

Metallized Polycarbonate Hermetically Sealed

Metallized Polycarbonate - Hermetically Sealed



FEATURES

- High Volumetric Efficiency
- Self Healing Properties
- Low Loss Characteristics

STANDARD CONFIGURATION

- MC52 Metal tube, herm seal round without insulating sleeve axial leads insulated case
- MC54 Metal tube, herm seal round without insulating sleeve axial leads grounded to case
- MC62 Metal tube, herm seal round with clear, plastic insulating sleeve axial leads insulated case
- MC64 Metal tube, herm seal round with clear, plastic insulating sleeve axial leads grounded to case

Specification Summary

Capacitance Range

.001uF to 100uF

Capacitance Tolerance

Standard tolerance is $\pm 10\%$. Tolerances of $\pm 20\%$, $\pm 5\%$, $\pm 2\%$, $\pm 1\%$ are available.

Operating Temperature Range

-55°C to +125°C without derating

Enclosure/ Construction

Hermetically Sealed in metal tubes with glass-to-metal solder-sealed terminals

Voltage Rating

DC working voltages of 50VDC, 75VDC, 100VDC, 150VDC, 200VDC, 300VDC, and 400VDC are standard.

Quality Control

Capacitors are tested 100% for:

- o Capacitance
- o Tolerance
- o Dissipation Factor
- o Dielectric withstanding Voltage
- o Insulation Resistance
- o Equivalent Series Resistance (ESR)

Process and inspection data are maintained on file and available on special request.

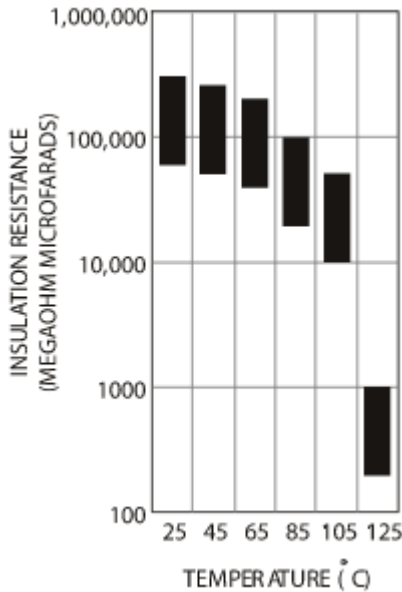
Environmental

| Parameter | Method | Condition |
|-----------------------|--------|-----------|
| Vibration | 204 | D |
| Immersion | 104 | B |
| Shock | 213 | I |
| Humidity | 106 | - |
| Thermal Shock | 107 | A |
| Life | 108 | F |
| Reference MIL-STD-202 | | |

Characteristics

Insulation Resistance

| Temperature(°C) | 25 | 85 | 125 | |
|------------------------|---------|-------|-----|--|
| Megaohms x Microfarads | 100,000 | 7,000 | 700 | |
| Insulation Resistance | | | | |

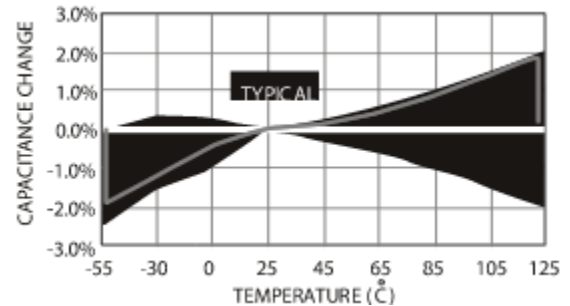


Dielectric Strength

Capacitors shall withstand a DC potential of 200% rated voltage for two minutes without damage. When the capacitor section is insulated from the case, the capacitors shall withstand a DC potential of 200% rated voltage applied between the case and the terminals. Test voltage must be applied and discharged through a resistance of 1 OHM per volt, minimum and at 25°C.

