

ALS42 Series 105°C

RoHS
Compliant

- Case Sizes and Terminals for the Asian Market
- Long Life, 9000 hours at 105°C (U_r, I_r applied)
- High ripple current
- Excellent surge voltage capability
- Optimized designs available on request

APPLICATION

Smoothing, energy storage, or pulse operation in telecommunication demanding power supplies, process control, AC-motor control, traction and welding.

BASIC DESIGN

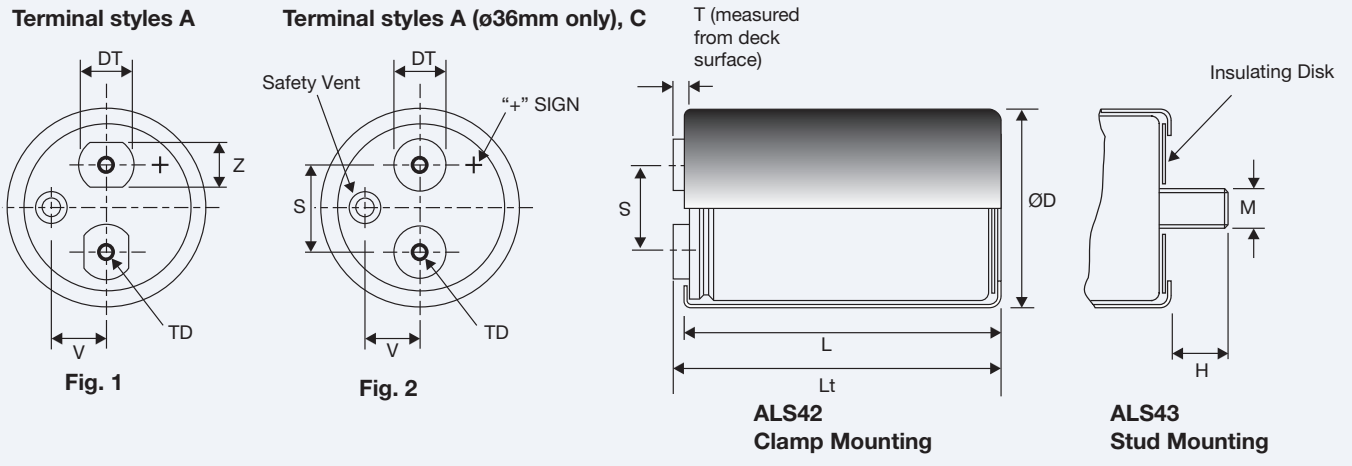
The ALS42/43 series of screw terminal capacitors feature the same high ripple currents and long life characteristics as the ALS32/33 series but can operate at higher temperatures. They are similarly suited for high reliability and long life applications

such as frequency converters, UPS systems and switch mode power supplies, but the extended temperature range allows increased ripple currents at lower temperatures.

