

## Interference Suppression Film Capacitor - Class X2 Radial MKP 310 V<sub>AC</sub> - Standard Across the Line


**FEATURES**

- 7.5 mm to 52.5 mm lead pitch
- Capacitance range up to 40 µF
- Very small dimensions
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS  
COMPLIANT**
**APPLICATIONS**

For standard across the line X2 applications.  
See also application note: [www.vishay.com/doc?28153](http://www.vishay.com/doc?28153)

| QUICK REFERENCE DATA                            |  |
|---|--|
| Capacitance range (E12 series)                  | 0.001 µF to 40 µF (preferred values according to E6)   |
| Capacitance tolerance                           | ± 20 %, ± 10 %, ± 5 %  |
| Rated AC voltage                                | 310 V <sub>AC</sub> , 50 Hz to 60 Hz   |
| Permissible DC voltage                          | For C ≤ 10 µF  |
|   | For C > 10 µF  |
|   | 800 V <sub>DC</sub> at 85 °C<br>630 V <sub>DC</sub> at 110 °C  |
|   | 575 V <sub>DC</sub> at 85 °C<br>450 V <sub>DC</sub> at 110 °C  |
| Climatic testing class according to IEC 60068-1 | 55/110/56/B  |
| Maximum application temperature                 | 110 °C   |
| Leads   | Tinned wire  |
| Reference standards                             | IEC 60384-14 and EN 60384-14<br>IEC 60065 requires pass. flamm. class B<br>CSA-E384-14, UL 60384-14<br>CQC   |
| Dielectric                                      | Polypropylene film   |
| Electrodes                                      | Metallized   |
| Construction                                    | Mono construction  |
| Encapsulation                                   | Plastic case, epoxy resin sealed, flame retardant UL-class 94 V-0  |
| Marking   | C-value, tolerance, rated voltage, sub-class, manufacturer's type, code for dielectric material, manufacturer location, year and week; manufacturer's logo or name; safety approvals |

**Note**

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

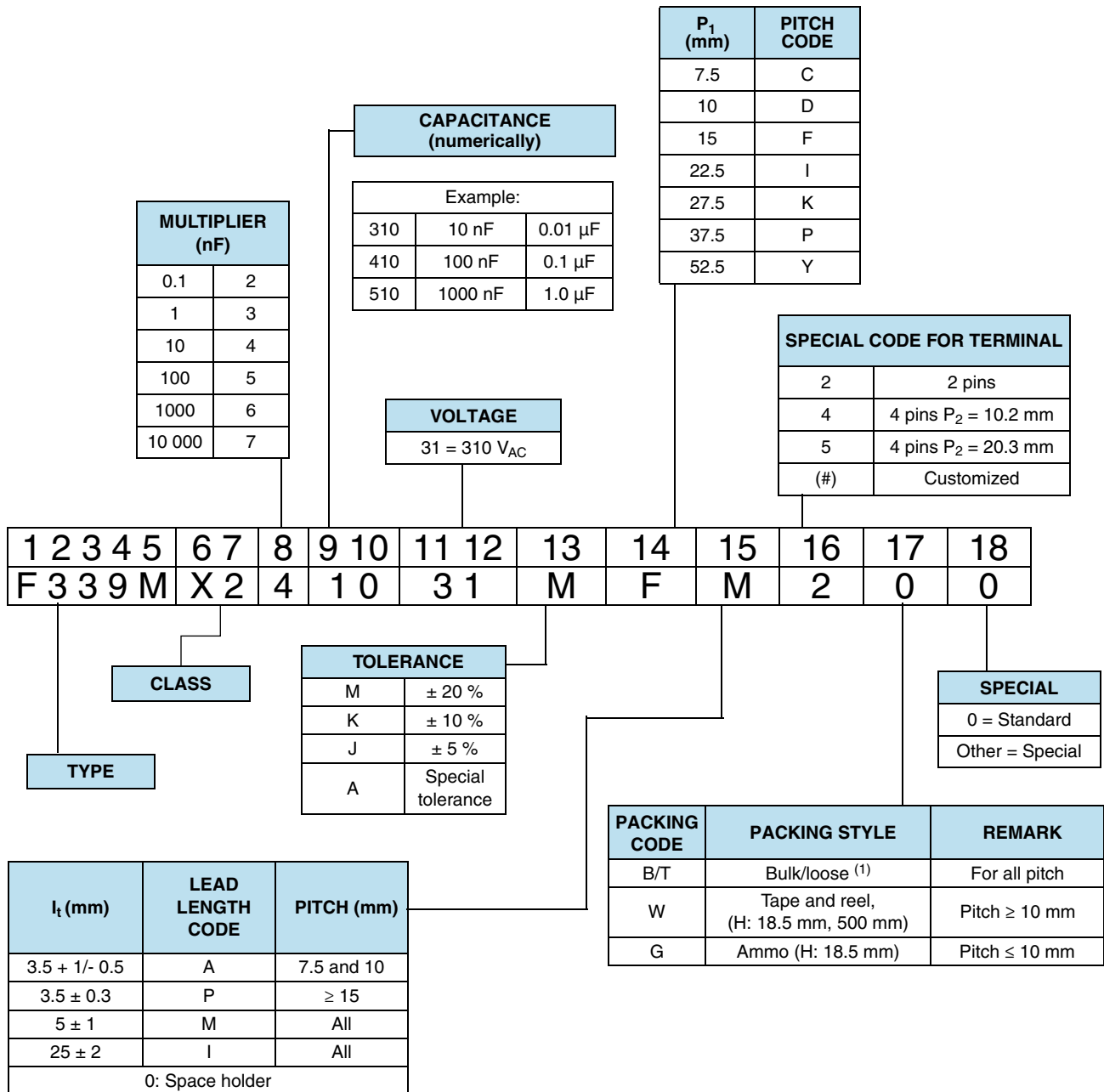
| DIMENSIONS in millimeters |        |
|---------------------------|--------|
| 2 PINS                    | 4 PINS |
|                           |        |

**Note**

- Ø dt ± 10 % of standard diameter specified



**COMPOSITION OF CATALOG NUMBER**



**Notes**

- For detailed tape specifications refer to Packaging Information: [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139)
- Terminal codes see detail tables for 37.5 mm and 52.5 mm pitch
- <sup>(1)</sup> Packaging will be bulk for all capacitors with pitch ≤ 15 mm and such long leads (> 5 mm)  
Capacitors with short leads up to 5 mm and pitch > 15 mm will be in tray and asking code will be "T"



| SPECIFIC REFERENCE DATA   |                          |                          |
|---|--------------------------|--------------------------|
| DESCRIPTION   | VALUE                    |                          |
| Rated AC voltage ( $U_{RAC}$ )  | 310 V                    |                          |
| Permissible DC voltage ( $U_{RDC}$ )  | 630 V                    |                          |
| Tangent of loss angle:  | at 1 kHz                 | at 10 kHz                |
| $C < 470$ nF  | $\leq 10 \times 10^{-4}$ | $\leq 20 \times 10^{-4}$ |
| $470$ nF $\leq C \leq 1$ $\mu$ F  | $\leq 20 \times 10^{-4}$ | $\leq 70 \times 10^{-4}$ |
| $1$ $\mu$ F $\leq C \leq 20$ $\mu$ F  | $\leq 30 \times 10^{-4}$ | -                        |
| $C > 20$ $\mu$ F  | $\leq 40 \times 10^{-4}$ | -                        |
| Rated voltage pulse slope ( $dU/dt$ ) <sub>R</sub> at 435 V <sub>DC</sub>                     |                          |                          |
| Pitch = 7.5 mm  | 600 V/ $\mu$ s           |                          |
| Pitch = 10 mm   | 600 V/ $\mu$ s           |                          |
| Pitch = 15 mm   | 400 V/ $\mu$ s           |                          |
| Pitch = 22.5 mm   | 150 V/ $\mu$ s           |                          |
| Pitch $\geq 27.5$ mm  | 100 V/ $\mu$ s           |                          |
| R between leads, for $C \leq 0.33$ $\mu$ F at 100 V; 1 min                                    | $> 15\,000$ M $\Omega$   |                          |
| RC between leads, for $C > 0.33$ $\mu$ F at 100 V; 1 min                                      | $> 5000$ s               |                          |
| R between leads and case; 100 V; 1 min  | $> 30\,000$ M $\Omega$   |                          |
| Withstanding (DC) voltage (cut off current 10 mA) <sup>(1)</sup> ; rise time $\leq 1000$ V/s: |                          |                          |
| $C \leq 1$ $\mu$ F  | 2200 V; 1 min            |                          |
| $1$ $\mu$ F $< C \leq 10$ $\mu$ F   | 1800 V; 1 min            |                          |
| $C > 10$ $\mu$ F  | 1500 V; 1 min            |                          |
| Withstanding (AC) voltage between leads and case  | 2120 V; 1 min            |                          |
| Maximum application temperature   | 110 °C                   |                          |

Note

<sup>(1)</sup> See "Voltage Proof Test for Metallized Film Capacitors": [www.vishay.com/doc?28169](http://www.vishay.com/doc?28169)

| ELECTRICAL DATA AND ORDERING CODE - PITCH 7.5 mm                                |                    |                                 |                            |  |                                   |             |                                    |             |   |      |
|---|--------------------|---------------------------------|----------------------------|--|-----------------------------------|-------------|------------------------------------|-------------|---|------|
| $U_{RAC}$<br>(V)  | CAP.<br>( $\mu$ F) | DIMENSIONS<br>w x h x l<br>(mm) | MASS<br>(g) <sup>(2)</sup> | CATALOG NUMBER F339MX2 ..... AND PACKAGING |                                   |             |                                    |             |   |      |
|   |                    |                                 |                            | LOOSE IN BOX                               |                                   |             |                                    |             | AMMOPACK <sup>(1)</sup>                 |      |
|   |                    |                                 |                            | SHORT LEADS                                |                                   |             | LONG LEADS                         |             | H = 18.5 mm<br>P <sub>0</sub> = 12.7 mm | SPQ  |
|   |                    |                                 |                            | $l_t =$<br>3.5 mm + 1 mm/<br>- 0.5 mm      | $l_t =$<br>5.0 mm<br>$\pm 1.0$ mm | SPQ         | $l_t =$<br>25.0 mm<br>$\pm 2.0$ mm | SPQ         |   |      |
| PITCH = 7.5 mm $\pm 0.4$ mm; $d_t = 0.50$ mm $\pm 0.05$ mm; C-TOL. = $\pm 20$ % |                    |                                 |                            |  |                                   |             |                                    |             |   |      |
| 310   | 0.0010             | 4.0 x 9.0 x 10.0                | 0.4                        | 21031MCA2B0                                | 21031MCM2B0                       | 1500        | 21031MCI2B0                        | 1000        | 21031MC02G0                             | 1250 |
|   | 0.0015             |                                 |                            | 21531MCA2B0                                | 21531MCM2B0                       |             | 21531MCI2B0                        |             | 21531MC02G0                             |      |
|   | 0.0022             |                                 |                            | 22231MCA2B0                                | 22231MCM2B0                       |             | 22231MCI2B0                        |             | 22231MC02G0                             |      |
|   | 0.0033             |                                 |                            | 23331MCA2B0                                | 23331MCM2B0                       |             | 23331MCI2B0                        |             | 23331MC02G0                             |      |
|   | 0.0047             |                                 |                            | 24731MCA2B0                                | 24731MCM2B0                       |             | 24731MCI2B0                        |             | 24731MC02G0                             |      |
|   | 0.0068             |                                 |                            | 26831MCA2B0                                | 26831MCM2B0                       |             | 26831MCI2B0                        |             | 26831MC02G0                             |      |
|   | 0.010              |                                 |                            | 31031MCA2B0                                | 31031MCM2B0                       |             | 31031MCI2B0                        |             | 31031MC02G0                             |      |
|   | 0.015              |                                 |                            | 31531MCA2B0                                | 31531MCM2B0                       |             | 31531MCI2B0                        |             | 31531MC02G0                             |      |
|   | 0.022              |                                 |                            | 32231MCA2B0                                | 32231MCM2B0                       |             | 32231MCI2B0                        |             | 32231MC02G0                             |      |
|   | 0.033              |                                 |                            | 33331MCA2B0                                | 33331MCM2B0                       |             | 33331MCI2B0                        |             | 33331MC02G0                             |      |
|   | 0.047              |                                 |                            | 5.0 x 10.5 x 10.0                          | 0.4                               |             | 34731MCA2B0                        |             | 34731MCM2B0                             |      |
| 0.068   | 6.0 x 11.5 x 10.0  | 0.8                             | 36831MCA2B0                | 36831MCM2B0                                | 750                               | 36831MCI2B0 | 1000                               | 36831MC02G0 | 750                                     |      |