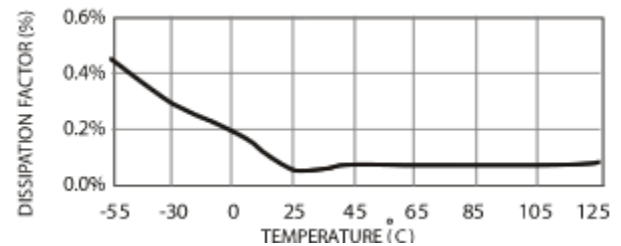
Capacitance Change

| Temperature(°C) | -55 | 25 | 85 | 125 |
|-----------------------------|-----------|----|-----------|-----------|
| Percentage Change (typical) | ± 1.5 | 0 | ± 0.3 | ± 0.8 |
| Capacitance Change | | | | |



Dissipation Factor

When measured at the frequency specified for capacitance measurements, the dissipation factor shall not exceed 0.3% from +25°C to +125°C.



ELECTRICAL DATA

| EC PART NUMBER | CAP (µF) | 50 VDC | | | 75 VDC | | | 100 VDC | | | 150 VDC | | | 200 VDC | | |
|----------------|----------|--------|-------|----|--------|-------|----|---------|-------|----|---------|-------|----|---------|-------|----|
| | | B | | | C | | | D | | | E | | | F | | |
| | | D | L | G | D | L | G | D | L | G | D | L | G | D | L | G |
| MC52_103K | 0.010 | - | - | - | 0.174 | 0.531 | 24 | 0.174 | 0.625 | 24 | 0.174 | 0.625 | 24 | 0.174 | 0.625 | 24 |
| MC52_123K | 0.012 | - | - | - | 0.174 | 0.531 | 24 | 0.174 | 0.625 | 24 | 0.174 | 0.625 | 24 | 0.174 | 0.625 | 24 |
| MC52_153K | 0.015 | - | - | - | 0.174 | 0.531 | 24 | 0.174 | 0.625 | 24 | 0.174 | 0.625 | 24 | 0.174 | 0.625 | 24 |
| MC52_183K | 0.018 | - | - | - | 0.174 | 0.531 | 24 | 0.174 | 0.625 | 24 | 0.174 | 0.625 | 24 | 0.193 | 0.625 | 24 |
| MC52_223K | 0.022 | - | - | - | 0.174 | 0.531 | 24 | 0.174 | 0.625 | 24 | 0.174 | 0.625 | 24 | 0.193 | 0.625 | 24 |
| MC52_273K | 0.027 | - | - | - | 0.174 | 0.531 | 24 | 0.174 | 0.625 | 24 | 0.193 | 0.625 | 24 | 0.235 | 0.625 | 22 |
| MC52_333K | 0.033 | - | - | - | 0.174 | 0.531 | 24 | 0.174 | 0.625 | 24 | 0.193 | 0.688 | 24 | 0.235 | 0.625 | 22 |
| MC52_393K | 0.039 | - | - | - | 0.174 | 0.625 | 24 | 0.174 | 0.625 | 24 | 0.193 | 0.688 | 24 | 0.235 | 0.688 | 22 |
| MC52_473K | 0.047 | 0.174 | 0.531 | 24 | 0.174 | 0.625 | 24 | 0.193 | 0.625 | 24 | 0.235 | 0.625 | 22 | 0.235 | 0.688 | 22 |
| MC52_563K | 0.056 | 0.174 | 0.531 | 24 | 0.174 | 0.625 | 24 | 0.193 | 0.625 | 24 | 0.235 | 0.688 | 22 | 0.312 | 0.625 | 22 |
| MC52_683K | 0.068 | 0.174 | 0.625 | 24 | 0.174 | 0.625 | 24 | 0.235 | 0.625 | 22 | 0.235 | 0.688 | 22 | 0.312 | 0.625 | 22 |
| MC52_823K | 0.082 | 0.174 | 0.625 | 24 | 0.193 | 0.625 | 24 | 0.235 | 0.625 | 22 | 0.312 | 0.625 | 22 | 0.312 | 0.688 | 22 |
| MC52_104K | 0.100 | 0.174 | 0.625 | 24 | 0.193 | 0.625 | 24 | 0.235 | 0.688 | 22 | 0.312 | 0.688 | 22 | 0.312 | 0.688 | 22 |