SPECIFICATION

| Standards | IEC 60384-4 Long Life Grade 40/105/56, | | | | | | | | | | | | | | | | | |
|---|--|---|-----------------|-----|-------|-----|-------|------|-------|--------|-------|---|------|--------|-----|-------------------------|----------------|---------------------------|
| Capacitance range | 1000 – 15000 µF | | | | | | | | | | | | | | | | | |
| Capacitance tolerance | -20 to +20% | | | | | | | | | | | | | | | | | |
| Rated voltage U_R | 350 – 450 VDC | | | | | | | | | | | | | | | | | |
| Surge voltage U_s | 1.10 x U _R (for U _R ≥ 350 VDC) | Test Condition: ≤ 30s surge, 1000 cycles @ 105°C | | | | | | | | | | | | | | | | |
| Surge voltage U_{ss} (Short duration) | <table border="1"> <thead> <tr> <th>U_R</th> <th>U_{ss}</th> </tr> </thead> <tbody> <tr> <td>350</td> <td>500</td> </tr> <tr> <td>400</td> <td>520</td> </tr> <tr> <td>415</td> <td>530</td> </tr> <tr> <td>450</td> <td>550</td> </tr> </tbody> </table> | U _R | U _{ss} | 350 | 500 | 400 | 520 | 415 | 530 | 450 | 550 | Test Condition: ≤ 500ms surge, 100 cycles @ 20°C | | | | | | |
| U _R | U _{ss} | | | | | | | | | | | | | | | | | |
| 350 | 500 | | | | | | | | | | | | | | | | | |
| 400 | 520 | | | | | | | | | | | | | | | | | |
| 415 | 530 | | | | | | | | | | | | | | | | | |
| 450 | 550 | | | | | | | | | | | | | | | | | |
| Leakage current I_L | = 0.003 x C _R x U _R (µA) or 6mA whichever is the smaller. Note, C _R is in µF. | Test Condition: U _R , 5mins., 20°C | | | | | | | | | | | | | | | | |
| Operational life time +105°C, U_R, I_r | <table border="1"> <thead> <tr> <th>Can Diameter</th> <th>Life (hrs)</th> </tr> </thead> <tbody> <tr> <td>36</td> <td>6000</td> </tr> <tr> <td>51</td> <td>7000</td> </tr> <tr> <td>63.5</td> <td>8000</td> </tr> <tr> <td>77, 90</td> <td>9000</td> </tr> </tbody> </table> | Can Diameter | Life (hrs) | 36 | 6000 | 51 | 7000 | 63.5 | 8000 | 77, 90 | 9000 | End of Life requirement: <table border="1"> <tbody> <tr> <td>ΔC/C</td> <td>≤ ±10%</td> </tr> <tr> <td>ESR</td> <td>≤ 2 x initial ESR value</td> </tr> <tr> <td>I_L</td> <td>≤ initial specified limit</td> </tr> </tbody> </table> | ΔC/C | ≤ ±10% | ESR | ≤ 2 x initial ESR value | I _L | ≤ initial specified limit |
| Can Diameter | Life (hrs) | | | | | | | | | | | | | | | | | |
| 36 | 6000 | | | | | | | | | | | | | | | | | |
| 51 | 7000 | | | | | | | | | | | | | | | | | |
| 63.5 | 8000 | | | | | | | | | | | | | | | | | |
| 77, 90 | 9000 | | | | | | | | | | | | | | | | | |
| ΔC/C | ≤ ±10% | | | | | | | | | | | | | | | | | |
| ESR | ≤ 2 x initial ESR value | | | | | | | | | | | | | | | | | |
| I _L | ≤ initial specified limit | | | | | | | | | | | | | | | | | |
| +105°C, U_R | <table border="1"> <thead> <tr> <th>Can Diameter</th> <th>Life (hrs)</th> </tr> </thead> <tbody> <tr> <td>36</td> <td>10000</td> </tr> <tr> <td>51</td> <td>11000</td> </tr> <tr> <td>63.5</td> <td>13000</td> </tr> <tr> <td>77, 90</td> <td>15000</td> </tr> </tbody> </table> | Can Diameter | Life (hrs) | 36 | 10000 | 51 | 11000 | 63.5 | 13000 | 77, 90 | 15000 | | | | | | | |
| Can Diameter | Life (hrs) | | | | | | | | | | | | | | | | | |
| 36 | 10000 | | | | | | | | | | | | | | | | | |
| 51 | 11000 | | | | | | | | | | | | | | | | | |
| 63.5 | 13000 | | | | | | | | | | | | | | | | | |
| 77, 90 | 15000 | | | | | | | | | | | | | | | | | |
| Shelf Life | 2000 hrs at 0V +85°C, or 30000 hrs at 0V +40°C | | | | | | | | | | | | | | | | | |
| Temperature range | -40 to +105°C (Operating) -55°C to +105°C (Storage) | | | | | | | | | | | | | | | | | |

SPECIFICATION



Terminals options

| Terminal Style | Case Diameter Availability | Thread | Height T mm ±0.8 | Diameter DT mm ±0.5 | Flats Z mm | Thread depth TD mm (min.) | Drawing |
|----------------|----------------------------|--------|------------------|---------------------|------------|---------------------------|---------|
| A | 35 mm only | M5 | 7.14 | 8 | - | 10 | Fig.2 |
| A | 51, 63.5, 76 & 90 mm | M5 | 5.5 | 13 | 10 | 10 | Fig.1 |
| C | 63.5, 76 & 90 mm | M6 | 5.5 | 13 | - | 10 | Fig.2 |

Terminations

Aluminium inserts with M5 threads as standard, max. torque 2NM. Optional M6 threaded inserts have a max. torque 4NM. Max. torque for stud mounting M8:4NM and M12:8NM.

