.0 | 1.2 | 3 | 34 | 400 | 880 | 18.4 |
| 2.50 | 940C8W2P5K-F | 34.0 | 46.0 | 1.2 | 3 | 35 | 400 | 1000 | 19.1 |
| 1000 Vdc (500 Vac) | | | | | | | | | |
| .15 | 940C10P15K-F | 15.0 | 34.0 | 1.0 | 7 | 22 | 856 | 128 | 6.7 |
| .22 | 940C10P22K-F | 17.5 | 34.0 | 1.0 | 7 | 23 | 856 | 188 | 7.4 |
| .33 | 940C10P33K-F | 20.5 | 34.0 | 1.0 | 6 | 24 | 856 | 283 | 8.8 |
| .47 | 940C10P47K-F | 24.0 | 34.0 | 1.2 | 5 | 26 | 856 | 402 | 10.6 |
| .68 | 940C10P68K-F | 28.0 | 34.0 | 1.2 | 5 | 27 | 856 | 582 | 11.7 |
| 1.00 | 940C10W1K-F | 26.0 | 46.0 | 1.2 | 5 | 32 | 480 | 480 | 12.5 |
| 1.50 | 940C10W1P5K-F | 31.0 | 46.0 | 1.2 | 4 | 34 | 480 | 720 | 15.6 |
| 2.00 | 940C10W2K-F | 35.5 | 46.0 | 1.2 | 3 | 36 | 480 | 960 | 19.6 |

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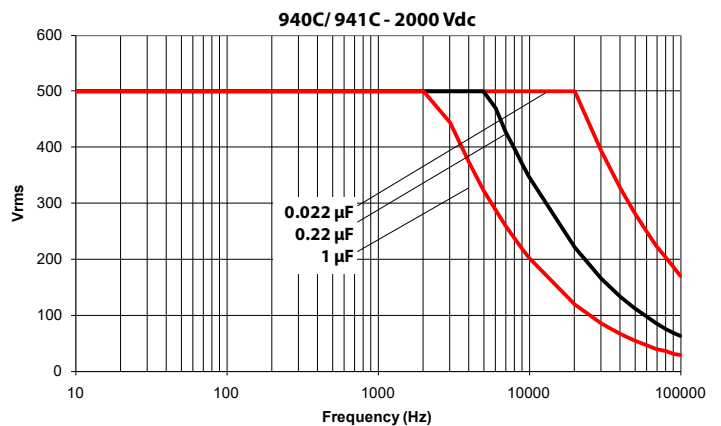
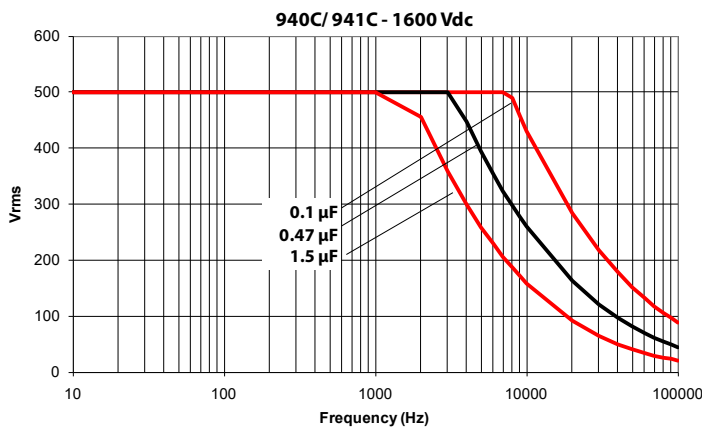
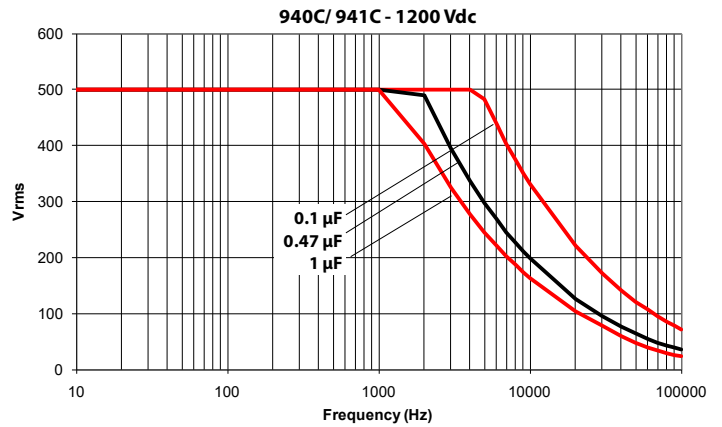
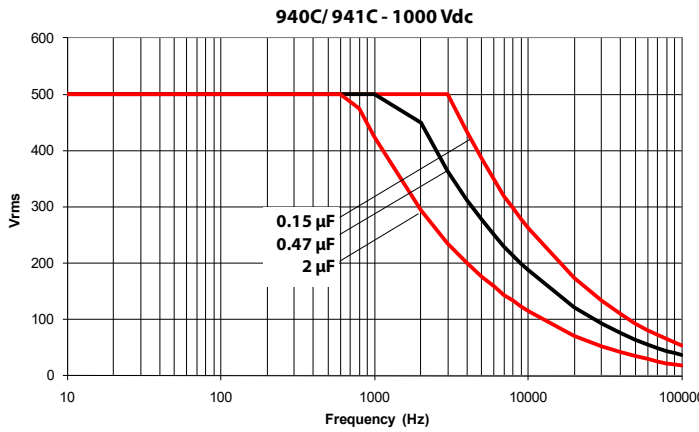
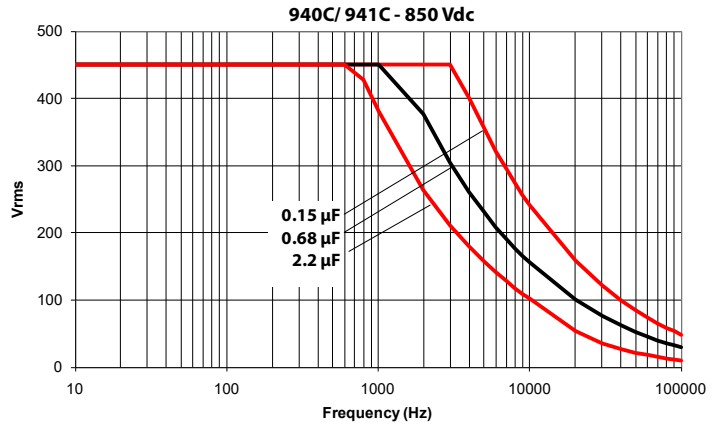
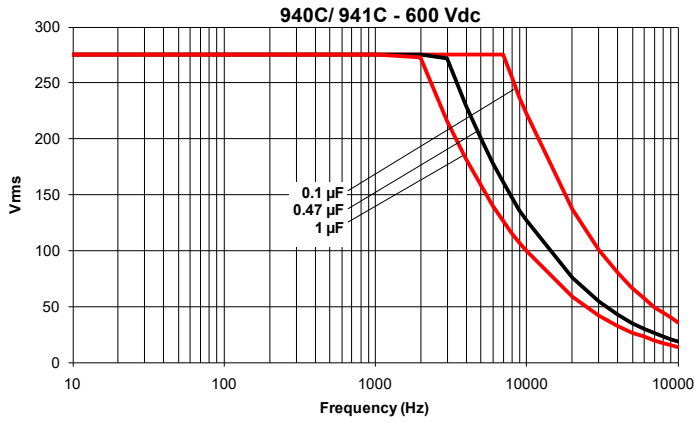
High dV/dt for Snubber Applications

| Cap. (μ F) | Catalog Part Number | D mm | L mm | d mm | Typical ESR (m Ω) | Typical ESL (nH) | dV/dt V/ μ s | I peak (A) | I _{RMS} 70 °C 100 kHz (A) |
|---------------------------|------------------------|---------|---------|---------|---------------------------------|------------------------|---------------------|---------------|---|
| 1200 Vdc (500 Vac) | | | | | | | | | |
