

CKR/CKS



Radial Lead Aluminum Electrolytic Capacitors

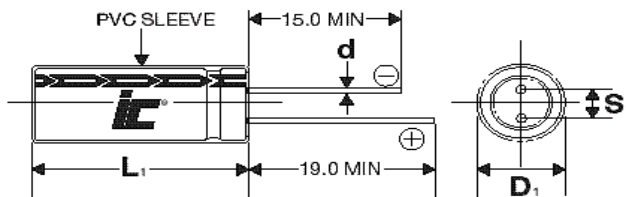
FEATURES

Small Size - High Voltage - General Purpose

APPLICATIONS

Bypass - Coupling - Filtering - De-coupling

| | | | | | | | | | | | | | | | | | | |
|--|----------------|--|----------------------------------|----------------|-----|------|------|------|------------------|-----------------|-----|-----|-----|-----|-----|-----|--|--|
| Operating Temperature Range | | -40°C to +85°C (6.3 to 100 WVDC) -25°C to +85°C (160 to 500 WVDC) | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | | ±20% at 120 Hz, 20°C | | | | | | | | | | | | | | | | |
| Surge Voltage | WVDC | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | 500 | | |
| | SVDC | 7.9 | 13 | 20 | 32 | 44 | 63 | 79 | 125 | 200 | 250 | 300 | 400 | 450 | 500 | 550 | | |
| Dissipation Factor | WVDC | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | 500 | | |
| | Tan δ | .24 | 0.2 | .16 | .14 | .12 | .1 | .1 | .08 | .2 | .2 | .2 | .2 | .2 | .2 | .24 | | |
| Add .02 for every 1000uF above 1000uF | | | | | | | | | | | | | | | | | | |
| Leakage Current | | 6.3 to 100 WVDC | | | | | | | | 160 to 500 WVDC | | | | | | | | |
| | | 2 Minutes | | | | | | | | 2 Minutes | | | | | | | | |
| | | .01CV or 3uA, Whichever is greater | | | | | | | | .03CV+10uA | | | | | | | | |
| Low Temperature Stability Impedance Ratio (120 Hz) | WVDC | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | 500 | | |
| | -25°C to +20°C | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 6 | 7 | 7 | 8 | | |
| | -40°C to +20°C | 10 | 8 | 6 | 5 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | | |
| Load Life | | 2000 hours at 85°C with rated WVDC and ripple current applied | | | | | | | | | | | | | | | | |
| | | Capacitance Change | ≤20% of initial measured value | | | | | | | | | | | | | | | |
| | | Dissipation Factor | ≤200% of maximum specified value | | | | | | | | | | | | | | | |
| | | Leakage Current | ≤100% of maximum specified value | | | | | | | | | | | | | | | |
| Shelf Life | | 1000 hours at 85°C with no voltage applied | | | | | | | | | | | | | | | | |
| | | Capacitance Change | ≤20% initial measured value | | | | | | | | | | | | | | | |
| | | Dissipation Factor | ≤200% of maximum specified value | | | | | | | | | | | | | | | |
| | | Leakage Current | ≤100% of maximum specified value | | | | | | | | | | | | | | | |
| Ripple Current Multipliers | | WVDC | Capacitance (uF) | Frequency (Hz) | | | | | Temperature (°C) | | | | | | | | | |
| | | 6.3 to 100V | 47 | 50 | 120 | 300 | 1k | 10k | 100k | 85 | 70 | 65 | 60 | 45 | | | | |
| | | | 68 to 470 | 0.75 | 1.0 | 1.35 | 1.57 | 2 | 2.3 | 1.0 | 1.4 | 1.6 | 1.7 | 1.8 | | | | |
| | | | ≥560 | 0.8 | 1.0 | 1.23 | 1.34 | 1.5 | 1.65 | 1.0 | 1.4 | 1.6 | 1.7 | 1.8 | | | | |
| | | 160 to 450V | .47 to 4.7 | 0.85 | 1.0 | 1.1 | 1.13 | 1.15 | 1.4 | 1.0 | 1.4 | 1.6 | 1.7 | 1.8 | | | | |
| | | | 6.8 to 82 | 0.65 | 1.0 | 1.35 | 1.75 | 2.3 | 2.5 | 1.0 | 1.4 | 1.6 | 1.7 | 1.8 | | | | |
| | | | 100 to 1000 | 0.75 | 1.0 | 1.25 | 1.5 | 1.75 | 1.8 | 1.0 | 1.4 | 1.6 | 1.7 | 1.8 | | | | |
| | | 0.8 | 1.0 | 1.15 | 1.5 | 1.4 | 1.5 | 1.0 | 1.4 | 1.6 | 1.7 | 1.8 | | | | | | |