Dimensions table ALS42 (sleeved) mm

| CASE CODE | D unsleeved ±0.8 | D sleeved ±0.8 | L unsleeved ±1.6 | L sleeved ±1.6 | LT sleeved ±1 | S ±0.5 | T ±0.8 | V | M THREAD | H ±1 | MOUNTING CLIP | WEIGHT grams |
|-----------|------------------|----------------|------------------|----------------|---------------|--------|--------|------|----------|------|---------------|--------------|
| D2C | 34.9 | 35.3 | 54.0 | 55.1 | 61.5 | 12.8 | 7.14 | 8 | M8 | 12 | V3/H2/UTE2736 | 80 |
| D2L | 34.9 | 35.3 | 66.7 | 67.8 | 74.5 | 12.8 | 7.14 | 8 | M8 | 12 | V3/H2/UTE2736 | 95 |
| D3C | 34.9 | 35.3 | 79.4 | 80.5 | 87.5 | 12.8 | 7.14 | 8 | M8 | 12 | V3/H2/UTE2736 | 115 |
| D3L | 34.9 | 35.3 | 92.1 | 93.2 | 100.5 | 12.8 | 7.14 | 8 | M8 | 12 | V3/H2/UTE2736 | 130 |
| D4C | 34.9 | 35.3 | 104.8 | 105.9 | 112.5 | 12.8 | 7.14 | 8 | M8 | 12 | V3/H2/UTE2736 | 150 |
| D4L | 34.9 | 35.3 | 117.5 | 118.6 | 125.5 | 12.8 | 7.14 | 8 | M8 | 12 | V3/H2/UTE2736 | 165 |
| D5C | 34.9 | 35.3 | 130.2 | 131.3 | 138.5 | 12.8 | 7.14 | 8 | M8 | 12 | V3/H2/UTE2736 | 185 |
| D5L | 34.9 | 35.3 | 142.9 | 144.0 | 151.5 | 12.8 | 7.14 | 8 | M8 | 12 | V3/H2/UTE2736 | 205 |
| K2C | 50.8 | 51.2 | 54.0 | 55.1 | 60.0 | 22.2 | 5.5 | 13.7 | M12 | 16 | V4/UTE2737 | 165 |
| K2L | 50.8 | 51.2 | 66.7 | 67.8 | 73.0 | 22.2 | 5.5 | 13.7 | M12 | 16 | V4/UTE2737 | 200 |
| K3C | 50.8 | 51.2 | 79.4 | 80.5 | 86.0 | 22.2 | 5.5 | 13.7 | M12 | 16 | V4/UTE2737 | 240 |
| K3L | 50.8 | 51.2 | 92.1 | 93.2 | 98.0 | 22.2 | 5.5 | 13.7 | M12 | 16 | V4/UTE2737 | 275 |
| K4C | 50.8 | 51.2 | 104.8 | 105.9 | 111.0 | 22.2 | 5.5 | 13.7 | M12 | 16 | V4/UTE2737 | 315 |
| KJA | 50.8 | 51.2 | 114.3 | 115.4 | 119.0 | 22.2 | 5.5 | 13.7 | M12 | 16 | V4/UTE2737 | 340 |
| K4L | 50.8 | 51.2 | 117.5 | 118.6 | 124.0 | 22.2 | 5.5 | 13.7 | M12 | 16 | V4/UTE2737 | 350 |
| K5C | 50.8 | 51.2 | 130.2 | 131.3 | 136.0 | 22.2 | 5.5 | 13.7 | M12 | 16 | V4/UTE2737 | 385 |
| K5L | 50.8 | 51.2 | 142.9 | 144.0 | 149.0 | 22.2 | 5.5 | 13.7 | M12 | 16 | V4/UTE2737 | 425 |