| MC52_124K | 0.120 | 0.174 | 0.625 | 24 | 0.235 | 0.625 | 22 | 0.235 | 0.688 | 22 | 0.312 | 0.688 | 22 | 0.312 | 0.812 | 22 |
| MC52_154K | 0.150 | 0.193 | 0.625 | 24 | 0.235 | 0.625 | 22 | 0.312 | 0.625 | 22 | 0.312 | 0.812 | 22 | 0.312 | 0.812 | 22 |
| MC52_184K | 0.180 | 0.193 | 0.625 | 24 | 0.312 | 0.625 | 22 | 0.312 | 0.625 | 22 | 0.312 | 0.812 | 22 | 0.400 | 0.688 | 20 |
| MC52_224K | 0.220 | 0.235 | 0.625 | 22 | 0.312 | 0.625 | 22 | 0.312 | 0.688 | 22 | 0.312 | 0.812 | 22 | 0.400 | 0.812 | 20 |
| MC52_274K | 0.270 | 0.235 | 0.625 | 22 | 0.312 | 0.625 | 22 | 0.312 | 0.688 | 22 | 0.400 | 0.812 | 20 | 0.400 | 0.812 | 20 |
| MC52_334K | 0.330 | 0.312 | 0.625 | 22 | 0.312 | 0.625 | 22 | 0.312 | 0.812 | 22 | 0.400 | 0.812 | 20 | 0.400 | 0.938 | 20 |
| MC52_394K | 0.390 | 0.312 | 0.625 | 22 | 0.312 | 0.843 | 22 | 0.312 | 0.812 | 22 | 0.400 | 0.812 | 20 | 0.400 | 0.938 | 20 |
| MC52_474K | 0.470 | 0.312 | 0.625 | 22 | 0.312 | 0.843 | 22 | 0.400 | 0.688 | 20 | 0.400 | 0.938 | 20 | 0.400 | 1.125 | 20 |
| MC52_564K | 0.560 | 0.312 | 0.625 | 22 | 0.312 | 0.843 | 22 | 0.400 | 0.812 | 20 | 0.400 | 1.125 | 20 | 0.400 | 1.312 | 20 |
| MC52_684K | 0.680 | 0.312 | 0.843 | 22 | 0.312 | 0.843 | 22 | 0.400 | 0.812 | 20 | 0.400 | 1.125 | 20 | 0.500 | 1.125 | 20 |
| MC52_824K | 0.820 | 0.312 | 0.843 | 22 | 0.400 | 0.843 | 20 | 0.400 | 0.938 | 20 | 0.500 | 0.938 | 20 | 0.500 | 1.125 | 20 |
| MC52_105K | 1.000 | 0.312 | 0.843 | 22 | 0.400 | 0.843 | 20 | 0.400 | 0.938 | 20 | 0.500 | 1.125 | 20 | 0.562 | 1.125 | 20 |
| MC52_125K | 1.200 | 0.400 | 0.843 | 20 | 0.400 | 1.125 | 20 | 0.500 | 0.938 | 20 | 0.500 | 1.125 | 20 | 0.562 | 1.312 | 20 |
| MC52_155K | 1.500 | 0.400 | 0.843 | 20 | 0.400 | 1.125 | 20 | 0.500 | 0.938 | 20 | 0.500 | 1.312 | 20 | 0.562 | 1.312 | 20 |
| MC52_185K | 1.800 | 0.400 | 0.843 | 20 | 0.400 | 1.125 | 20 | 0.500 | 1.125 | 20 | 0.562 | 1.312 | 20 | 0.562 | 1.812 | 20 |
| MC52_205K | 2.000 | 0.400 | 0.843 | 20 | 0.500 | 1.125 | 20 | 0.500 | 1.125 | 20 | 0.562 | 1.312 | 20 | 0.562 | 1.812 | 20 |
| MC52_225K | 2.200 | 0.400 | 1.125 | 20 | 0.500 | 1.125 | 20 | 0.500 | 1.125 | 20 | 0.562 | 1.562 | 20 | 0.562 | 1.812 | 20 |
| MC52_275K | 2.700 | 0.400 | 1.125 | 20 | 0.500 | 1.125 | 20 | 0.562 | 1.312 | 20 | 0.562 | 1.812 | 20 | 0.670 | 1.562 | 20 |
