

Overview

The C44U series is a polypropylene segmented metallized film capacitor with a cylindrical, aluminium can-type design filled with resin. It uses screw terminals and a plastic deck.

Applications

Typical applications include DC filtering and energy storage.

Benefits

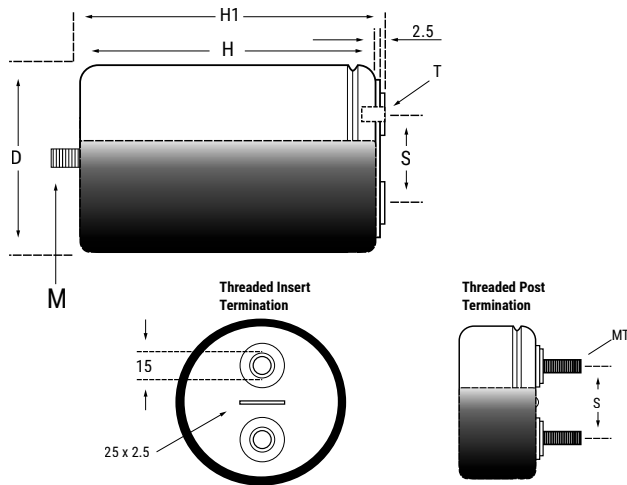
- Controlled self-healing
- Low loss
- High ripple current
- High capacitance density
- Long lifetime



Part Number System

| C4 | 4 | U | Q | G | T | 6 | 5 | 0 | 0 | F | 8 | S | K |
|--|-----------------------|-------------|---|---|---|---|---|---|---|--|------------------------|---|-------------------|
| Series | | | DC Voltage | Case and Fixing | Terminals Code | Capacitance Code (pF) | | | | Variants | Case Diameter | Film Type | Tolerance |
| C4 = MKP Capacitors for Power Applications | 4 = Cylindrical types | U = DC link | H = 600 V J = 700 V O = 900 V Q = 1,100 V U = 1,300 V | G = Cylindrical case with threaded bolt M12 E = Cylindrical case without threaded bolt | T = M6 female terminals Q = M8 male terminals Y = M8 female terminals | Digits nine, ten, and eleven indicate the first three digits of capacitance value. Digit eight indicates the number of zeros to be added. | | | | A = 85°C hot spot temperature series F/G = 70°C hot spot temperature series | 7 = 76 mm 8 = 85 mm | T = Standard film S = Segmented film | J = 5% K = 10% |

Dimensions – Millimeters



| D | H | H1 | S | Threaded Insert Terminations (T) | Threaded Post Terminations (MT) | Mounting Stud (M) |
|----------|----------|-----------|----------|---|--|--------------------------|
| +1/-0 | +0.5/-0 | ±1 | ±0.2 | | | |
| 76 | 55 | 61 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |
| 76 | 70 | 76 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |
| 76 | 95 | 101 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |
| 76 | 120 | 126 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |
| 76 | 140 | 146 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |
| 85 | 55 | 61 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |
| 85 | 70 | 76 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |
| 85 | 95 | 101 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |
| 85 | 120 | 126 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |
| 85 | 124.5 | 126 | 32 | M6 x 10 | M8 x 22.5 | M12 x 16 |
| 85 | 140 | 146 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |
| 85 | 155 | 161 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |
| 85 | 174 | 180 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |
| 85 | 264 | 270 | 31.7 | M6 x 12 | M8 x 22.5 | M12 x 16 |

Qualifications

| | |
|-----------------------|-----------------------------------|
| Reference Standards | IEC 61071 |
| IEC Climatic Category | 40/85/21 according to IEC 60068-1 |

General Technical Data

| | |
|-------------------------------------|--|
| Dielectric | Polypropylene Metallized Film, non-inductive type, self-healing property |
| Application | DC Filtering/DC Link |
| Climatic Category | 40/85/21 IEC 60068-1 |
| Maximum Operating Temperature | +90°C |
| Upper Temperature T_{MAX} Group A | +85°C IEC 61071 – Endurance Test Temperature |
| Upper Temperature T_{MAX} Group B | +70°C IEC 61071 – Endurance Test Temperature |
| Lower Temperature T_{min} | -40°C |
| Standard | IEC 61071 |
| Protection | Aluminium case with or without, threaded bolt M12 |
| | Plastic deck flame retardant execution UL 94 V-0 |
| | Thermosetting resin sealing UL 94 V-0 compliant |
| Installation | Any position |
| Leads | High current M6 or M8 terminals |
| Packaging | Packed in cardboard boxes with protection for the terminals |
| RoHS Compliant | Compliant with Directive 2002/95/EC and Directive 2011/65/EU of the European Parliament and of the Council on 8 June 2011, including Commission Delegated Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU. |