| L3C | 63.5 | 63.9 | 79.4 | 80.5 | 84.0 | 28.5 | 5.5 | 15.8 | M12 | 16 | V8 | 370 |
| L3L | 63.5 | 63.9 | 92.1 | 93.2 | 97.0 | 28.5 | 5.5 | 15.8 | M12 | 16 | V8 | 430 |
| L4C | 63.5 | 63.9 | 104.8 | 105.9 | 110.0 | 28.5 | 5.5 | 15.8 | M12 | 16 | V8 | 485 |
| LJA | 63.5 | 63.9 | 114.3 | 115.4 | 119.0 | 28.5 | 5.5 | 15.8 | M12 | 16 | V8 | 535 |
| L4L | 63.5 | 63.9 | 117.5 | 118.6 | 123.0 | 28.5 | 5.5 | 15.8 | M12 | 16 | V8 | 545 |
| L5C | 63.5 | 63.9 | 130.2 | 131.3 | 135.0 | 28.5 | 5.5 | 15.8 | M12 | 16 | V8 | 600 |
| L5L | 63.5 | 63.9 | 142.9 | 144.0 | 148.0 | 28.5 | 5.5 | 15.8 | M12 | 16 | V8 | 660 |
| L5R | 63.5 | 63.9 | 149.2 | 150.4 | 154.0 | 28.5 | 5.5 | 15.8 | M12 | 16 | V8 | 690 |
| L7L | 63.5 | 63.9 | 193.7 | 194.8 | 198.0 | 28.5 | 5.5 | 15.8 | M12 | 16 | V8 | 890 |
| N3L | 76.2 | 76.6 | 92.1 | 93.2 | 97.0 | 31.8 | 5.5 | 19 | M12 | 16 | V11 | 615 |
| N4C | 76.2 | 76.6 | 104.8 | 105.9 | 110.0 | 31.8 | 5.5 | 19 | M12 | 16 | V11 | 700 |
| NJA | 76.2 | 76.6 | 114.3 | 115.4 | 119.0 | 31.8 | 5.5 | 19 | M12 | 16 | V11 | 770 |
| N4L | 76.2 | 76.6 | 117.5 | 118.6 | 123.0 | 31.8 | 5.5 | 19 | M12 | 16 | V11 | 780 |
| N5C | 76.2 | 76.6 | 130.2 | 131.3 | 135.0 | 31.8 | 5.5 | 19 | M12 | 16 | V11 | 865 |
| N5L | 76.2 | 76.6 | 142.9 | 144.0 | 148.0 | 31.8 | 5.5 | 19 | M12 | 16 | V11 | 950 |
| N5R | 76.2 | 76.6 | 149.2 | 150.4 | 154.0 | 31.8 | 5.5 | 19 | M12 | 16 | V11 | 990 |
| N6L | 76.2 | 76.6 | 168.3 | 169.4 | 173.0 | 31.8 | 5.5 | 19 | M12 | 16 | V11 | 1115 |
| N7L | 76.2 | 76.6 | 193.7 | 194.8 | 198.0 | 31.8 | 5.5 | 19 | M12 | 16 | V11 | 1280 |
| N8L | 76.2 | 76.6 | 219.1 | 220.2 | 224.0 | 31.8 | 5.5 | 19 | M12 | 16 | V11 | 1450 |
| Q5R | 88.9 | 90 | 149.2 | 150.4 | 154.0 | 31.8 | 5.5 | 25 | M12 | 16 | V90 | 1360 |
| Q6L | 88.9 | 90 | 168.3 | 169.4 | 173.0 | 31.8 | 5.5 | 25 | M12 | 16 | V90 | 1520 |
| Q7L | 88.9 | 90 | 193.7 | 194.8 | 198.0 | 31.8 | 5.5 | 25 | M12 | 16 | V90 | 1870 |
| Q8L | 88.9 | 90 | 219.1 | 220.2 | 224.0 | 31.8 | 5.5 | 25 | M12 | 16 | V90 | 2000 |

