

# Type 942, Polypropylene Capacitors, for High Pulse, Snubber

## Very High dV/dt for Snubber Applications



Type 942 round, axial film capacitors utilize a hybrid section design of polypropylene film, metal foils and metallized polypropylene dielectric to achieve both high peak current as well as superior rms current ratings. This series is ideal for high pulse operation and high peak current circuits.

### Highlights

- Very high dV/dt
- Very high pulse current
- Low inductance
- Self Healing

### Specifications

|                                               |                                                                                             |
|-----------------------------------------------|---------------------------------------------------------------------------------------------|
| Capacitance Range                             | 0.01 to 2.5 $\mu$ F                                                                         |
| Capacitance Tolerance                         | $\pm 10\%$ (K) Standard; $\pm 5\%$ (J) Optional                                             |
| Rated Voltage                                 | 600 to 2000 Vdc (300 to 500 Vac, 60 Hz)                                                     |
| Operating Temperature Range                   | -55 °C to 105 °C*<br>*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 $\Omega$ x $\mu$ F                                                              |
| Test Voltage between Terminals @ 25°C         | 150% 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<br>30,000 h @ rated Vac, 70 °C                                  |
| Regulatory Information                        |                                                                                             |

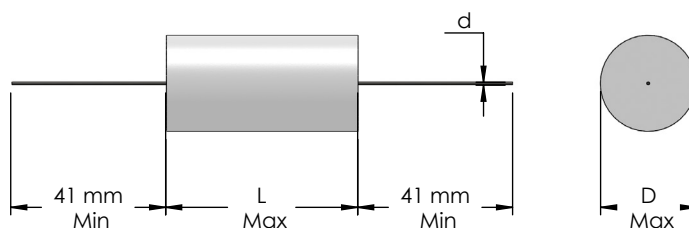
### Dimensions

#### 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

|        |                             |               |                      |                                   |                |                     |
|--------|-----------------------------|---------------|----------------------|-----------------------------------|----------------|---------------------|
| 942    | C                           | 6             | P                    | 22                                | K              | -F                  |
|        |                             |               |                      |                                   |                |                     |
|        | Termination                 |               | Capacitance          | Capacitance                       | Tolerance      | RoHS                |
| Series | Code                        | Voltage Code  | Decimal Point        | Significant Figures $\mu\text{F}$ | Code           | Compliant Indicator |
| 942    | C = Tinned Copper Wire      | 6 = 600 Vdc   | S = 0.0              |                                   | K = $\pm 10\%$ |                     |
|        | F = Insulated Stranded Wire | 8 = 850 Vdc   | P = 0.               |                                   | J = $\pm 5\%$  |                     |
|        | H = Copper Lugs             | 10 = 1000 Vdc | W = No decimal point |                                   |                |                     |
|        |                             | 12 = 1200 Vdc |                      |                                   |                |                     |
|        |                             | 16 = 1600 Vdc |                      |                                   |                |                     |
|        |                             | 20 = 2000 Vdc |                      |                                   |                |                     |