| .10 | 940C12P1K-F | 15.5 | 34.0 | 1.0 | 9 | 22 | 1142 | 114 | 6.1 |
| .15 | 940C12P15K-F | 18.5 | 34.0 | 1.0 | 7 | 23 | 1142 | 171 | 7.6 |
| .22 | 940C12P22K-F | 21.5 | 34.0 | 1.0 | 7 | 24 | 1142 | 251 | 8.4 |
| .33 | 940C12P33K-F | 20.0 | 46.0 | 1.0 | 7 | 29 | 640 | 211 | 9.0 |
| .47 | 940C12P47K-F | 23.0 | 46.0 | 1.2 | 7 | 30 | 640 | 301 | 9.8 |
| .68 | 940C12P68K-F | 27.0 | 46.0 | 1.2 | 6 | 32 | 640 | 435 | 11.7 |
| 1.00 | 940C12W1K-F | 33.0 | 46.0 | 1.2 | 5 | 35 | 640 | 640 | 14.5 |
| 1.50 | 940C12W1P5K-F | 35.0 | 54.0 | 1.2 | 4 | 39 | 502 | 754 | 17.9 |
| 1600 Vdc (500 Vac) | | | | | | | | | |
| .10 | 940C16P1K-F | 18.0 | 34.0 | 1.0 | 7 | 23 | 1427 | 143 | 7.5 |
| .15 | 940C16P15K-F | 21.5 | 34.0 | 1.0 | 5 | 24 | 1427 | 214 | 9.9 |
| .22 | 940C16P22K-F | 25.5 | 34.0 | 1.2 | 7 | 26 | 1427 | 314 | 9.3 |
| .33 | 940C16P33K-F | 23.5 | 46.0 | 1.2 | 7 | 31 | 800 | 264 | 10.0 |
| .47 | 940C16P47K-F | 27.5 | 46.0 | 1.2 | 6 | 32 | 800 | 376 | 11.8 |
| .68 | 940C16P68K-F | 32.5 | 46.0 | 1.2 | 6 | 35 | 800 | 544 | 13.1 |
| 1.00 | 940C16W1K-F | 39.0 | 46.0 | 1.2 | 5 | 37 | 800 | 800 | 16.2 |
| 1.50 | 940C16W1P5K-F | 42.0 | 54.0 | 1.2 | 4 | 42 | 628 | 942 | 20.1 |
| 2000 Vdc (500 Vac) | | | | | | | | | |
| .022 | 940C20S22K-F | 11.5 | 34.0 | 0.8 | 35 | 6 | 1712 | 38 | 2.6 |
| .033 | 940C20S33K-F | 13.5 | 34.0 | 0.8 | 20 | 21 | 1712 | 57 | 3.8 |
| .047 | 940C20S47K-F | 15.0 | 34.0 | 1.0 | 12 | 22 | 1712 | 80 | 5.2 |