ARTICLE TABLE ALS42 (105°C)

| Cap (μ F) | Nominal Case Size mm D x L | ESR (m Ω) at 25°C | | Ripple current (A) at 105°C | | Type number |
|-----------------------------------|----------------------------------|------------------------------|--------|--------------------------------|--------|-----------------|
| | | 120 Hz | 20 kHz | 120 Hz | 20 kHz | |
| 350 VDC (U_R) | | | | | | |
| 1000 | 51 x 80 | 121 | 78 | 5.0 | 9.9 | ALS42A102K3C350 |
| 1200 | 51 x 80 | 103 | 67 | 5.3 | 10.1 | ALS42A122K3C350 |
| 1500 | 51 x 93 | 81 | 53 | 6.2 | 11.3 | ALS42A152K3L350 |
| 1800 | 51 x 93 | 70 | 46 | 6.6 | 11.2 | ALS42A182K3L350 |
| 2200 | 51 x 131 | 58 | 38 | 8.3 | 14.8 | ALS42A222K5C350 |
| 2700 | 63.5 x 93 | 48 | 32 | 9.6 | 16.5 | ALS42A272L3L350 |
| 3300 | 63.5 x 115 | 39 | 26 | 11.2 | 18.9 | ALS42A332LJA350 |
| 3900 | 63.5 x 131 | 36 | 25 | 12.5 | 19.7 | ALS42A392L5C350 |
| 4700 | 63.5 x 150 | 31 | 22 | 13.5 | 20.8 | ALS42A472L5R350 |
| 4700 | 77 x 115 | 30 | 21 | 13.5 | 20.0 | ALS42A472NJA350 |
| 5600 | 63.5 x 194 | 24 | 17 | 14.9 | 23.4 | ALS42A562L7L350 |
| 5600 | 77 x 131 | 28 | 21 | 15.0 | 20.8 | ALS42A562N5C350 |
| 6800 | 77 x 150 | 24 | 18 | 16.5 | 22.5 | ALS42A682N5R350 |
| 8200 | 90 x 150 | 18 | 13 | 20.9 | 29.5 | ALS42A822Q5R350 |
| 10000 | 90 x 150 | 16 | 12 | 21.5 | 28.4 | ALS42A103Q5R350 |
| 12000 | 90 x 194 | 14 | 10 | 26.5 | 35.9 | ALS42A123Q7L350 |
| 15000 | 90 x 220 | 12 | 9 | 31.8 | 41.3 | ALS42A153Q8L350 |
| 400 VDC (U_R) | | | | | | |
| 1000 | 51 x 80 | 103 | 65 | 5.2 | 10.1 | ALS42A102K3C400 |
| 1200 | 51 x 93 | 87 | 55 | 5.9 | 11.2 | ALS42A122K3L400 |
| 1500 | 51 x 115 | 70 | 44 | 7.1 | 13.4 | ALS42A152KJA400 |
| 1800 | 51 x 131 | 59 | 37 | 8.0 | 14.8 | ALS42A182K5C400 |
| 2200 | 63.5 x 93 | 49 | 31 | 9.3 | 16.4 | ALS42A222L3L400 |
| 2700 | 63.5 x 115 | 40 | 26 | 10.8 | 18.9 | ALS42A272LJA400 |
| 3300 | 63.5 x 131 | 33 | 22 | 12.3 | 20.0 | ALS42A332L5C400 |
| 3900 | 63.5 x 150 | 31 | 21 | 13.1 | 20.7 | ALS42A392L5R400 |
| 3900 | 77 x 115 | 31 | 21 | 13.1 | 19.9 | ALS42A392NJA400 |
| 4700 | 63.5 x 194 | 25 | 17 | 14.4 | 23.1 | ALS42A472L7L400 |
| 4700 | 77 x 131 | 29 | 20 | 14.6 | 20.6 | ALS42A472N5C400 |
| 5600 | 63.5 x 194 | 22 | 15 | 15.2 | 23.0 | ALS42A562L7L400 |
| 5600 | 77 x 150 | 24 | 17 | 16.1 | 22.3 | ALS42A562N5R400 |
| 6800 | 90 x 150 | 18 | 12 | 20.4 | 29.3 | ALS42A682Q5R400 |
| 8200 | 90 x 150 | 16 | 12 | 20.9 | 28.1 | ALS42A822Q5R400 |
| 10000 | 90 x 194 | 14 | 10 | 25.9 | 35.8 | ALS42A103Q7L400 |
| 12000 | 90 x 220 | 12 | 9 | 30.9 | 41.2 | ALS42A123Q8L400 |
| 415 VDC (U_R) | | | | | | |
| 1000 | 51 x 80 | 98 | 61 | 5.3 | 10.1 | ALS42A102K3C415 |
| 1200 | 51 x 93 | 87 | 57 | 6.0 | 10.9 | ALS42A122K3L415 |
| 1500 | 51 x 115 | 66 | 42 | 7.2 | 13.5 | ALS42A152KJA415 |
| 1800 | 51 x 131 | 56 | 35 | 8.2 | 14.8 | ALS42A182K5C415 |
| 2200 | 63.5 x 93 | 49 | 32 | 9.4 | 16.1 | ALS42A222L3L415 |
| 2700 | 63.5 x 115 | 40 | 27 | 11.0 | 18.6 | ALS42A272LJA415 |
| 3900 | 63.5 x 150 | 29 | 19 | 13.7 | 22.1 | ALS42A392L5R415 |
| 3900 | 77 x 115 | 31 | 21 | 13.2 | 19.5 | ALS42A392NJA415 |
| 4700 | 77 x 131 | 29 | 20 | 14.6 | 20.6 | ALS42A472N5C415 |
| 4700 | 63.5 x 194 | 24 | 16 | 14.7 | 23.1 | ALS42A472L7L415 |
| 5600 | 63.5 x 194 | 21 | 15 | 15.4 | 22.9 | ALS42A562L7L415 |
| 5600 | 77 x 150 | 24 | 17 | 16.1 | 22.3 | ALS42A562N5R415 |
| 6800 | 90 x 150 | 18 | 12 | 20.4 | 29.3 | ALS42A682Q5R415 |
| 8200 | 90 x 150 | 16 | 12 | 20.9 | 28.1 | ALS42A822Q5R415 |
| 10000 | 90 x 194 | 14 | 10 | 25.9 | 35.8 | ALS42A103Q7L415 |
| 12000 | 90 x 220 | 12 | 9 | 30.9 | 41.2 | ALS42A123Q8L415 |