### Ratings

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

| Cap.<br>( $\mu\text{F}$ ) | Catalog<br>Part Number | D<br>mm | L<br>mm | d<br>mm | Typical<br>ESR<br>(m $\Omega$ ) | Typical<br>ESL<br>(nH) | dV/dt<br>(V/ $\mu\text{s}$ ) | I <sub>PEAK</sub><br>(A) | I <sub>RMS</sub><br>70 °C<br>100 kHz<br>(A) |
|---------------------------|------------------------|---------|---------|---------|---------------------------------|------------------------|------------------------------|--------------------------|---------------------------------------------|
| <b>600 Vdc (300 Vac)</b>  |                        |         |         |         |                                 |                        |                              |                          |                                             |
| .15                       | 942C6P15K-F            | 14.0    | 34.0    | 1.0     | 5                               | 21                     | 1427                         | 214                      | 7.7                                         |
| .22                       | 942C6P22K-F            | 16.0    | 34.0    | 1.0     | 7                               | 22                     | 1427                         | 314                      | 7.0                                         |
| .33                       | 942C6P33K-F            | 19.0    | 34.0    | 1.0     | 6                               | 23                     | 1427                         | 471                      | 8.4                                         |
| .47                       | 942C6P47K-F            | 22.0    | 34.0    | 1.0     | 5                               | 24                     | 1427                         | 671                      | 10.1                                        |
| .68                       | 942C6P68K-F            | 25.6    | 34.0    | 1.2     | 4                               | 26                     | 1427                         | 970                      | 12.4                                        |
| 1.00                      | 942C6W1K-F             | 23.5    | 46.0    | 1.2     | 5                               | 30                     | 800                          | 800                      | 11.8                                        |
| 1.50                      | 942C6W1P5K-F           | 28.5    | 46.0    | 1.2     | 4                               | 32                     | 800                          | 1200                     | 14.8                                        |
| 2.00                      | 942C6W2K-F             | 28.5    | 54.0    | 1.2     | 3                               | 36                     | 628                          | 1256                     | 18.2                                        |
| 2.20                      | 942C6W2P2K-F           | 30.0    | 54.0    | 1.2     | 3                               | 36                     | 628                          | 1382                     | 18.8                                        |
| 2.50                      | 942C6W2P5K-F           | 32.0    | 54.0    | 1.2     | 3                               | 37                     | 628                          | 1570                     | 19.5                                        |
| <b>850 Vdc (360 Vac)</b>  |                        |         |         |         |                                 |                        |                              |                          |                                             |
| .15                       | 942C8P15K-F            | 15.5    | 34.0    | 1.0     | 5                               | 22                     | 1712                         | 257                      | 8.1                                         |
| .22                       | 942C8P22K-F            | 18.0    | 34.0    | 1.0     | 7                               | 23                     | 1712                         | 377                      | 7.5                                         |
| .33                       | 942C8P33K-F            | 21.5    | 34.0    | 1.0     | 6                               | 24                     | 1712                         | 565                      | 7.7                                         |
| .47                       | 942C8P47K-F            | 25.0    | 34.0    | 1.2     | 5                               | 26                     | 1712                         | 805                      | 10.9                                        |
| .68                       | 942C8P68K-F            | 29.5    | 34.0    | 1.2     | 4                               | 27                     | 1712                         | 1164                     | 13.6                                        |
| 1.00                      | 942C8W1K-F             | 28.0    | 46.0    | 1.2     | 5                               | 32                     | 960                          | 960                      | 13.1                                        |
| 1.50                      | 942C8W1P5K-F           | 29.0    | 54.0    | 1.2     | 4                               | 36                     | 754                          | 1131                     | 15.9                                        |
| 2.00                      | 942C8W2K-F             | 29.5    | 64.0    | 1.2     | 3                               | 41                     | 574                          | 1148                     | 19.9                                        |
| <b>1000 Vdc (400 Vac)</b> |                        |         |         |         |                                 |                        |                              |                          |                                             |
| .10                       | 942C10P1K-F            | 16.0    | 34.0    | 1.0     | 8                               | 22                     | 2283                         | 228                      | 6.6                                         |
| .15                       | 942C10P15K-F           | 19.0    | 34.0    | 1.0     | 7                               | 23                     | 2283                         | 342                      | 7.8                                         |
| .22                       | 942C10P22K-F           | 22.5    | 34.0    | 1.0     | 6                               | 24                     | 2283                         | 502                      | 9.3                                         |
| .33                       | 942C10P33K-F           | 21.0    | 46.0    | 1.0     | 5                               | 29                     | 1280                         | 422                      | 11.0                                        |
| .47                       | 942C10P47K-F           | 24.0    | 46.0    | 1.2     | 5                               | 30                     | 1280                         | 601                      | 11.9                                        |
| .68                       | 942C10P68K-F           | 28.5    | 46.0    | 1.2     | 5                               | 32                     | 1280                         | 870                      | 13.3                                        |
| 1.00                      | 942C10W1K-F            | 30.0    | 54.0    | 1.2     | 5                               | 37                     | 1005                         | 1005                     | 14.6                                        |
| 1.40                      | 942C10W1P4K-F          | 31.5    | 64.0    | 1.2     | 4                               | 41                     | 765                          | 1071                     | 17.9                                        |

