

## Metallized Polyester Film Capacitors MKT Radial Type



### FEATURES

- 10.0 mm to 27.5 mm lead pitch
- Self-healing properties
- Flame retardant case
- Material categorization:  
for definitions of compliance please see  
[www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

### APPLICATIONS

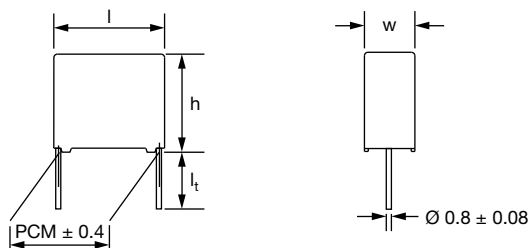
Blocking, bypassing, filtering, timing, coupling and decoupling circuits, interference suppression in low voltage applications.

| QUICK REFERENCE DATA                                   |                                                                                                                                   |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Capacitance range (E12 series)                         | 1000 pF to 15 $\mu$ F (preferred values according to E6)                                                                          |
| Capacitance tolerance                                  | $\pm 20\%$ (M), $\pm 10\%$ (K), $\pm 5\%$ (J) (on request)                                                                        |
| Climatic testing class according to IEC 60068          | 55/100/56                                                                                                                         |
| Reference standards                                    | IEC 60384-2                                                                                                                       |
| Dielectric                                             | Polyester film                                                                                                                    |
| Electrodes                                             | Vacuum deposited aluminum                                                                                                         |
| Construction                                           | Extended metallized film                                                                                                          |
| Encapsulation                                          | Flame retardant plastic case UL-class 94 V-0                                                                                      |
| Leads                                                  | Tinned wire                                                                                                                       |
| Marking                                                | Manufacturer's logo; type; C-value; rated voltage; tolerance; date of manufacture                                                 |
| Temperature range                                      | -55 °C to +100 °C                                                                                                                 |
| Rated DC voltage                                       | 63 V <sub>DC</sub> , 100 V <sub>DC</sub> , 250 V <sub>DC</sub> , 400 V <sub>DC</sub> , 630 V <sub>DC</sub> , 1000 V <sub>DC</sub> |
| Permissible AC voltages (RMS) up to 60 Hz              | 40 V <sub>AC</sub> , 63 V <sub>AC</sub> , 160 V <sub>AC</sub> , 200 V <sub>AC</sub> , 220 V <sub>AC</sub>                         |
| Capacitance drift                                      | Up to +40 °C, $\pm 1.5\%$ for a period of two years                                                                               |
| Derating for DC and AC category voltage U <sub>C</sub> | At +85 °C: U <sub>C</sub> = 1.0 U <sub>R</sub><br>At +100 °C: U <sub>C</sub> = 0.8 U <sub>R</sub>                                 |
| Self inductance                                        | ~ 6 nH measured with 2 mm long leads                                                                                              |
| Pull test on leads                                     | $\geq 30$ N in direction of leads according to IEC 60068-2-21                                                                     |

