



AC and Pulse Double Metallized Polypropylene Film Capacitors MMKP Radial Potted Type



FEATURES

- 7.5 mm to 37.5 mm lead pitch
- Material categorization:
for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

APPLICATIONS

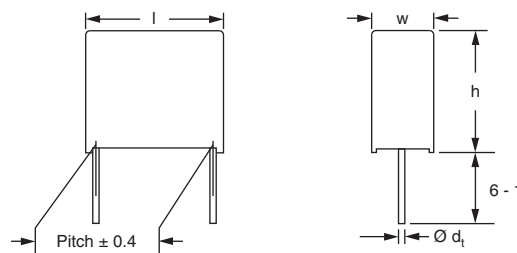
- High voltage, high current and high pulse operations
- Protection circuits in SMPS's, snubber and electronic ballast circuits

| QUICK REFERENCE DATA | |
|---|---|
| Rated DC voltage | 250 V _{DC} ; 400 V _{DC} ; 630 V _{DC} ; 1000 V _{DC} ; 1600 V _{DC} ; 2000 V _{DC} |
| Rated AC voltage | 160 V _{AC} ; 220 V _{AC} ; 250 V _{AC} ; 400 V _{AC} ; 600 V _{AC} ; 650 V _{AC} ; 700 V _{AC} |
| Capacitance range | 470 pF to 6.8 μF |
| Capacitance tolerance | ± 5 % |
| Climatic testing class acc. to EN 60068-1 | 55/100/56 |
| Maximum application temperature | 100 °C |
| Reference standards | IEC 60384-16 |
| Dielectric | Polypropylene film |
| Electrodes | Metallized |
| Construction | Internal series construction |
| Encapsulation | Plastic case, epoxy resin sealed, flame retardant, UL-class 94 V-0 |
| Leads | Tinned wire |
| Marking | C-value; tolerance; rated voltage; manufacturer's type; code for dielectric material; manufacturer location; manufacturer's logo; year and week |

