

8 Soldering Lug Capacitors Type LF



Features

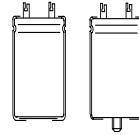
- high capacitance
- long useful life
- high ripple currents
- LFA clamp mounted
- LFB stud mounted

Applications

- standard and switched mode power supplies
- computer
- telecommunication
- industrial electronic

Quick reference

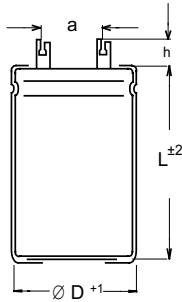
| | $U_R \leq 100 \text{ V}$ | $U_R > 100 \text{ V}$ |
|----------------------------------|---|-----------------------|
| Temperature range | - 40°C - + 105°C | - 40°C - + 85°C |
| Tolerance | + 30% -10% | |
| Max. reverse voltage | 2V | |
| Useful life | see diagram Useful Life p. 50 | |
| Leakage current 5 min @ U_R | $0,008 * C [\mu\text{F}] * U [\text{V}] + 4\mu\text{A} [\mu\text{A}]$ | |
| Leakage current 1 h @ U_R | $0,12 * \text{leakage current 5 min @ } U_R$ | |
| Specs. | DIN 41332 IEC 384 - 4 | |
| Insulation | shrink - on sleeve voltage proof $\geq 2500 \text{ V AC}$ | |
| Content of supply | LFB with mounting nut | |
| Terminals | soldering lugs | |



8.1 Mechanical Data Type LF

LFA

clamp mounted

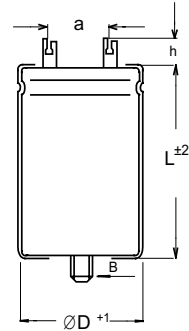


| D [mm] | h [mm] | a [mm] | B |
|--------|--------|--------|-----------|
| 25 | 10 | 10 | M 8 x 12 |
| 30 | 10 | 10 | M 8 x 12 |
| 35 | 10 | 10 | M 8 x 12 |
| 40 | 10 | 20 | M 8 x 12 |
| 50 | 10 | 20 | M 12 x 16 |

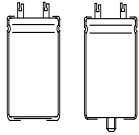
| | thread | max. tightening torque |
|----------|--------|------------------------|
| mounting | M 8 | 4 Nm |
| mounting | M 12 | 10 Nm |

LFB

stud mounted



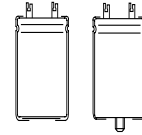
| Capacitance [μF] | Rated voltage [V] | | | | | | | | | | |
|------------------|-------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 16 | 25 | 40 | 63 | 100 | 160 | 250 | 350 | 400 | 450 | 500 |
| 47 | | | | | | | | | 25 x 36 | 25 x 36 | 30 x 50 |
| 68 | | | | | | | | 25 x 36 | 25 x 36 | 30 x 36 | 30 x 50 |
| 100 | | | | | | | 25 x 36 | 30 x 36 | 30 x 36 | 30 x 36 | 35 x 50 |
| 150 | | | | | | | 30 x 36 | 30 x 50 | 30 x 50 | 35 x 50 | 35 x 66 |
| 220 | | | | | | 25 x 36 | 30 x 36 | 35 x 50 | 35 x 50 | 35 x 66 | 35 x 66 |
| 330 | | | | | | 30 x 36 | 30 x 50 | 35 x 66 | 35 x 66 | 40 x 66 | |
| 470 | | | | | 25 x 36 | 30 x 50 | 35 x 50 | 40 x 66 | 40 x 66 | 40 x 66 | |
| 680 | | | | | 30 x 36 | 35 x 50 | 35 x 50 | 40 x 66 | 50 x 66 | | |
| 1000 | | | | 25 x 36 | 30 x 36 | 35 x 50 | 40 x 66 | 50 x 66 | | | |
| 1500 | | | | 25 x 36 | 30 x 50 | | | | | | |
| 2200 | | | 25 x 36 | 30 x 36 | 35 x 50 | | | | | | |
| 3300 | | | 30 x 36 | 30 x 50 | 35 x 66 | | | | | | |
| 4700 | | 25 x 36 | 30 x 36 | 35 x 50 | 40 x 66 | | | | | | |
| 6800 | | 25 x 36 | 30 x 50 | 35 x 66 | 50 x 66 | | | | | | |
| 10000 | 30 x 36 | 30 x 36 | 35 x 50 | 35 x 66 | 50 x 95 | | | | | | |
| 15000 | 30 x 50 | 30 x 50 | 35 x 66 | 40 x 66 | | | | | | | |
| 22000 | 35 x 50 | 35 x 50 | 40 x 66 | | | | | | | | |
| 33000 | 35 x 66 | 35 x 66 | | | | | | | | | |
| 47000 | 35 x 66 | 40 x 66 | | | | | | | | | |