#### Note

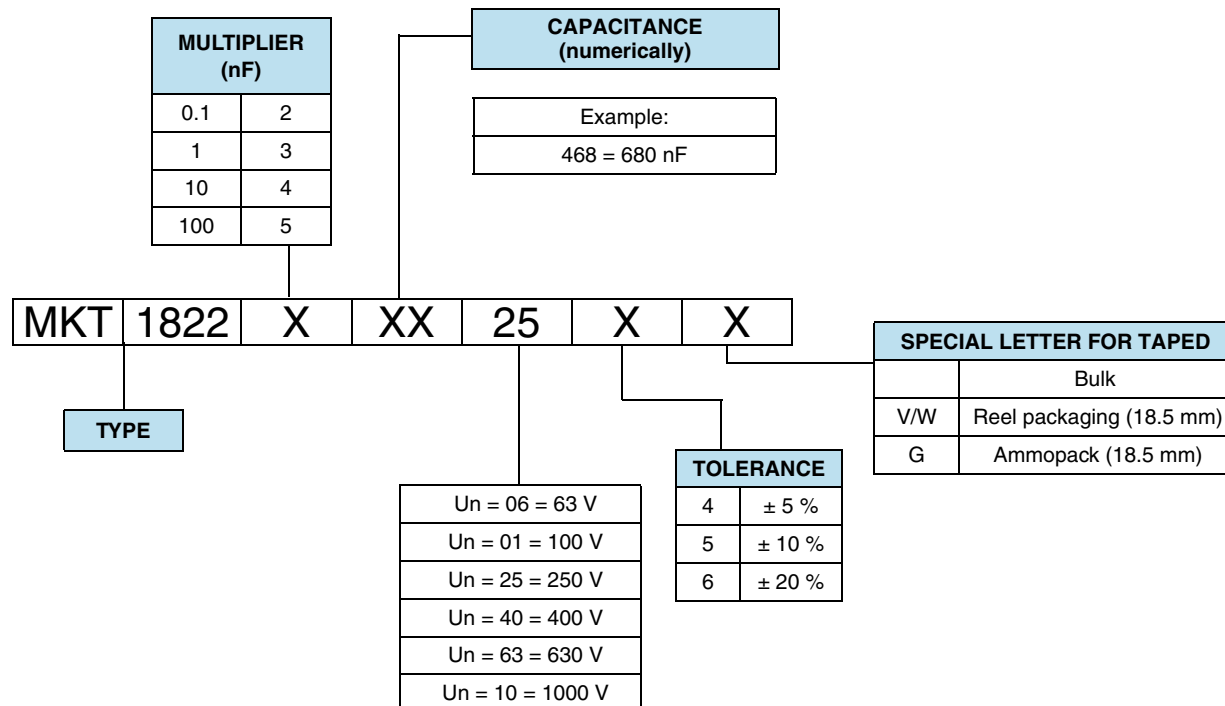
- For more detailed data and test requirements, contact [dc-film@vishay.com](mailto:dc-film@vishay.com)

### DIMENSIONS in millimeters





## COMPOSITION OF CATALOG NUMBER



## Note

- For detailed tape specifications refer to packaging information [www.vishay.com/docs?28139](http://www.vishay.com/docs?28139) or “Recommended Packaging” table

## SPECIFIC REFERENCE DATA

| DESCRIPTION                                                                                       |                                        |                     |                     | MAX. VALUE            |                                |                       |
|---------------------------------------------------------------------------------------------------|----------------------------------------|---------------------|---------------------|-----------------------|--------------------------------|-----------------------|
| Tangent of loss angle:<br>C ≤ 0.1 μF<br>0.1 μF < C ≤ 1.0 μF<br>C > 1.0 μF                         |                                        |                     |                     | at 1 kHz              | at 10 kHz                      | at 100 kHz            |
|                                                                                                   |                                        |                     |                     | 8 x 10 <sup>-3</sup>  | 15 x 10 <sup>-3</sup>          | 25 x 10 <sup>-3</sup> |
|                                                                                                   |                                        |                     |                     | 8 x 10 <sup>-3</sup>  | 15 x 10 <sup>-3</sup>          | -                     |
|                                                                                                   |                                        |                     |                     | 10 x 10 <sup>-3</sup> | -                              | -                     |
| PCM<br>(mm)                                                                                       | MAXIMUM PULSE RISE TIME (dV/dt) [V/μs] |                     |                     |                       |                                |                       |
|                                                                                                   | 63 V <sub>DC</sub>                     | 100 V <sub>DC</sub> | 250 V <sub>DC</sub> | 400 V <sub>DC</sub>   | 630 V <sub>DC</sub>            | 1000 V <sub>DC</sub>  |
| 10                                                                                                | 11                                     | 13                  | 22                  | 37                    | 60                             | 130                   |
| 15                                                                                                | 7                                      | 8                   | 13                  | 21                    | 33                             | 65                    |
| 22.5                                                                                              | 4                                      | 5                   | 8                   | 13                    | 19                             | 34                    |
| 27.5                                                                                              | 3                                      | 4                   | 6                   | 10                    | 14                             | 25                    |
| If the maximum pulse voltage is less than the rated voltage higher dV/dt values can be permitted. |                                        |                     |                     |                       |                                |                       |
| R between leads, for C ≤ 0.33 μF and U <sub>R</sub> ≤ 100 V                                       |                                        |                     |                     |                       | > 15 000 MΩ                    |                       |
| R between leads, for C ≤ 0.33 μF and U <sub>R</sub> > 100 V                                       |                                        |                     |                     |                       | > 30 000 MΩ                    |                       |
| RC between leads, for C > 0.33 μF and U <sub>R</sub> ≤ 100 V                                      |                                        |                     |                     |                       | > 5000 s                       |                       |
| RC between leads, for C > 0.33 μF and U <sub>R</sub> > 100 V                                      |                                        |                     |                     |                       | > 10 000 s                     |                       |
| R between leads and case, 100 V; (foil method)                                                    |                                        |                     |                     |                       | > 30 000 MΩ                    |                       |
| Withstanding (DC) voltage (cut off current 10 mA); rise time < 1000 V/s                           |                                        |                     |                     |                       | 1.6 x U <sub>RDC</sub> , 1 min |                       |
| Withstanding (DC) voltage between leads and case                                                  |                                        |                     |                     |                       | 2 x U <sub>RDC</sub> , 1 min   |                       |
| Maximum application temperature                                                                   |                                        |                     |                     |                       | 100 °C                         |                       |