Note

- For more detailed data and test requirements, contact dc-film@vishay.com

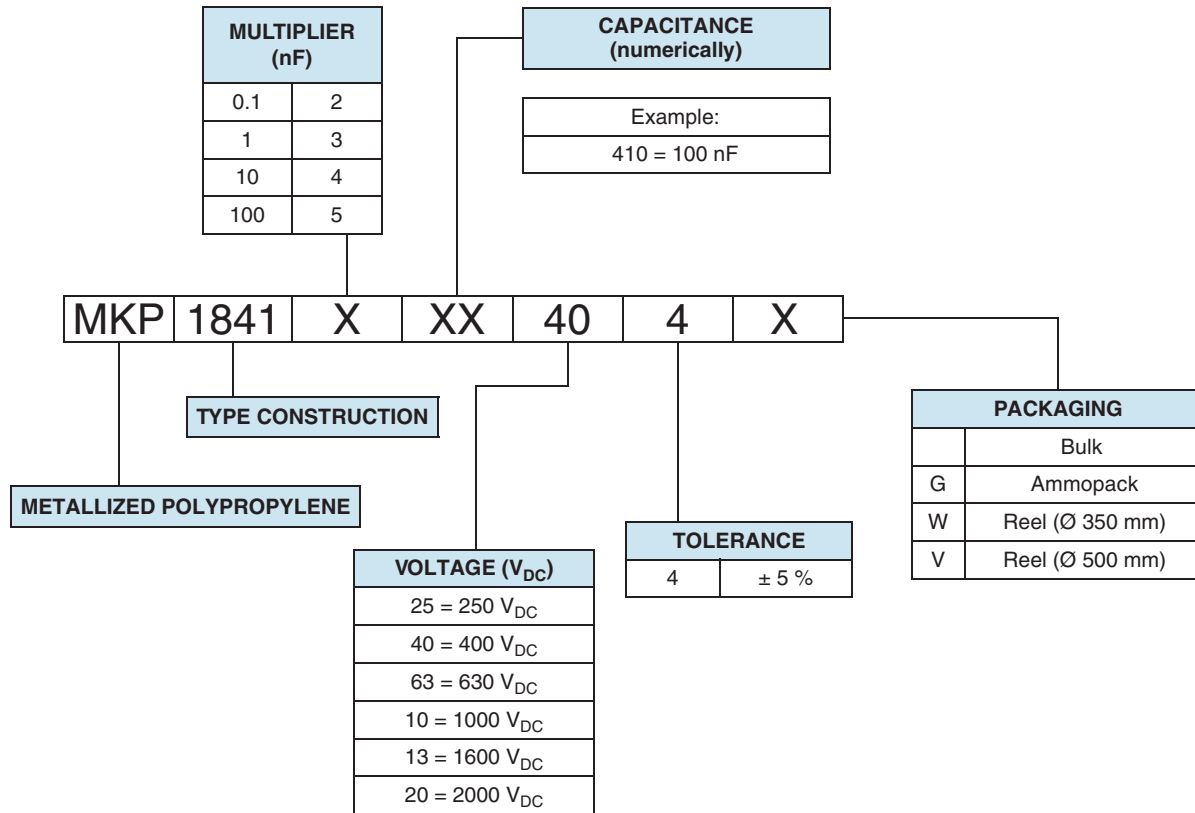
DIMENSIONS in millimeters



| PITCH | w | Ø d _t |
|--------------|--------|------------------|
| 7.5 | - | 0.5 ± 0.05 |
| 10 | - | 0.6 ± 0.06 |
| 15 | ≤ 6 | 0.6 ± 0.06 |
| 15 | > 6 | 0.8 ± 0.08 |
| 22.5 to 27.5 | - | 0.8 ± 0.08 |
| 37.5 | < 16.0 | 0.8 ± 0.08 |
| 37.5 | ≥ 16.0 | 1.0 ± 0.1 |



COMPOSITION OF CATALOG NUMBER



Note

- For detailed tape specifications refer to “Packaging Information” www.vishay.com/doc?28139 or end of catalog

| SPECIFIC REFERENCE DATA | | | | | | | |
|---|---|---------------------|---------------------|---------------------|------------------------|--------------------------------|-------------------------|
| DESCRIPTION | | | | | VALUE | | |
| Tangent of loss angle: C ≤ 0.1 μF 0.1 μF < C ≤ 1.0 μF C > 1.0 μF | | | | | at 1 kHz | at 10 kHz | at 100 kHz |
| | | | | | ≤ 5 x 10 ⁻⁴ | ≤ 10 x 10 ⁻⁴ | ≤ 15 x 10 ⁻⁴ |
| | | | | | ≤ 5 x 10 ⁻⁴ | ≤ 10 x 10 ⁻⁴ | - |
| ≤ 5 x 10 ⁻⁴ | - | - | | | | | |
| PITCH (mm) | MAXIMUM PULSE RISE TIME (dU/dt) _R [V/μs] | | | | | | |
| | 160 V _{DC} | 250 V _{DC} | 400 V _{DC} | 630 V _{DC} | 1000 V _{DC} | 1600 V _{DC} | 2000 V _{DC} |
| 7.5 | 1800 | 2200 | 3600 | 4500 | - | - | - |
| 10 | 820 | 1140 | 1840 | 2280 | - | - | - |
| 15 | 410 | 560 | 910 | 3430 | 6600 | 11 100 | 20 300 |
| 22.5 | 260 | 320 | 520 | 2120 | 2800 | 3800 | 6200 |
| 27.5 | 202 | 240 | 400 | 1524 | 2000 | 2680 | 4200 |
| 37.5 | 140 | 170 | 280 | 980 | 1280 | 1690 | 2600 |
| R between leads, for C ≤ 0.33 μF at 100 V; 1 min | | | | | | > 100 000 MΩ | |
| R between leads and case: 100 V; 1 min | | | | | | > 30 000 MΩ | |
| Withstanding (DC) voltage between leads and case | | | | | | 2840 V; 1 min | |
| Withstanding (DC) voltage (cut off current 10 mA) ⁽¹⁾ ; rise time ≤ 1000 V/s | | | | | | 1.6 x U _{RDC} ; 1 min | |
| Maximum application temperature | | | | | | 100 °C | |

Note

- ⁽¹⁾ See “Voltage Proof Test for Metalized Film Capacitors”: www.vishay.com/doc?28169