| ELECTRICAL DATA AND ORDERING CODE - PITCH 7.5 mm                                   |   |                                 |                            |  |                               |             |                                |   |             |             |
|--|---|---------------------------------|----------------------------|--|-------------------------------|-------------|--------------------------------|---|-------------|-------------|
| U <sub>RAC</sub><br>(V)  | CAP.<br>(μF)  | DIMENSIONS<br>w x h x l<br>(mm) | MASS<br>(g) <sup>(2)</sup> | CATALOG NUMBER F339MX2 ..... AND PACKAGING |                               |             |                                |   |             |             |
|  |   |                                 |                            | LOOSE IN BOX                               |                               |             |                                | AMMOPACK <sup>(1)</sup>                 |             |             |
|  |   |                                 |                            | SHORT LEADS                                |                               | LONG LEADS  |                                | H = 18.5 mm<br>P <sub>0</sub> = 12.7 mm | SPQ         |             |
|  |   |                                 |                            | $l_t =$<br>3.5 mm + 1 mm/<br>- 0.5 mm      | $l_t =$<br>5.0 mm<br>± 1.0 mm | SPQ         | $l_t =$<br>25.0 mm<br>± 2.0 mm |   |             | SPQ         |
| <b>PITCH = 7.5 mm ± 0.4 mm; d<sub>t</sub> = 0.50 mm ± 0.05 mm; C-TOL. = ± 10 %</b> |   |                                 |                            |  |                               |             |                                |   |             |             |
| 310  | 0.0010  | 4.0 x 9.0 x 10.0                | 0.45                       | 21031KCA2B0                                | 21031KCM2B0                   | 1500        | 21031KCI2B0                    | 1000                                    | 21031KC02G0 | 1250        |
|  | 0.0012  |                                 |                            | 21231KCA2B0                                | 21231KCM2B0                   |             | 21231KCI2B0                    |   | 21231KC02G0 |             |
|  | 0.0015  |                                 |                            | 21531KCA2B0                                | 21531KCM2B0                   |             | 21531KCI2B0                    |   | 21531KC02G0 |             |
|  | 0.0018  |                                 |                            | 21831KCA2B0                                | 21831KCM2B0                   |             | 21831KCI2B0                    |   | 21831KC02G0 |             |
|  | 0.0022  |                                 |                            | 22231KCA2B0                                | 22231KCM2B0                   |             | 22231KCI2B0                    |   | 22231KC02G0 |             |
|  | 0.0027  |                                 |                            | 22731KCA2B0                                | 22731KCM2B0                   |             | 22731KCI2B0                    |   | 22731KC02G0 |             |
|  | 0.0033  |                                 |                            | 23331KCA2B0                                | 23331KCM2B0                   |             | 23331KCI2B0                    |   | 23331KC02G0 |             |
|  | 0.0039  |                                 |                            | 23931KCA2B0                                | 23931KCM2B0                   |             | 23931KCI2B0                    |   | 23931KC02G0 |             |
|  | 0.0047  |                                 |                            | 24731KCA2B0                                | 24731KCM2B0                   |             | 24731KCI2B0                    |   | 24731KC02G0 |             |
|  | 0.0056  |                                 |                            | 25631KCA2B0                                | 25631KCM2B0                   |             | 25631KCI2B0                    |   | 25631KC02G0 |             |
|  | 0.0068  |                                 |                            | 26831KCA2B0                                | 26831KCM2B0                   |             | 26831KCI2B0                    |   | 26831KC02G0 |             |
|  | 0.0082  |                                 |                            | 28231KCA2B0                                | 28231KCM2B0                   |             | 28231KCI2B0                    |   | 28231KC02G0 |             |
|  | 0.010   |                                 |                            | 31031KCA2B0                                | 31031KCM2B0                   |             | 31031KCI2B0                    |   | 31031KC02G0 |             |
|  | 0.012   |                                 |                            | 31231KCA2B0                                | 31231KCM2B0                   |             | 31231KCI2B0                    |   | 31231KC02G0 |             |
|  | 0.015   |                                 |                            | 31531KCA2B0                                | 31531KCM2B0                   |             | 31531KCI2B0                    |   | 31531KC02G0 |             |
|  | 0.018   |                                 |                            | 31831KCA2B0                                | 31831KCM2B0                   |             | 31831KCI2B0                    |   | 31831KC02G0 |             |
|  | 0.022   |                                 |                            | 32231KCA2B0                                | 32231KCM2B0                   |             | 32231KCI2B0                    |   | 32231KC02G0 |             |
|  | 0.027   |                                 |                            | 32731KCA2B0                                | 32731KCM2B0                   |             | 32731KCI2B0                    |   | 32731KC02G0 |             |
|  | 0.033   | 5.0 x 10.5 x 10.0               | 0.6                        | 33331KCA2B0                                | 33331KCM2B0                   | 1000        | 33331KCI2B0                    | 1250                                    | 33331KC02G0 | 1000        |
|  | 0.039   |                                 |                            | 33931KCA2B0                                | 33931KCM2B0                   |             | 33931KCI2B0                    |   | 33931KC02G0 |             |
|  | 0.047   | 6.0 x 11.5 x 10.0               | 0.8                        | 34731KCA2B0                                | 34731KCM2B0                   | 750         | 34731KCI2B0                    | 1000                                    | 34731KC02G0 | 750         |
|  | 0.056   |                                 |                            | 35631KCA2B0                                | 35631KCM2B0                   |             | 35631KCI2B0                    |   | 35631KC02G0 |             |
|  | <b>PITCH = 7.5 mm ± 0.4 mm; d<sub>t</sub> = 0.50 mm ± 0.05 mm; C-TOL. = ± 5 %</b> |                                 |                            |  |                               |             |                                |   |             |             |
|  | 310   | 0.0010                          | 4.0 x 9.0 x 10.0           | 0.45                                       | 21031JCA2B0                   | 21031JCM2B0 | 1500                           | 21031JCI2B0                             | 1000        | 21031JC02G0 |
| 0.0012   |   | 21231JCA2B0                     |                            |  | 21231JCM2B0                   | 21231JCI2B0 |                                | 21231JC02G0                             |             |             |
| 0.0015   |   | 21531JCA2B0                     |                            |  | 21531JCM2B0                   | 21531JCI2B0 |                                | 21531JC02G0                             |             |             |
| 0.0018   |   | 21831JCA2B0                     |                            |  | 21831JCM2B0                   | 21831JCI2B0 |                                | 21831JC02G0                             |             |             |
| 0.0022   |   | 22231JCA2B0                     |                            |  | 22231JCM2B0                   | 22231JCI2B0 |                                | 22231JC02G0                             |             |             |
| 0.0027   |   | 22731JCA2B0                     |                            |  | 22731JCM2B0                   | 22731JCI2B0 |                                | 22731JC02G0                             |             |             |
| 0.0033   |   | 23331JCA2B0                     |                            |  | 23331JCM2B0                   | 23331JCI2B0 |                                | 23331JC02G0                             |             |             |
| 0.0039   |   | 23931JCA2B0                     |                            |  | 23931JCM2B0                   | 23931JCI2B0 |                                | 23931JC02G0                             |             |             |
| 0.0047   |   | 24731JCA2B0                     |                            |  | 24731JCM2B0                   | 24731JCI2B0 |                                | 24731JC02G0                             |             |             |
| 0.0056   |   | 25631JCA2B0                     |                            |  | 25631JCM2B0                   | 25631JCI2B0 |                                | 25631JC02G0                             |             |             |
| 0.0068   |   | 26831JCA2B0                     |                            |  | 26831JCM2B0                   | 26831JCI2B0 |                                | 26831JC02G0                             |             |             |
| 0.0082   |   | 28231JCA2B0                     |                            |  | 28231JCM2B0                   | 28231JCI2B0 |                                | 28231JC02G0                             |             |             |
| 0.010  |   | 31031JCA2B0                     |                            |  | 31031JCM2B0                   | 31031JCI2B0 |                                | 31031JC02G0                             |             |             |
| 0.012  |   | 31231JCA2B0                     |                            |  | 31231JCM2B0                   | 31231JCI2B0 |                                | 31231JC02G0                             |             |             |
| 0.015  |   | 31531JCA2B0                     |                            |  | 31531JCM2B0                   | 31531JCI2B0 |                                | 31531JC02G0                             |             |             |
| 0.018  |   | 31831JCA2B0                     |                            |  | 31831JCM2B0                   | 31831JCI2B0 |                                | 31831JC02G0                             |             |             |
| 0.022  |   | 32231JCA2B0                     |                            |  | 32231JCM2B0                   | 32231JCI2B0 |                                | 32231JC02G0                             |             |             |
| 0.027  |   | 32731JCA2B0                     |                            |  | 32731JCM2B0                   | 32731JCI2B0 |                                | 32731JC02G0                             |             |             |
| 0.033  |   | 5.0 x 10.5 x 10.0               | 0.6                        | 33331JCA2B0                                | 33331JCM2B0                   | 1000        | 33331JCI2B0                    | 1250                                    | 33331JC02G0 | 1000        |
| 0.039  |   |                                 |                            | 33931JCA2B0                                | 33931JCM2B0                   |             | 33931JCI2B0                    |   | 33931JC02G0 |             |
| 0.047  |   | 6.0 x 11.5 x 10.0               | 0.8                        | 34731JCA2B0                                | 34731JCM2B0                   | 750         | 34731JCI2B0                    | 1000                                    | 34731JC02G0 | 750         |
| 0.056  |   |                                 |                            | 35631JCA2B0                                | 35631JCM2B0                   |             | 35631JCI2B0                    |   | 35631JC02G0 |             |

**Notes**

- SPQ = Standard Packing Quantity

(1) H = In-tape height; P<sub>0</sub> = Sprocket hole distance; for detailed specifications refer to "Packaging Information" [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139)

(2) Weight for short lead product only



| ELECTRICAL DATA AND ORDERING CODE - PITCH 10 mm                                     |                   |                                 |                            |   |  |             |   |             |   |             |   |             |
|---|-------------------|---------------------------------|----------------------------|---|--|-------------|---|-------------|---|-------------|---|-------------|
| U <sub>RAC</sub><br>(V)   | CAP.<br>(μF)      | DIMENSIONS<br>w x h x l<br>(mm) | MASS<br>(g) <sup>(3)</sup> | CATALOG NUMBER F339MX2 ..... AND PACKAGING        |  |             |   |             |   |             |   |             |
|   |                   |                                 |                            | LOOSE IN BOX                                      |  |             |   |             | AMMOPACK <sup>(1)</sup>                 |             | REEL <sup>(1)(2)</sup>                                |             |
|   |                   |                                 |                            | SHORT LEADS                                       |  |             | LONG LEADS                              |             |   |             |   |             |
|   |                   |                                 |                            | I <sub>t</sub> =<br>3.5 mm<br>+ 1 mm/<br>- 0.5 mm | I <sub>t</sub> =<br>5.0 mm<br>± 1.0 mm | SPQ         | I <sub>t</sub> =<br>25.0 mm<br>± 2.0 mm | SPQ         | H = 18.5 mm<br>P <sub>0</sub> = 12.7 mm | SPQ         | Ø = 500 mm<br>H = 18.5 mm<br>P <sub>0</sub> = 15.0 mm | SPQ         |
| <b>PITCH = 10.0 mm ± 0.4 mm; d<sub>t</sub> = 0.60 mm ± 0.06 mm; C-TOL. = ± 20 %</b> |                   |                                 |                            |   |  |             |   |             |   |             |   |             |
|   |                   | 4.0 x 10.0 x 12.5               | 0.6                        | 21031MDA2B0                                       | 21031MDM2B0                            | 1000        | 21031MDI2B0                             | 1250        | 21031MD02G0                             | 950         | -   |             |
| 0.0010  |                   |                                 |                            | 21531MDA2B0                                       | 21531MDM2B0                            |             | 21531MDI2B0                             |             | 21531MD02G0                             |             |   |             |
| 0.0015  |                   |                                 |                            | 22231MDA2B0                                       | 22231MDM2B0                            |             | 22231MDI2B0                             |             | 22231MD02G0                             |             |   |             |
| 0.0022  |                   |                                 |                            | 23331MDA2B0                                       | 23331MDM2B0                            |             | 23331MDI2B0                             |             | 23331MD02G0                             |             |   |             |
| 0.0033  |                   |                                 |                            | 24731MDA2B0                                       | 24731MDM2B0                            |             | 24731MDI2B0                             |             | 24731MD02G0                             |             |   |             |
| 0.0047  |                   |                                 |                            | 26831MDA2B0                                       | 26831MDM2B0                            |             | 26831MDI2B0                             |             | 26831MD02G0                             |             |   |             |
| 0.0068  |                   |                                 |                            | 31031MDA2B0                                       | 31031MDM2B0                            |             | 31031MDI2B0                             |             | 31031MD02G0                             |             |   |             |
| 0.010   |                   |                                 |                            | 31531MDA2B0                                       | 31531MDM2B0                            |             | 31531MDI2B0                             |             | 31531MD02G0                             |             |   |             |
| 0.015   |                   |                                 |                            | 32231MDA2B0                                       | 32231MDM2B0                            |             | 32231MDI2B0                             |             | 32231MD02G0                             |             |   |             |
| 0.022   |                   |                                 |                            | 33331MDA2B0                                       | 33331MDM2B0                            |             | 33331MDI2B0                             |             | 33331MD02G0                             |             |   |             |
| 0.033   |                   |                                 |                            | 34731MDA2B0                                       | 34731MDM2B0                            |             | 34731MDI2B0                             |             | 34731MD02G0                             |             |   |             |
| 0.047   |                   |                                 |                            | 36831MDA2B0                                       | 36831MDM2B0                            |             | 36831MDI2B0                             |             | 36831MD02G0                             |             |   |             |
| 0.068   |                   |                                 |                            |   |  |             |   |             |   |             |   |             |
| 0.10  | 5.0 x 11.0 x 12.5 |                                 |                            | 0.82  | 41031MDA2B0                            |             | 41031MDM2B0                             |             | 1000                                    |             |   | 41031MDI2B0 |
| 0.15  | 6.0 x 12.0 x 12.5 | 1.1                             | 41531MDA2B0                | 41531MDM2B0                                       | 750                                    | 41531MDI2B0 | 750                                     | 41531MD02G0 | 600                                     | 41531MD02W0 | 1500  |             |
| <b>PITCH = 10.0 mm ± 0.4 mm; d<sub>t</sub> = 0.60 mm ± 0.06 mm; C-TOL. = ± 10 %</b> |                   |                                 |                            |   |  |             |   |             |   |             |   |             |
|   |                   | 4.0 x 10.0 x 12.5               | 0.6                        | 21031KDA2B0                                       | 21031KDM2B0                            | 1000        | 21031KDI2B0                             | 1250        | 21031KD02G0                             | 950         | -   |             |
| 0.0010  |                   |                                 |                            | 21231KDA2B0                                       | 21231KDM2B0                            |             | 21231KDI2B0                             |             | 21231KD02G0                             |             |   |             |
| 0.0012  |                   |                                 |                            | 21531KDA2B0                                       | 21531KDM2B0                            |             | 21531KDI2B0                             |             | 21531KD02G0                             |             |   |             |
| 0.0015  |                   |                                 |                            | 21831KDA2B0                                       | 21831KDM2B0                            |             | 21831KDI2B0                             |             | 21831KD02G0                             |             |   |             |
| 0.0018  |                   |                                 |                            | 22231KDA2B0                                       | 22231KDM2B0                            |             | 22231KDI2B0                             |             | 22231KD02G0                             |             |   |             |
| 0.0022  |                   |                                 |                            | 22731KDA2B0                                       | 22731KDM2B0                            |             | 22731KDI2B0                             |             | 22731KD02G0                             |             |   |             |
| 0.0027  |                   |                                 |                            | 23331KDA2B0                                       | 23331KDM2B0                            |             | 23331KDI2B0                             |             | 23331KD02G0                             |             |   |             |
| 0.0033  |                   |                                 |                            | 23931KDA2B0                                       | 23931KDM2B0                            |             | 23931KDI2B0                             |             | 23931KD02G0                             |             |   |             |
| 0.0039  |                   |                                 |                            | 24731KDA2B0                                       | 24731KDM2B0                            |             | 24731KDI2B0                             |             | 24731KD02G0                             |             |   |             |
| 0.0047  |                   |                                 |                            | 25631KDA2B0                                       | 25631KDM2B0                            |             | 25631KDI2B0                             |             | 25631KD02G0                             |             |   |             |
| 0.0056  |                   |                                 |                            | 26831KDA2B0                                       | 26831KDM2B0                            |             | 26831KDI2B0                             |             | 26831KD02G0                             |             |   |             |
| 0.0068  |                   |                                 |                            | 28231KDA2B0                                       | 28231KDM2B0                            |             | 28231KDI2B0                             |             | 28231KD02G0                             |             |   |             |
| 0.0082  |                   |                                 |                            |   |  |             |   |             |   |             |   |             |
| 0.010   |                   |                                 |                            | 31031KDA2B0                                       | 31031KDM2B0                            |             | 31031KDI2B0                             |             | 31031KD02G0                             |             |   |             |
| 0.012   |                   |                                 |                            | 31231KDA2B0                                       | 31231KDM2B0                            |             | 31231KDI2B0                             |             | 31231KD02G0                             |             |   |             |
| 0.015   |                   |                                 |                            | 31531KDA2B0                                       | 31531KDM2B0                            |             | 31531KDI2B0                             |             | 31531KD02G0                             |             |   |             |
| 0.018   |                   |                                 |                            | 31831KDA2B0                                       | 31831KDM2B0                            |             | 31831KDI2B0                             |             | 31831KD02G0                             |             |   |             |
| 0.022   |                   |                                 |                            | 32231KDA2B0                                       | 32231KDM2B0                            |             | 32231KDI2B0                             |             | 32231KD02G0                             |             |   |             |
| 0.027   |                   | 32731KDA2B0                     | 32731KDM2B0                | 32731KDI2B0                                       | 32731KD02G0                            |             |   |             |   |             |   |             |
| 0.033   |                   | 33331KDA2B0                     | 33331KDM2B0                | 33331KDI2B0                                       | 33331KD02G0                            |             |   |             |   |             |   |             |
| 0.039   |                   | 33931KDA2B0                     | 33931KDM2B0                | 33931KDI2B0                                       | 33931KD02G0                            |             |   |             |   |             |   |             |
| 0.047   |                   | 34731KDA2B0                     | 34731KDM2B0                | 34731KDI2B0                                       | 34731KD02G0                            |             |   |             |   |             |   |             |
| 0.056   | 5.0 x 11.0 x 12.5 | 0.82                            | 35631KDA2B0                | 35631KDM2B0                                       | 1100                                   | 35631KDI2B0 | 1000                                    | 35631KD02G0 | 750                                     |             |   |             |
| 0.068   |                   | 36831KDA2B0                     | 36831KDM2B0                |   | 36831KDI2B0                            |             | 36831KD02G0                             |             | 36831KD02W0                             | 1900        |   |             |
| 0.082   | 6.0 x 12.0 x 12.5 | 1.1                             | 38231KDA2B0                | 38231KDM2B0                                       | 750                                    | 38231KDI2B0 | 750                                     | 38231KD02G0 | 600                                     | 38231KD02W0 | 1500  |             |
| 0.10  |                   |                                 | 41031KDA2B0                | 41031KDM2B0                                       |  | 41031KDI2B0 |   | 41031KD02G0 |   |             |   |             |