| ELECTRICAL DATA         |              |                     |                 |                 |                         |      |
|-------------------------|--------------|---------------------|-----------------|-----------------|-------------------------|------|
| U <sub>RDC</sub><br>(V) | CAP.<br>(μF) | CAPACITANCE<br>CODE | VOLTAGE<br>CODE | V <sub>AC</sub> | DIMENSIONS<br>W x H x L | PCM  |
| 63                      | 0.22         | -422                | 06              | 40              | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.33         | -433                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.47         | -447                |                 |                 | 5.5 x 10.5 x 13.0       | 10   |
|                         | 0.68         | -468                |                 |                 | 5.5 x 10.5 x 18.0       | 15   |
|                         | 1.0          | -510                |                 |                 | 5.5 x 10.5 x 18.0       | 15   |
|                         | 1.5          | -515                |                 |                 | 6.5 x 12.5 x 18.0       | 15   |
|                         | 2.2          | -522                |                 |                 | 7.5 x 13.5 x 18.0       | 15   |
|                         | 3.3          | -533                |                 |                 | 7.5 x 15.5 x 26.5       | 22.5 |
|                         | 4.7          | -547                |                 |                 | 8.5 x 16.5 x 26.5       | 22.5 |
|                         | 6.8          | -568                |                 |                 | 10.5 x 18.5 x 26.5      | 22.5 |
|                         | 10.0         | -610                |                 |                 | 11.5 x 20.5 x 31.5      | 27.5 |
|                         | 15.0         | -615                |                 |                 | 13.5 x 23.5 x 31.5      | 27.5 |
| 100                     | 0.068        | -368                | 01              | 63              | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.10         | -410                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.15         | -415                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.22         | -422                |                 |                 | 4.5 x 9.5 x 13.0        | 10   |
|                         | 0.33         | -433                |                 |                 | 5.5 x 10.5 x 18.0       | 15   |
|                         | 0.47         | -447                |                 |                 | 5.5 x 10.5 x 18.0       | 15   |
|                         | 0.68         | -468                |                 |                 | 6.5 x 12.5 x 18.0       | 15   |
|                         | 1.0          | -510                |                 |                 | 7.5 x 13.5 x 18.0       | 15   |
|                         | 1.5          | -515                |                 |                 | 7.5 x 15.5 x 26.5       | 22.5 |
|                         | 2.2          | -522                |                 |                 | 8.5 x 16.5 x 26.5       | 22.5 |
|                         | 3.3          | -533                |                 |                 | 10.5 x 18.5 x 26.5      | 22.5 |
|                         | 4.7          | -547                |                 |                 | 11.5 x 20.5 x 31.5      | 27.5 |
|                         | 6.8          | -568                |                 |                 | 13.5 x 23.5 x 31.5      | 27.5 |
|                         | 10.0         | -610                |                 |                 | 15.0 x 24.5 x 31.5      | 27.5 |
|                         | 15.0         | -615                |                 |                 | 16.5 x 29.5 x 31.5      | 27.5 |
| 250                     | 0.033        | -333                | 25              | 160             | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.047        | -347                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.068        | -368                |                 |                 | 4.5 x 9.5 x 13.0        | 10   |
|                         | 0.10         | -410                |                 |                 | 5.5 x 10.5 x 18.0       | 15   |
|                         | 0.15         | -415                |                 |                 | 5.5 x 10.5 x 18.0       | 15   |
|                         | 0.22         | -422                |                 |                 | 5.5 x 10.5 x 18.0       | 15   |
|                         | 0.33         | -433                |                 |                 | 6.5 x 12.5 x 18.0       | 15   |
|                         | 0.47         | -447                |                 |                 | 6.5 x 14.5 x 26.5       | 22.5 |
|                         | 0.68         | -468                |                 |                 | 7.5 x 15.5 x 26.5       | 22.5 |
|                         | 1.0          | -510                |                 |                 | 8.5 x 16.5 x 26.5       | 22.5 |
|                         | 1.5          | -515                |                 |                 | 9.0 x 18.5 x 31.5       | 27.5 |
|                         | 2.2          | -522                |                 |                 | 11.5 x 20.5 x 31.5      | 27.5 |
|                         | 3.3          | -533                |                 |                 | 13.5 x 23.5 x 31.5      | 27.5 |
| 400                     | 0.0010       | -210                | 40              | 200             | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0015       | -215                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0022       | -222                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0033       | -233                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0047       | -247                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0068       | -268                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.010        | -310                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.015        | -315                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.022        | -322                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.033        | -333                |                 |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.047        | -347                |                 |                 | 5.5 x 10.5 x 18.0       | 15   |
|                         | 0.068        | -368                |                 |                 | 5.5 x 10.5 x 18.0       | 15   |
|                         | 0.10         | -410                |                 |                 | 5.5 x 10.5 x 18.0       | 15   |
|                         | 0.15         | -415                |                 |                 | 6.5 x 12.5 x 18.0       | 15   |
|                         | 0.22         | -422                |                 |                 | 7.5 x 15.5 x 26.5       | 22.5 |
|                         | 0.33         | -433                |                 |                 | 8.5 x 16.5 x 26.5       | 22.5 |
|                         | 0.47         | -447                |                 |                 | 10.5 x 18.5 x 26.5      | 22.5 |
|                         | 0.68         | -468                |                 |                 | 11.5 x 20.5 x 31.5      | 27.5 |
|                         | 1.0          | -510                |                 |                 | 11.5 x 20.5 x 31.5      | 27.5 |
|                         | 1.5          | -515                |                 |                 | 13.5 x 23.5 x 31.5      | 27.5 |