| ELECTRICAL DATA | | | | | | |
|-------------------------|--------------|---------------------|-----------------|-----------------|---------------------------|------|
| U _{RDC} (V) | CAP. (μF) | CAPACITANCE CODE | VOLTAGE CODE | V _{AC} | DIMENSIONS (w x h x l) | PCM |
| 160 | 0.010 | 310 | 16 | 100 | 4.5 x 9.5 x 10.0 | 7.5 |
| | 0.015 | 315 | | | 4.5 x 9.5 x 10.0 | 7.5 |
| | 0.022 | 322 | | | 4.0 x 10.0 x 12.5 | 10 |
| | 0.033 | 333 | | | 4.0 x 10.0 x 12.5 | 10 |
| | 0.047 | 347 | | | 5.0 x 11.0 x 12.5 | 10 |
| | 0.068 | 368 | | | 6.0 x 12.0 x 12.5 | 10 |
| | 0.10 | 410 | | | 5.0 x 11.0 x 17.5 | 15 |
| | 0.15 | 415 | | | 6.0 x 12.0 x 17.5 | 15 |
| | 0.22 | 422 | | | 7.0 x 13.5 x 17.5 | 15 |
| | 0.33 | 433 | | | 8.5 x 15.0 x 17.5 | 15 |
| | 0.47 | 447 | | | 8.5 x 18.0 x 26.0 | 22.5 |
| | 0.68 | 468 | | | 10.0 x 19.5 x 26.0 | 22.5 |
| | 1.0 | 510 | | | 12.0 x 22.0 x 26.0 | 22.5 |
| | 1.5 | 515 | | | 13.0 x 23.0 x 31.5 | 27.5 |
| | 2.2 | 522 | | | 18.0 x 28.0 x 31.5 | 27.5 |
| | 3.3 | 533 | | | 21.0 x 31.0 x 31.0 | 27.5 |
| 4.7 | 547 | 30.0 x 45.0 x 42.0 | 37.5 | | | |
| 250 | 0.0068 | 268 | 25 | 160 | 4.0 x 9.0 x 10.0 | 7.5 |
| | 0.010 | 310 | | | 4.5 x 9.5 x 10.0 | 7.5 |
| | 0.015 | 315 | | | 4.5 x 9.5 x 10.0 | 7.5 |
| | 0.022 | 322 | | | 4.0 x 10.0 x 12.5 | 10 |
| | 0.033 | 333 | | | 4.0 x 10.0 x 12.5 | 10 |
| | 0.047 | 347 | | | 5.0 x 11.0 x 12.5 | 10 |
| | 0.068 | 368 | | | 5.0 x 11.0 x 17.5 | 15 |
| | 0.10 | 410 | | | 5.0 x 11.0 x 17.5 | 15 |
| | 0.15 | 415 | | | 6.0 x 12.0 x 17.5 | 15 |
| | 0.22 | 422 | | | 8.5 x 15.0 x 17.5 | 15 |
| | 0.33 | 433 | | | 7.0 x 16.5 x 26.0 | 22.5 |
| | 0.47 | 447 | | | 8.5 x 18.0 x 26.0 | 22.5 |
| | 0.68 | 468 | | | 10.0 x 19.5 x 26.0 | 22.5 |
| | 1.0 | 510 | | | 11.0 x 21.0 x 31.0 | 27.5 |
| | 1.5 | 515 | | | 13.0 x 23.0 x 31.0 | 27.5 |
| | 2.2 | 522 | | | 18.0 x 28.0 x 31.5 | 27.5 |
| 3.3 | 533 | 21.0 x 31.0 x 31.0 | 27.5 | | | |
| 4.7 | 547 | 30.0 x 45.0 x 42.0 | 37.5 | | | |
| 400 | 0.0047 | 247 | 40 | 220 | 4.5 x 9.5 x 10.0 | 7.5 |
| | 0.0068 | 268 | | | 5.0 x 10.5 x 10.0 | 7.5 |
| | 0.010 | 310 | | | 4.0 x 10.0 x 12.5 | 10 |
| | 0.015 | 315 | | | 4.0 x 10.0 x 12.5 | 10 |
| | 0.022 | 322 | | | 4.0 x 10.0 x 12.5 | 10 |
| | 0.033 | 333 | | | 5.0 x 11.0 x 17.5 | 15 |
| | 0.047 | 347 | | | 5.0 x 11.0 x 17.5 | 15 |
| | 0.068 | 368 | | | 6.0 x 12.0 x 17.5 | 15 |
| | 0.10 | 410 | | | 7.0 x 13.5 x 17.5 | 15 |
| | 0.15 | 415 | | | 7.0 x 16.5 x 26.0 | 22.5 |
| | 0.22 | 422 | | | 8.5 x 18.0 x 26.0 | 22.5 |
| | 0.33 | 433 | | | 12.0 x 22.0 x 26.0 | 22.5 |
| | 0.47 | 447 | | | 13.0 x 23.0 x 31.0 | 27.5 |
| | 0.68 | 468 | | | 15.0 x 25.0 x 31.5 | 27.5 |
| | 1.0 | 510 | | | 14.5 x 24.5 x 41.5 | 37.5 |
| | 1.5 | 515 | | | 16.0 x 28.5 x 41.5 | 37.5 |
| 2.2 | 522 | 18.5 x 35.5 x 43.0 | 37.5 | | | |