Aluminium Electrolytic Capacitors

8.2 Standard Values Type LF

| U _R [V] | C _R [μF] | Case size ∅ x L [mm] | ESR _{100 Hz} | ESR _{100Hz} | tan δ _{100Hz} | Z _{10KHz} | Rated ripple current 100Hz | | Order code LFA... LFB... |
|-----------------------|------------------------|----------------------------|-----------------------|----------------------|------------------------|--------------------|-------------------------------|--------------|--------------------------------|
| | | | 20°C typ. [mΩ] | 20°C max. [mΩ] | 20°C max. [%] | 20°C max. [mΩ] | 85°C [A] | 105°C [A] | |
| 16 | 10000 | 30 x 36 | 25 | 38 | 30 | 40 | | 3,6 | ...10301630036 |
| 16 | 15000 | 30 x 50 | 22 | 33 | 31 | 30 | | 4,4 | ...15301630050 |
| 16 | 22000 | 35 x 50 | 20 | 30 | 41 | 30 | | 5,0 | ...22301635050 |
| 16 | 33000 | 35 x 66 | 15 | 23 | 45 | 20 | | 6,5 | ...33301635066 |
| 16 | 47000 | 35 x 66 | 12 | 18 | 45 | 20 | | 7,2 | ...47301635066 |
| 25 | 4700 | 25 x 36 | 20 | 30 | 20 | 30 | | 3,7 | ...47202525036 |
| 25 | 6800 | 25 x 36 | 19 | 29 | 22 | 30 | | 3,8 | ...68202525036 |
| 25 | 10000 | 30 x 36 | 17 | 26 | 25 | 30 | | 4,4 | ...10302530036 |
| 25 | 15000 | 30 x 50 | 16 | 24 | 27 | 30 | | 5,1 | ...15302530050 |
| 25 | 22000 | 35 x 50 | 15 | 23 | 31 | 20 | | 5,8 | ...22302535050 |
| 25 | 33000 | 35 x 66 | 12 | 18 | 31 | 20 | | 7,2 | ...33302535066 |
| 25 | 47000 | 40 x 66 | 11 | 17 | 32 | 20 | | 7,9 | ...47302540066 |
| 40 | 2200 | 25 x 36 | 60 | 90 | 12 | 80 | | 2,2 | ...22204025036 |
| 40 | 3300 | 30 x 36 | 50 | 75 | 12 | 70 | | 2,6 | ...33204030036 |
| 40 | 4700 | 30 x 36 | 40 | 60 | 14 | 60 | | 2,9 | ...47204030036 |
| 40 | 6800 | 30 x 50 | 30 | 45 | 18 | 40 | | 3,7 | ...68204030050 |
| 40 | 10000 | 35 x 50 | 25 | 38 | 20 | 40 | | 4,5 | ...10304035050 |