| ELECTRICAL DATA AND ORDERING CODE - PITCH 10 mm                                    |                   |                                 |                            |  |                               |             |                                |                         |   |                        |   |             |      |             |             |      |     |   |   |
|--|-------------------|---------------------------------|----------------------------|--|-------------------------------|-------------|--------------------------------|-------------------------|---|------------------------|---|-------------|------|-------------|-------------|------|-----|---|---|
| U <sub>RAC</sub><br>(V)  | CAP.<br>(μF)      | DIMENSIONS<br>w x h x l<br>(mm) | MASS<br>(g) <sup>(3)</sup> | CATALOG NUMBER F339MX2 ..... AND PACKAGING |                               |             |                                |                         |   |                        |   |             |      |             |             |      |     |   |   |
|  |                   |                                 |                            | LOOSE IN BOX                               |                               |             |                                | AMMOPACK <sup>(1)</sup> |   | REEL <sup>(1)(2)</sup> |   |             |      |             |             |      |     |   |   |
|  |                   |                                 |                            | SHORT LEADS                                |                               | LONG LEADS  |                                |                         |   |                        |   |             |      |             |             |      |     |   |   |
|  |                   |                                 |                            | $l_t =$<br>3.5 mm<br>+ 1 mm/<br>- 0.5 mm   | $l_t =$<br>5.0 mm<br>± 1.0 mm | SPQ         | $l_t =$<br>25.0 mm<br>± 2.0 mm | SPQ                     | H = 18.5 mm<br>P <sub>0</sub> = 12.7 mm | SPQ                    | Ø = 500 mm<br>H = 18.5 mm<br>P <sub>0</sub> = 15.0 mm | SPQ         |      |             |             |      |     |   |   |
| <b>PITCH = 10.0 mm ± 0.4 mm; d<sub>t</sub> = 0.60 mm ± 0.06 mm; C-TOL. = ± 5 %</b> |                   |                                 |                            |  |                               |             |                                |                         |   |                        |   |             |      |             |             |      |     |   |   |
| 310  | 0.0010            | 4.0 x 10.0 x 12.5               | 0.6                        | 21031JDA2B0                                | 21031JDM2B0                   | 1000        | 21031JDI2B0                    | 21031JD02G0             | 1250                                    | 950                    | -   | -           |      |             |             |      |     |   |   |
|  | 0.0012            |                                 |                            | 21231JDA2B0                                | 21231JDM2B0                   |             | 21231JDI2B0                    | 21231JD02G0             |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.0015            |                                 |                            | 21531JDA2B0                                | 21531JDM2B0                   |             | 21531JDI2B0                    | 21531JD02G0             |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.0018            |                                 |                            | 21831JDA2B0                                | 21831JDM2B0                   |             | 21831JDI2B0                    | 21831JD02G0             |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.0022            |                                 |                            | 22231JDA2B0                                | 22231JDM2B0                   |             | 22231JDI2B0                    | 22231JD02G0             |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.0027            |                                 |                            | 22731JDA2B0                                | 22731JDM2B0                   |             | 22731JDI2B0                    | 22731JD02G0             |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.0033            |                                 |                            | 23331JDA2B0                                | 23331JDM2B0                   |             | 23331JDI2B0                    | 23331JD02G0             |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.0039            |                                 |                            | 23931JDA2B0                                | 23931JDM2B0                   |             | 23931JDI2B0                    | 23931JD02G0             |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.0047            |                                 |                            | 24731JDA2B0                                | 24731JDM2B0                   |             | 24731JDI2B0                    | 24731JD02G0             |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.0056            |                                 |                            | 25631JDA2B0                                | 25631JDM2B0                   |             | 25631JDI2B0                    | 25631JD02G0             |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.0068            |                                 |                            | 26831JDA2B0                                | 26831JDM2B0                   |             | 26831JDI2B0                    | 26831JD02G0             |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.0082            |                                 |                            | 28231JDA2B0                                | 28231JDM2B0                   |             | 28231JDI2B0                    | 28231JD02G0             |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.010             |                                 |                            | 4.0 x 10.0 x 12.5                          | 0.6                           |             | 31031JDA2B0                    | 31031JDM2B0             |   |                        |   |             | 1000 | 31031JDI2B0 | 31031JD02G0 | 1250 | 950 | - | - |
|  | 0.012             |                                 |                            |  |                               |             | 31231JDA2B0                    | 31231JDM2B0             |   |                        |   |             |      | 31231JDI2B0 | 31231JD02G0 |      |     |   |   |
|  | 0.015             | 31531JDA2B0                     | 31531JDM2B0                |  |                               | 31531JDI2B0 | 31531JD02G0                    |                         |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.018             | 31831JDA2B0                     | 31831JDM2B0                |  |                               | 31831JDI2B0 | 31831JD02G0                    |                         |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.022             | 32231JDA2B0                     | 32231JDM2B0                |  |                               | 32231JDI2B0 | 32231JD02G0                    |                         |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.027             | 32731JDA2B0                     | 32731JDM2B0                |  |                               | 32731JDI2B0 | 32731JD02G0                    |                         |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.033             | 33331JDA2B0                     | 33331JDM2B0                |  |                               | 33331JDI2B0 | 33331JD02G0                    |                         |   |                        |   |             |      |             |             |      |     |   |   |
|  | 0.039             | 33931JDA2B0                     | 33931JDM2B0                |  |                               | 33931JDI2B0 | 33931JD02G0                    |                         |   |                        |   |             |      |             |             |      |     |   |   |
| 0.047  | 34731JDA2B0       | 34731JDM2B0                     | 34731JDI2B0                |  |                               | 34731JD02G0 |                                |                         |   |                        |   |             |      |             |             |      |     |   |   |
| 0.056  | 5.0 x 11.0 x 12.5 | 0.82                            | 35631JDA2B0                |  |                               | 35631JDM2B0 | 1000                           | 35631JDI2B0             | 35631JD02G0                             | 1000                   | 750   | -           |      | -           |             |      |     |   |   |
| 0.068  |                   |                                 | 36831JDA2B0                | 36831JDM2B0                                | 36831JDI2B0                   | 36831JD02G0 |                                |                         |   |                        |   |             |      |             |             |      |     |   |   |
| 0.082  | 6.0 x 12.0 x 12.5 | 1.1                             | 38231JDA2B0                | 38231JDM2B0                                | 750                           | 38231JDI2B0 | 38231JD02G0                    | 750                     | 600                                     | 38231JD02W0            | 1500  |             |      |             |             |      |     |   |   |
| 0.10   |                   |                                 | 41031JDA2B0                | 41031JDM2B0                                |                               | 41031JDI2B0 | 41031JD02G0                    |                         |   |                        |   | 41031JD02W0 |      |             |             |      |     |   |   |

**Notes**

- SPQ = Standard Packing Quantity
- (1) Reel diameter = 356 mm is available on request
- (2) H = In tape height; P<sub>0</sub> = Sprocket hole distance; for detailed specifications refer to "Packaging Information" [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139)
- (3) Weight for short lead product only