| ELECTRICAL DATA | | | | | | |
|--------------------------------------|----------------------------|-----------------------------------|-------------------------------|-----------------------|---|------------|
| U_{RDC} (V) | CAP. (μF) | CAPACITANCE CODE | VOLTAGE CODE | V_{AC} | DIMENSIONS (w x h x l) | PCM |
| 630 | 0.00047 | 147 | 63 | 250 | 3.0 x 8.5 x 10.0 | 7.5 |
| | 0.00068 | 168 | | | 3.0 x 8.5 x 10.0 | 7.5 |
| | 0.0010 | 210 | | | 3.0 x 8.5 x 10.0 | 7.5 |
| | 0.0015 | 215 | | | 3.0 x 8.5 x 10.0 | 7.5 |
| | 0.0022 | 222 | | | 3.0 x 8.5 x 10.0 | 7.5 |
| | 0.0033 | 233 | | | 4.0 x 9.0 x 10.0 | 7.5 |
| 630 | 0.0047 | 247 | 63 | 400 | 5.0 x 11.0 x 17.5 | 15 |
| | 0.0068 | 268 | | | 5.0 x 11.0 x 17.5 | 15 |
| | 0.010 | 310 | | | 5.0 x 11.0 x 17.5 | 15 |
| | 0.015 | 315 | | | 5.0 x 11.0 x 17.5 | 15 |
| | 0.022 | 322 | | | 6.0 x 12.0 x 17.5 | 15 |
| | 0.033 | 333 | | | 6.0 x 15.5 x 26.0 | 22.5 |
| | 0.047 | 347 | | | 6.0 x 15.5 x 26.0 | 22.5 |
| | 0.068 | 368 | | | 7.0 x 16.5 x 26.0 | 22.5 |
| | 0.10 | 410 | | | 9.0 x 19.0 x 31.0 | 27.5 |
| | 0.15 | 415 | | | 11.0 x 21.0 x 31.0 | 27.5 |
| | 0.22 | 422 | | | 12.5 x 22.5 x 41.5 | 37.5 |
| | 0.33 | 433 | | | 14.5 x 24.5 x 41.5 | 37.5 |
| | 0.47 | 447 | | | 14.5 x 24.5 x 41.5 | 37.5 |
| | 0.68 | 468 | | | 16.0 x 28.5 x 41.5 | 37.5 |
| 1000 | 0.0022 | 222 | 10 | 600 | 5.0 x 11.0 x 17.5 | 15 |
| | 0.0033 | 233 | | | 5.0 x 11.0 x 17.5 | 15 |
| | 0.0047 | 247 | | | 6.0 x 12.0 x 17.5 | 15 |
| | 0.0068 | 268 | | | 7.0 x 13.5 x 17.5 | 15 |
| | 0.010 | 310 | | | 6.0 x 15.5 x 26.0 | 22.5 |
| | 0.015 | 315 | | | 7.0 x 16.5 x 26.0 | 22.5 |
| | 0.022 | 322 | | | 8.5 x 18.0 x 26.0 | 22.5 |
| | 0.033 | 333 | | | 10.0 x 19.5 x 26.0 | 22.5 |
| | 0.047 | 347 | | | 11.0 x 21.0 x 31.0 | 27.5 |
| | 0.068 | 368 | | | 13.0 x 23.0 x 31.0 | 27.5 |
| | 0.10 | 410 | | | 15.0 x 25.0 x 31.5 | 27.5 |
| | 0.15 | 415 | | | 12.5 x 22.5 x 41.5 | 37.5 |
| | 0.22 | 422 | | | 12.5 x 22.5 x 41.5 | 37.5 |
| | 0.33 | 433 | | | 14.5 x 24.5 x 41.5 | 37.5 |
| 0.47 | 447 | 16.0 x 28.5 x 41.5 | 37.5 | | | |