| | | | | | | | |
|---|-----|-----|-----|-----|------|-----|-----|
| D | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
| S | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| d | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |

L₁=L+1.5mm Max.
D₁=D+0.5mm Max.
S₁=S+0.5 mm



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CKR_CKS

+85°C, Standard 2000 hour

| Capacitance (µF) | WVDC | IC PART NUMBER | Maximum ESR (Ω) 120 Hz, +20°C | Maximum RMS Ripple Current (mA) 120 Hz, +85°C | Dims DxL (mm) |
|------------------|------|----------------|-------------------------------|---|---------------|
| 1 | 50 | 105CKR050M | 165.79 | 13 | 5x11 |
| 1 | 100 | 105CKR100M | 165.79 | 25 | 5x11 |
| 1 | 250 | 105CKR250M | 331.573 | 18 | 6.3x11 |
| 1 | 450 | 105CKS450M | 397.887 | 29 | 8x11.5 |
| 1 | 450 | 105CKS450MEBB | 397.887 | 20 | 6.3x11 |
| 1 | 500 | 105CKS500MEBB | 397.887 | 20 | 6.3x11 |
| 1.5 | 50 | 155CKR050M | 110.52 | 18 | 5x11 |
| 2.2 | 50 | 225CKR050M | 75.358 | 28 | 5x11 |
| 2.2 | 100 | 225CKS100M | 75.357 | 40 | 5x11 |
| 2.2 | 250 | 225CKS250M | 150.715 | 32 | 6.3x11 |
| 2.2 | 350 | 225CKS350M | 180.858 | 38 | 6.3x11 |
| 2.2 | 400 | 225CKS400MEBB | 180.858 | 38 | 6.3x11 |
| 2.2 | 450 | 225CKS450MJM | 180.858 | 38 | 8x11.5 |
| 2.2 | 500 | 225CKS500MFH | 180.858 | 34 | 8x11.5 |
| 3.3 | 50 | 335CKS050M | 50.238 | 35 | 5x11 |
| 3.3 | 100 | 335CKS100M | 50.238 | 45 | 5x11 |
| 3.3 | 250 | 335CKS250MGM | 100.477 | 40 | 6.3x11 |
| 3.3 | 350 | 335CKS350MJM | 120.572 | 55 | 8x11.5 |
| 3.3 | 400 | 335CKS400MJM | 120.572 | 55 | 8x11.5 |
| 3.3 | 450 | 335CKS450MLM | 120.572 | 40 | 10x12.5 |
| 4.7 | 50 | 475CKR050M | 35.274 | 50 | 5x11 |
| 4.7 | 100 | 475CKR100M | 28.219 | 55 | 5x11 |
| 4.7 | 250 | 475CKS250MGM | 70.547 | 58 | 6.3x11 |