| 40 | 15000 | 35 x 66 | 19 | 29 | 22 | 30 | | 5,8 | ...15304035066 |
| 40 | 22000 | 40 x 66 | 17 | 26 | 25 | 30 | | 6,4 | ...22304040066 |
| 50 | 2200 | 25 x 36 | 60 | 90 | 12 | 80 | | 2,2 | ...22205025036 |
| 50 | 3300 | 30 x 36 | 38 | 57 | 12 | 50 | | 2,9 | ...33205030036 |
| 50 | 4700 | 30 x 50 | 35 | 53 | 15 | 50 | | 3,5 | ...47205030050 |
| 50 | 6800 | 35 x 50 | 25 | 38 | 16 | 40 | | 4,5 | ...68205035050 |
| 50 | 10000 | 35 x 66 | 20 | 30 | 19 | 30 | | 5,6 | ...10305035066 |
| 50 | 15000 | 40 x 66 | 17 | 26 | 24 | 30 | | 6,4 | ...15305040066 |
| 63 | 1000 | 25 x 36 | 90 | 135 | 8 | 120 | | 1,8 | ...10206325036 |
| 63 | 1500 | 25 x 36 | 60 | 90 | 8 | 80 | | 2,2 | ...15206325036 |
| 63 | 2200 | 30 x 36 | 50 | 75 | 10 | 70 | | 2,6 | ...22206330036 |
| 63 | 3300 | 30 x 50 | 43 | 65 | 13 | 60 | | 3,1 | ...33206330050 |
| 63 | 4700 | 35 x 50 | 32 | 48 | 15 | 50 | | 4,0 | ...47206335050 |
| 63 | 6800 | 35 x 66 | 30 | 45 | 16 | 40 | | 4,6 | ...68206335066 |
| 63 | 10000 | 35 x 66 | 21 | 32 | 16 | 30 | | 5,5 | ...10306335066 |
| 63 | 15000 | 40 x 66 | 15 | 23 | 16 | 20 | | 6,8 | ...15306340066 |
| 100 | 470 | 25 x 36 | 190 | 285 | 8 | 260 | | 1,2 | ...47110025036 |
| 100 | 680 | 30 x 36 | 130 | 195 | 8 | 180 | | 1,6 | ...68110030036 |
| 100 | 1000 | 30 x 36 | 80 | 120 | 8 | 110 | | 2,0 | ...10210030036 |
| 100 | 1500 | 30 x 50 | 55 | 83 | 8 | 80 | | 2,8 | ...15210030050 |
| 100 | 2200 | 35 x 50 | 45 | 68 | 9 | 60 | | 3,4 | ...22210035050 |
| 100 | 3300 | 35 x 66 | 35 | 53 | 11 | 50 | | 4,2 | ...33210035066 |
| 100 | 4700 | 40 x 66 | 31 | 47 | 14 | 50 | | 4,7 | ...47210040066 |
| 100 | 6800 | 50 x 66 | 30 | 45 | 15 | 40 | | 5,2 | ...68210050066 |
| 100 | 10000 | 50 x 95 | 27 | 41 | 15 | 40 | | 6,2 | ...10310050095 |

