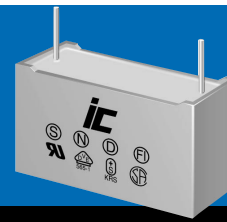


# MKP

## Class X2 Radial Lead Metallized Polypropylene Capacitors



- EMI filter
- Antenna coupling
- Across the line
- Line bypass

|  |  |  |  |  |
|--|--|--|--|--|
| <b>Operating Temperature Range</b>         |  | <b>-40°C to +110°C</b>   |  |  |
| <b>Capacitance Tolerance</b>               |  | <b>±10% at 1kHz, 25°C</b>  |  |  |
| <b>Voltage Range<br/>50-60Hz</b>           | <b>VAC</b>   | <b>310 (UL, CSA)<br/>275 (IEC 60384-14)</b>  |  |  |
| <b>Dissipation Factor</b>                  |  | <b>0.1% at 1 kHz, 20°C</b>   |  |  |
| <b>Insulation Resistance</b>               | <b>Capacitance</b>   | <b>Terminal to Terminal</b>  | <b>Terminal to Case</b>                  |  |
|  | ≤0.33 μF   | 15,000MΩ at 100VDC   | >30,000 MΩ at 100VDC<br>>500MΩ at 500VDC |  |
|  | >0.33 μF   | 5,000 MΩ x μF at 100VDC  | >30,000 MΩ at 100VDC<br>>500MΩ at 500VDC |  |
| <b>Load Life</b>                           | <b>1000 hours at +110°C with 125% of rated voltage with the voltage increased to 1000Vrms for 0.1 seconds every hour.</b>  |  |  |  |
|  | <b>Capacitance Change</b>  | <5% maximum of initial measured value  |  |  |
|  | <b>Dissipation Factor</b>  | <0.15% at 1kHz   |  |  |
|  | <b>Insulation Resistance</b>   | <b>Capacitance</b>   | <b>Terminal to Terminal</b>              |  |
|  |  | ≤0.33μF  | 7500 MΩ Minimum at 100VDC                |  |
| >0.33μF                                    |  | 2500 MΩxμF Minimum at 100VDC   |  |  |
|  | 3000 MΩ  | Terminal to Case   |  |  |
| <b>Humidity Test</b>                       | 500 hours at 90 to 95% RH, 40°C and no voltage applied after which the following voltage shall be applied for 1 minute to each capacitor<br>C≤0.0068μF 1500VAC, C>0.0068μF 1075VDC |  |  |  |
|  | <b>Capacitance Change</b>  | <5% of initial measured value  |  |  |
|  | <b>Dissipation Factor</b>  | <0.15% at 1kHz   |  |  |
|  | <b>Insulation Resistance</b>   | <b>Capacitance</b>   | <b>Terminal to Terminal</b>              |  |
|  |  | ≤0.33μF  | 7500 MΩ Minimum at 100VDC                |  |
| >0.33μF                                    |  | 2500 MΩxμF Minimum at 100VDC   |  |  |
|  | Terminal to Case   | 15000 MΩ at 100 VDC  |  |  |
| <b>Voltage Impulse Test</b>                | 24 pulses  |  |  |  |
|  | C≤1.0uF Vp=2.5kVDC<br>C>1.0uF Vp=2.5kV/√C  |  |  |  |
| <b>Self-inductance</b>                     | ≤1 nH/mm along the capacitor pitch and lead length   |  |  |  |
| <b>Dielectric Strength</b>                 | <b>Terminal to Terminal</b>  | C≤0.0068μF 1500Vac or 2121 Vdc for 1 minute<br>C>0.0068μF 1000Vac or 1768 Vdc for 1 minute<br>Cut-off current: 2Aac or 10mAdc<br>Current limiting resistance: 1Ω/V |  |  |
|  | <b>Terminal to Case</b>  | 2050VAC applied for 1 minute.  |  |  |
| <b>Capacitance Drift Factor</b>            | <1 nH/mm along the capacitor pitch and lead length   |  |  |  |
| <b>Capacitance Temperature Coefficient</b> | -200 ppm/°C, ± 100ppm/°C   |  |  |  |
| <b>Construction</b>                        | Wound, Extended metallized film  |  |  |  |
| <b>Dielectric</b>                          | Polypropylene film   |  |  |  |
| <b>Electrodes</b>                          | Vacuum deposited zinc layers   |  |  |  |
| <b>Leads</b>                               | Tinned copper wire (lead free)   |  |  |  |
| <b>Coating</b>                             | Solvent resistant box with flame retardant epoxy sealed resin (UL 94V-0)   |  |  |  |