| ELECTRICAL DATA AND ORDERING CODE - PITCH 15 mm                                   |                    |                                 |                            |  |  |             |   |             |   |     |
|---|--------------------|---------------------------------|----------------------------|--|--|-------------|---|-------------|---|-----|
| U <sub>RAC</sub><br>(V)   | CAP.<br>(µF)       | DIMENSIONS<br>w x h x l<br>(mm) | MASS<br>(g) <sup>(3)</sup> | CATALOG NUMBER F339MX2 ..... AND PACKAGING |  |             |   |             |   |     |
|   |                    |                                 |                            | LOOSE IN BOX                               |  |             |   |             | REEL <sup>(1)(2)</sup>                                |     |
|   |                    |                                 |                            | SHORT LEADS                                |  |             | LONG LEADS                              |             | Ø = 500 mm<br>H = 18.5 mm<br>P <sub>0</sub> = 12.7 mm | SPQ |
|   |                    |                                 |                            | l <sub>t</sub> =<br>3.5 mm ± 0.3 mm        | l <sub>t</sub> =<br>5.0 mm<br>± 1.0 mm | SPQ         | l <sub>t</sub> =<br>25.0 mm<br>± 2.0 mm | SPQ         |   |     |
| <b>PITCH = 15 mm ± 0.4 mm; d<sub>t</sub> = 0.60 mm ± 0.06 mm; C-TOL. = ± 20 %</b> |                    |                                 |                            |  |  |             |   |             |   |     |
| 0.010   | 5.0 x 11.0 x 17.5  | 1.0                             | 31031MFP2B0                | 31031MFM2B0                                | 1250                                   | 31031MFI2B0 | 1000                                    | 31031MF02W0 | 1100  |     |
| 0.015   |                    |                                 | 31531MFP2B0                | 31531MFM2B0                                |  | 31531MFI2B0 |   | 31531MF02W0 |   |     |
| 0.022   |                    |                                 | 32231MFP2B0                | 32231MFM2B0                                |  | 32231MFI2B0 |   | 32231MF02W0 |   |     |
| 0.033   |                    |                                 | 33331MFP2B0                | 33331MFM2B0                                |  | 33331MFI2B0 |   | 33331MF02W0 |   |     |
| 0.047   |                    |                                 | 34731MFP2B0                | 34731MFM2B0                                |  | 34731MFI2B0 |   | 34731MF02W0 |   |     |
| 0.068   |                    |                                 | 36831MFP2B0                | 36831MFM2B0                                |  | 36831MFI2B0 |   | 36831MF02W0 |   |     |
| 0.10  |                    |                                 | 41031MFP2B0                | 41031MFM2B0                                |  | 41031MFI2B0 |   | 41031MF02W0 |   |     |
| 0.15  |                    |                                 | 41531MFP2B0                | 41531MFM2B0                                |  | 41531MFI2B0 |   | 41531MF02W0 |   |     |
| 0.22  | 6.0 x 12.0 x 17.5  | 1.4                             | 42231MFP2B0                | 42231MFM2B0                                | 1000                                   | 42231MFI2B0 | 1000                                    | 42231MF02W0 | 900   |     |
| <b>PITCH = 15 mm ± 0.4 mm; d<sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 20 %</b> |                    |                                 |                            |  |  |             |   |             |   |     |
| 0.33  | 8.5 x 15.0 x 17.5  | 2.4                             | 43331MFP2B0                | 43331MFM2B0                                | 750                                    | 43331MFI2B0 | 500                                     | 43331MF02W0 | 650   |     |
| 0.47  | 10.0 x 16.5 x 17.5 | 3.0                             | 44731MFP2B0                | 44731MFM2B0                                | 500                                    | 44731MFI2B0 | 450                                     | 44731MF02W0 | 600   |     |
| 0.68  | 11.0 x 18.5 x 18.0 | 5.5                             | 46831MFP2B0                | 46831MFM2B0                                | 225                                    | 46831MFI2B0 | 350                                     | 46831MF02W0 | -   |     |
| <b>PITCH = 15 mm ± 0.4 mm; d<sub>t</sub> = 0.60 mm ± 0.06 mm; C-TOL. = ± 10 %</b> |                    |                                 |                            |  |  |             |   |             |   |     |
| 0.010   | 5.0 x 11.0 x 17.5  | 1.0                             | 31031KFP2B0                | 31031KFM2B0                                | 1250                                   | 31031KFI2B0 | 1000                                    | 31031KF02W0 | 1100  |     |
| 0.012   |                    |                                 | 31231KFP2B0                | 31231KFM2B0                                |  | 31231KFI2B0 |   | 31231KF02W0 |   |     |
| 0.015   |                    |                                 | 31531KFP2B0                | 31531KFM2B0                                |  | 31531KFI2B0 |   | 31531KF02W0 |   |     |
| 0.018   |                    |                                 | 31831KFP2B0                | 31831KFM2B0                                |  | 31831KFI2B0 |   | 31831KF02W0 |   |     |
| 0.022   |                    |                                 | 32231KFP2B0                | 32231KFM2B0                                |  | 32231KFI2B0 |   | 32231KF02W0 |   |     |
| 0.027   |                    |                                 | 32731KFP2B0                | 32731KFM2B0                                |  | 32731KFI2B0 |   | 32731KF02W0 |   |     |
| 0.033   |                    |                                 | 33331KFP2B0                | 33331KFM2B0                                |  | 33331KFI2B0 |   | 33331KF02W0 |   |     |
| 0.039   |                    |                                 | 33931KFP2B0                | 33931KFM2B0                                |  | 33931KFI2B0 |   | 33931KF02W0 |   |     |
| 0.047   |                    |                                 | 34731KFP2B0                | 34731KFM2B0                                |  | 34731KFI2B0 |   | 34731KF02W0 |   |     |
| 0.056   |                    |                                 | 35631KFP2B0                | 35631KFM2B0                                |  | 35631KFI2B0 |   | 35631KF02W0 |   |     |
| 0.068   |                    |                                 | 36831KFP2B0                | 36831KFM2B0                                |  | 36831KFI2B0 |   | 36831KF02W0 |   |     |
| 0.082   |                    |                                 | 38231KFP2B0                | 38231KFM2B0                                |  | 38231KFI2B0 |   | 38231KF02W0 |   |     |
| 0.10  |                    |                                 | 41031KFP2B0                | 41031KFM2B0                                |  | 41031KFI2B0 |   | 41031KF02W0 |   |     |
| 0.12  |                    |                                 | 41231KFP2B0                | 41231KFM2B0                                |  | 41231KFI2B0 |   | 41231KF02W0 |   |     |
| 0.15  | 6.0 x 12.0 x 17.5  | 1.4                             | 41531KFP2B0                | 41531KFM2B0                                | 1000                                   | 41531KFI2B0 | 1000                                    | 41531KF02W0 | 900   |     |
| 0.18  |                    |                                 | 41831KFP2B0                | 41831KFM2B0                                |  | 41831KFI2B0 |   | 41831KF02W0 |   |     |
| <b>PITCH = 15 mm ± 0.4 mm; d<sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 10 %</b> |                    |                                 |                            |  |  |             |   |             |   |     |
| 0.22  | 7.0 x 13.5 x 17.5  | 1.8                             | 42231KFP2B0                | 42231KFM2B0                                | 750                                    | 42231KFI2B0 | 500                                     | 42231KF02W0 | 800   |     |
| 0.27  | 8.5 x 15.0 x 17.5  | 2.4                             | 42731KFP2B0                | 42731KFM2B0                                | 750                                    | 42731KFI2B0 | 500                                     | 42731KF02W0 | 650   |     |
| 0.33  |                    |                                 | 43331KFP2B0                | 43331KFM2B0                                |  | 43331KFI2B0 |   | 43331KF02W0 |   |     |
| 0.39  | 10.0 x 16.5 x 17.5 | 3.0                             | 43931KFP2B0                | 43931KFM2B0                                | 500                                    | 43931KFI2B0 | 450                                     | 43931KF02W0 | 600   |     |
| 0.47  |                    |                                 | 44731KFP2B0                | 44731KFM2B0                                |  | 44731KFI2B0 |   | 44731KF02W0 |   |     |
| 0.56  | 11.0 x 18.5 x 18.0 | 5.5                             | 45631KFP2B0                | 45631KFM2B0                                | 225                                    | 45631KFI2B0 | 350                                     | -           | -   |     |



| ELECTRICAL DATA AND ORDERING CODE - PITCH 15 mm                                  |  |                                 |                            |  |  |             |   |             |   |             |
|--|--|---------------------------------|----------------------------|--|--|-------------|---|-------------|---|-------------|
| U <sub>RAC</sub><br>(V)  | CAP.<br>(µF)   | DIMENSIONS<br>w x h x l<br>(mm) | MASS<br>(g) <sup>(3)</sup> | CATALOG NUMBER F339MX2 ..... AND PACKAGING |  |             |   |             |   |             |
|  |  |                                 |                            | LOOSE IN BOX                               |  |             |   |             | REEL <sup>(1)(2)</sup>                                |             |
|  |  |                                 |                            | SHORT LEADS                                |  |             | LONG LEADS                              |             |   |             |
|  |  |                                 |                            | l <sub>t</sub> =<br>3.5 mm ± 0.3 mm        | l <sub>t</sub> =<br>5.0 mm<br>± 1.0 mm | SPQ         | l <sub>t</sub> =<br>25.0 mm<br>± 2.0 mm | SPQ         | Ø = 500 mm<br>H = 18.5 mm<br>P <sub>0</sub> = 12.7 mm | SPQ         |
| <b>PITCH = 15 mm ± 0.4 mm; d<sub>t</sub> = 0.60 mm ± 0.06 mm; C-TOL. = ± 5 %</b> |  |                                 |                            |  |  |             |   |             |   |             |
| 310  | 0.010  | 5.0 x 11.0 x 17.5               | 1.0                        | 31031JFP2B0                                | 31031JFM2B0                            | 1250        | 31031JFI2B0                             | 1000        | 31031JF02W0   | 1100        |
|  | 0.012  |                                 |                            | 31231JFP2B0                                | 31231JFM2B0                            |             | 31231JFI2B0                             |             | 31231JF02W0   |             |
|  | 0.015  |                                 |                            | 31531JFP2B0                                | 31531JFM2B0                            |             | 31531JFI2B0                             |             | 31531JF02W0   |             |
|  | 0.018  |                                 |                            | 31831JFP2B0                                | 31831JFM2B0                            |             | 31831JFI2B0                             |             | 31831JF02W0   |             |
|  | 0.022  |                                 |                            | 32231JFP2B0                                | 32231JFM2B0                            |             | 32231JFI2B0                             |             | 32231JF02W0   |             |
|  | 0.027  |                                 |                            | 32731JFP2B0                                | 32731JFM2B0                            |             | 32731JFI2B0                             |             | 32731JF02W0   |             |
|  | 0.033  | 5.0 x 11.0 x 17.5               | 1.0                        | 33331JFP2B0                                | 33331JFM2B0                            | 1250        | 33331JFI2B0                             | 1000        | 33331JF02W0   | 1100        |
|  | 0.039  |                                 |                            | 33931JFP2B0                                | 33931JFM2B0                            |             | 33931JFI2B0                             |             | 33931JF02W0   |             |
|  | 0.047  |                                 |                            | 34731JFP2B0                                | 34731JFM2B0                            |             | 34731JFI2B0                             |             | 34731JF02W0   |             |
|  | 0.056  |                                 |                            | 35631JFP2B0                                | 35631JFM2B0                            |             | 35631JFI2B0                             |             | 35631JF02W0   |             |
|  | 0.068  |                                 |                            | 36831JFP2B0                                | 36831JFM2B0                            |             | 36831JFI2B0                             |             | 36831JF02W0   |             |
|  | 0.082  |                                 |                            | 38231JFP2B0                                | 38231JFM2B0                            |             | 38231JFI2B0                             |             | 38231JF02W0   |             |
|  | 0.10   | 41031JFP2B0                     | 41031JFM2B0                | 41031JFI2B0                                | 41031JF02W0                            |             |   |             |   |             |
|  | 0.12   | 41231JFP2B0                     | 41231JFM2B0                | 41231JFI2B0                                | 41231JF02W0                            |             |   |             |   |             |
|  | 0.15   | 6.0 x 12.0 x 17.5               | 1.4                        | 41531JFP2B0                                | 41531JFM2B0                            | 1000        | 41531JFI2B0                             | 1000        | 41531JF02W0   | 900         |
|  | 0.18   |                                 |                            | 41831JFP2B0                                | 41831JFM2B0                            |             | 41831JFI2B0                             |             | 41831JF02W0   |             |
|  | <b>PITCH = 15 mm ± 0.4 mm; d<sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 5 %</b> |                                 |                            |  |  |             |   |             |   |             |
|  |  | 0.22                            | 7.0 x 13.5 x 17.5          | 1.8  | 42231JFP2B0                            | 42231JFM2B0 | 750                                     | 42231JFI2B0 | 500   | 42231JF02W0 |
|  | 0.27   | 8.5 x 15.0 x 17.5               | 2.4                        | 42731JFP2B0                                | 42731JFM2B0                            | 750         | 42731JFI2B0                             | 500         | 42731JF02W0   | 650         |
|  | 0.33   |                                 |                            | 43331JFP2B0                                | 43331JFM2B0                            |             | 43331JFI2B0                             |             | 43331JF02W0   |             |
|  | 0.39   | 10.0 x 16.5 x 17.5              | 3.0                        | 43931JFP2B0                                | 43931JFM2B0                            | 500         | 43931JFI2B0                             | 450         | 43931JF02W0   | 600         |
|  | 0.47   |                                 |                            | 44731JFP2B0                                | 44731JFM2B0                            |             | 44731JFI2B0                             |             | 44731JF02W0   |             |
|  | 0.56   | 11.0 x 18.5 x 18.0              | 5.5                        | 45631JFP2B0                                | 45631JFM2B0                            | 225         | 45631JFI2B0                             | 350         | -   | -           |

**Notes**

- SPQ = Standard Packing Quantity
- (1) Reel diameter = 356 mm is available on request
- (2) H = In tape height; P<sub>0</sub> = Sprocket hole distance; for detailed specifications refer to "Packaging Information" [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139)
- (3) Weight for short lead product only