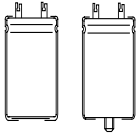


Standard Values Type LF

| U _R [V] | C _R [μF] | Case size Ø x L [mm] | ESR _{100 Hz} | ESR _{100Hz} | tan δ _{100Hz} | Z _{10KHz} | Rated ripple current 100Hz | | Order code |
|-----------------------|------------------------|----------------------------|-----------------------|----------------------|------------------------|--------------------|-------------------------------|--------------|------------------|
| | | | 20°C typ. [mΩ] | 20°C max. [mΩ] | 20°C max. [%] | 20°C max. [mΩ] | 85°C [A] | 105°C [A] | LFA... LFB... |
| 160 | 220 | 25 x 36 | 400 | 600 | 8 | 530 | 0,8 | | ...22116025036 |
| 160 | 330 | 30 x 36 | 267 | 400 | 8 | 360 | 1,1 | | ...33116030036 |
| 160 | 470 | 30 x 50 | 200 | 300 | 9 | 270 | 1,4 | | ...47116030050 |
| 160 | 680 | 35 x 50 | 133 | 200 | 9 | 180 | 2,0 | | ...68116035050 |
| 160 | 1000 | 35 x 50 | 93 | 140 | 9 | 130 | 2,3 | | ...10216035050 |
| 250 | 100 | 25 x 36 | 493 | 740 | 8 | 680 | 0,8 | | ...10125025036 |
| 250 | 150 | 30 x 36 | 440 | 660 | 8 | 590 | 0,9 | | ...15125030036 |
| 250 | 220 | 30 x 36 | 347 | 520 | 8 | 470 | 1,0 | | ...22125030036 |
| 250 | 330 | 30 x 50 | 227 | 340 | 8 | 310 | 1,4 | | ...33125030050 |
| 250 | 470 | 35 x 50 | 167 | 250 | 8 | 230 | 1,7 | | ...47125035050 |
| 250 | 680 | 35 x 50 | 140 | 210 | 8 | 190 | 1,9 | | ...68125035050 |
| 250 | 1000 | 40 x 66 | 80 | 120 | 9 | 110 | 2,9 | | ...10225040066 |
| 350 | 68 | 25 x 36 | 1133 | 1700 | 5 | 1510 | 0,5 | | ...68035025036 |
| 350 | 100 | 30 x 36 | 1000 | 1500 | 5 | 1320 | 0,6 | | ...10135030036 |
| 350 | 150 | 30 x 50 | 733 | 1100 | 5 | 970 | 0,8 | | ...15135030050 |
| 350 | 220 | 35 x 50 | 387 | 580 | 5 | 520 | 1,1 | | ...22135035050 |
| 350 | 330 | 35 x 66 | 253 | 380 | 5 | 340 | 1,6 | | ...33135035066 |
| 350 | 470 | 40 x 66 | 187 | 280 | 5 | 250 | 1,9 | | ...47135040066 |
| 350 | 680 | 40 x 66 | 147 | 220 | 5 | 200 | 2,2 | | ...68135040066 |
| 350 | 1000 | 50 x 66 | 93 | 140 | 5 | 130 | 2,9 | | ...10235050066 |
| 400 | 47 | 25 x 36 | 1333 | 2000 | 5 | 1790 | 0,5 | | ...47040025036 |
| 400 | 68 | 25 x 36 | 1267 | 1900 | 5 | 1680 | 0,5 | | ...68040025036 |
| 400 | 100 | 30 x 36 | 1067 | 1600 | 5 | 1410 | 0,6 | | ...10140030036 |
| 400 | 150 | 30 x 50 | 800 | 1200 | 5 | 1050 | 0,7 | | ...15140030050 |
| 400 | 220 | 35 x 50 | 400 | 600 | 5 | 530 | 1,1 | | ...22140035050 |
| 400 | 330 | 35 x 66 | 280 | 420 | 5 | 370 | 1,5 | | ...33140035066 |
| 400 | 470 | 40 x 66 | 207 | 310 | 5 | 280 | 1,8 | | ...47140040066 |
| 400 | 680 | 50 x 66 | 167 | 250 | 5 | 220 | 2,2 | | ...68140050066 |
| 450 | 47 | 25 x 36 | 1000 | 1500 | 7 | 1380 | 0,5 | | ...47045025036 |
| 450 | 68 | 30 x 36 | 867 | 1300 | 7 | 1170 | 0,6 | | ...68045030036 |
| 450 | 100 | 30 x 36 | 547 | 820 | 7 | 750 | 0,8 | | ...10145030036 |
| 450 | 150 | 35 x 50 | 340 | 510 | 7 | 470 | 1,2 | | ...15145035050 |
| 450 | 220 | 35 x 66 | 213 | 320 | 7 | 300 | 1,7 | | ...22145035066 |
| 450 | 330 | 40 x 66 | 180 | 270 | 7 | 250 | 2,0 | | ...33145040066 |
| 450 | 470 | 40 x 66 | 100 | 150 | 7 | 140 | 2,6 | | ...47145040066 |
| 500 | 47 | 30 x 50 | 1000 | 1500 | 10 | 1380 | 0,6 | | ...47050030050 |
| 500 | 68 | 30 x 50 | 667 | 1000 | 10 | 920 | 0,8 | | ...68050030050 |
| 500 | 100 | 35 x 50 | 567 | 850 | 10 | 770 | 0,9 | | ...10150035050 |
| 500 | 150 | 35 x 66 | 413 | 620 | 10 | 560 | 1,2 | | ...15150035066 |
| 500 | 220 | 35 x 66 | 233 | 350 | 10 | 320 | 1,6 | | ...22150035066 |