| ELECTRICAL DATA | | | | | | |
|-------------------------|--------------|---------------------|-----------------|-----------------|---------------------------|------|
| U _{RDC} (V) | CAP. (μF) | CAPACITANCE CODE | VOLTAGE CODE | V _{AC} | DIMENSIONS (w x h x l) | PCM |
| 1600 | 0.0010 | 210 | 13 | 650 | 5.0 x 11.0 x 17.5 | 15 |
| | 0.0015 | 215 | | | 5.0 x 11.0 x 17.5 | 15 |
| | 0.0022 | 222 | | | 5.0 x 11.0 x 17.5 | 15 |
| | 0.0033 | 233 | | | 6.0 x 15.5 x 26.0 | 22.5 |
| | 0.0047 | 247 | | | 6.0 x 15.5 x 26.0 | 22.5 |
| | 0.0068 | 268 | | | 6.0 x 15.5 x 26.0 | 22.5 |
| | 0.010 | 310 | | | 6.0 x 15.5 x 26.0 | 22.5 |
| | 0.015 | 315 | | | 7.0 x 16.5 x 26.0 | 22.5 |
| | 0.022 | 322 | | | 8.5 x 18.0 x 26.0 | 22.5 |
| | 0.033 | 333 | | | 9.0 x 19.0 x 31.0 | 27.5 |
| | 0.047 | 347 | | | 11.0 x 21.0 x 31.0 | 27.5 |
| | 0.068 | 368 | | | 12.5 x 22.5 x 41.5 | 37.5 |
| | 0.10 | 410 | | | 12.5 x 22.5 x 41.5 | 37.5 |
| | 0.15 | 415 | | | 16.0 x 28.5 x 41.5 | 37.5 |
| | 0.22 | 422 | | | 18.0 x 32.5 x 41.5 | 37.5 |
| 2000 | 0.00047 | 147 | 20 | 700 | 5.0 x 11.0 x 17.5 | 15 |
| | 0.00068 | 168 | | | 5.0 x 11.0 x 17.5 | 15 |
| | 0.0010 | 210 | | | 6.0 x 15.5 x 26.0 | 22.5 |
| | 0.0015 | 215 | | | 6.0 x 15.5 x 26.0 | 22.5 |
| | 0.0022 | 222 | | | 6.0 x 15.5 x 26.0 | 22.5 |
| | 0.0033 | 233 | | | 6.0 x 15.5 x 26.0 | 22.5 |
| | 0.0047 | 247 | | | 6.0 x 15.5 x 26.0 | 22.5 |
| | 0.0068 | 268 | | | 7.0 x 16.5 x 26.0 | 22.5 |
| | 0.010 | 310 | | | 8.5 x 18.0 x 26.0 | 22.5 |
| | 0.015 | 315 | | | 9.0 x 19.0 x 31.0 | 27.5 |
| | 0.022 | 322 | | | 11.0 x 21.0 x 31.0 | 27.5 |
| | 0.033 | 333 | | | 11.0 x 21.0 x 31.0 | 27.5 |
| | 0.047 | 347 | | | 12.5 x 22.5 x 41.5 | 37.5 |
| | 0.068 | 368 | | | 12.5 x 22.5 x 41.5 | 37.5 |
| | 0.10 | 410 | | | 14.5 x 24.5 x 41.5 | 37.5 |

| RECOMMENDED PACKAGING | | | | | | | |
|-----------------------|----------------------|--------------------|--------------------------|---------------------------|-----------|---------------------|-------------|
| LETTER CODE | TYPE OF PACKAGING | HEIGHT (H) (mm) | REEL DIAMETER (mm) | ORDERING CODE EXAMPLES | PCM 15 | PCM 22.5 TO 27.5 | PCM 37.5 |
| G | Ammo | 18.5 | S ⁽¹⁾ | MKP1841315635G | X | - | - |
| W | Reel | 18.5 | 350 | MKP1841315635W | X | - | - |
| V | Reel | 18.5 | 500 | MKP1841410105V | X | X | - |
| G | Ammo | 18.5 | L ⁽²⁾ | MKP1841410105G | - | X | - |
| - | Bulk | - | - | MKP1841447105 | X | X | X |