| 4.7 | 400 | 475CKS400MFH | 84.6569 | 70 | 8x11.5 |
| 4.7 | 400 | 475CKS400M | 84.6569 | 75 | 10x16 |
| 4.7 | 450 | 475CKS450M | 84.6569 | 75 | 10x16 |
| 4.7 | 450 | 475CKS450MLN | 84.6569 | 70 | 10x12.5 |
| 4.7 | 500 | 475CKS500MGBW | 84.6569 | 68 | 10x16 |
| 6.8 | 500 | 685CKS500MGJG | 58.5128 | 80 | 10x20 |
| 10 | 50 | 106CKR050M | 16.579 | 75 | 5x11 |
| 10 | 63 | 106CKR063M | 16.579 | 75 | 5x11 |
| 10 | 100 | 106CKS100MEM | 16.579 | 80 | 5x11 |
| 10 | 160 | 106CKS160M | 33.157 | 90 | 8x11.5 |
| 10 | 200 | 106CKS200M | 33.157 | 100 | 10x12.5 |
| 10 | 250 | 106CKS250MLN | 33.157 | 105 | 10x20 |
| 10 | 400 | 106CKS400MLQ | 39.7887 | 120 | 10x16 |
| 10 | 450 | 106CKS450MLU | 39.7887 | 80 | 10x20 |
| 10 | 450 | 106CKS450MGBW | 39.7887 | 105 | 10x16 |
| 10 | 500 | 106CKS500MTJG | 39.7887 | 105 | 12.5x20 |
| 15 | 50 | 156CKR050M | 11.052 | 78 | 5x11 |
| 22 | 50 | 226CKR050M | 7.536 | 110 | 5x11 |
| 22 | 63 | 226CKR063M | 7.536 | 130 | 6.3x11 |
| 22 | 63 | 226CKS063M | 7.536 | 115 | 5x11 |
| 22 | 100 | 226CKS100M | 7.536 | 135 | 6.3x11 |
| 22 | 100 | 226CKR100M | 7.536 | 155 | 8x11.5 |
| 22 | 160 | 226CKS160M | 15.071 | 172 | 10x16 |
| 22 | 200 | 226CKS200MLQ | 15.071 | 175 | 10x16 |
| 22 | 250 | 226CKS250MLU | 15.071 | 195 | 10x20 |
| 22 | 350 | 226CKS350M | 18.0858 | 210 | 12.5x20 |
| 22 | 400 | 226CKS400M | 18.0858 | 210 | 12.5x25 |
| 22 | 400 | 226CKS400MTJG | 18.0858 | 210 | 12.5x20 |
| 22 | 450 | 226CKS450MNV | 18.0858 | 210 | 12.5x25 |
| 22 | 450 | 226CKS450M | 18.0858 | 210 | 16x25 |
| 22 | 500 | 226CKS500MKJH | 18.0858 | 195 | 16x20 |
| 33 | 35 | 336CKR035M | 6.0238 | 110 | 5x11 |
| 33 | 50 | 336CKS050M | 5.0238 | 130 | 5x11 |
| 33 | 63 | 336CKR063M | 5.0238 | 160 | 6.3x11 |
| 33 | 160 | 336CKS160M | 10.048 | 230 | 10x20 |