Electrical Characteristics

| | |
|------------------------------------|---|
| Capacitance Tolerance | $\pm 10\%$ at +25°C |
| Dissipation Factor (DF) | ≤ 0.0002 at 10 kHz with $T = 25^\circ\text{C} \pm 5^\circ\text{C}$ |
| Surge Voltage | $1.5 \times V_{NDC}$ for maximum 10 times in lifetime at +25°C |
| Over-Voltage (IEC 61071) | $1.15 \times V_{NDC}$ for maximum 30 minimum, once per day |
| | $1.3 \times V_{NDC}$ for maximum 1 minimum, once per day |
| Peak Non-Repetitive Current | $1.5 \times I_{pkr}$ maximum 1,000 times in lifetime |
| Insulation Resistance | $IR \times C \geq 30,000$ seconds at 100 VDC 1 minute at +25°C |
| Capacitance Deviation in Operation | $\pm 1.5\%$ maximum on capacitance value measured at +25°C |
| Permissible Relative Humidity | Annual average $\leq 70\%$; 85% on 30 days/year randomly distributed throughout the year. Dewing not admissible. |

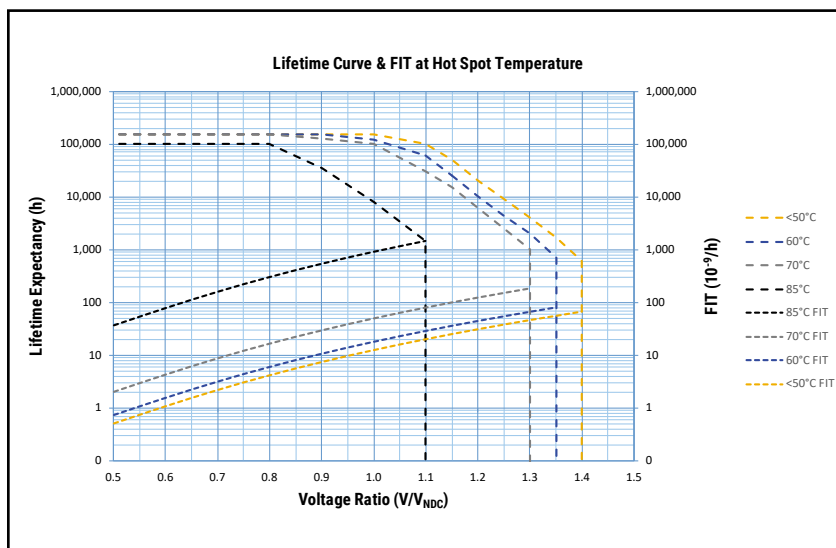
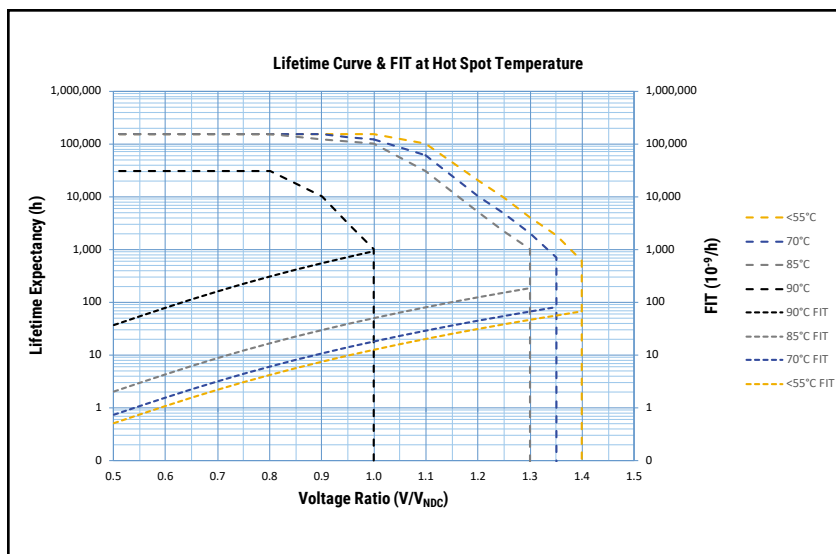
Life Expectancy

| | |
|---------------------------------|--|
| Life Expectancy – Group A | 100,000 hours at V_{NDC} at Hot-Spot temperature $T_{HS} = 85^\circ\text{C}$ |
| Life Expectancy – Group B | 100,000 hours at V_{NDC} at Hot-Spot temperature $T_{HS} = 70^\circ\text{C}$ |
| Capacitance drop at end of life | -10% (typical) |
| Failure Rate IEC 61709 | 50 FIT at V_{NDC} at reference T_{HS} (see FIT curves) |