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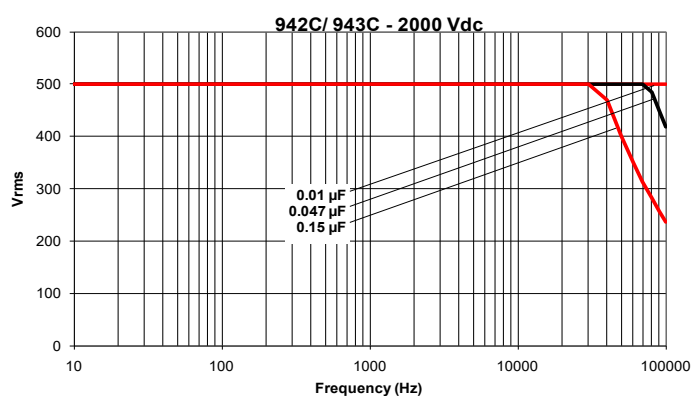
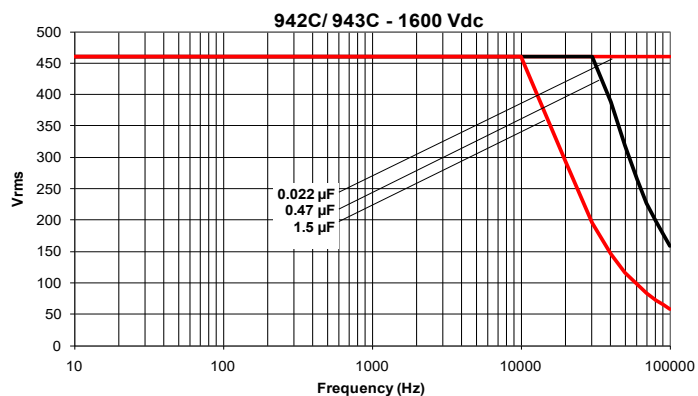
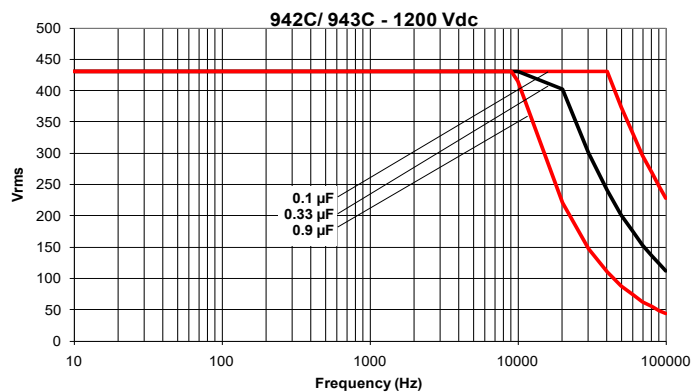
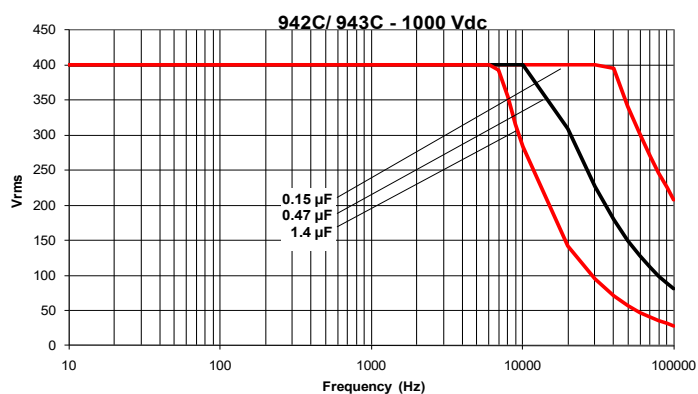
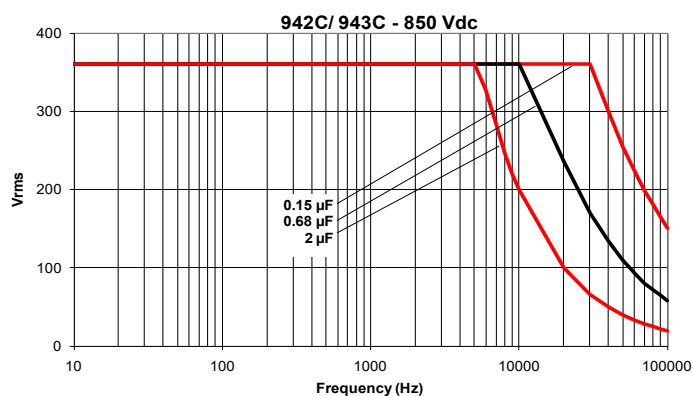
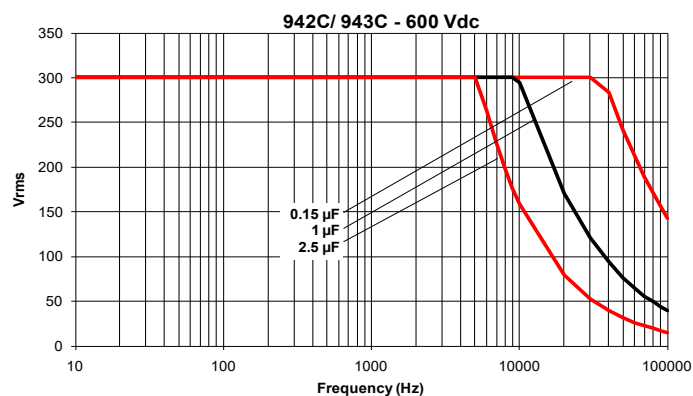
## Very High dV/dt for Snubber Applications