# MKP

Class X2 Radial  
Lead Metallized  
Polypropylene  
Capacitors

## STANDARD PART LISTING

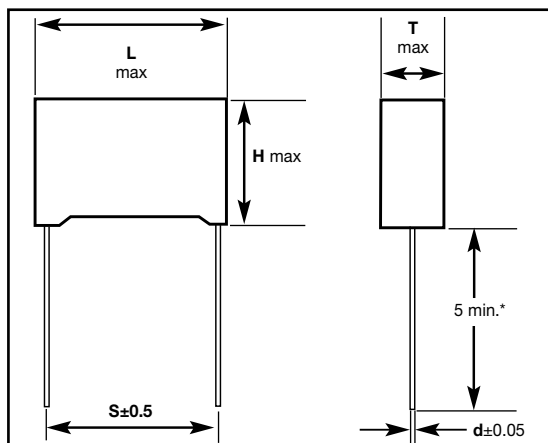
| Capacitance (µF) | IC <sup>®</sup> PART NUMBER | dv/dt (v/µs) | LxHxT (mm) | S   | d   |
|------------------|-----------------------------|--------------|------------|-----|-----|
| 0.0047           | 472MKP275K                  | 400          | 13x10x5    | 10  | 0.6 |
| 0.0047           | 472MKP275KC                 | 500          | 10x8x4     | 7.5 | 0.6 |
| 0.0056           | 562MKP275KC                 | 500          | 10x8x4     | 7.5 | 0.6 |
| 0.0056           | 562MKP275KD                 | 400          | 13x10x5    | 10  | 0.6 |
| 0.0068           | 682MKP275K                  | 400          | 13x10x5    | 10  | 0.6 |
| 0.0068           | 682MKP275KC                 | 500          | 10x8x4     | 7.5 | 0.6 |
| 0.0082           | 822MKP275KC                 | 500          | 10x8x4     | 7.5 | 0.6 |
| 0.0082           | 822MKP275KD                 | 400          | 13x10x5    | 10  | 0.6 |
| 0.01             | 103MKP275K                  | 400          | 13x10x5    | 10  | 0.6 |
| 0.01             | 103MKP275KC                 | 500          | 10x8x4     | 7.5 | 0.6 |
| 0.01             | 103MKP275KE                 | 300          | 18x11x5    | 15  | 0.8 |
| 0.012            | 123MKP275KC                 | 500          | 10x8x4     | 7.5 | 0.6 |
| 0.012            | 123MKP275KD                 | 400          | 13x10x5    | 10  | 0.6 |
| 0.015            | 153MKP275K                  | 400          | 13x11x5    | 10  | 0.6 |
| 0.015            | 153MKP275KC                 | 500          | 10x9x4     | 7.5 | 0.6 |
| 0.015            | 153MKP275KE                 | 300          | 18x11x5    | 15  | 0.8 |
| 0.018            | 183MKP275KC                 | 500          | 10x9x4     | 7.5 | 0.6 |
| 0.018            | 183MKP275KD                 | 400          | 13x11x5    | 10  | 0.6 |
| 0.022            | 223MKP275K                  | 400          | 13x11x5    | 10  | 0.6 |
| 0.022            | 223MKP275KB                 | 300          | 18x11x5    | 15  | 0.8 |
| 0.022            | 223MKP275KC                 | 500          | 10x9x4     | 7.5 | 0.6 |
| 0.027            | 273MKP275KC                 | 500          | 10x10x5    | 7.5 | 0.6 |
| 0.027            | 273MKP275KD                 | 400          | 13x11x5    | 10  | 0.6 |
| 0.033            | 333MKP275K                  | 400          | 13x12x6    | 10  | 0.6 |
| 0.033            | 333MKP275KC                 | 500          | 10x10x5    | 7.5 | 0.6 |
| 0.033            | 333MKP275KE                 | 300          | 18x11x5    | 15  | 0.8 |
| 0.039            | 393MKP275KC                 | 500          | 10x11x5    | 7.5 | 0.6 |
| 0.039            | 393MKP275KD                 | 400          | 13x9x4     | 10  | 0.6 |
| 0.039            | 393MKP275KE                 | 300          | 18x11x5    | 15  | 0.8 |
| 0.047            | 473MKP275K                  | 300          | 18x11x5    | 15  | 0.8 |
| 0.047            | 473MKP275KC                 | 500          | 10x12x6    | 7.5 | 0.6 |
| 0.047            | 473MKP275KD                 | 400          | 13x10x5    | 10  | 0.6 |
| 0.056            | 563MKP275KC                 | 500          | 10x12x6    | 7.5 | 0.6 |
| 0.056            | 563MKP275KD                 | 400          | 13x10x5    | 10  | 0.6 |
| 0.056            | 563MKP275KE                 | 300          | 18x11x5    | 15  | 0.8 |
| 0.068            | 683MKP275K                  | 300          | 18x11x5    | 15  | 0.8 |
| 0.068            | 683MKP275KD                 | 400          | 13x11x5    | 10  | 0.6 |
| 0.082            | 823MKP275KD                 | 400          | 13x12x6    | 10  | 0.6 |
| 0.082            | 823MKP275KE                 | 300          | 18x11x5    | 15  | 0.8 |
| 0.1              | 104MKP275K                  | 300          | 18x11x5    | 15  | 0.8 |
| 0.1              | 104MKP275KD                 | 400          | 13x12x6    | 10  | 0.8 |