| Capacitance (µF) | WVDC | IC PART NUMBER | Maximum ESR (Ω) 120 Hz, +20°C | Maximum RMS Ripple Current (mA) 120 Hz, +85°C | Dims DxL (mm) |
|------------------|------|----------------|-------------------------------|---|---------------|
| 33 | 200 | 336CKS200MLU | 10.048 | 240 | 10x20 |
| 33 | 250 | 336CKS250M | 10.048 | 260 | 12.5x20 |
| 33 | 350 | 336CKS350M | 12.0572 | 300 | 12.5x25 |
| 33 | 400 | 336CKS400M | 12.0572 | 260 | 16x25 |
| 33 | 400 | 336CKS400MTJD | 12.0572 | 300 | 12.5x25 |
| 33 | 450 | 336CKS450MQV | 12.0572 | 300 | 16x25 |
| 33 | 450 | 336CKS450M | 12.0572 | 280 | 16x30 |
| 33 | 500 | 336CKS500MKJD | 12.0572 | 260 | 16x25 |
| 47 | 25 | 476CKR025M | 4.938 | 130 | 5x11 |
| 47 | 35 | 476CKS035M | 4.233 | 140 | 5x11 |
| 47 | 50 | 476CKR050M | 2.822 | 180 | 6.3x11 |
| 47 | 63 | 476CKR063M | 2.822 | 210 | 8x11.5 |
| 47 | 63 | 476CKS063M | 2.822 | 190 | 6.3x11 |
| 47 | 100 | 476CKS100M | 2.822 | 260 | 10x12.5 |
| 47 | 100 | 476CKR100M | 2.822 | 280 | 10x16 |
| 47 | 160 | 476CKR160M | 7.055 | 270 | 12.5x25 |
| 47 | 160 | 476CKS160MLU | 7.055 | 285 | 10x21 |
| 47 | 200 | 476CKS200MTJG | 7.055 | 310 | 12.5x20 |
| 47 | 250 | 476CKS250M | 7.055 | 350 | 12.5x25 |
| 47 | 250 | 476CKS250MNU | 7.055 | 310 | 12.5x20 |
| 47 | 350 | 476CKS350M | 8.4657 | 390 | 16x25 |
| 47 | 400 | 476CKS400MQV | 8.4657 | 390 | 16x25 |
| 47 | 450 | 476CKS450MQV | 8.4657 | 380 | 16x30 |
| 47 | 500 | 476CKS500MKAG | 8.4657 | 320 | 16x30 |
| 68 | 500 | 686CKS500MKAD | 5.8513 | 430 | 18x35 |
| 82 | 500 | 826CKS500MKCG | 4.8523 | 500 | 18x40 |
| 100 | 16 | 107CKS016M | 2.653 | 175 | 5x11 |
| 100 | 25 | 107CKS025MEM | 2.321 | 180 | 5x11 |
| 100 | 35 | 107CKS035M | 1.989 | 235 | 6.3x11 |
| 100 | 50 | 107CKR050M | 1.658 | 310 | 8x11.5 |
| 100 | 63 | 107CKR063M | 1.658 | 330 | 10x12.5 |
| 100 | 63 | 107CKS063MJM | 1.658 | 325 | 8x11.5 |
| 100 | 100 | 107CKS100MLQ | 1.658 | 340 | 10x16 |
| 100 | 100 | 107CKS100M | 1.658 | 455 | 10x20 |
| 100 | 160 | 107CKS160M | 3.316 | 490 | 12.5x25 |
| 100 | 250 | 107CKS250MQV | 3.316 | 560 | 16x25 |
| 100 | 350 | 107CKS350M | 3.9789 | 550 | 18x35 |
| 100 | 400 | 107CKS400MKAD | 3.9789 | 640 | 16x35 |
| 100 | 450 | 107CKS450MLAD | 3.9789 | 640 | 18x35 |
| 100 | 450 | 107CKS450M | 3.9789 | 550 | 18x40 |
| 100 | 500 | 107CKS500MKCD | 3.9789 | 590 | 18x45 |
| 150 | 50 | 157CKS050M | 1.1052 | 263 | 8x11.5 |
| 150 | 450 | 157CKS450MLCD | 2.65258 | 850 | 18x45 |
| 150 | 450 | 157CKS450MLCG | 2.65258 | 860 | 18x40 |
| 220 | 10 | 227CKS010M | 1.507 | 230 | 5x11 |
| 220 | 16 | 227CKS016M | 1.206 | 290 | 6.3x11 |
| 220 | 25 | 227CKR025M | 1.055 | 370 | 8x11.5 |
| 220 | 25 | 227CKS025MGM | 1.055 | 280 | 6.3x11 |
| 220 | 35 | 227CKR035M | 0.904 | 450 | 10x12.5 |
| 220 | 35 | 227CKS035M | 1.055 | 405 | 8x11.5 |
| 220 | 50 | 227CKS050M | 0.754 | 510 | 10x12.5 |
| 220 | 50 | 227CKR050M | 0.754 | 540 | 10x16 |
| 220 | 63 | 227CKS063M | 0.754 | 615 | 10x16 |
| 220 | 100 | 227CKS100MNU | 0.754 | 745 | 12.5x20 |
| 220 | 160 | 227CKS160MQV | 1.13 | 900 | 16x30 |
| 220 | 200 | 227CKS200M | 1.13 | 960 | 16x35 |
| 220 | 250 | 227CKS250M | 1.13 | 1020 | 18x35 |
| 330 | 10 | 337CKS010M | 1.005 | 325 | 6.3x11 |

