

## FEATURES

Small size – Safety Agency approved –  
Metalized Polypropylene

## APPLICATIONS

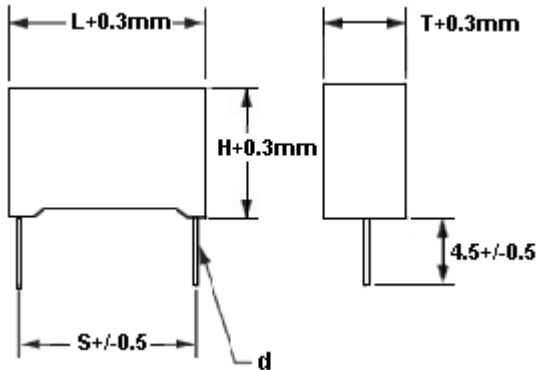
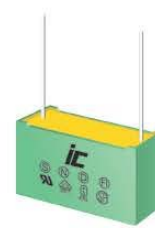
EMI filters – Across the line

|                                                                           |                                                                                                                                                                                   |                                                                                                                                                                                          |                                           |  |
|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|--|
| Operating Temperature Range                                               | -40°C to +110°C                                                                                                                                                                   |                                                                                                                                                                                          |                                           |  |
| Capacitance Tolerance                                                     | ±10% at 1 kHz, 20°C                                                                                                                                                               |                                                                                                                                                                                          |                                           |  |
| AC voltage<br>(50/60 Hz)                                                  | UL/CSA                                                                                                                                                                            | VDE                                                                                                                                                                                      | CQC                                       |  |
|                                                                           | 250/275/310                                                                                                                                                                       | 250/275/310                                                                                                                                                                              | 310                                       |  |
| Dissipation Factor<br>at 1 kHz and 20°C                                   | Tan δ                                                                                                                                                                             |                                                                                                                                                                                          |                                           |  |
|                                                                           | .1% Max                                                                                                                                                                           |                                                                                                                                                                                          |                                           |  |
| Insulation Resistance<br>@20°C (<70% RH)for 1 minute<br>at 100VDC applied | Capacitance                                                                                                                                                                       | Terminal to Terminal                                                                                                                                                                     | Terminal to Case                          |  |
|                                                                           | ≤0.33uF                                                                                                                                                                           | 15000 MΩ                                                                                                                                                                                 | >30000 MΩ at 100VDC<br>>5000 MΩ at 500VDC |  |
|                                                                           | >0.33uF                                                                                                                                                                           | 5000 MΩxuF                                                                                                                                                                               | >30000 MΩ at 100VDC<br>>5000 MΩ at 500VDC |  |
| Self Inductance                                                           | ≤1 nano-Henry per mm of lead spacing and lead length                                                                                                                              |                                                                                                                                                                                          |                                           |  |
| Dielectric Strength                                                       | Terminal to Terminal                                                                                                                                                              | C≤.0068uF, 1500 VAC or 2121 VDC applied for 60 seconds<br>C>.0068uF, 1768VDC or 1000 VAC applied for 60 seconds<br>Cut-off current: 2A ac or 10mAdc<br>Current limiting resistance: 1Ω/V |                                           |  |
|                                                                           | Terminal to case                                                                                                                                                                  | 2050VAC (50/60 Hz) applied between the terminals and case for 60 seconds and 20°C                                                                                                        |                                           |  |
| Life Expectancy                                                           | 1000 hours at 110°C at 125% of rated voltage with once every hour the voltage is increased to 1000 VAC for 0.1 seconds                                                            |                                                                                                                                                                                          |                                           |  |
|                                                                           | Capacitance change                                                                                                                                                                | ≤10% of initially measured value                                                                                                                                                         |                                           |  |
|                                                                           | Dissipation Factor                                                                                                                                                                | ≤1.0% at 1kHz                                                                                                                                                                            |                                           |  |
|                                                                           | Insulation Resistance                                                                                                                                                             | ≥100% of initially specified value (T-T)<br>≥3000 MΩ (Terminal to case)                                                                                                                  |                                           |  |
| Humidity test                                                             | 500 Hours at 90 to 95% RH, 40C and no voltage applied after which the following voltage will be applied for 1 minute to each capacitor.<br>C≤0.0068uF 1500VAC, C>0.0068uF 1000VAC |                                                                                                                                                                                          |                                           |  |
|                                                                           | Capacitance change                                                                                                                                                                | ≤10% of initially measured value                                                                                                                                                         |                                           |  |
|                                                                           | Dissipation Factor                                                                                                                                                                | ≤1.0% at 1kHz                                                                                                                                                                            |                                           |  |
|                                                                           | Insulation Resistance                                                                                                                                                             | ≥50% of initially specified value (T-T)<br>≥15000 MΩ (Terminal to Case)                                                                                                                  |                                           |  |
| Impulse voltage<br>(24 pulses)                                            | C≤ 1uF Vp=2.5kVDC<br>C> 1uF Vp=2.5kV √C                                                                                                                                           |                                                                                                                                                                                          |                                           |  |
| Capacitance temperature coefficient                                       | -200ppm/°C, ±100ppm/°C                                                                                                                                                            |                                                                                                                                                                                          |                                           |  |
| Construction                                                              | Metallized Polypropylene film                                                                                                                                                     |                                                                                                                                                                                          |                                           |  |
| Electrodes                                                                | Vacuum deposited Metal layers                                                                                                                                                     |                                                                                                                                                                                          |                                           |  |
| Coating                                                                   | Flame retardant Solvent resistant plastic case with epoxy end fill (UL94V-0)                                                                                                      |                                                                                                                                                                                          |                                           |  |
| Lead terminations                                                         | tinned copper clad steel leads                                                                                                                                                    |                                                                                                                                                                                          |                                           |  |