| .068 | 940C20S68K-F | 17.5 | 34.0 | 1.0 | 8 | 23 | 1712 | 116 | 6.9 |
| .100 | 940C20P1K-F | 21.0 | 34.0 | 1.0 | 7 | 24 | 1712 | 171 | 8.3 |
| .150 | 940C20P15K-F | 19.5 | 46.0 | 1.0 | 7 | 29 | 960 | 144 | 8.9 |
| .220 | 940C20P22K-F | 22.0 | 46.0 | 1.0 | 8 | 30 | 960 | 211 | 9.0 |
| .330 | 940C20P33K-F | 27.0 | 46.0 | 1.2 | 8 | 32 | 960 | 317 | 10.1 |
| .470 | 940C20P47K-F | 32.0 | 46.0 | 1.2 | 6 | 34 | 960 | 451 | 13.0 |
| .560 | 940C20P56K-F | 31.0 | 54.0 | 1.2 | 7 | 37 | 754 | 422 | 12.6 |
| .680 | 940C20P68K-F | 34.0 | 54.0 | 1.2 | 6 | 39 | 754 | 513 | 14.3 |
| 1.00 | 940C20W1K-F | 41.0 | 54.0 | 1.2 | 5 | 42 | 754 | 754 | 17.7 |
| 3000 Vdc (500 Vac) | | | | | | | | | |
| .010 | 940C30S1K-F | 11.5 | 34.0 | 0.8 | 60 | 20 | 2568 | 26 | 2.0 |
| .015 | 940C30S15K-F | 13.5 | 34.0 | 0.8 | 40 | 21 | 2568 | 39 | 2.7 |
| .022 | 940C30S22K-F | 15.5 | 34.0 | 1.0 | 25 | 22 | 2568 | 57 | 3.6 |
| .033 | 940C30S33K-F | 18.0 | 34.0 | 1.0 | 14 | 23 | 2568 | 85 | 5.3 |
| .047 | 940C30S47K-F | 16.5 | 46.0 | 1.0 | 14 | 28 | 1440 | 68 | 5.7 |
| .068 | 940C30S68K-F | 19.0 | 46.0 | 1.0 | 12 | 29 | 1440 | 98 | 6.7 |
| .100 | 940C30P1K-F | 22.5 | 46.0 | 1.2 | 10 | 30 | 1440 | 144 | 8.1 |
| .150 | 940C30P15K-F | 27.0 | 46.0 | 1.2 | 8 | 32 | 1440 | 216 | 10.1 |

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RMS Voltage vs Frequency @ 25 °C



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