Test Method

| | |
|---|--|
| Test voltage between terminals | 1.5 x V _{NDC} for 10 seconds or 1.65 V _{NDC} for 2 seconds at 25°C |
| Test voltage between terminals and case | 3.2 kVAC 50 Hz for 2 seconds |
| Damp Heat | IEC 60068-2-78 |
| Change of temperature | IEC 60068-2-14 |

Lifetime Expectancy/Failure Quota Graphs



Notes:

$$T_{HS} = T_{AMB} + \Delta T$$

$$\Delta T = ESR * I_{rms}^2 * R_{th}$$

I_{rms} should be limited to values granting $\Delta T \leq 30^\circ C$

Table 1A – Ratings & Part Number Reference

| Cap Value (µF) | VDC | Maximum Dimensions (mm) | | | Ripple Current | Peak Current | ESR | ESL | Thermal Res | dV/dt (V/µs) | Pkg Qty | Weight (grams) | Part Number Group A Heavy Duty |
|----------------|-------|-------------------------|-----|-----|------------------------------|--------------|-------------|------|-------------|--------------|---------|----------------|--------------------------------|
| | | D | H | H1 | 10 kHz 40°C (A) ¹ | (A) | 10 kHz (mΩ) | (nH) | (°C/W) | | | | |
| 120 | 700 | 76 | 55 | 61 | 63 | 2,520 | 1.1 | 36 | 9.9 | 21 | 18 | 280 | C44UJGT6120A7TK |
| 160 | 700 | 85 | 55 | 61 | 73 | 3,360 | 0.9 | 36 | 8.6 | 21 | 10 | 354 | C44UJGT6160A8TK |
| 175 | 700 | 76 | 70 | 76 | 62 | 2,450 | 1.4 | 40 | 8.2 | 14 | 18 | 348 | C44UJGT6175A7TK |
| 225 | 700 | 85 | 70 | 76 | 70 | 3,150 | 1.2 | 40 | 7.2 | 14 | 10 | 414 | C44UJGT6225A8TK |
| 350 | 700 | 76 | 120 | 126 | 55 | 2,450 | 2.8 | 50 | 5.3 | 7 | 9 | 569 | C44UJGT6350A7SK |
| 425 | 700 | 76 | 140 | 146 | 55 | 2,550 | 3.2 | 60 | 4.6 | 6 | 9 | 656 | C44UJGT6425A7SK |
| 450 | 700 | 85 | 120 | 126 | 65 | 3,150 | 2.3 | 50 | 4.6 | 7 | 5 | 723 | C44UJGT6450A8SK |
| 550 | 700 | 85 | 140 | 146 | 65 | 3,300 | 2.6 | 60 | 4.1 | 6 | 5 | 831 | C44UJGT6550A8SK |
| 75 | 900 | 76 | 55 | 61 | 57 | 1,950 | 1.4 | 36 | 9.9 | 26 | 18 | 283 | C44UOGT5750A7TK |
| 100 | 900 | 85 | 55 | 61 | 65 | 2,600 | 1.2 | 36 | 8.6 | 26 | 10 | 355 | C44UOGT6100A8TK |
| 110 | 900 | 76 | 70 | 76 | 57 | 1,870 | 1.6 | 40 | 8.2 | 17 | 18 | 324 | C44UOGT6110A7TK |
| 150 | 900 | 85 | 70 | 76 | 65 | 2,550 | 1.4 | 40 | 7.2 | 17 | 10 | 437 | C44UOGT6150A8TK |
| 220 | 900 | 76 | 120 | 126 | 50 | 1,980 | 3.3 | 50 | 5.3 | 9 | 9 | 574 | C44UOGT6220A7SK |
| 275 | 900 | 76 | 140 | 146 | 50 | 1,925 | 3.8 | 60 | 4.6 | 7 | 9 | 654 | C44UOGT6275A7SK |
| 300 | 900 | 85 | 120 | 126 | 60 | 2,700 | 2.7 | 50 | 4.6 | 9 | 5 | 711 | C44UOGT6300A8SK |
| 350 | 900 | 85 | 140 | 146 | 60 | 2,450 | 3.0 | 60 | 4.1 | 7 | 5 | 833 | C44UOGT6350A8SK |
| 50 | 1,100 | 76 | 55 | 61 | 52 | 1,550 | 1.6 | 36 | 9.9 | 31 | 18 | 265 | C44UQGT5500A7TK |
| 70 | 1,100 | 85 | 55 | 61 | 62 | 2,170 | 1.3 | 36 | 8.6 | 31 | 10 | 356 | C44UQGT5700A8TK |
| 75 | 1,100 | 76 | 70 | 76 | 58 | 1,575 | 1.6 | 40 | 8.2 | 21 | 18 | 352 | C44UQGT5750A7TK |
| 100 | 1,100 | 85 | 70 | 76 | 60 | 2,100 | 1.7 | 40 | 7.2 | 21 | 10 | 414 | C44UQGT6100A8TK |
| 150 | 1,100 | 76 | 120 | 126 | 45 | 1,650 | 4.1 | 50 | 5.3 | 11 | 9 | 577 | C44UQGT6150A7SK |
| 190 | 1,100 | 76 | 140 | 146 | 47 | 1,710 | 4.3 | 60 | 4.6 | 9 | 9 | 654 | C44UQGT6190A7SK |
| 200 | 1,100 | 85 | 120 | 126 | 55 | 2,200 | 3.2 | 50 | 4.6 | 11 | 5 | 723 | C44UQGT6200A8SK |
| 250 | 1,100 | 85 | 140 | 146 | 55 | 2,250 | 3.6 | 60 | 4.1 | 9 | 5 | 824 | C44UQGT6250A8SK |
| Cap Value | VDC | D | H | H1 | Ripple Current | Peak Current | ESR | ESL | Thermal Res | dV/dt (V/µs) | Pkg Qty | Weight | Part Number |