Convert to inches, divide by 25.4

| Capacitance (µF) | IC <sup>®</sup> PART NUMBER | dv/dt (v/µs) | LxHxT (mm)   | S    | d   |
|------------------|-----------------------------|--------------|--------------|------|-----|
| 0.12             | 124MKP275KD                 | 400          | 13x13x7      | 10   | 0.6 |
| 0.15             | 154MKP275K                  | 180          | 26x14.5x6    | 22.5 | 0.8 |
| 0.15             | 154MKP275KD                 | 400          | 13x14x8      | 10   | 0.6 |
| 0.15             | 154MKP275KE                 | 300          | 18x13.5x7.5  | 15   | 0.8 |
| 0.18             | 184MKP275KE                 | 300          | 18x12x6      | 15   | 0.8 |
| 0.18             | 184MKP275KG                 | 180          | 26x14.5x6    | 22.5 | 0.8 |
| 0.22             | 224MKP275K                  | 180          | 26x14.5x6    | 22.5 | 0.8 |
| 0.22             | 224MKP275KB                 | 300          | 18x14x8      | 15   | 0.8 |
| 0.27             | 274MKP275KE                 | 300          | 18x14.5x7.5  | 15   | 0.8 |
| 0.33             | 334MKP275K                  | 180          | 26x17x8.5    | 22.5 | 0.8 |
| 0.33             | 334MKP275KE                 | 300          | 18x13.5x10   | 15   | 0.8 |
| 0.39             | 394MKP275KE                 | 300          | 18x17x8      | 15   | 0.8 |
| 0.39             | 394MKP275KG                 | 180          | 26x16.5x7.5  | 22.5 | 0.8 |
| 0.47             | 474MKP275KE                 | 300          | 18x18x9      | 15   | 0.8 |
| 0.47             | 474MKP275K                  | 120          | 32x18x9      | 27.5 | 0.8 |
| 0.47             | 474MKP275KB                 | 180          | 26x16.5x7    | 22.5 | 0.8 |
| 0.56             | 564MKP275KE                 | 300          | 18x19x10     | 15   | 0.8 |
| 0.56             | 564MKP275KG                 | 180          | 26x16.5x7.5  | 22.5 | 0.8 |
| 0.56             | 564MKP275KH                 | 120          | 31x20x10     | 27.5 | 0.8 |
| 0.68             | 684MKP275K                  | 120          | 31x20x10     | 27.5 | 0.8 |
| 0.68             | 684MKP275KG                 | 180          | 26x17x8      | 22.5 | 0.8 |
| 0.82             | 824MKP275KG                 | 180          | 26x18x9      | 22.5 | 0.8 |
| 0.82             | 824MKP275KH                 | 120          | 31x20x11     | 27.5 | 0.8 |
| 1                | 105MKP275K                  | 120          | 31x20x11     | 27.5 | 0.8 |