| ELECTRICAL DATA         |              |                     |                   |                 |                         |      |
|-------------------------|--------------|---------------------|-------------------|-----------------|-------------------------|------|
| U <sub>RDC</sub><br>(V) | CAP.<br>(μF) | CAPACITANCE<br>CODE | VOLTAGE<br>CODE   | V <sub>AC</sub> | DIMENSIONS<br>W x H x L | PCM  |
| 630                     | 0.0010       | -210                | 63 <sup>(1)</sup> | 220             | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0015       | -215                |                   |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0022       | -222                |                   |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0033       | -233                |                   |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0047       | -247                |                   |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0068       | -268                |                   |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.010        | -310                |                   |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.015        | -315                |                   |                 | 5.5 x 10.5 x 13.0       | 10   |
|                         | 0.022        | -322                |                   |                 | 6.5 x 11.5 x 13.0       | 10   |
|                         | 0.033        | -333                |                   |                 | 5.5 x 10.5 x 18.0       | 15   |
|                         | 0.047        | -347                |                   |                 | 6.5 x 12.5 x 18.0       | 15   |
|                         | 0.068        | -368                |                   |                 | 7.5 x 13.5 x 18.0       | 15   |
|                         | 0.10         | -410                |                   |                 | 6.5 x 14.5 x 26.5       | 22.5 |
|                         | 0.15         | -415                |                   |                 | 7.5 x 15.5 x 26.5       | 22.5 |
|                         | 0.22         | -422                |                   |                 | 8.5 x 16.5 x 26.5       | 22.5 |
|                         | 0.33         | -433                |                   |                 | 11.5 x 20.5 x 31.5      | 27.5 |
|                         | 0.47         | -447                |                   |                 | 11.5 x 20.5 x 31.5      | 27.5 |
|                         | 0.68         | -468                |                   |                 | 13.5 x 23.5 x 31.5      | 27.5 |
|                         | 1.0          | -510                |                   |                 | 15.0 x 24.5 x 31.5      | 27.5 |
| 1000                    | 0.0010       | -210                | 10 <sup>(1)</sup> | 220             | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0015       | -215                |                   |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0022       | -222                |                   |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0033       | -233                |                   |                 | 4.0 x 9.0 x 13.0        | 10   |
|                         | 0.0047       | -247                |                   |                 | 5.5 x 10.5 x 13.0       | 10   |
|                         | 0.0068       | -268                |                   |                 | 6.5 x 11.5 x 13.0       | 10   |
|                         | 0.010        | -310                |                   |                 | 5.5 x 10.5 x 18.0       | 15   |
|                         | 0.015        | -315                |                   |                 | 6.5 x 12.5 x 18.0       | 15   |
|                         | 0.022        | -322                |                   |                 | 7.5 x 13.5 x 18.0       | 15   |
|                         | 0.033        | -333                |                   |                 | 6.5 x 14.5 x 26.5       | 22.5 |
|                         | 0.047        | -347                |                   |                 | 7.5 x 15.5 x 26.5       | 22.5 |
|                         | 0.068        | -368                |                   |                 | 8.5 x 16.5 x 26.5       | 22.5 |
|                         | 0.10         | -410                |                   |                 | 10.5 x 18.5 x 26.5      | 22.5 |
|                         | 0.15         | -415                |                   |                 | 11.5 x 20.5 x 31.5      | 27.5 |
|                         | 0.22         | -422                |                   |                 | 13.5 x 23.5 x 31.5      | 27.5 |
|                         | 0.33         | -433                |                   |                 | 16.5 x 29.5 x 31.5      | 27.5 |
|                         | 0.47         | -447                |                   |                 | 20.0 x 35.0 x 31.5      | 27.5 |