| Cap.<br>( $\mu$ F)        | Catalog<br>Part Number | D<br>mm | L<br>mm | d<br>mm | Typical<br>ESR<br>(m $\Omega$ ) | Typical<br>ESL<br>(nH) | dV/dt<br>(V/ $\mu$ s) | I <sub>PEAK</sub><br>(A) | I <sub>RMS</sub><br>70 °C<br>100 kHz<br>(A) |
|---------------------------|------------------------|---------|---------|---------|---------------------------------|------------------------|-----------------------|--------------------------|---------------------------------------------|
| <b>1200 Vdc (430 Vac)</b> |                        |         |         |         |                                 |                        |                       |                          |                                             |
| .10                       | 942C12P1K-F            | 19.0    | 34.0    | 1.0     | 5                               | 23                     | 2854                  | 285                      | 9.2                                         |
| .15                       | 942C12P15K-F           | 22.5    | 34.0    | 1.0     | 5                               | 24                     | 2854                  | 428                      | 10.2                                        |
| .22                       | 942C12P22K-F           | 26.5    | 34.0    | 1.2     | 6                               | 26                     | 2854                  | 628                      | 10.3                                        |
| .33                       | 942C12P33K-F           | 24.5    | 46.0    | 1.2     | 6                               | 31                     | 1600                  | 528                      | 11.0                                        |
| .47                       | 942C12P47K-F           | 29.0    | 46.0    | 1.2     | 5                               | 32                     | 1600                  | 752                      | 13.4                                        |
| .68                       | 942C12P68K-F           | 30.5    | 54.0    | 1.2     | 5                               | 37                     | 1256                  | 854                      | 14.7                                        |
| .90                       | 942C12P9K-F            | 31.0    | 64.0    | 1.2     | 5                               | 41                     | 957                   | 861                      | 15.9                                        |
| <b>1600 Vdc (460 Vac)</b> |                        |         |         |         |                                 |                        |                       |                          |                                             |
| .022                      | 942C16S22K-F           | 12.0    | 34.0    | 1.0     | 27                              | 20                     | 3425                  | 75                       | 3.0                                         |
| .033                      | 942C16S33K-F           | 14.5    | 34.0    | 1.0     | 14                              | 21                     | 3425                  | 113                      | 4.7                                         |
| .047                      | 942C16S47K-F           | 16.5    | 34.0    | 1.0     | 8                               | 22                     | 3425                  | 161                      | 6.7                                         |
| .068                      | 942C16S68K-F           | 19.0    | 34.0    | 1.0     | 6                               | 23                     | 3425                  | 233                      | 8.4                                         |
| .10                       | 942C16P1K-F            | 22.5    | 34.0    | 1.0     | 4                               | 24                     | 3425                  | 342                      | 11.4                                        |
| .15                       | 942C16P15K-F           | 20.5    | 46.0    | 1.0     | 5                               | 29                     | 1919                  | 288                      | 10.9                                        |
| .22                       | 942C16P22K-F           | 23.5    | 46.0    | 1.0     | 5                               | 68                     | 1919                  | 422                      | 11.8                                        |
| .33                       | 942C16P33K-F           | 28.5    | 46.0    | 1.2     | 5                               | 32                     | 1919                  | 633                      | 13.3                                        |
| .47                       | 942C16P47K-F           | 30.0    | 54.0    | 1.2     | 5                               | 36                     | 1507                  | 708                      | 14.6                                        |
| .56                       | 942C16P56K-F           | 28.5    | 64.0    | 1.2     | 5                               | 40                     | 1148                  | 643                      | 15.1                                        |
| .68                       | 942C16P68K-F           | 31.5    | 64.0    | 1.2     | 5                               | 42                     | 1148                  | 781                      | 16.0                                        |
| <b>2000 Vdc (500 Vac)</b> |                        |         |         |         |                                 |                        |                       |                          |                                             |
| .01                       | 942C20S1K-F            | 12.0    | 34.0    | 1.0     | 50                              | 20                     | 5137                  | 51                       | 2.2                                         |
| .015                      | 942C20S15K-F           | 14.5    | 34.0    | 1.0     | 40                              | 21                     | 5137                  | 77                       | 2.8                                         |
| .022                      | 942C20S22K-F           | 16.5    | 34.0    | 1.0     | 20                              | 22                     | 5137                  | 113                      | 4.2                                         |
| .033                      | 942C20S33K-F           | 19.5    | 34.0    | 1.0     | 12                              | 23                     | 5137                  | 170                      | 6.0                                         |
| .047                      | 942C20S47K-F           | 18.0    | 46.0    | 1.0     | 10                              | 28                     | 2879                  | 135                      | 7.1                                         |
| .068                      | 942C20S68K-F           | 20.5    | 46.0    | 1.0     | 6                               | 29                     | 2879                  | 196                      | 9.9                                         |
| .10                       | 942C20P1K-F            | 24.5    | 46.0    | 1.2     | 5                               | 30                     | 2879                  | 288                      | 12.1                                        |
| .15                       | 942C20P15K-F           | 29.5    | 46.0    | 1.2     | 5                               | 32                     | 2879                  | 432                      | 13.5                                        |