| MC52_305K | 3.000 | 0.400 | 1.125 | 20 | 0.500 | 1.125 | 20 | 0.562 | 1.312 | 20 | 0.562 | 1.812 | 20 | 0.750 | 1.562 | 20 |
| MC52_335K | 3.300 | 0.400 | 1.125 | 20 | 0.562 | 1.125 | 20 | 0.562 | 1.312 | 20 | 0.562 | 1.812 | 20 | 0.750 | 1.812 | 20 |
| MC52_395K | 3.900 | 0.500 | 1.125 | 20 | 0.562 | 1.125 | 20 | 0.562 | 1.562 | 20 | 0.670 | 1.812 | 20 | 0.750 | 1.812 | 20 |
| MC52_475K | 4.700 | 0.500 | 1.125 | 20 | 0.562 | 1.312 | 20 | 0.670 | 1.312 | 20 | 0.670 | 1.812 | 20 | 0.750 | 2.062 | 20 |
| MC52_505K | 5.000 | 0.500 | 1.125 | 20 | 0.562 | 1.312 | 20 | 0.670 | 1.312 | 20 | 0.750 | 1.562 | 20 | 0.750 | 2.062 | 20 |
| MC52_565K | 5.600 | 0.500 | 1.125 | 20 | 0.670 | 1.312 | 20 | 0.670 | 1.312 | 20 | 0.750 | 1.812 | 20 | 0.750 | 2.312 | 20 |
| MC52_685K | 6.800 | 0.562 | 1.125 | 20 | 0.670 | 1.312 | 20 | 0.670 | 1.562 | 20 | 0.750 | 2.063 | 20 | 1.000 | 1.812 | 20 |
| MC52_825K | 8.200 | 0.562 | 1.321 | 20 | 0.670 | 1.625 | 20 | 0.670 | 1.812 | 20 | 0.750 | 2.375 | 20 | 1.000 | 2.062 | 20 |
| MC52_106K | 10.000 | 0.670 | 1.321 | 20 | 0.670 | 1.625 | 20 | 0.750 | 1.812 | 20 | 0.750 | 2.625 | 20 | 1.000 | 2.312 | 20 |
| MC52_126K | 12.000 | 0.670 | 1.321 | 20 | 0.670 | 1.875 | 20 | 0.750 | 1.812 | 20 | 1.000 | 1.875 | 20 | 1.000 | 2.563 | 18 |
| MC52_156K | 15.000 | 0.750 | 1.375 | 20 | 0.750 | 1.875 | 20 | 1.000 | 1.875 | 20 | 1.000 | 2.125 | 20 | 1.125 | 2.687 | 18 |
| MC52_186K | 18.000 | 0.750 | 1.375 | 20 | 0.750 | 2.125 | 20 | 1.000 | 1.875 | 20 | 1.000 | 2.625 | 18 | 1.250 | 2.687 | 18 |
| MC52_206K | 20.000 | 0.750 | 1.625 | 20 | 0.750 | 2.625 | 20 | 1.000 | 1.875 | 20 | 1.000 | 2.875 | 18 | 1.250 | 2.687 | 18 |
| MC52_226K | 22.000 | 0.750 | 1.625 | 20 | 0.750 | 2.625 | 20 | 1.000 | 1.875 | 20 | 1.125 | 2.937 | 18 | 1.250 | 2.937 | 18 |
| MC52_256K | 25.000 | 1.000 | 1.375 | 20 | 1.000 | 1.875 | 20 | 1.000 | 2.125 | 20 | 1.250 | 2.687 | 18 | 1.390 | 2.937 | 18 |
| MC52_276K | 27.000 | 1.000 | 1.375 | 20 | 1.000 | 1.875 | 20 | 1.000 | 2.125 | 20 | 1.250 | 2.687 | 18 | 1.390 | 2.937 | 18 |
| MC52_306K | 30.000 | 1.000 | 1.375 | 20 | 1.000 | 2.125 | 20 | 1.000 | 2.375 | 20 | 1.250 | 2.937 | 18 | 1.390 | 3.187 | 18 |
| MC52_336K | 33.000 | 1.000 | 1.375 | 20 | 1.000 | 2.125 | 20 | 1.000 | 2.625 | 18 | 1.250 | 2.937 | 18 | 1.390 | 3.187 | 18 |
| MC52_396K | 39.000 | 1.000 | 1.625 | 20 | 1.000 | 2.625 | 18 | 1.000 | 2.875 | 18 | 1.390 | 2.937 | 18 | 1.500 | 3.187 | 18 |