CKR_CKS

+85°C, Standard 2000 hour

| Capacitance (µF) | WVDC | IC PART NUMBER | Maximum ESR (Ω) 120 Hz, +20°C | Maximum RMS Ripple Current (mA) 120 Hz, +85°C | Dims DxDL (mm) |
|------------------|------|----------------|-------------------------------|---|----------------|
| 330 | 25 | 337CKS025M | 0.703 | 455 | 8x11.5 |
| 330 | 35 | 337CKS035M | 0.603 | 580 | 10x12.5 |
| 330 | 50 | 337CKS050M | 0.5024 | 710 | 10x16 |
| 330 | 50 | 337CKR050M | 0.5024 | 730 | 10x20 |
| 330 | 63 | 337CKS063M | 0.5024 | 825 | 10x20 |
| 330 | 100 | 337CKS100M | 0.5024 | 990 | 12.5x25 |
| 330 | 160 | 337CKS160MLAG | 1.005 | 1150 | 18x30 |
| 470 | 10 | 477CKS010M | 0.67 | 385 | 6.3x11 |
| 470 | 16 | 477CKS016M | 0.564 | 500 | 8x11.5 |
| 470 | 25 | 477CKS025M | 0.494 | 630 | 10x12.5 |
| 470 | 35 | 477CKS035M | 0.423 | 755 | 10x16 |
| 470 | 50 | 477CKS050M | 0.3527 | 815 | 10x20 |
| 470 | 50 | 477CKR050M | 0.353 | 930 | 12.5x20 |
| 470 | 63 | 477CKS063M | 0.3527 | 1155 | 12.5x20 |
| 470 | 100 | 477CKS100M | 0.3527 | 1395 | 16x25 |
| 470 | 160 | 477CKS160MLAD | 0.7055 | 1460 | 18x35 |
| 470 | 200 | 477CKS200MLCD | 0.7055 | 1610 | 18x45 |
| 680 | 50 | 687CKS050MTJG | 0.244 | 1000 | 12.5x20 |
| 680 | 50 | 687CKR050M | 0.244 | 810 | 12.5x25 |
| 680 | 63 | 687CKS063MTJD | 0.244 | 1515 | 12.5x25 |
| 680 | 160 | 687CKS160MLCD | 0.488 | 1600 | 18x45 |
| 1000 | 6.3 | 108CKS6R3M | 0.365 | 610 | 8x11.5 |
| 1000 | 10 | 108CKS010M | 0.315 | 795 | 10x12.5 |
| 1000 | 16 | 108CKS016M | 0.3316 | 930 | 10x16 |
| 1000 | 16 | 108CKS016MLN | 0.3316 | 700 | 10x12.5 |
| 1000 | 25 | 108CKS025M | 0.232 | 1095 | 10x20 |
| 1000 | 25 | 108CKR025M | 0.232 | 1150 | 12.5x20 |
| 1000 | 35 | 108CKR035M | 0.199 | 1370 | 12.5x25 |
| 1000 | 35 | 108CKS035M | 0.199 | 1410 | 12.5x20 |
| 1000 | 50 | 108CKS050M | 0.166 | 1715 | 12.5x25 |
| 1000 | 50 | 108CKR050M | 0.166 | 1510 | 16x25 |
| 1000 | 63 | 108CKR063M | 0.166 | 1670 | 16x30 |
| 1000 | 63 | 108CKS063M | 0.166 | 2040 | 16x25 |
| 1000 | 100 | 108CKS100MRY | 0.166 | 1995 | 18x35 |
| 1500 | 10 | 158CKS010M | 0.2432 | 875 | 10x16 |
| 1500 | 16 | 158CKS016M | 0.199 | 1025 | 10x20 |
| 1500 | 25 | 158CKS025M | 0.177 | 1210 | 12.5x20 |
| 1500 | 35 | 158CKR035M | 0.155 | 1110 | 16x25 |
| 1500 | 50 | 158CKS050M | 0.133 | 1650 | 16x30 |
| 2200 | 6.3 | 228CKS6R3M | 0.211 | 900 | 10x16 |
| 2200 | 10 | 228CKS010M | 0.1809 | 1230 | 10x20 |