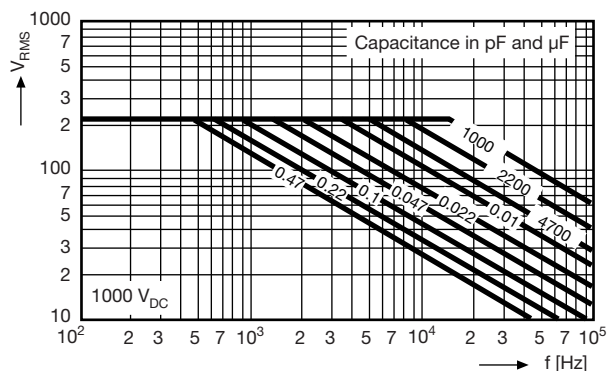
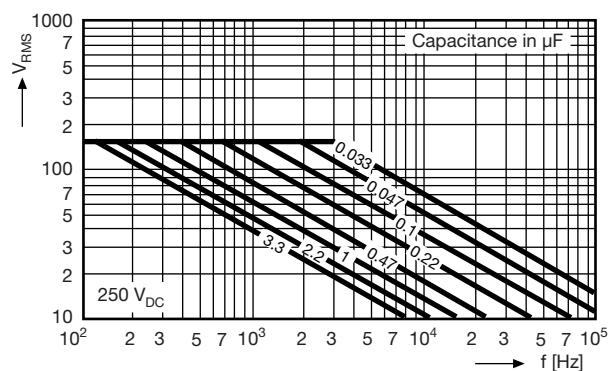
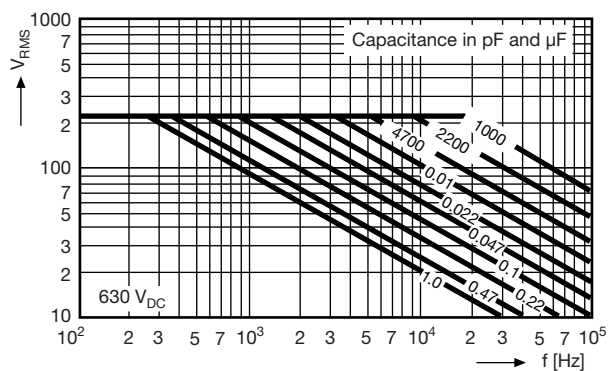
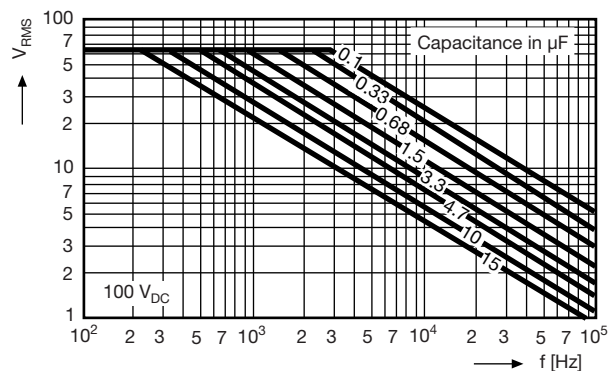
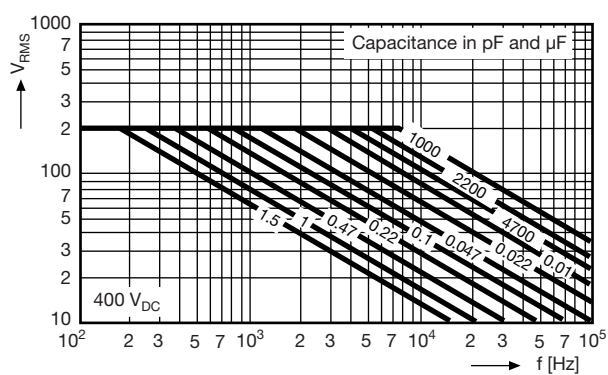
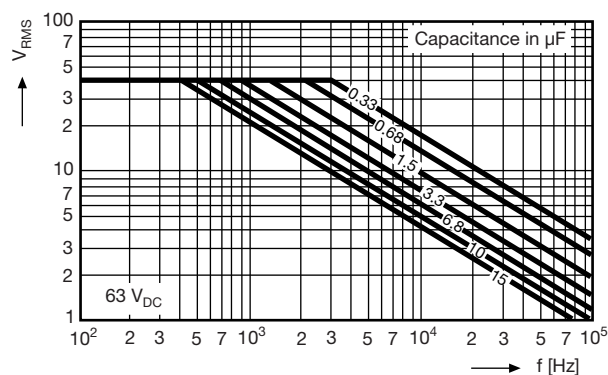
**Note**<sup>(1)</sup> Not suitable for mains applications.