| ELECTRICAL DATA AND ORDERING CODE - PITCH 22.5 mm                                   |                    |                                 |                            |  |                                     |             |                                      |             |   |     |
|---|--------------------|---------------------------------|----------------------------|--|-------------------------------------|-------------|--------------------------------------|-------------|---|-----|
| U <sub>RAC</sub><br>(V)   | CAP.<br>(μF)       | DIMENSIONS<br>w x h x l<br>(mm) | MASS<br>(g) <sup>(2)</sup> | CATALOG NUMBER F339MX2 ..... AND PACKAGING |                                     |             |                                      |             |   |     |
|   |                    |                                 |                            | LOOSE IN BOX                               |                                     |             |                                      |             | REEL <sup>(1)(2)</sup>                                |     |
|   |                    |                                 |                            | SHORT LEADS                                |                                     |             | LONG LEADS                           |             |   |     |
|   |                    |                                 |                            | l <sub>t</sub> =<br>3.5 mm ± 0.3 mm        | l <sub>t</sub> =<br>5.0 mm ± 1.0 mm | SPQ         | l <sub>t</sub> =<br>25.0 mm ± 2.0 mm | SPQ         | Ø = 500 mm<br>H = 18.5 mm<br>P <sub>0</sub> = 12.7 mm | SPQ |
| <b>PITCH = 22.5 mm ± 0.4 mm; d<sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 20 %</b> |                    |                                 |                            |  |                                     |             |                                      |             |   |     |
| 0.15  | 6.0 x 15.5 x 26.0  | 2.4                             | 41531MIP2T0                | 41531MIM2T0                                | 300                                 | 41531MII2B0 | 250                                  | 41531MIO2W0 | 600   |     |
| 0.22  |                    |                                 | 42231MIP2T0                | 42231MIM2T0                                |                                     | 42231MII2B0 |                                      | 42231MIO2W0 |   |     |
| 0.33  |                    |                                 | 43331MIP2T0                | 43331MIM2T0                                |                                     | 43331MII2B0 |                                      | 43331MIO2W0 |   |     |
| 0.47  | 7.0 x 16.5 x 26.0  | 2.9                             | 44731MIP2T0                | 44731MIM2T0                                | 200                                 | 44731MII2B0 | 250                                  | 44731MIO2W0 | 500   |     |
| 0.68  | 8.5 x 18.0 x 26.0  | 3.8                             | 46831MIP2T0                | 46831MIM2T0                                | 200                                 | 46831MII2B0 | 250                                  | 46831MIO2W0 | 450   |     |
| 1.0   | 10.0 x 19.5 x 26.0 | 6.8                             | 51031MIP2T0                | 51031MIM2T0                                | 200                                 | 51031MII2B0 | 200                                  | 51031MIO2W0 | 350   |     |
| 1.5   | 12.0 x 22.0 x 26.0 | 10                              | 51531MIP2T0                | 51531MIM2T0                                | 150                                 | 51531MII2B0 | 200                                  | 51531MIO2W0 | 300   |     |
| 2.2   | 12.5 x 22.5 x 26.5 | 11                              | 52231MIP2T0                | 52231MIM2T0                                | 110                                 | 52231MII2B0 | 275                                  | 52231MIO2W0 | 250   |     |
| 3.3   | 18.0 x 29.5 x 26.5 | 20.5                            | 53331MIP2T0                | 53331MIM2T0                                | 90                                  | 53331MII2B0 | 250                                  | 53331MIO2W0 | 200   |     |
| <b>PITCH = 22.5 mm ± 0.4 mm; d<sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 10 %</b> |                    |                                 |                            |  |                                     |             |                                      |             |   |     |
| 0.12  | 6.0 x 15.5 x 26.0  | 2.4                             | 41231KIP2T0                | 41231KIM2T0                                | 300                                 | 41231KII2B0 | 250                                  | 41231KIO2W0 | 600   |     |
| 0.15  |                    |                                 | 41531KIP2T0                | 41531KIM2T0                                |                                     | 41531KII2B0 |                                      | 41531KIO2W0 |   |     |
| 0.18  |                    |                                 | 41831KIP2T0                | 41831KIM2T0                                |                                     | 41831KII2B0 |                                      | 41831KIO2W0 |   |     |
| 0.22  |                    |                                 | 42231KIP2T0                | 42231KIM2T0                                |                                     | 42231KII2B0 |                                      | 42231KIO2W0 |   |     |
| 0.27  |                    |                                 | 42731KIP2T0                | 42731KIM2T0                                |                                     | 42731KII2B0 |                                      | 42731KIO2W0 |   |     |
| 0.33  |                    |                                 | 43331KIP2T0                | 43331KIM2T0                                |                                     | 43331KII2B0 |                                      | 43331KIO2W0 |   |     |
| 0.39  | 7.0 x 16.5 x 26.0  | 2.9                             | 43931KIP2T0                | 43931KIM2T0                                | 200                                 | 43931KII2B0 | 250                                  | 43931KIO2W0 | 500   |     |
| 0.47  |                    |                                 | 44731KIP2T0                | 44731KIM2T0                                |                                     | 44731KII2B0 |                                      | 44731KIO2W0 |   |     |
| 0.56  | 8.5 x 18.0 x 26.0  | 3.8                             | 45631KIP2T0                | 45631KIM2T0                                | 200                                 | 45631KII2B0 | 250                                  | 45631KIO2W0 | 450   |     |
| 0.68  |                    |                                 | 46831KIP2T0                | 46831KIM2T0                                |                                     | 46831KII2B0 |                                      | 46831KIO2W0 |   |     |
| 0.82  | 10.0 x 19.5 x 26.0 | 6.8                             | 48231KIP2T0                | 48231KIM2T0                                | 200                                 | 48231KII2B0 | 200                                  | 48231KIO2W0 | 350   |     |
| 1.0   | 12.0 x 22.0 x 26.0 | 7.8                             | 51031KIP2T0                | 51031KIM2T0                                | 150                                 | 51031KII2B0 | 200                                  | 51031KIO2W0 | 300   |     |
| 1.2   |                    |                                 | 51231KIP2T0                | 51231KIM2T0                                |                                     | 51231KII2B0 |                                      | 51231KIO2W0 |   |     |
| 1.5   |                    |                                 | 51531KIP2T0                | 51531KIM2T0                                |                                     | 51531KII2B0 |                                      | 51531KIO2W0 |   |     |
| 1.8   | 15.5 x 26.5 x 26.5 | 14                              | 51831KIP2T0                | 51831KIM2T0                                | 110                                 | 51831KII2B0 | 275                                  | 51831KIO2W0 | 250   |     |
| 2.2   |                    |                                 | 52231KIP2T0                | 52231KIM2T0                                |                                     | 52231KII2B0 |                                      | 52231KIO2W0 |   |     |
| 2.7   | 18.0 x 29.5 x 26.5 | 20                              | 52731KIP2T0                | 52731KIM2T0                                | 90                                  | 52731KII2B0 | 250                                  | 52731KIO2W0 | 200   |     |
| <b>PITCH = 22.5 mm ± 0.4 mm; d<sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 5 %</b>  |                    |                                 |                            |  |                                     |             |                                      |             |   |     |
| 0.12  | 6.0 x 15.5 x 26.0  | 2.4                             | 41231JIP2T0                | 41231JIM2T0                                | 300                                 | 41231JII2B0 | 250                                  | 41231JIO2W0 | 600   |     |
| 0.15  |                    |                                 | 41531JIP2T0                | 41531JIM2T0                                |                                     | 41531JII2B0 |                                      | 41531JIO2W0 |   |     |
| 0.18  |                    |                                 | 41831JIP2T0                | 41831JIM2T0                                |                                     | 41831JII2B0 |                                      | 41831JIO2W0 |   |     |
| 0.22  |                    |                                 | 42231JIP2T0                | 42231JIM2T0                                |                                     | 42231JII2B0 |                                      | 42231JIO2W0 |   |     |
| 0.27  |                    |                                 | 42731JIP2T0                | 42731JIM2T0                                |                                     | 42731JII2B0 |                                      | 42731JIO2W0 |   |     |
| 0.33  |                    |                                 | 43331JIP2T0                | 43331JIM2T0                                |                                     | 43331JII2B0 |                                      | 43331JIO2W0 |   |     |
| 0.39  | 7.0 x 16.5 x 26.0  | 2.9                             | 43931JIP2T0                | 43931JIM2T0                                | 200                                 | 43931JII2B0 | 250                                  | 43931JIO2W0 | 500   |     |
| 0.47  |                    |                                 | 44731JIP2T0                | 44731JIM2T0                                |                                     | 44731JII2B0 |                                      | 44731JIO2W0 |   |     |
| 0.56  | 8.5 x 18.0 x 26.0  | 3.8                             | 45631JIP2T0                | 45631JIM2T0                                | 200                                 | 45631JII2B0 | 250                                  | 45631JIO2W0 | 450   |     |
| 0.68  |                    |                                 | 46831JIP2T0                | 46831JIM2T0                                |                                     | 46831JII2B0 |                                      | 46831JIO2W0 |   |     |
| 0.82  | 10.0 x 19.5 x 26.0 | 6.8                             | 48231JIP2T0                | 48231JIM2T0                                | 200                                 | 48231JII2B0 | 200                                  | 48231JIO2W0 | 350   |     |
| 1.0   | 12.0 x 22.0 x 26.0 | 7.8                             | 51031JIP2T0                | 51031JIM2T0                                | 150                                 | 51031JII2B0 | 200                                  | 51031JIO2W0 | 300   |     |
| 1.2   |                    |                                 | 51231JIP2T0                | 51231JIM2T0                                |                                     | 51231JII2B0 |                                      | 51231JIO2W0 |   |     |
| 1.5   |                    |                                 | 51531JIP2T0                | 51531JIM2T0                                |                                     | 51531JII2B0 |                                      | 51531JIO2W0 |   |     |
| 1.8   | 15.5 x 26.5 x 26.5 | 14                              | 51831JIP2T0                | 51831JIM2T0                                | 110                                 | 51831JII2B0 | 275                                  | 51831JIO2W0 | 250   |     |
| 2.2   |                    |                                 | 52231JIP2T0                | 52231JIM2T0                                |                                     | 52231JII2B0 |                                      | 52231JIO2W0 |   |     |

**Notes**

- SPQ = Standard Packing Quantity

(1) Reel diameter = 356 mm is available on request

(2) H = In tape height; P<sub>0</sub> = Sprocket hole distance; for detailed specifications refer to "Packaging Information" [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139)

(3) Weight for short lead product only



| ELECTRICAL DATA AND ORDERING CODE - PITCH 27.5 mm                                   |                    |                                 |                            |  |                                  |             |                                   |     |
|---|--------------------|---------------------------------|----------------------------|--|----------------------------------|-------------|-----------------------------------|-----|
| U <sub>RAC</sub><br>(V)   | CAP.<br>(μF)       | DIMENSIONS<br>w x h x l<br>(mm) | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER F339MX2 ..... AND PACKAGING |                                  |             |                                   |     |
|   |                    |                                 |                            | LOOSE IN BOX                               |                                  |             |                                   |     |
|   |                    |                                 |                            | SHORT LEADS                                |                                  |             | LONG LEADS                        |     |
|   |                    |                                 |                            | l <sub>t</sub> = 3.5 mm ± 0.3 mm           | l <sub>t</sub> = 5.0 mm ± 1.0 mm | SPQ         | l <sub>t</sub> = 25.0 mm ± 2.0 mm | SPQ |
| <b>PITCH = 27.5 mm ± 0.4 mm; d<sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 20 %</b> |                    |                                 |                            |  |                                  |             |                                   |     |
| 0.47  | 9.0 x 19.0 x 31.5  | 5.5                             | 44731MKP2T0                | 44731MKM2T0                                | 100                              | 44731MKI2B0 | 150                               |     |
| 0.68  |                    |                                 | 46831MKP2T0                | 46831MKM2T0                                |                                  | 46831MKI2B0 |                                   |     |
| 1.0   |                    |                                 | 51031MKP2T0                | 51031MKM2T0                                |                                  | 51031MKI2B0 |                                   |     |
| 1.5   | 11.0 x 21.0 x 31.0 | 7.4                             | 51531MKP2T0                | 51531MKM2T0                                | 100                              | 51531MKI2B0 | 125                               |     |
| 2.2   | 13.0 x 23.0 x 31.0 | 9.2                             | 52231MKP2T0                | 52231MKM2T0                                | 100                              | 52231MKI2B0 | 125                               |     |
| 3.3   | 18.0 x 28.0 x 31.5 | 12.3                            | 53331MKP2T0                | 53331MKM2T0                                | 100                              | 53331MKI2B0 | 100                               |     |
| 4.7   | 21.0 x 31.0 x 31.0 | 16.1                            | 54731MKP2T0                | 54731MKM2T0                                | 50                               | 54731MKI2B0 | 75                                |     |
| 6.8   | 20.0 x 35.0 x 31.5 | 17.5                            | 56831MKP2T0                | 56831MKM2T0                                | 70                               | 56831MKI2B0 | 150                               |     |
| <b>PITCH = 27.5 mm ± 0.4 mm; d<sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 10 %</b> |                    |                                 |                            |  |                                  |             |                                   |     |
| 0.39  | 9.0 x 19.0 x 31.5  | 5.5                             | 43931KKP2T0                | 43931KKM2T0                                | 100                              | 43931KKI2B0 | 150                               |     |
| 0.47  |                    |                                 | 44731KKP2T0                | 44731KKM2T0                                |                                  | 44731KKI2B0 |                                   |     |
| 0.56  |                    |                                 | 45631KKP2T0                | 45631KKM2T0                                |                                  | 45631KKI2B0 |                                   |     |
| 0.68  |                    |                                 | 46831KKP2T0                | 46831KKM2T0                                |                                  | 46831KKI2B0 |                                   |     |
| 0.82  |                    |                                 | 48231KKP2T0                | 48231KKM2T0                                |                                  | 48231KKI2B0 |                                   |     |
| 1.0   | 11.0 x 21.0 x 31.0 | 7.4                             | 51031KKP2T0                | 51031KKM2T0                                | 100                              | 51031KKI2B0 | 125                               |     |
| 1.2   |                    |                                 | 51231KKP2T0                | 51231KKM2T0                                |                                  | 51231KKI2B0 |                                   |     |
| 1.5   |                    |                                 | 51531KKP2T0                | 51531KKM2T0                                |                                  | 51531KKI2B0 |                                   |     |
| 1.8   | 13.0 x 23.0 x 31.0 | 9.2                             | 51831KKP2T0                | 51831KKM2T0                                | 100                              | 51831KKI2B0 | 125                               |     |
| 2.2   |                    |                                 | 52231KKP2T0                | 52231KKM2T0                                |                                  | 52231KKI2B0 |                                   |     |
| 2.7   | 15.0 x 25.0 x 31.5 | 12.3                            | 52731KKP2T0                | 52731KKM2T0                                | 100                              | 52731KKI2B0 | 125                               |     |
| 3.3   | 18.0 x 28.0 x 31.5 | 16.1                            | 53331KKP2T0                | 53331KKM2T0                                | 100                              | 53331KKI2B0 | 100                               |     |
| 3.9   | 21.0 x 31.0 x 31.0 | 20.3                            | 53931KKP2T0                | 53931KKM2T0                                | 50                               | 53931KKI2B0 | 75                                |     |
| 4.7   |                    |                                 | 54731KKP2T0                | 54731KKM2T0                                |                                  | 54731KKI2B0 |                                   |     |
| 5.6   | 20.0 x 35.0 x 31.5 | 17                              | 55631KKP2T0                | 55631KKM2T0                                | 70                               | 55631KKI2B0 | 150                               |     |
| <b>PITCH = 27.5 mm ± 0.4 mm; d<sub>t</sub> = 0.80 mm ± 0.08 mm; C-TOL. = ± 5 %</b>  |                    |                                 |                            |  |                                  |             |                                   |     |
| 0.39  | 9.0 x 19.0 x 31.5  | 5.5                             | 43931JKP2T0                | 43931JKM2T0                                | 100                              | 43931JKI2B0 | 150                               |     |
| 0.47  |                    |                                 | 44731JKP2T0                | 44731JKM2T0                                |                                  | 44731JKI2B0 |                                   |     |
| 0.56  |                    |                                 | 45631JKP2T0                | 45631JKM2T0                                |                                  | 45631JKI2B0 |                                   |     |
| 0.68  |                    |                                 | 46831JKP2T0                | 46831JKM2T0                                |                                  | 46831JKI2B0 |                                   |     |
| 0.82  |                    |                                 | 48231JKP2T0                | 48231JKM2T0                                |                                  | 48231JKI2B0 |                                   |     |
| 1.0   | 11.0 x 21.0 x 31.0 | 7.4                             | 51031JKP2T0                | 51031JKM2T0                                | 100                              | 51031JKI2B0 | 125                               |     |
| 1.2   |                    |                                 | 51231JKP2T0                | 51231JKM2T0                                |                                  | 51231JKI2B0 |                                   |     |
| 1.5   |                    |                                 | 51531JKP2T0                | 51531JKM2T0                                |                                  | 51531JKI2B0 |                                   |     |
| 1.8   | 13.0 x 23.0 x 31.0 | 9.2                             | 51831JKP2T0                | 51831JKM2T0                                | 100                              | 51831JKI2B0 | 125                               |     |
| 2.2   |                    |                                 | 52231JKP2T0                | 52231JKM2T0                                |                                  | 52231JKI2B0 |                                   |     |
| 2.7   | 15.0 x 25.0 x 31.5 | 12.3                            | 52731JKP2T0                | 52731JKM2T0                                | 100                              | 52731JKI2B0 | 125                               |     |
| 3.3   | 18.0 x 28.0 x 31.5 | 16.1                            | 53331JKP2T0                | 53331JKM2T0                                | 100                              | 53331JKI2B0 | 100                               |     |
| 3.9   | 21.0 x 31.0 x 31.0 | 18.3                            | 53931JKP2T0                | 53931JKM2T0                                | 50                               | 53931JKI2B0 | 75                                |     |
| 4.7   |                    |                                 | 54731JKP2T0                | 54731JKM2T0                                |                                  | 54731JKI2B0 |                                   |     |
| 5.6   | 20.0 x 35.0 x 31.5 | 19                              | 55631JKP2T0                | 55631JKM2T0                                | 70                               | 55631JKI2B0 | 150                               |     |