| 1                | 105MKP275KG                 | 180          | 26x19x10     | 22.5 | 0.8 |
| 1.2              | 125MKP275KG                 | 180          | 26x20x11.5   | 22.5 | 0.8 |
| 1.5              | 155MKP275K                  | 120          | 31x23.5x14   | 27.5 | 0.8 |
| 1.5              | 155MKP275KE                 | 180          | 26x22x12     | 22.5 | 0.8 |
| 1.8              | 185MKP275KE                 | 180          | 26x24x14     | 22.5 | 0.8 |
| 2.2              | 225MKP275K                  | 120          | 31x26x18     | 27.5 | 0.8 |
| 2.2              | 225MKP275KE                 | 180          | 26x25x15     | 22.5 | 0.8 |
| 3.3              | 335MKP275KH                 | 100          | 31x33x18     | 27.5 | 1.0 |
| 3.3              | 335MKP275KJ                 | 100          | 41.5x28.5x16 | 37.5 | 1.0 |
| 3.9              | 395MKP275KJ                 | 100          | 41.5x35x20   | 37.5 | 1.0 |
| 4.7              | 475MKP275KH                 | 120          | 31.5x37x22   | 27.5 | 1.0 |
| 4.7              | 475MKP275KJ                 | 100          | 41.5x32x19   | 37.5 | 1.0 |
| 5.6              | 565MKP275KJ                 | 100          | 41.5x35x20   | 37.5 | 1.0 |
| 6.8              | 685MKP275KJ                 | 100          | 41.5x39x24   | 37.5 | 1.0 |
| 8.2              | 825MKP275KJ                 | 100          | 41.5x45x30   | 37.5 | 1.0 |
| 10               | 106MKP275KJ                 | 100          | 41.5x45x30   | 37.5 | 1.0 |

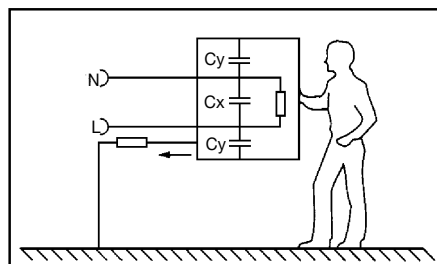


## PHYSICAL DIMENSIONS



All dimensions in (mm)

**\*17mm lead length available upon request**



X2 capacitors are used to suppress electrical noise by reducing the input impedance of the device incorporating the capacitor.

X2 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                   | File #          | Rated Voltage | Class  |
|---------------|----------------------------|-----------------|---------------|--|
| UL            | 1414                       | E-317132        | 310 VAC       | FOK X2 <sup>*A</sup><br>FOK Y2 <sup>*B</sup> |
| CSA           | C22.2, No.1-98, 8-M1986    | 158927, LR85363 | 250 VAC       | X  |
| CB            | IEC-60384-14               | DE-1-11829      | 275 VAC       | X2   |
| ENEC          | EN-1324000<br>IEC-60384-14 | 139131L         | 275 VAC       | X2   |

A- Antenna coupling, Line Bypass, Across the line  
B- Electromagnetic Interference Filter