| RECOMMENDED PACKAGING |                      |                       |                          |                           |           |           |                     |
|-----------------------|----------------------|-----------------------|--------------------------|---------------------------|-----------|-----------|---------------------|
| LETTER<br>CODE        | TYPE OF<br>PACKAGING | HEIGHT<br>(H)<br>(mm) | REEL<br>DIAMETER<br>(mm) | ORDERING CODE<br>EXAMPLES | PCM<br>10 | PCM<br>15 | PCM<br>22.5 TO 27.5 |
| G                     | Ammo                 | 18.5                  | S <sup>(1)</sup>         | MKT1822-422-065-G         | X         | X         | -                   |
| W                     | Reel                 | 18.5                  | 350                      | MKT1822-422-065-W         | X         | X         | -                   |
| V                     | Reel                 | 18.5                  | 500                      | MKT1822-510-255-V         | -         | X         | X                   |
| G                     | Ammo                 | 18.5                  | L <sup>(2)</sup>         | MKT1822-510-255-G         | -         | -         | X                   |
| -                     | Bulk                 | -                     | -                        | MKT1822-510-255           | X         | X         | X                   |
| -                     | Bulk                 | -                     | -                        | MKT1822-522-255           | X         | -         | X                   |

**Notes**<sup>(1)</sup> S = Box size 55 mm x 210 mm x 340 mm (W x H x L)<sup>(2)</sup> L = Box size 60 mm x 360 mm x 510 mm (W x H x L)



## PERMISSIBLE AC VOLTAGE VS. FREQUENCY





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