Notes

- SPQ = Standard Packing Quantity
- (1) Weight for short lead product only



| ELECTRICAL DATA AND ORDERING CODE - PITCH 37.5 mm/PITCH 52.5 mm (two pin version)  |                    |                                 |                            |  |             |                                   |     |
|--|--------------------|---------------------------------|----------------------------|--|-------------|-----------------------------------|-----|
| U <sub>RAC</sub><br>(V)  | CAP.<br>(μF)       | DIMENSIONS<br>w x h x l<br>(mm) | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER F339MX2 ..... AND PACKAGING |             |                                   |     |
|  |                    |                                 |                            | LOOSE IN BOX                               |             |                                   |     |
|  |                    |                                 |                            | SHORT LEADS                                |             | LONG LEADS                        |     |
|  |                    |                                 |                            | l <sub>t</sub> = 5.0 mm ± 1.0 mm           | SPQ         | l <sub>t</sub> = 25.0 mm ± 2.0 mm | SPQ |
| <b>PITCH = 37.5 mm ± 0.5 mm; d<sub>t</sub> = 1.0 mm ± 0.1 mm; C-TOL. = ± 20 %</b>  |                    |                                 |                            |  |             |                                   |     |
| 3.3  | 12.5 x 22.5 x 41.5 | 11.5                            | 53331MPM2T0                | 90   | 53331MPI2T0 | 200                               |     |
| 4.7  | 14.5 x 24.5 x 41.5 | 14.5                            | 54731MPM2T0                | 80   | 54731MPI2T0 | 175                               |     |
| 6.8  | 18.0 x 32.5 x 41.5 | 19.5                            | 56831MPM2T0                | 60   | 56831MPI2T0 | 125                               |     |
| 10   | 18.5 x 35.5 x 43.0 | 30.0                            | 61031MPM2T0                | 105  | 61031MPI2T0 | 105                               |     |
| 15   | 24.0 x 44.0 x 42.0 | 48.0                            | 61531MPM2T0                | 77   | 61531MPI2T0 | 77                                |     |
| 20   | 30.0 x 45.0 x 42.0 | 64.0                            | 62031MPM2T0                | 63   | 62031MPI2T0 | 63                                |     |
| <b>PITCH = 37.5 mm ± 0.5 mm; d<sub>t</sub> = 1.0 mm ± 0.1 mm; C-TOL. = ± 10 %</b>  |                    |                                 |                            |  |             |                                   |     |
| 3.3  | 14.5 x 24.5 x 41.5 | 15.5                            | 53331KPM2T0                | 80   | 53331KPI2T0 | 175                               |     |
| 3.9  | 16.0 x 28.5 x 41.5 | 19.0                            | 53931KPM2T0                | 70   | 53931KPI2T0 | 150                               |     |
| 4.7  |                    |                                 | 54731KPM2T0                |  | 54731KPI2T0 |                                   |     |
| 5.6  | 18.0 x 32.5 x 41.5 | 25.5                            | 55631KPM2T0                | 60   | 55631KPI2T0 | 125                               |     |
| 6.8  |                    |                                 | 56831KPM2T0                |  | 56831KPI2T0 |                                   |     |
| 8.2  | 18.5 x 35.5 x 43.0 | 30.0                            | 58231KPM2T0                | 105  | 58231KPI2T0 | 105                               |     |
| 10   | 21.5 x 38.5 x 43.0 | 37.5                            | 61031KPM2T0                | 91   | 61031KPI2T0 | 91                                |     |
| 15   | 30.0 x 45.0 x 42.0 | 67.0                            | 61531KPM2T0                | 63   | 61531KPI2T0 | 63                                |     |
| <b>PITCH = 37.5 mm ± 0.5 mm; d<sub>t</sub> = 1.0 mm ± 0.1 mm; C-TOL. = ± 5 %</b>   |                    |                                 |                            |  |             |                                   |     |
| 3.3  | 14.5 x 24.5 x 41.5 | 15.5                            | 53331JPM2T0                | 80   | 53331JPI2T0 | 175                               |     |
| 3.9  | 16.0 x 28.5 x 41.5 | 19.0                            | 53931JPM2T0                | 70   | 53931JPI2T0 | 150                               |     |
| 4.7  |                    |                                 | 54731JPM2T0                |  | 54731JPI2T0 |                                   |     |
| 5.6  | 18.0 x 32.5 x 41.5 | 25.5                            | 55631JPM2T0                | 60   | 55631JPI2T0 | 125                               |     |
| 6.8  |                    |                                 | 56831JPM2T0                |  | 56831JPI2T0 |                                   |     |
| 8.2  | 18.5 x 35.5 x 43.0 | 30.0                            | 58231JPM2T0                | 105  | 58231JPI2T0 | 105                               |     |
| 10   | 21.5 x 38.5 x 43.0 | 37.5                            | 61031JPM2T0                | 91   | 61031JPI2T0 | 91                                |     |
| 15   | 30.0 x 45.0 x 42.0 | 67.0                            | 61531JPM2T0                | 63   | 61531JPI2T0 | 63                                |     |
| <b>PITCH = 52.5 mm ± 0.5 mm; d<sub>t</sub> = 1.2 mm ± 0.12 mm; C-TOL. = ± 20 %</b> |                    |                                 |                            |  |             |                                   |     |
| 20   | 25.0 x 45.0 x 57.5 | 69.0                            | 62031MYM2T0                | 55   | 62031MYI2T0 | 55                                |     |
| 25   |                    | 63.5                            | 62531MYM2T0                |  | 62531MYI2T0 |                                   |     |
| 30   | 30.0 x 45.0 x 57.5 | 85.0                            | 63031MYM2T0                | 45   | 63031MYI2T0 | 45                                |     |
| 35   | 35.0 x 50.0 x 57.5 | 105.0                           | 63531MYM2T0                | 40   | 63531MYI2T0 | 40                                |     |
| 40   |                    |                                 | 64031MYM2T0                |  | 64031MYI2T0 |                                   |     |
| <b>PITCH = 52.5 mm ± 0.5 mm; d<sub>t</sub> = 1.2 mm ± 0.12 mm; C-TOL. = ± 10 %</b> |                    |                                 |                            |  |             |                                   |     |
| 20   | 25.0 x 45.0 x 57.5 | 65.5                            | 62031KYM2T0                | 55   | 62031KYI2T0 | 55                                |     |
| 25   | 30.0 x 45.0 x 57.5 | 86.5                            | 62531KYM2T0                | 45   | 62531KYI2T0 | 45                                |     |
| 30   | 35.0 x 50.0 x 57.5 | 105.0                           | 63031KYM2T0                | 40   | 63031KYI2T0 | 40                                |     |
| 35   |                    |                                 | 63531KYM2T0                |  | 63531KYI2T0 |                                   |     |
| <b>PITCH = 52.5 mm ± 0.5 mm; d<sub>t</sub> = 1.2 mm ± 0.12 mm; C-TOL. = ± 5 %</b>  |                    |                                 |                            |  |             |                                   |     |
| 20   | 25.0 x 45.0 x 57.5 | 65.5                            | 62031JYM2T0                | 55   | 62031JYI2T0 | 55                                |     |
| 25   | 30.0 x 45.0 x 57.5 | 86.5                            | 62531JYM2T0                | 45   | 62531JYI2T0 | 45                                |     |
| 30   | 30.0 x 50.0 x 57.5 | 105.0                           | 63031JYM2T0                | 40   | 63031JYI2T0 | 40                                |     |

Notes  
 • SPQ = Standard Packing Quantity  
 (1) Weight for short lead product only



| <b>ELECTRICAL DATA AND ORDERING CODE - PITCH 37.5 mm/PITCH 52.5 mm (four pin version)</b>  |                    |                                 |                            |  |             |                                   |     |
|--|--------------------|---------------------------------|----------------------------|--|-------------|-----------------------------------|-----|
| U <sub>RAC</sub><br>(V)  | CAP.<br>(μF)       | DIMENSIONS<br>w x h x l<br>(mm) | MASS<br>(g) <sup>(1)</sup> | CATALOG NUMBER F339MX2 ..... AND PACKAGING |             |                                   |     |
|  |                    |                                 |                            | LOOSE IN BOX                               |             |                                   |     |
|  |                    |                                 |                            | SHORT LEADS                                |             | LONG LEADS                        |     |
|  |                    |                                 |                            | l <sub>t</sub> = 5.0 mm ± 1.0 mm           | SPQ         | l <sub>t</sub> = 25.0 mm ± 2.0 mm | SPQ |
| <b>PITCH P<sub>1</sub> = 37.5 mm ± 0.5 mm; P<sub>2</sub> = 10.2 mm ± 0.5 mm; d<sub>t</sub> = 1.0 mm ± 0.1 mm; C-TOL. = ± 20 %</b>  |                    |                                 |                            |  |             |                                   |     |
| 10   | 18.5 x 35.5 x 43.0 | 30.0                            | 61031MPM4T0                | 105  | -           | -                                 | -   |
| 15   | 24.0 x 44.0 x 42.0 | 48.0                            | 61531MPM4T0                | 77   | -           | -                                 | -   |
| 20   | 30.0 x 45.0 x 42.0 | 64.0                            | 62031MPM4T0                | 63   | -           | -                                 | -   |
| <b>PITCH P<sub>1</sub> = 37.5 mm ± 0.5 mm; P<sub>2</sub> = 20.3 mm ± 0.5 mm; d<sub>t</sub> = 1.0 mm ± 0.1 mm; C-TOL. = ± 20 %</b>  |                    |                                 |                            |  |             |                                   |     |
| 20   | 30.0 x 45.0 x 42.0 | 64.0                            | 62031MPM5T0                | 63   | -           | -                                 | -   |
| <b>PITCH P<sub>1</sub> = 37.5 mm ± 0.5 mm; P<sub>2</sub> = 10.2 mm ± 0.5 mm; d<sub>t</sub> = 1.0 mm ± 0.1 mm; C-TOL. = ± 10 %</b>  |                    |                                 |                            |  |             |                                   |     |
| 10   | 21.5 x 38.5 x 43.0 | 37.5                            | 61031KPM4T0                | 91   | -           | -                                 | -   |
| 15   | 30.0 x 45.0 x 42.0 | 67.0                            | 61531KPM4T0                | 63   | -           | -                                 | -   |
| <b>PITCH P<sub>1</sub> = 37.5 mm ± 0.5 mm; P<sub>2</sub> = 20.3 mm ± 0.5 mm; d<sub>t</sub> = 1.0 mm ± 0.1 mm; C-TOL. = ± 10 %</b>  |                    |                                 |                            |  |             |                                   |     |
| 15   | 30.0 x 45.0 x 42.0 | 67.0                            | 61531KPM5T0                | 63   | -           | -                                 | -   |
| <b>PITCH P<sub>1</sub> = 37.5 mm ± 0.5 mm; P<sub>2</sub> = 10.2 mm ± 0.5 mm; d<sub>t</sub> = 1.0 mm ± 0.1 mm; C-TOL. = ± 5 %</b>   |                    |                                 |                            |  |             |                                   |     |
| 10   | 21.5 x 38.5 x 43.0 | 37.5                            | 61031JPM4T0                | 91   | -           | -                                 | -   |
| 15   | 30.0 x 45.0 x 42.0 | 67.0                            | 61531JPM4T0                | 63   | -           | -                                 | -   |
| <b>PITCH P<sub>1</sub> = 37.5 mm ± 0.5 mm; P<sub>2</sub> = 20.3 mm ± 0.5 mm; d<sub>t</sub> = 1.0 mm ± 0.1 mm; C-TOL. = ± 5 %</b>   |                    |                                 |                            |  |             |                                   |     |
| 15   | 30.0 x 45.0 x 42.0 | 67.0                            | 61531JPM5T0                | 63   | -           | -                                 | -   |
| <b>PITCH P<sub>1</sub> = 52.5 mm ± 0.5 mm; P<sub>2</sub> = 10.2 mm ± 0.5 mm; d<sub>t</sub> = 1.2 mm ± 0.12 mm; C-TOL. = ± 20 %</b> |                    |                                 |                            |  |             |                                   |     |
| 310  | 25                 | 25.0 x 45.0 x 57.5              | 69.0                       | 62031MYM4T0                                | 55          | 62031MYI4T0                       | 55  |
|  |                    |                                 | 63.5                       | 62531MYM4T0                                |             | 62531MYI4T0                       |     |
|  | 30                 | 30.0 x 45.0 x 57.5              | 85.0                       | 63031MYM4T0                                | 45          | 63031MYI4T0                       | 45  |
| <b>PITCH P<sub>1</sub> = 52.5 mm ± 0.5 mm; P<sub>2</sub> = 20.3 mm ± 0.5 mm; d<sub>t</sub> = 1.2 mm ± 0.12 mm; C-TOL. = ± 20 %</b> |                    |                                 |                            |  |             |                                   |     |
| 30   | 30.0 x 45.0 x 57.5 | 85.0                            | 63031MYM5T0                | 45   | 63031MYI5T0 | 45                                | 45  |
| 35   | 35.0 x 50.0 x 57.5 | 105.0                           | 63531MYM5T0                | 40   | 63531MYI5T0 | 40                                | 40  |
| 40   | 35.0 x 50.0 x 57.5 | 105.0                           | 64031MYM5T0                | 40   | 64031MYI5T0 | 40                                | 40  |
| <b>PITCH P<sub>1</sub> = 52.5 mm ± 0.5 mm; P<sub>2</sub> = 10.2 mm ± 0.5 mm; d<sub>t</sub> = 1.2 mm ± 0.12 mm; C-TOL. = ± 10 %</b> |                    |                                 |                            |  |             |                                   |     |
| 20   | 25.0 x 45.0 x 57.5 | 65.5                            | 62031KYM4T0                | 55   | 62031KYI4T0 | 55                                | 55  |
| 25   | 30.0 x 45.0 x 57.5 | 86.5                            | 62531KYM4T0                | 45   | 62531KYI4T0 | 45                                | 45  |
| <b>PITCH P<sub>1</sub> = 52.5 mm ± 0.5 mm; P<sub>2</sub> = 20.3 mm ± 0.5 mm; d<sub>t</sub> = 1.2 mm ± 0.12 mm; C-TOL. = ± 10 %</b> |                    |                                 |                            |  |             |                                   |     |
| 25   | 30.0 x 45.0 x 57.5 | 86.5                            | 62531KYM5T0                | 45   | 62531KYI5T0 | 45                                | 45  |
| 30   | 35.0 x 50.0 x 57.5 | 105.0                           | 63031KYM5T0                | 40   | 63031KYI5T0 | 40                                | 40  |
|  |                    |                                 | 63531KYM5T0                |  | 63531KYI5T0 |                                   |     |
| <b>PITCH P<sub>1</sub> = 52.5 mm ± 0.5 mm; P<sub>2</sub> = 10.2 mm ± 0.5 mm; d<sub>t</sub> = 1.2 mm ± 0.12 mm; C-TOL. = ± 5 %</b>  |                    |                                 |                            |  |             |                                   |     |
| 20   | 25.0 x 45.0 x 57.5 | 65.5                            | 62031JYM4T0                | 55   | 62031JYI4T0 | 55                                | 55  |
| 25   | 30.0 x 45.0 x 57.5 | 86.5                            | 62531JYM4T0                | 45   | 62531JYI4T0 | 45                                | 45  |
| <b>PITCH P<sub>1</sub> = 52.5 mm ± 0.5 mm; P<sub>2</sub> = 20.3 mm ± 0.5 mm; d<sub>t</sub> = 1.2 mm ± 0.12 mm; C-TOL. = ± 5 %</b>  |                    |                                 |                            |  |             |                                   |     |
| 25   | 30.0 x 45.0 x 57.5 | 86.5                            | 62531JYM5T0                | 45   | 62531JYI5T0 | 45                                | 45  |
| 30   | 35.0 x 50.0 x 57.5 | 105.0                           | 63031JYM5T0                | 40   | 63031JYI5T0 | 40                                | 40  |