¹ Current values that lead to a ΔT of $\sim 85^\circ\text{C}$ in the Hot Spot $T_{HS} = T_{AMB} + \Delta T = 85^\circ\text{C}$
For Packaging quantities not listed, please contact KEMET.

Table 1B – Ratings & Part Number Reference

| Cap Value (µF) | VDC | Maximum Dimensions (mm) | | | Ripple Current | Peak Current | ESR | ESL | Thermal Res | dV/dt (V/µs) | Pkg Qty | Weight (grams) | Part Number Group B Standard Duty |
|----------------|-------|-------------------------|-------|-----|------------------------------|--------------|-------------|------|-------------|--------------|---------|----------------|-----------------------------------|
| | | D | H | H1 | 10 kHz 40°C (A) ¹ | (A) | 10 kHz (mΩ) | (nH) | (°C/W) | | | | |
| 600 | 600 | 85 | 124.5 | 126 | 83 | 8,200 | 0.75 | 50 | 5.8 | 14 | 5 | 940 | C44UHGT6600G8TK |
| 200 | 900 | 76 | 95 | 101 | 45 | 2,000 | 2.3 | 36 | 6.4 | 10 | 9 | 645 | C44UOGQ6200F7SK |
| 270 | 900 | 76 | 95 | 101 | 50 | 2,700 | 1.8 | 36 | 6.4 | 10 | 9 | 610 | C44UOGQ6270F7SK |
| 370 | 900 | 85 | 95 | 101 | 60 | 3,700 | 1.4 | 40 | 5.6 | 10 | 5 | 715 | C44UOGQ6370F8SK |
| 510 | 900 | 85 | 120 | 126 | 60 | 3,570 | 1.8 | 40 | 4.6 | 7 | 5 | 840 | C44UOGQ6510F8SK |
| 600 | 900 | 85 | 140 | 146 | 58 | 4,200 | 2.2 | 40 | 4.1 | 7 | 5 | 950 | C44UOGQ6600F8SK |
| 130 | 1,100 | 76 | 95 | 101 | 40 | 1,560 | 2.8 | 36 | 6.4 | 12 | 9 | 580 | C44UQGQ6130F7SK |
| 175 | 1,100 | 76 | 95 | 101 | 46 | 2,100 | 2.2 | 36 | 6.4 | 12 | 9 | 610 | C44UQGQ6175F7SK |
| 240 | 1,100 | 85 | 95 | 101 | 56 | 2,880 | 1.7 | 40 | 5.6 | 12 | 5 | 710 | C44UQGQ6240F8SK |
| 280 | 1,100 | 76 | 140 | 146 | 43 | 1,960 | 3.4 | 40 | 4.6 | 7 | 9 | 805 | C44UQGQ6280F7SK |
| 330 | 1,100 | 85 | 140 | 146 | 50 | 2,310 | 2.9 | 40 | 4.1 | 7 | 5 | 990 | C44UQGQ6330F8SK |
| 420 | 1,100 | 85 | 155 | 161 | 60 | 2,940 | 2.1 | 60 | 3.7 | 7 | 5 | 1120 | C44UQGT6420G8SK |
| 500 | 1,100 | 85 | 174 | 180 | 90 | 6,000 | 1.1 | 80 | 3.4 | 12 | 5 | 1120 | C44UQGQ6500F8SK |
| 90 | 1,300 | 76 | 95 | 101 | 37 | 1,350 | 3.3 | 36 | 6.4 | 15 | 9 | 580 | C44UUGQ5900F7SK |
| 120 | 1,300 | 76 | 95 | 101 | 43 | 1,800 | 2.5 | 36 | 6.4 | 15 | 9 | 610 | C44UUGQ6120F7SK |
| 165 | 1,300 | 85 | 95 | 101 | 52 | 2,475 | 2.0 | 40 | 5.6 | 15 | 5 | 716 | C44UUGQ6165F8SK |
| 195 | 1,300 | 76 | 140 | 146 | 40 | 1,755 | 4.0 | 50 | 4.6 | 9 | 9 | 797 | C44UUGQ6195F7SK |
| 250 | 1,300 | 85 | 140 | 146 | 47 | 2,250 | 3.3 | 50 | 4.1 | 9 | 5 | 957 | C44UUGQ6250F8SK |
| 320 | 1,300 | 85 | 174 | 180 | 82 | 4,800 | 1.3 | 80 | 3.4 | 15 | 5 | 1130 | C44UUGQ6320F8SK |
| 550 | 1,300 | 85 | 264 | 270 | 82 | 4,950 | 1.9 | 100 | 2.3 | 9 | 5 | 1600 | C44UUGQ6550F8SK |