# MKP

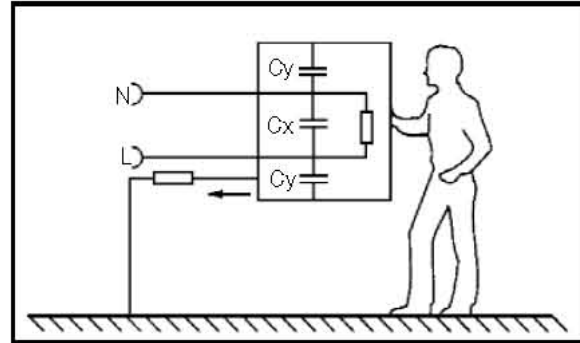
## Boxed Metallized Polypropylene Film Capacitors

Class X2 EMI/RFI



All dimensions in (mm)

\* 17mm lead length available upon request



X capacitors are used to suppress electrical noise by reducing the input impedance of the device incorporating the capacitor.

X capacitors are connected across the supply line where failure of the capacitor will not result in personal exposure to electrical shock.

X2 capacitors are to be used in applications where the peak voltage is  $\leq 1200V$ .

| Safety agency | Standard                                                                | Voltage     | Class | Certificate number |
|---------------|-------------------------------------------------------------------------|-------------|-------|--------------------|
| UL/CSA        | ANSI/UL 60384-14                                                        | 250/275/310 | FOWX2 | E317135            |
|               | CSA E60384-1                                                            | 250/275/310 | FOWX8 | E317135            |
| VDE/ENEC      | DIN EN 60384-14 (VDE 0565 (1-1), EN60384-14:2013-08, IEC60384-14 (ed 4) | 250/275/310 | X2    | 40040758           |
| CQC           | GB/T14472-2014 (.0022 to 5.6uF)                                         | 310         | X2    | CQC14001115428     |