**Notes**

- SPQ = Standard Packing Quantity
- <sup>(1)</sup> Weight for short lead product only

| APPROVALS  |                     |               |              |  |
|--|---------------------|---------------|--------------|--|
| SAFETY APPROVALS X2  | VOLTAGE             | VALUE         | FILE NUMBERS | LINK   |
| EN 60384-14 (ENEC)<br>(= IEC 60384-14 ed-3)  | 310 V <sub>AC</sub> | 1 nF to 40 μF | 40028493     | <a href="http://www.vishay.com/doc?28215">www.vishay.com/doc?28215</a> |
| UL 60384-14  | 310 V <sub>AC</sub> | 1 nF to 40 μF | E354331      | <a href="http://www.vishay.com/doc?28216">www.vishay.com/doc?28216</a> |
| CSA-E384-14  | 310 V <sub>AC</sub> | 1 nF to 40 μF | E354331      |  |
| CQC  | 310 V <sub>AC</sub> | 1 nF to 40 μF | 10001041904  | <a href="http://www.vishay.com/doc?28217">www.vishay.com/doc?28217</a> |
| CB - Test certificate  | 310 V <sub>AC</sub> | 1 nF to 40 μF | DE-41725     | <a href="http://www.vishay.com/doc?28214">www.vishay.com/doc?28214</a> |
| The ENEC-approval together with the CB-Certificate replace all national marks of the following countries (they have already signed the ENEC-Agreement): Austria; Belgium; Czech.Republic; Denmark; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Luxembourg; Netherlands; Norway; Portugal; Slovenian; Spain; Sweden; Switzerland and United Kingdom. |                     |               |              |  |
|  |                     |               |              |  |

## MOUNTING

### Normal Use

The capacitors are designed for mounting on printed-circuit boards. The capacitors packed in bandoliers are designed for mounting in printed circuit boards by means of automatic insertion machines.

For detailed tape specifications refer to Packaging Information: [www.vishay.com/doc?28139](http://www.vishay.com/doc?28139)

### Specific Method of Mounting to Withstand Vibration and Shock

In order to withstand vibration and shock tests, it must be ensured that the stand-off pips are in good contact with the printed-circuit board:

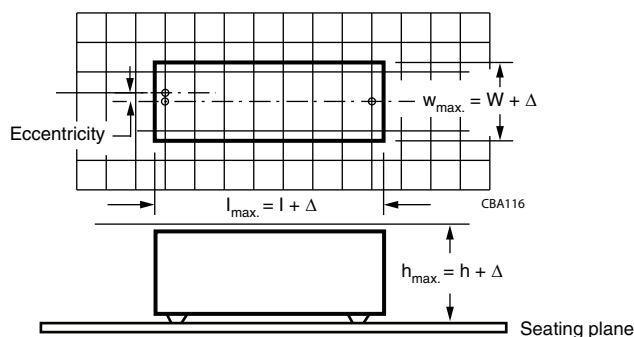
- For pitches  $\leq 15$  mm capacitors shall be mechanically fixed by the leads
- For larger pitches the capacitors shall be mounted in the same way and the body clamped in addition

### Space Requirements on Printed Circuit-Board

The maximum space for length ( $l_{max.}$ ), width ( $W_{max.}$ ), and height ( $h_{max.}$ ) of film capacitors to take in account on the printed circuit board is shown in the drawings:

- For products with pitch  $\leq 15$  mm,  $\Delta w = \Delta l = 0.3$  mm and  $\Delta h = 0.1$  mm
- For products with  $15 \text{ mm} < \text{pitch} \leq 27.5$  mm,  $\Delta w = \Delta l = 0.5$  mm and  $\Delta h = 0.1$  mm
- For products with pitch = 37.5 mm,  $\Delta w = \Delta l = 0.7$  mm;  $\Delta h = 0.5$  mm
- For products with pitch = 52.5 mm,  $\Delta w = \Delta l = 1.0$  mm and  $\Delta h = 0.5$  mm

Eccentricity defined as in drawing. The maximum eccentricity is smaller than or equal to the lead diameter of the product concerned.



## SOLDERING CONDITIONS

For general soldering conditions and wave soldering profile, we refer to the application note: "Soldering Guidelines for Film Capacitors": [www.vishay.com/doc?28171](http://www.vishay.com/doc?28171)

### Storage Temperature

- $T_{stg} = -25$  °C to  $+35$  °C with RH maximum 75 % without condensation

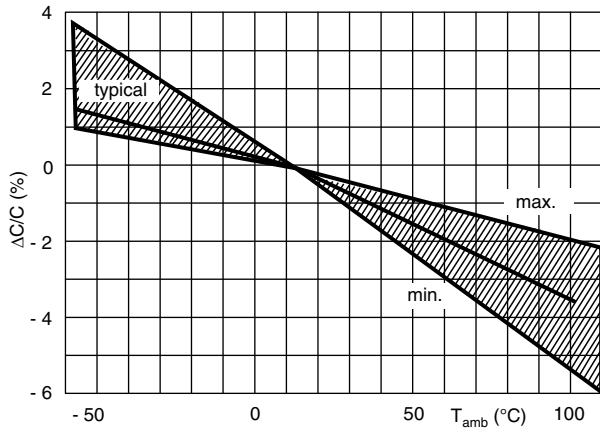
### Ratings and Characteristics Reference Conditions

Unless otherwise specified, all electrical values apply to an ambient free air temperature of  $23$  °C  $\pm 1$  °C, an atmospheric pressure of 86 kPa to 106 kPa and a relative humidity of  $50$  %  $\pm 2$  %.

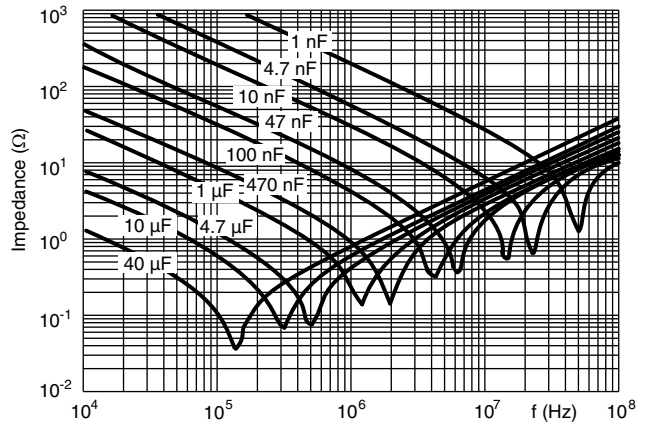
For reference testing, a conditioning period shall be applied over  $96$  h  $\pm 4$  h by heating the products in a circulating air oven at the rated temperature and a relative humidity not exceeding 20 %.



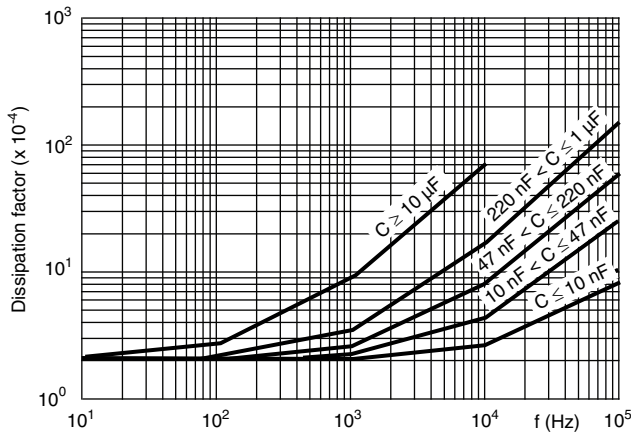
CHARACTERISTICS



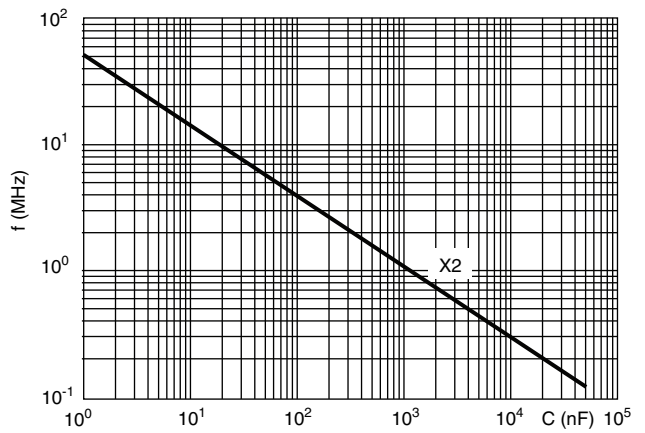
Capacitance as a function of ambient temperature (typical curve)



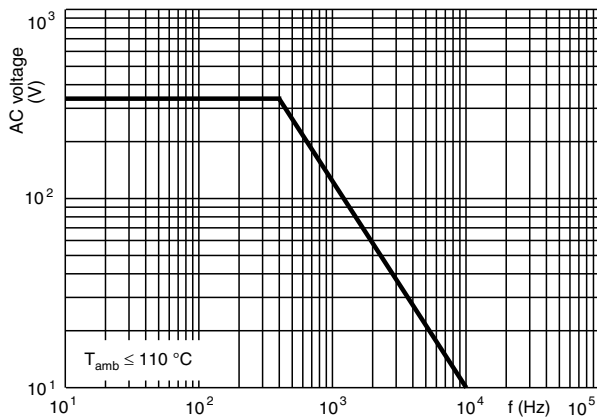
Impedance as a function of frequency (typical curve)



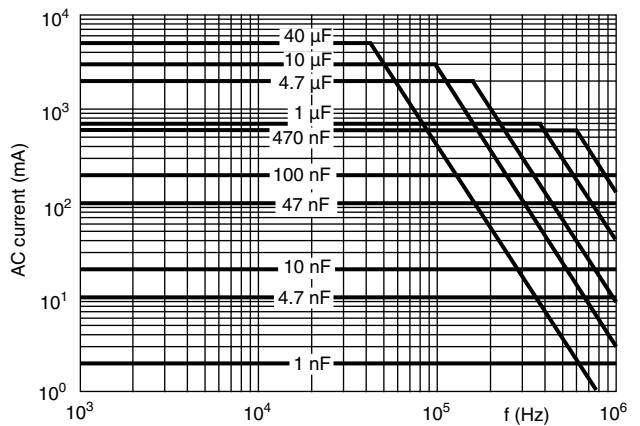
Tangent of loss angle as a function of frequency (typical curve)