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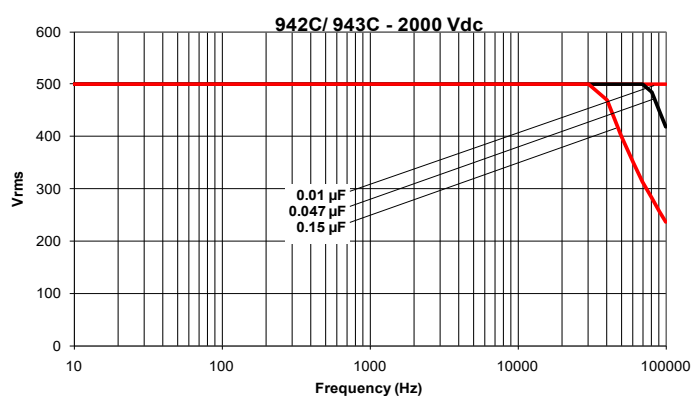
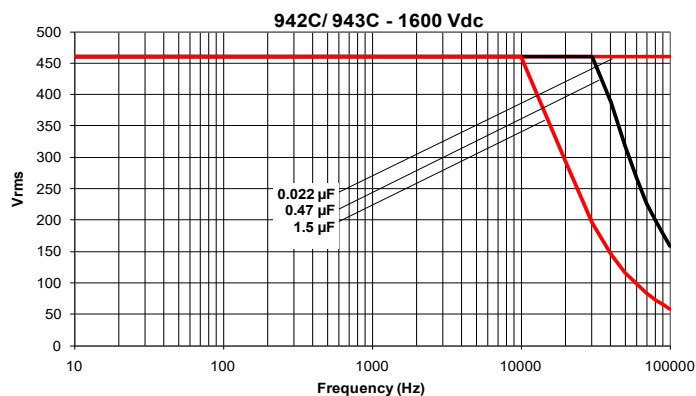
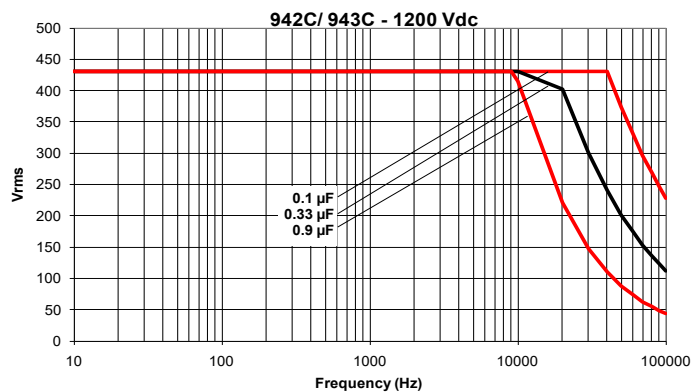
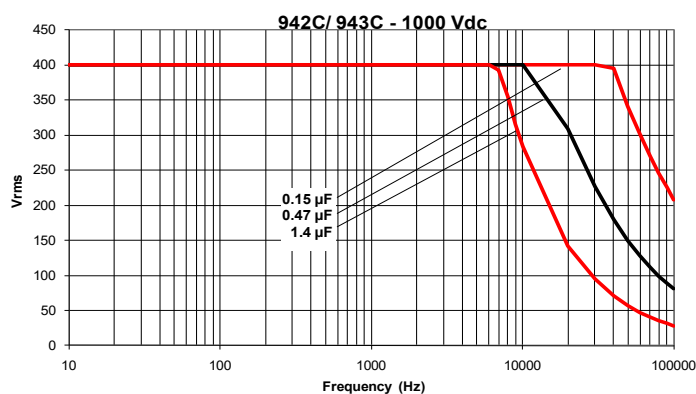
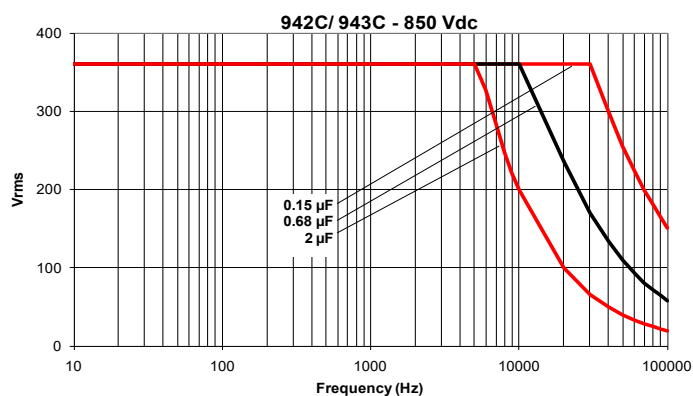
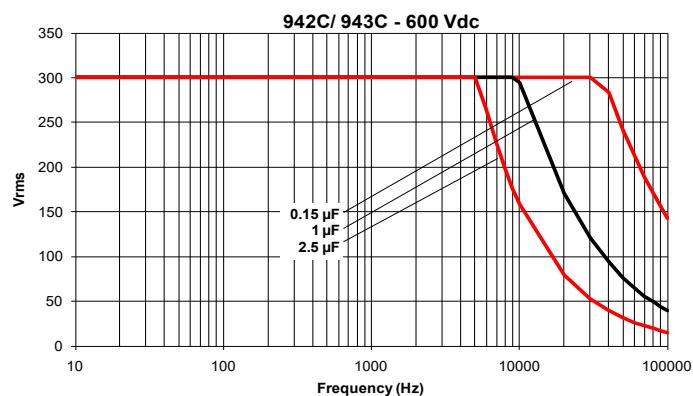
### RMS Voltage vs Frequency @ 25 °C



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### RMS Voltage vs Frequency @ 25 °C



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