| Cap Value | VDC | D | H | H1 | Ripple Current | Peak Current | ESR | ESL | Thermal Res | dV/dt (V/µs) | Pkg Qty | Weight | Part Number |

¹ Current values that lead to a ΔT of $\sim 70^\circ\text{C}$ in the Hot Spot à $T_{HS} = T_{AMB} + \Delta T = 70^\circ\text{C}$
For Packaging quantities not listed, please contact KEMET.

Marking

| | |
|-------------|--|
| MKP C44U | ← Dielectric Type. Series. |
| 500µF ±10% | ← Capacitance. Tolerance. |
| Un = 1100V~ | ← Rated Voltage |
| -40 +85°C | ← Climatic Category Temperatures - Minimum/Maximum |
| NO PCB SH | ← Self-Healing Dielectric. |
| B7 11257039 | ← Production Date. Batch Number. |

Environmental Compliance

As a leading global supplier of electronic components and an environmentally conscious company, KEMET continually aspires to improve the environmental effects of our manufacturing processes and our finished electronic components.

In Europe (RoHS Directive) and in some other geographical areas such as China (China RoHS), legislation has been enacted to prevent or otherwise limit the use of certain hazardous materials, including lead (Pb), in electronic equipment. KEMET monitors legislation globally to ensure compliance and endeavors to adjust our manufacturing processes and/or electronic components as may be required by applicable law.

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All KEMET power film capacitors are RoHS compliant.

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Dissipation Factor

Dissipation factor is a complex function involved with capacitor inefficiency. The $\tan \delta$ may vary up and down with increased temperature. For more information, refer to Performance Characteristics.

Sealing

Hermetically Sealed Capacitors

As the temperature increases, the pressure inside the capacitor increases. If the internal pressure is high enough, it can cause a breach in the capacitor. Such a breach can result in leakage, impregnation, filling fluid, or moisture susceptibility.

Barometric Pressure

The altitude at which hermetically sealed capacitors are operated controls the capacitor's voltage rating. As the barometric pressure decreases, the susceptibility to terminal arc-over increases. Non-hermetic capacitors can be affected by internal stresses due to pressure changes. These effects can be in the form of capacitance changes, dielectric arc-over, and/or low insulation resistance. Altitude can also affect heat transfer. Heat that is generated in an operation cannot be dissipated properly, and high RI^2 losses and eventual failure can result.

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