Mounting Style 2=plain or 3=stud
Termination Style A,C



ARTICLE TABLE ALS42 (105°C)

| Cap (μ F) | Nominal Case Size mm D x L | ESR ($m\Omega$) at 25°C | | Ripple current (A) at 105°C | | Type number |
|-----------------------------------|----------------------------------|------------------------------|--------|--------------------------------|--------|-----------------|
| | | 120 Hz | 20 kHz | 120 Hz | 20 kHz | |
| 450 VDC (U_R) | | | | | | |
| 1000 | 51 x 93 | 89 | 54 | 5.8 | 11.2 | ALS42A102K3L450 |
| 1200 | 51 x 115 | 73 | 44 | 6.8 | 13.4 | ALS42A122KJA450 |
| 1500 | 51 x 131 | 60 | 37 | 7.8 | 14.8 | ALS42A152K5C450 |
| 1800 | 63.5 x 93 | 51 | 31 | 9.0 | 16.4 | ALS42A182L3L450 |
| 2200 | 63.5 x 115 | 42 | 26 | 10.5 | 18.9 | ALS42A222LJA450 |
| 2700 | 63.5 x 131 | 34 | 21 | 12.2 | 21.5 | ALS42A272L5C450 |
| 2700 | 77 x 115 | 36 | 23 | 12.3 | 20.3 | ALS42A272NJA450 |
| 3300 | 63.5 x 150 | 30 | 20 | 13.2 | 22.1 | ALS42A332L5R450 |
| 3300 | 77 x 131 | 31 | 20 | 14.0 | 21.4 | ALS42A332N5C450 |
| 3900 | 63.5 x 194 | 25 | 16 | 14.2 | 23.3 | ALS42A392L7L450 |
| 4700 | 77 x 150 | 25 | 17 | 15.8 | 22.2 | ALS42A472N5R450 |
| 5600 | 77 x 194 | 19 | 13 | 19.5 | 28.3 | ALS42A562N7L450 |
| 5600 | 90 x 150 | 20 | 14 | 19.8 | 28.8 | ALS42A562Q5R450 |
| 6800 | 90 x 194 | 16 | 11 | 24.3 | 36.2 | ALS42A682Q7L450 |
| 8200 | 90 x 194 | 14 | 10 | 25.4 | 35.7 | ALS42A822Q7L450 |
| 10000 | 90 x 220 | 12 | 9 | 30.4 | 41.2 | ALS42A103Q8L450 |

Mounting Style 2=plain or 3=stud 
Termination Style A,C

OPERATIONAL DATA

Operational Lifetime

Please see separate BHC application notes TD003 for calculating operational life expectancy under customer specific conditions.

RELIABILITY

The failure rate is derived from our periodic test results. The failure rate (λ_R) is therefore only given at test temperature for life tests. An estimation is also given at 40°C. The expected failure rate for this capacitor range is based on our periodic test results for capacitors with structural similarity. Failure rate is frequently quoted in FIT (Failures In Time) where 1 FIT = 1×10^{-9} failures per hour. Failure rates include both catastrophic and parametric failures

| | |
|-------|-----------------------|
| T_a | Failure rate per hour |
| 85°C | 220 FIT |
| 40°C | 10 FIT |

MECHANICAL DATA

Mounting position

The capacitor can be mounted in any position so long as the safety vent can operate. It is possible for some electrolyte to be expelled. As this is a conducting liquid, suitable precautions should be instigated by the system designer to avoid secondary short circuits.

The capacitors are designed to be mounted in free air and are not suitable for submersion in liquid.

Vibration

10Hz to 55Hz at 0.75mm or 10g for 3x2hrs duration. Except 220mm long cans 10Hz to 55Hz at 0.35mm or 5g for 3x0.5hrs duration.

Insulating resistance

≥ 100 Mohms at 100V d.c., across insulating sleeve.

Voltage proof

≥ 2500 V d.c., across insulating sleeve.

Safety vent

A safety vent for over pressure is featured on terminal deck. This is in the form of a rubber plug designed to relieve build up of internal pressure due to over stress or catastrophic failure.