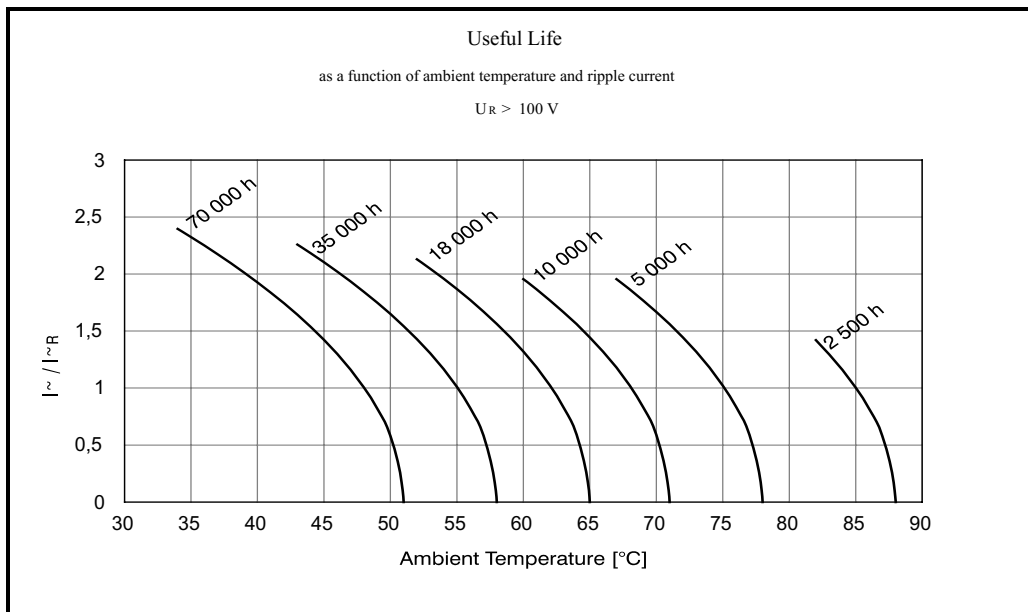
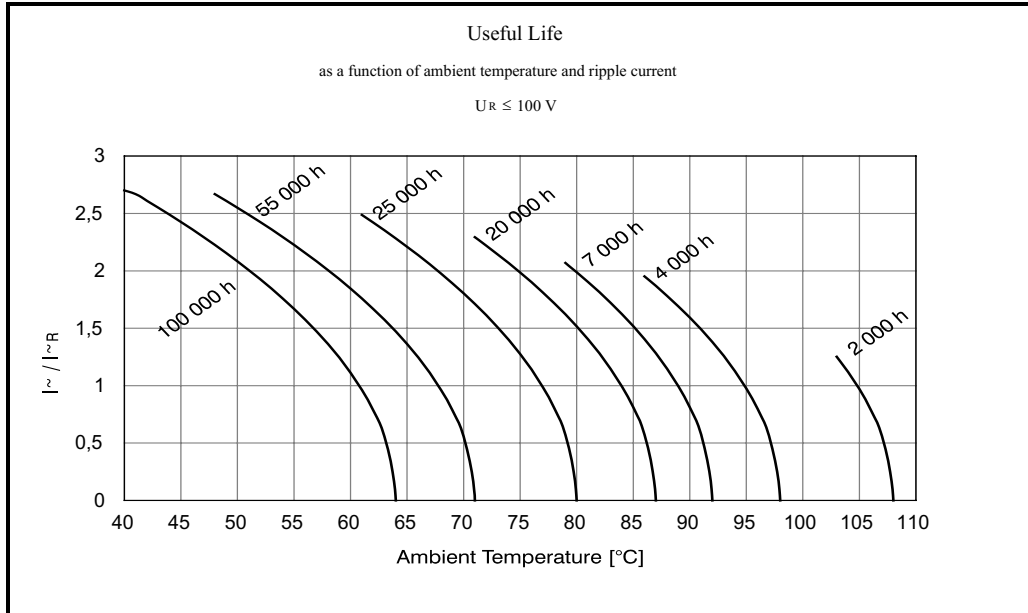
Other case size and voltage - / capacitance combinations are available on request !
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Aluminium Electrolytic Capacitors

8.3 Useful Life Type LF



Ripple current as a function of the frequency f

| f [Hz] | 50 | 100 | 200 | 400 | 1 000 | 2 000 | 4000 | 10 000 | 20 000 | 40 000 |
|-----------|------|-----|------|------|-------|-------|------|--------|--------|--------|
| I / I_R | 0,97 | 1,0 | 1,08 | 1,12 | 1,15 | 1,18 | 1,2 | 1,25 | 1,25 | 1,25 |