**ic** ILLINOIS CAPACITOR, INC.

Your Global Source for World-Class Capacitors

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**North America**

Tel: 847.675.1760

sales@illcap.com

**Asia**

Tel: 852.2793 0931

sales@illcap.com.hk

# MKP

## Class X2

| Capacitance (μF) | IC PART NUMBER | dv/dt (v/μ sec.) | Dims LxHxT (mm) | S (MM) | d (MM) |
|------------------|----------------|------------------|-----------------|--------|--------|
| 0.0047           | 472MKP275KC    | 500              | 10x8x4          | 7.5    | 0.6    |
| 0.0047           | 472MKP275K     | 400              | 13x10x5         | 10     | 0.6    |
| 0.0056           | 562MKP275KC    | 500              | 10x8x4          | 7.5    | 0.6    |
| 0.0056           | 562MKP275KD    | 400              | 13x9x4          | 10     | 0.6    |
| 0.0068           | 682MKP275KC    | 500              | 10x8x4          | 7.5    | 0.6    |
| 0.0068           | 682MKP275K     | 400              | 13x9x4          | 10     | 0.6    |
| 0.0082           | 822MKP275KC    | 500              | 10x8x4          | 7.5    | 0.6    |
| 0.0082           | 822MKP275KD    | 400              | 13x9x4          | 10     | 0.6    |
| 0.01             | 103MKP275KE    | 300              | 18x8x4          | 15     | 0.6    |
| 0.01             | 103MKP275KC    | 500              | 10x8x4          | 7.5    | 0.6    |
| 0.01             | 103MKP275K     | 400              | 13x9x4          | 10     | 0.6    |
| 0.015            | 153MKP275K     | 400              | 13x9x4          | 10     | 0.6    |
| 0.015            | 153MKP275KC    | 500              | 10x8x4          | 7.5    | 0.6    |
| 0.015            | 153MKP275KE    | 300              | 18x8x4          | 15     | 0.8    |
| 0.022            | 223MKP275KC    | 500              | 10x9x4          | 7.5    | 0.6    |
| 0.022            | 223MKP275KCG5  | 500              | 10x8x4          | 7.5    | 0.6    |
| 0.022            | 223MKP275KB    | 300              | 18x9x4          | 15     | 0.6    |
| 0.022            | 223MKP275K     | 400              | 13x9x4          | 10     | 0.6    |
| 0.033            | 333MKP275K     | 400              | 13x9x4          | 10     | 0.6    |
| 0.033            | 333MKP275KC    | 500              | 10x9x5          | 7.5    | 0.6    |
| 0.033            | 333MKP275KCG4  | 500              | 10x10x5         | 7.5    | 0.6    |
| 0.033            | 333MKP275KE    | 300              | 18x9x4          | 15     | 0.8    |
| 0.047            | 473MKP275KD    | 400              | 13x9x4          | 10     | 0.6    |
| 0.047            | 473MKP275KC    | 500              | 10x10x5         | 7.5    | 0.6    |
| 0.047            | 473MKP275K     | 300              | 18x9x4          | 15     | 0.6    |
| 0.056            | 563MKP275KC    | 500              | 10x11x5         | 7.5    | 0.6    |
| 0.056            | 563MKP275KE    | 300              | 18x9x4          | 15     | 0.6    |
| 0.056            | 563MKP275KD    | 400              | 13x9.5x4.5      | 10     | 0.6    |
| 0.068            | 683MKP275KD    | 400              | 13x10x5         | 10     | 0.6    |
| 0.068            | 683MKP275KC    | 500              | 10x12x6         | 7.5    | 0.6    |
| 0.068            | 683MKP275K     | 300              | 18x10x4         | 15     | 0.6    |
| 0.082            | 823MKP275KC    | 500              | 10x12x6         | 7.5    | 0.6    |
| 0.082            | 823MKP275KD    | 400              | 13x11x5         | 10     | 0.6    |
| 0.082            | 823MKP275KE    | 300              | 18x10x5         | 15     | 0.8    |
| 0.1              | 104MKP275KG5   | 300              | 18x10.5x5       | 15     | 0.8    |
| 0.1              | 104MKP275KC    | 500              | 10x13x7         | 7.5    | 0.6    |
| 0.1              | 104MKP275KD    | 400              | 13x11x5         | 10     | 0.6    |
| 0.1              | 104MKP275K     | 300              | 18x11x5         | 15     | 0.8    |
| 0.12             | 124MKP275KE    | 300              | 18x10x5         | 15     | 0.8    |
| 0.12             | 124MKP275KD    | 400              | 13x12x6         | 10     | 0.6    |
| 0.15             | 154MKP275KD    | 400              | 13x12x7         | 10     | 0.6    |
| 0.15             | 154MKP275KA    | 350              | 15x11.5x6       | 12.5   | 0.8    |
| 0.15             | 154MKP275K     | 180              | 26x14.5x6       | 22.5   | 0.8    |
| 0.15             | 154MKP275KE    | 300              | 18x10.5x5       | 15     | 0.8    |
| 0.22             | 224MKP275KB    | 300              | 18x11.5x6       | 15     | 0.8    |
| 0.22             | 224MKP275K     | 180              | 26x14.5x6       | 22.5   | 0.8    |
| 0.22             | 224MKP275KA    | 350              | 15x12.5x7       | 12.5   | 0.8    |
| 0.22             | 224MKP275KD    | 400              | 13x14x8         | 10     | 0.6    |
| 0.22             | 224MKP275KBG4  | 300              | 18x13x7         | 15     | 0.8    |