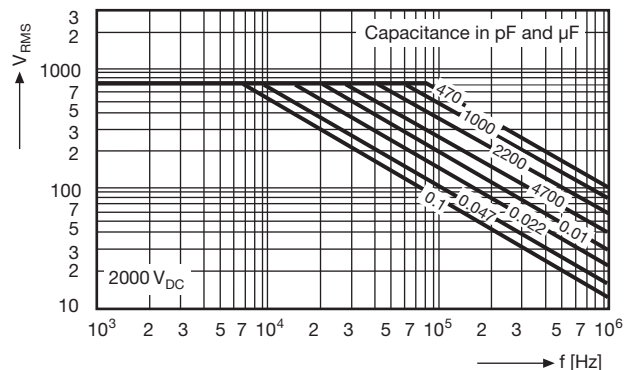
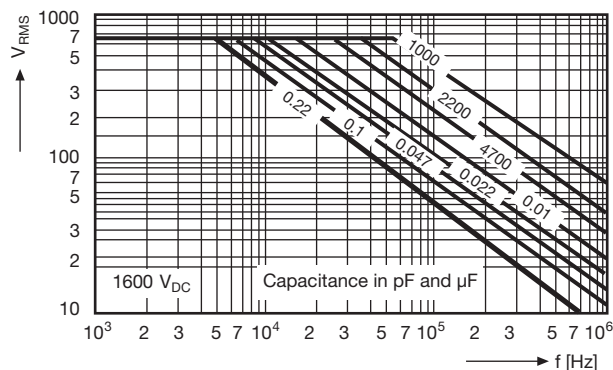
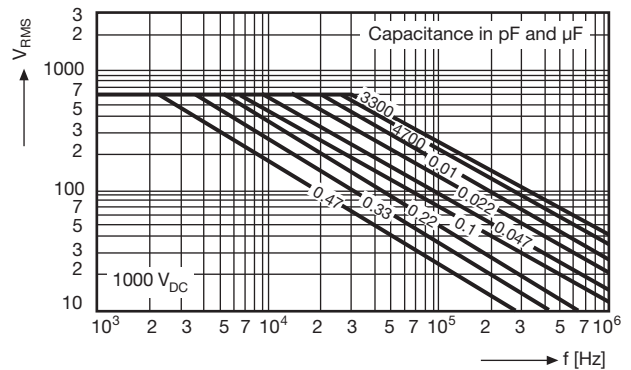
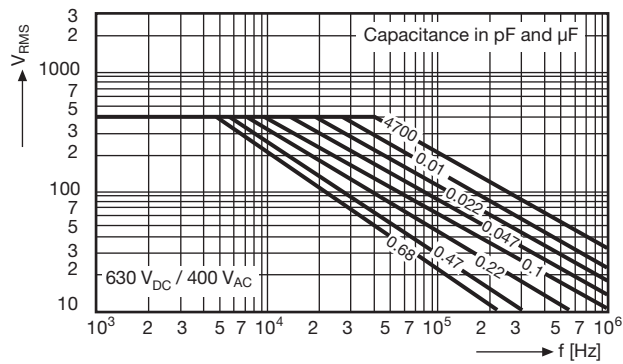
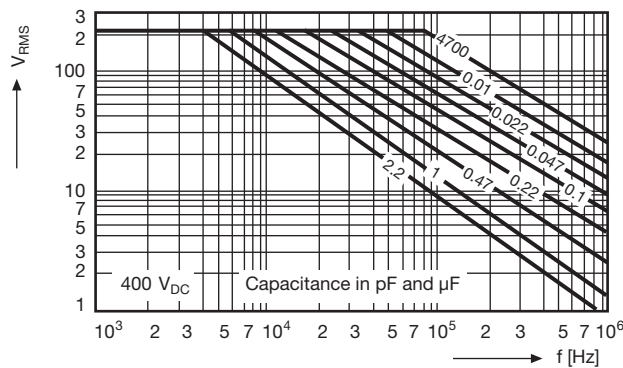
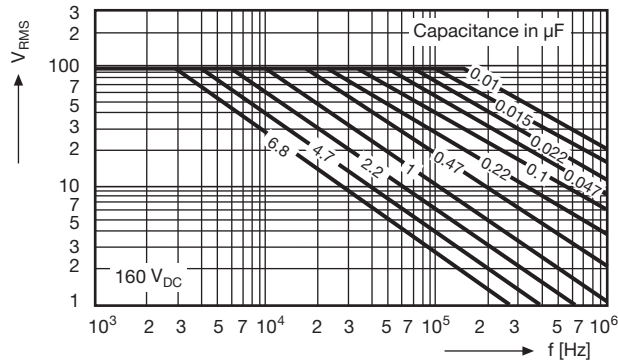
Notes

⁽¹⁾ S = box size 55 mm x 210 mm x 340 mm (W x H x L)

⁽²⁾ L = box size 60 mm x 510 mm x 360 mm (W x H x L)



PERMISSIBLE AC VOLTAGE VS. FREQUENCY





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