Note: The fifth character of the part number represents the DC voltage rating (i.e. B=50 VDC, C=75 VDC, etc.).

| EC PART NUMBER | CAP (μF) | 50 VDC | | | 75 VDC | | | 100 VDC | | | 150 VDC | | | 200 VDC | | |
|----------------|----------|--------|-------|----|--------|-------|----|---------|-------|----|---------|-------|----|---------|---|---|
| | | B | | | C | | | D | | | E | | | F | | |
| | | D | L | G | D | L | G | D | L | G | D | L | G | D | L | G |
| MC52_476K | 47.000 | 1.000 | 1.875 | 20 | 1.000 | 2.875 | 18 | 1.125 | 2.937 | 18 | 1.500 | 2.937 | 18 | - | - | - |
| MC52_506K | 50.000 | 1.000 | 1.875 | 20 | 1.125 | 2.937 | 18 | 1.250 | 2.937 | 18 | 1.500 | 3.187 | 18 | - | - | - |
| MC52_566K | 56.000 | 1.000 | 1.875 | 20 | 1.125 | 2.937 | 18 | 1.250 | 2.937 | 18 | 1.500 | 3.187 | 18 | - | - | - |
| MC52_686K | 68.000 | 1.000 | 2.125 | 20 | 1.250 | 2.937 | 18 | 1.390 | 2.937 | 18 | - | - | - | - | - | - |
| MC52_756K | 75.000 | 1.000 | 2.375 | 20 | 1.250 | 2.937 | 18 | 1.390 | 2.937 | 18 | - | - | - | - | - | - |
| MC52_826K | 82.000 | 1.000 | 2.625 | 18 | 1.250 | 3.187 | 18 | 1.390 | 3.187 | 18 | - | - | - | - | - | - |
| MC52_906K | 90.000 | 1.000 | 2.875 | 18 | 1.390 | 2.937 | 18 | 1.390 | 3.187 | 18 | - | - | - | - | - | - |
| MC52_107K | 100.000 | 1.000 | 3.187 | 18 | 1.390 | 3.187 | 18 | 1.500 | 3.187 | 18 | - | - | - | - | - | - |

Note: The fifth character of the part number represents the DC voltage rating (i.e. B=50 VDC, C=75 VDC, etc.).