| Capacitance (μF) | IC PART NUMBER | dv/dt (v/μ sec.) | Dims LxHxT (mm) | S (MM) | d (MM) |
|------------------|----------------|------------------|-----------------|--------|--------|
| 0.33             | 334MKP275KA    | 350              | 15x14x8.5       | 12.5   | 0.8    |
| 0.33             | 334MKP275K     | 180              | 26x12x6         | 22.5   | 0.8    |
| 0.33             | 334MKP275KE    | 300              | 18x13x7         | 15     | 0.8    |
| 0.39             | 394MKP275KG    | 180              | 26x12x6         | 22.5   | 0.8    |
| 0.39             | 394MKP275KA    | 350              | 15x15x9         | 12.5   | 0.8    |
| 0.39             | 394MKP275KE    | 300              | 18x13.5x7.5     | 15     | 0.8    |
| 0.47             | 474MKP275KE    | 300              | 18x14x8         | 15     | 0.8    |
| 0.47             | 474MKP275KBG5  | 180              | 26x14x6         | 22.5   | 0.8    |
| 0.47             | 474MKP275KA    | 350              | 15x16x10        | 12.5   | 0.6    |
| 0.47             | 474MKP275K     | 120              | 31x13.5x6       | 27.5   | 0.8    |
| 0.47             | 474MKP275KB    | 180              | 26x16.5x7.5     | 22.5   | 0.8    |
| 0.47             | 474MKP275KG4   | 120              | 32x18x9         | 27.5   | 0.8    |
| 0.56             | 564MKP275KH    | 120              | 31x14x6.5       | 27.5   | 0.8    |
| 0.56             | 564MKP275KE    | 300              | 18x15x9         | 15     | 0.8    |
| 0.56             | 564MKP275KG    | 180              | 26x14x7         | 22.5   | 0.8    |
| 0.68             | 684MKP275KG    | 180              | 26x17x8         | 22.5   | 0.8    |
| 0.68             | 684MKP275K     | 120              | 31x15.5x6.5     | 27.5   | 0.8    |
| 0.68             | 684MKP275KE    | 300              | 18x16x10        | 15     | 0.8    |
| 0.82             | 824MKP275KE    | 300              | 18x17.5x10      | 15     | 0.8    |
| 0.82             | 824MKP275KG    | 180              | 26x16x8         | 22.5   | 0.8    |
| 0.82             | 824MKP275KH    | 120              | 31x16x7.5       | 27.5   | 0.8    |
| 1                | 105MKP275K     | 120              | 31x17x8         | 27.5   | 0.8    |
| 1                | 105MKP275KE    | 300              | 18x18.5x11      | 15     | 0.8    |
| 1                | 105MKP275KG    | 180              | 26x17x9         | 22.5   | 0.8    |
| 1                | 105MKP275KGG4  | 180              | 26x19x10        | 22.5   | 0.8    |
| 1.2              | 125MKP275KH    | 120              | 31x17.5x9       | 27.5   | 0.8    |
| 1.2              | 125MKP275KG    | 180              | 26x19.5x9       | 22.5   | 0.8    |
| 1.5              | 155MKP275KG    | 180              | 26x21x10        | 22.5   | 0.8    |
| 1.5              | 155MKP275K     | 120              | 31x18.5x10      | 27.5   | 0.8    |
| 1.8              | 185MKP275KG    | 180              | 26x23x12.5      | 22.5   | 0.8    |
| 1.8              | 185MKP275KH    | 120              | 31x20.5x12      | 27.5   | 0.8    |
| 2.2              | 225MKP275KGE   | 180              | 26x22x15        | 22.5   | 0.8    |
| 2.2              | 225MKP275KG    | 180              | 26x24x13.5      | 22.5   | 0.8    |
| 2.2              | 225MKP275KG5   | 120              | 31x22x13        | 27.5   | 0.8    |
| 2.2              | 225MKP275K     | 120              | 31x26x18        | 27.5   | 0.8    |
| 3.3              | 335MKP275KHF   | 120              | 31x26x17.5      | 27.5   | 0.8    |
| 3.3              | 335MKP275KH    | 120              | 31x29x15.5      | 27.5   | 0.8    |
| 3.3              | 335MKP275KJ    | 100              | 41.5x26x14.5    | 37.5   | 1      |
| 3.9              | 395MKP275KJ    | 100              | 41.5x27.5x16    | 37.5   | 1      |
| 3.9              | 395MKP275KH    | 120              | 31x28x19        | 27.5   | 0.8    |
| 4.7              | 475MKP275KH    | 120              | 31x30.5x20      | 27.5   | 0.8    |
| 4.7              | 475MKP275KHG   | 120              | 31x32.5x19      | 27.5   | 0.8    |
| 4.7              | 475MKP275KJ    | 100              | 41.5x30x17      | 37.5   | 1      |
| 5.6              | 565MKP275KJ    | 100              | 41.5x31.5x18.5  | 37.5   | 1      |
| 5.6              | 565MKP275KH    | 120              | 31x34.5x21      | 27.5   | 0.8    |
| 6.8              | 685MKP275KJ    | 100              | 41.5x35.5x22.5  | 37.5   | 1      |
| 8.2              | 825MKP275KJ    | 100              | 41.5x38x25      | 37.5   | 1      |
| 10               | 106MKP275KJ    | 100              | 41.5x41x27.5    | 37.5   | 1      |