Resonant frequency as a function of capacitance (typical curve)



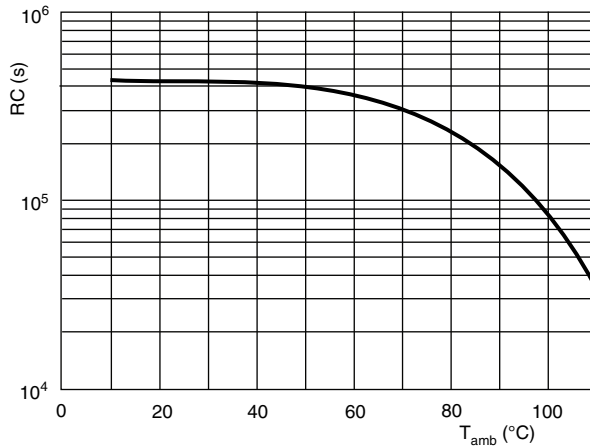
Max. RMS voltage as a function of frequency



Max. RMS current as a function of frequency



**CHARACTERISTICS**



Insulation resistance as a function of ambient temperature (typical curve)

**APPLICATION NOTES**

- For X2 electromagnetic interference suppression in **standard across the line applications** (50 Hz/60 Hz) with a maximum mains voltage of 310 V<sub>AC</sub>.
- For series impedance applications we refer to application note [www.vishay.com/doc?28153](http://www.vishay.com/doc?28153)
- For capacitors connected in parallel, normally the proof voltage and possibly the rated voltage must be reduced. For information depending of the capacitance value and the number of parallel connections contact: [rfi@vishay.com](mailto:rfi@vishay.com)
- These capacitors are not intended for continuous pulse application. For these situations capacitors of the AC and pulse programs must be used.
- The maximum ambient temperature must not exceed 110 °C.
- Rated voltage pulse slope:  
If the pulse voltage is lower than the rated voltage, the values of the specific reference data can be multiplied by 435 V<sub>DC</sub> and divided by the applied voltage.

**INSPECTION REQUIREMENTS**

**General Notes**

Sub-clause numbers of tests and performance requirements refer to the “Sectional Specification, IEC 60384-14 and Specific Reference Data.

| GROUP C INSPECTION REQUIREMENTS                     |  |   |
|---|--|---|
| SUB-CLAUSE NUMBER AND TEST                          | CONDITIONS   | PERFORMANCE REQUIREMENTS                                      |
| <b>SUB-GROUP C1A PART OF SAMPLE OF SUB-GROUP C1</b> |  |   |
| 4.1 Dimensions (detail)<br><br>Initial measurements | Capacitance<br>Tangent of loss angle:<br>For C ≤ 1 μF at 10 kHz or<br>for C > 1 μF at 1 kHz                                  | As specified in chapters “General data” of this specification |
| 4.3 Robustness of terminations                      | Tensile: Load 10 N; 10 s<br>Bending: Load 5 N; 4 x 90°   | No visible damage   |
| 4.4 Resistance to soldering heat                    | No pre-drying<br>Method: 1A<br>Solder bath: 280 °C ± 5 °C<br>Duration: 10 s  |   |
| 4.19 Component solvent resistance                   | Isopropylalcohol at room temperature<br>Method: 2<br>Immersion time: 5 min ± 0.5 min<br>Recovery time:<br>Min. 1 h, max. 2 h |   |



| GROUP C INSPECTION REQUIREMENTS                     |  |  |
|---|--|--|
| SUB-CLAUSE NUMBER AND TEST                          | CONDITIONS   | PERFORMANCE REQUIREMENTS   |
| <b>SUB-GROUP C1A PART OF SAMPLE OF SUB-GROUP C1</b> |  |  |
| 4.4.2 Final measurements                            | Visual examination<br><br>Capacitance<br><br>Tangent of loss angle<br><br>Insulation resistance  | No visible damage<br>Legible marking<br><br>$ \Delta C/C  \leq 5\%$ of the value measured initially<br><br>Increase of $\tan \delta$ :<br>$\leq 0.008$ for: $C \leq 1 \mu\text{F}$ or<br>$\leq 0.005$ for: $C > 1 \mu\text{F}$<br>Compared to values measured initially<br><br>As specified in section "Insulation Resistance" of this specification |
| <b>SUB-GROUP C1B PART OF SAMPLE OF SUB-GROUP C1</b> |  |  |
| Initial measurements                                | Capacitance<br>Tangent of loss angle:<br>For $C \leq 1 \mu\text{F}$ at 10 kHz or<br>for $C > 1 \mu\text{F}$ at 1 kHz   |  |
| 4.20 Solvent resistance of the marking              | Isopropylalcohol at room temperature<br>Method: 1<br>Rubbing material: Cotton wool<br>Immersion time: 5 min $\pm$ 0.5 min  | No visible damage<br>Legible marking   |
| 4.6 Rapid change of temperature                     | $\theta A = -55^\circ\text{C}$<br>$\theta B = +125^\circ\text{C}$  |  |
| 4.6.1 Inspection                                    | 5 cycles<br>Duration $t = 30$ min  | No visible damage  |
| 4.7 Vibration                                       | Visual examination<br>Mounting: See section "Mounting" of this specification<br>Procedure B4<br>Frequency range: 10 Hz to 55 Hz<br>Amplitude: 0.75 mm or<br>Acceleration 98 m/s <sup>2</sup><br>(whichever is less severe)<br>Total duration 6 h |  |
| 4.7.2 Final inspection                              | Visual examination   | No visible damage  |
| 4.9 Shock   | Mounting: See section "Mounting" for more information<br>Pulse shape: Half sine<br>Acceleration: 490 m/s <sup>2</sup><br>Duration of pulse: 11 ms  |  |
| 4.9.2 Final measurements                            | Visual examination<br><br>Capacitance<br><br>Tangent of loss angle<br><br>Insulation resistance  | No visible damage<br><br>$ \Delta C/C  \leq 5\%$ of the value measured initially.<br><br>Increase of $\tan \delta$ :<br>$\leq 0.008$ for: $C \leq 1 \mu\text{F}$ or<br>$\leq 0.005$ for: $C > 1 \mu\text{F}$<br>Compared to values measured initially<br><br>As specified in section "Insulation Resistance" of this specification                   |

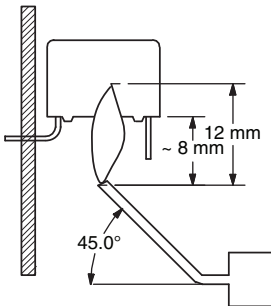




| GROUP C INSPECTION REQUIREMENTS  |   |   |
|--|---|---|
| SUB-CLAUSE NUMBER AND TEST   | CONDITIONS  | PERFORMANCE REQUIREMENTS  |
| <b>SUB-GROUP C1<br/>COMBINED SAMPLE OF SPECIMENS OF<br/>SUB-GROUPS C1A AND C1B</b> |   |   |
| 4.11 Climatic sequence   |   |   |
| 4.11.1 Initial measurements  | Capacitance<br>Measured in 4.4.2 and 4.9.2<br>Tangent of loss angle:<br>Measured initially in C1A and C1B   |   |
| 4.11.2 Dry heat  | Temperature: 110 °C<br>Duration: 16 h   |   |
| 4.11.3 Damp heat cyclic<br>Test Db<br>First cycle                                  |   |   |
| 4.11.4 Cold  | Temperature: - 55 °C<br>Duration: 2 h   |   |
| 4.11.5 Damp heat cyclic<br>Test Db<br>Remaining cycles                             |   |   |
| 4.11.6 Final measurements  | Visual examination<br><br>Capacitance<br><br>Tangent of loss angle<br><br>Voltage proof<br>1350 V <sub>DC</sub> ; 1 min between terminations<br><br>Insulation resistance | No visible damage<br><br>Legible marking<br>$ \Delta C/C  \leq 5\%$ of the value measured in 4.11.1.<br><br>Increase of tan $\delta$ :<br>$\leq 0.008$ for: $C \leq 1 \mu\text{F}$ or<br>$\leq 0.005$ for: $C > 1 \mu\text{F}$<br>Compared to values measured in 4.11.1.<br><br>No permanent breakdown or flash-over<br><br>$\geq 50\%$ of values specified in section<br>"Insulation Resistance" of this specification |
| <b>SUB-GROUP C2</b>  |   |   |
| 4.12 Damp heat steady state  | 56 days; 40 °C; 90 % to 95 % RH<br>no load  |   |
| 4.12.1 Initial measurements  | Capacitance<br>Tangent of loss angle: at 1 kHz  |   |
| 4.12.3 Final measurements  | Visual examination<br><br>Capacitance<br><br>Tangent of loss angle<br><br>Voltage proof<br>1350 V <sub>DC</sub> ; 1 min between terminations<br><br>Insulation resistance | No visible damage<br>Legible marking<br><br>$ \Delta C/C  \leq 5\%$ of the value measured in 4.12.1.<br><br>Increase of tan $\delta$ :<br>$\leq 0.008$ for: $C \leq 1 \mu\text{F}$ or<br>$\leq 0.005$ for: $C > 1 \mu\text{F}$<br>Compared to values measured in 4.12.1.<br><br>No permanent breakdown or flash-over<br><br>$\geq 50\%$ of values specified in section<br>"Insulation Resistance" of this specification |



| GROUP C INSPECTION REQUIREMENTS |   |   |
|---------------------------------|---|---|
| SUB-CLAUSE NUMBER AND TEST      | CONDITIONS  | PERFORMANCE REQUIREMENTS  |
| <b>SUB-GROUP C3</b>             |   |   |
| 4.13.1 Initial measurements     | Capacitance<br>Tangent of loss angle:<br>For $C \leq 1 \mu\text{F}$ at 10 kHz or<br>for $C > 1 \mu\text{F}$ at 1 kHz  |   |
| 4.13 Impulse voltage            | 3 successive impulses, full wave, peak voltage:<br>X2: 2.5 kV for $C \leq 1 \mu\text{F}$<br>X2: 2.5 kV/ $\sqrt{C}$ for $C > 1 \mu\text{F}$<br>Max. 24 pulses                        | No self healing breakdowns or flash-over  |
| 4.14 Endurance                  | Duration: 1000 h<br>$1.25 \times U_{\text{RAC}}$ at 110 °C<br>Once in every hour the voltage is increased to $1000 V_{\text{RMS}}$ for 0.1 s via resistor of $47 \Omega \pm 5 \%$   |   |
| 4.14.7 Final measurements       | Visual examination  | No visible damage<br>Legible marking  |
|                                 | Capacitance   | $ \Delta C/C  \leq 10 \%$ compared to values measured in 4.13.1.  |
|                                 | Tangent of loss angle   | Increase of $\tan \delta$ :<br>$\leq 0.008$ for: $C \leq 1 \mu\text{F}$ or<br>$\leq 0.005$ for: $C > 1 \mu\text{F}$<br>Compared to values measured in 4.13.1. |
|                                 | Voltage proof<br>1350 $V_{\text{DC}}$ ; 1 min between terminations<br>2120 $V_{\text{AC}}$ ; 1 min between terminations and case  | No permanent breakdown or flash-over  |
|                                 | Insulation resistance   | $\geq 50 \%$ of values specified in section "Insulation Resistance" of this specification   |
| <b>SUB-GROUP C4</b>             |   |   |
| 4.15 Charge and discharge       | 10 000 cycles<br>Charged to 435 $V_{\text{DC}}$<br>Discharge resistance:<br>$R = \frac{435 V_{\text{DC}}}{1.25 \times C (dU/dt)}$<br>$R = 2.2 \Omega$ for pitch 37.5 mm and 52.5 mm |   |
| 4.15.1 Initial measurements     | Capacitance<br>Tangent of loss angle:<br>For $C \leq 1 \mu\text{F}$ at 10 kHz or<br>for $C > 1 \mu\text{F}$ at 1 kHz  |   |
| 4.15.3 Final measurements       | Capacitance   | $ \Delta C/C  \leq 10 \%$ compared to values measured in 4.15.1.  |
|                                 | Tangent of loss angle   | Increase of $\tan \delta$ :<br>$\leq 0.008$ for: $C \leq 1 \mu\text{F}$ or<br>$\leq 0.005$ for: $C > 1 \mu\text{F}$<br>Compared to values measured in 4.15.1. |
|                                 | Insulation resistance   | $\geq 50 \%$ of values specified in section "Insulation Resistance" of this specification   |

| <b>GROUP C INSPECTION REQUIREMENTS</b> |   |  |
|--|---|--|
| <b>SUB-CLAUSE NUMBER AND TEST</b>      | <b>CONDITIONS</b>   | <b>PERFORMANCE REQUIREMENTS</b>  |
| <b>SUB-GROUP C5</b>                    |   |  |
| 4.16 Radio frequency characteristic    | Resonance frequency   | ≥ 0.9 times the value as specified in section "Resonant Frequency" of this specification   |
| <b>SUB-GROUP C6</b>                    |   |  |
| 4.17 Passive flammability<br>Class B   | Bore of gas jet: Ø 0.5 mm<br>Fuel: Butane<br>Test duration for actual volume V in mm <sup>3</sup> :<br>V ≤ 250: 10 s<br>250 < V ≤ 500: 20 s<br>500 < V ≤ 1750: 30 s<br>V > 1750: 60 s<br>One flame application<br> | After removing test flame from capacitor, the capacitor must not continue to burn for more than 10 s. No burning particle must drop from the sample. |
| <b>SUB-GROUP C7</b>                    |   |  |
| 4.18 Active flammability               | 20 cycles of 2.5 kV discharges on the test capacitor connected to U <sub>RAC</sub>  | The cheese cloth around the capacitors shall not burn with a flame.<br>No electrical measurements are required.                                      |



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