| EC PART NUMBER | CAP (μF) | 300 VDC | | | 400 VDC | | |
|----------------|----------|---------|-------|----|---------|-------|----|
| | | H | | | J | | |
| | | D | L | G | D | L | G |
| MC52_103K | 0.010 | 0.193 | 0.688 | 24 | 0.235 | 0.688 | 22 |
| MC52_123K | 0.012 | 0.235 | 0.688 | 22 | 0.235 | 0.812 | 22 |
| MC52_153K | 0.015 | 0.235 | 0.688 | 22 | 0.235 | 0.812 | 22 |
| MC52_183K | 0.018 | 0.235 | 0.812 | 22 | 0.235 | 0.812 | 22 |
| MC52_223K | 0.022 | 0.235 | 0.812 | 22 | 0.312 | 0.688 | 22 |
| MC52_273K | 0.027 | 0.312 | 0.688 | 22 | 0.312 | 0.812 | 22 |
| MC52_333K | 0.033 | 0.312 | 0.688 | 22 | 0.312 | 0.812 | 22 |
| MC52_393K | 0.039 | 0.312 | 0.812 | 22 | 0.312 | 0.938 | 22 |
| MC52_473K | 0.047 | 0.312 | 0.812 | 22 | 0.400 | 0.812 | 20 |
| MC52_563K | 0.056 | 0.312 | 0.938 | 22 | 0.400 | 0.812 | 20 |
| MC52_683K | 0.068 | 0.312 | 0.938 | 22 | 0.400 | 0.938 | 20 |
| MC52_823K | 0.082 | 0.400 | 0.812 | 20 | 0.400 | 0.938 | 20 |
| MC52_104K | 0.100 | 0.400 | 0.938 | 20 | 0.400 | 1.125 | 20 |
| MC52_124K | 0.120 | 0.400 | 0.938 | 20 | 0.400 | 1.312 | 20 |
| MC52_154K | 0.150 | 0.400 | 1.125 | 20 | 0.400 | 1.312 | 20 |
| MC52_184K | 0.180 | 0.400 | 1.312 | 20 | 0.562 | 1.125 | 20 |
| MC52_224K | 0.220 | 0.400 | 1.312 | 20 | 0.562 | 1.125 | 20 |
| MC52_274K | 0.270 | 0.562 | 1.125 | 20 | 0.562 | 1.312 | 20 |
| MC52_334K | 0.330 | 0.562 | 1.125 | 20 | 0.562 | 1.562 | 20 |
| MC52_394K | 0.390 | 0.562 | 1.125 | 20 | 0.562 | 1.562 | 20 |
| MC52_474K | 0.470 | 0.562 | 1.562 | 20 | 0.562 | 1.812 | 20 |
| MC52_564K | 0.560 | 0.562 | 1.562 | 20 | 0.670 | 1.562 | 20 |
| MC52_684K | 0.680 | 0.670 | 1.312 | 20 | 0.670 | 1.812 | 20 |
| MC52_824K | 0.820 | 0.670 | 1.562 | 20 | 0.750 | 1.812 | 20 |
| MC52_105K | 1.000 | 0.670 | 1.812 | 20 | 0.750 | 2.062 | 20 |
| MC52_125K | 1.200 | 0.670 | 1.812 | 20 | 1.000 | 1.812 | 20 |
| MC52_155K | 1.500 | 0.750 | 2.062 | 20 | 1.000 | 1.812 | 20 |
| MC52_185K | 1.800 | 0.750 | 2.062 | 20 | 1.000 | 2.062 | 20 |
| MC52_205K | 2.000 | 0.750 | 2.062 | 20 | 1.000 | 2.062 | 20 |
| MC52_225K | 2.200 | 1.000 | 1.812 | 20 | 1.000 | 2.312 | 20 |
| MC52_275K | 2.700 | 1.000 | 1.812 | 20 | 1.000 | 2.562 | 20 |
| MC52_305K | 3.000 | 1.000 | 2.062 | 20 | 1.000 | 2.687 | 18 |
| MC52_335K | 3.300 | 1.000 | 2.312 | 20 | - | - | - |
| MC52_395K | 3.900 | 1.000 | 2.562 | 20 | - | - | - |

Note: The fifth character of the part number represents the DC voltage rating (i.e. H=300 VDC, J=400 VDC).

Additional Information

High volumetric efficiency which results in small, lightweight units. This is particularly important to designers of equipment where space is at a premium. Self-healing properties assuring greater operational reliability. Low loss characteristics and high current carrying capabilities make these capacitors especially suitable for specialized AC and RF applications. Applications for these capacitors include tuned circuits, analog computer reference capacitors and precision timing and integrating circuits.

HOW TO ORDER

| | | |
|--|---|-------------|
| TYPE Metallized Polycarbonate | → | MC |
| STYLE / VOLTAGE 5=Metal tube, hermetically sealed round without insulating sleeves; 6=Metal tube, hermetically sealed round with clear plastic insulating sleeves. / B=50VDC, C=75VDC, D=100VDC, E=150VDC, F=200VDC, H=300VDC, J=400VDC | → | 52 B |
| CAPACITANCE IN PICO FARADS The first two digits are significant, the third represents the number of zeros (e.g. 104 = 100,000 pfd = .1mfd) | → | 104 |
| TOLERANCE Standard tolerance is ±10% : Tolerances of ±20%, ±5%, ±2%, ±1% are available. | → | K |

Marking And Date Code

All capacitors are marked with company initials "EC", corporate logo or EC trademark—in addition to type MC, capacitance, tolerance, rated DC working voltage and date code. The first two digits of the date code represent the year, the second two digits the week, i.e., 0952 is the 52nd week of 2009, 0902 is the second week of 2009.

Quality Assurance

Major emphasis is placed on quality assurance. EC is an ISO 9001-2000 and AS9100:2004 Certified Company. Raw material inspection and the use of SPC manufacturing procedures assure the highest quality standards. Procedures are fully described in the EC Quality Control Manual. Electronic Concepts will continue to advance the state-of-the-art by utilizing leading edge technology, compact capacitor designs and establishing reliability procedures.

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Rev. B