| Capacitance (µF) | WVDC | IC PART NUMBER | Maximum ESR (Ω) 120 Hz, +20°C | Maximum RMS Ripple Current (mA) 120 Hz, +85°C | Dims DxDL (mm) |
|------------------|------|----------------|-------------------------------|---|----------------|
| 2200 | 16 | 228CKS016M | 0.151 | 1555 | 12.5x20 |
| 2200 | 16 | 228CKS016MLU | 0.151 | 1010 | 10x20 |
| 2200 | 25 | 228CKS025M | 0.136 | 1800 | 12.5x25 |
| 2200 | 25 | 228CKR025M | 0.1356 | 1770 | 16x25 |
| 2200 | 35 | 228CKR035M | 0.1206 | 2090 | 16x30 |
| 2200 | 35 | 228CKS035M | 0.121 | 2135 | 16x25 |
| 2200 | 50 | 228CKS050M | 0.106 | 2390 | 16x35 |
| 2200 | 50 | 228CKS050MQW | 0.106 | 2320 | 16x30 |
| 2200 | 63 | 228CKS063M | 0.106 | 2300 | 18x35 |
| 3300 | 6.3 | 338CKS6R3M | 0.1507 | 1350 | 10x20 |
| 3300 | 10 | 338CKS010M | 0.1306 | 1685 | 12.5x20 |
| 3300 | 16 | 338CKS016M | 0.1105 | 1990 | 12.5x25 |
| 3300 | 25 | 338CKS025M | 0.703 | 2305 | 16x25 |
| 3300 | 35 | 338CKS035MQW | 0.0904 | 2340 | 16x30 |
| 3300 | 50 | 338CKS050M | 0.0804 | 3220 | 18x35 |
| 3300 | 63 | 338CKS063MLCG | 0.0804 | 2500 | 18x40 |
| 4700 | 6.3 | 478CKS6R3M | 0.1129 | 1830 | 12.5x20 |
| 4700 | 10 | 478CKS010M | 0.0988 | 2105 | 12.5x25 |
| 4700 | 16 | 478CKS016M | 0.085 | 2490 | 16x25 |
| 4700 | 25 | 478CKS025M | 0.078 | 2855 | 16x30 |
| 4700 | 35 | 478CKS035M | 0.071 | 3400 | 18x35 |
| 4700 | 35 | 478CKS035MQY | 0.071 | 2500 | 16x35 |
| 4700 | 50 | 478CKS050MLCG | 0.0635 | 3340 | 18x40 |
| 6800 | 6.3 | 688CKS6R3M | 0.083 | 1930 | 12.5x25 |
| 6800 | 10 | 688CKS010M | 0.0756 | 2610 | 16x25 |
| 6800 | 16 | 688CKS016MQV | 0.068 | 2250 | 16x25 |
| 6800 | 16 | 688CKS016MKAG | 0.068 | 3010 | 16x30 |
| 6800 | 25 | 688CKS025MQY | 0.063 | 2600 | 16x35 |
| 6800 | 25 | 688CKS025M | 0.063 | 3530 | 18x35 |
| 6800 | 35 | 688CKS035M | 0.0585 | 3500 | 18x40 |
| 10000 | 6.3 | 109CKS6R3M | 0.0696 | 2760 | 16x25 |
| 10000 | 10 | 109CKS010MQW | 0.063 | 2960 | 16x30 |
| 10000 | 16 | 109CKS016M | 0.056 | 3230 | 18x35 |
| 10000 | 16 | 109CKS016MQY | 0.056 | 3490 | 16x35 |
| 10000 | 25 | 109CKS025M | 0.053 | 2800 | 18x40 |
| 15000 | 6.3 | 159CKS6R3M | 0.0531 | 2860 | 16x35 |
| 15000 | 10 | 159CKS010MKCG | 0.0531 | 3100 | 16x40 |
| 15000 | 16 | 159CKS016M | 0.052 | 3100 | 18x40 |
| 22000 | 6.3 | 229CKS6R3MRY | 0.0497 | 3200 | 18x35 |
| 22000 | 6.3 | 229CKS6R3M | 0.0497 | 3400 | 18x40 |
| 22000 | 10 | 229CKS010M | 0.0467 | 3400 | 18x40 |