



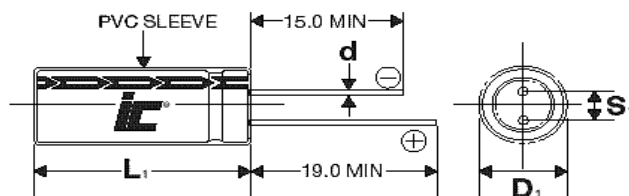
#### FEATURES

Small Size - High Ripple Current - Super Low ESR

#### APPLICATIONS

DC-DC Converters - Voltage Regulators - Motherboards  
- De-Coupling

| Operating Temperature Range                               |               | -55°C to +105°C                                                                                                                        |    |                                  |    |                 |  |                  |  |
|-----------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------|----|----------------------------------|----|-----------------|--|------------------|--|
| Capacitance Tolerance                                     |               | +20% at 120 Hz, 20°C                                                                                                                   |    |                                  |    |                 |  |                  |  |
| Surge Voltage                                             | WVDC          | 16                                                                                                                                     | 20 | 25                               | 35 |                 |  |                  |  |
|                                                           | SVDC          | 1.15*WVDC                                                                                                                              |    |                                  |    |                 |  |                  |  |
| Dissipation Factor                                        | WVDC          | 16                                                                                                                                     | 20 | 25                               | 35 |                 |  |                  |  |
|                                                           | Tan δ         | .12 MAX @120 Hz, 20°C                                                                                                                  |    |                                  |    |                 |  |                  |  |
| Leakage Current                                           |               | 2 Minutes                                                                                                                              |    |                                  |    |                 |  |                  |  |
|                                                           |               | 0.2CV or 280uA,<br>Whichever is greater                                                                                                |    |                                  |    |                 |  |                  |  |
| Low Temperature Stability<br>Impedance Ratio<br>(100 kHz) | -55°C/ +20°C  | ≤1.25                                                                                                                                  |    |                                  |    |                 |  |                  |  |
|                                                           | +105°C/ +20°C | ≤1.25                                                                                                                                  |    |                                  |    |                 |  |                  |  |
| Load Life                                                 |               | 2000 hours at 105°C with rated WVDC and ripple current applied                                                                         |    |                                  |    |                 |  |                  |  |
|                                                           |               | Capacitance Change                                                                                                                     |    | ≤20% of initial measured value   |    |                 |  |                  |  |
|                                                           |               | Dissipation Factor                                                                                                                     |    | ≤150% of maximum specified value |    |                 |  |                  |  |
|                                                           |               | ESR                                                                                                                                    |    | ≤150% of maximum specified value |    |                 |  |                  |  |
|                                                           |               | Leakage Current                                                                                                                        |    | ≤100% of maximum specified value |    |                 |  |                  |  |
| Surge Voltage Life                                        |               | 1000 cycles at 20°C with rated surge voltage applied for 30 seconds through a 1kΩ resistor and discharged for 5 minutes and 30 seconds |    |                                  |    |                 |  |                  |  |
|                                                           |               | Capacitance Change                                                                                                                     |    | ≤20% initial measured value      |    |                 |  |                  |  |
|                                                           |               | Dissipation Factor                                                                                                                     |    | ≤150% of maximum specified value |    |                 |  |                  |  |
|                                                           |               | ESR                                                                                                                                    |    | ≤150% of maximum specified value |    |                 |  |                  |  |
|                                                           |               | Leakage Current                                                                                                                        |    | ≤100% of maximum specified value |    |                 |  |                  |  |
| Damp Heat Test                                            |               | 1000 hours at 60°C and 90 to 95% RH with no voltage applied                                                                            |    |                                  |    |                 |  |                  |  |
|                                                           |               | Capacitance Change                                                                                                                     |    | ≤20% initial measured value      |    |                 |  |                  |  |
|                                                           |               | Dissipation Factor                                                                                                                     |    | ≤150% of maximum specified value |    |                 |  |                  |  |
|                                                           |               | ESR                                                                                                                                    |    | ≤150% of maximum specified value |    |                 |  |                  |  |
|                                                           |               | Leakage Current                                                                                                                        |    | ≤100% of maximum specified value |    |                 |  |                  |  |
| Ripple Current Multipliers                                |               | Frequency (Hz)                                                                                                                         |    |                                  |    |                 |  |                  |  |
|                                                           |               | 120 Hz≤f<1kHz                                                                                                                          |    | 1 kHz≤f<10 kHz                   |    | 10 kHz≤f<100kHz |  | 100 kHz≤f<500kHz |  |
|                                                           |               | 0.05                                                                                                                                   |    | 0.3                              |    | 0.7             |  | 1.0              |  |



| DxL | 6.3x8 | 8x8 | 8x11.5 | 10x12.5 |
|-----|-------|-----|--------|---------|
| S   | 2.5   | 3.5 | 3.5    | 3.0     |
| d   | 0.6   | 0.6 | 0.6    | 0.6     |

L<sub>1</sub>=L+1.0 mm Max. (D≤8mm)  
L<sub>1</sub>=L+1.5 mm Max. (D>8mm)  
D<sub>1</sub>=D+0.5mm Max.  
S<sub>1</sub>=S+0.5 mm

# ULG

+105°C Standard Low ESR

| Capacitance<br>(μF) | WVDC | IC PART NUMBER | Maximum<br>ESR (Ω)<br>120 Hz,<br>+20°C | Maximum<br>ESR (mΩ)<br>100 kHz,<br>+20°C | Leakage<br>Current<br>(μA) | Maximum<br>RMS<br>Ripple<br>Current<br>(mA)<br>100 kHz,<br>+105°C | Dims DxL<br>(mm) |
|---------------------|------|----------------|----------------------------------------|------------------------------------------|----------------------------|-------------------------------------------------------------------|------------------|
| 22                  | 25   | 226ULG025MEF   | 9.04                                   | 55                                       | 280                        | 1700                                                              | 6.3x8            |
| 33                  | 20   | 336ULG020MEF   | 6.03                                   | 45                                       | 280                        | 1880                                                              | 6.3x8            |
| 33                  | 25   | 336ULG025MFF   | 6.03                                   | 50                                       | 280                        | 1870                                                              | 8x8              |
| 47                  | 20   | 476ULG020MFF   | 4.23                                   | 42                                       | 280                        | 1952                                                              | 8x8              |
| 47                  | 25   | 476ULG025MFF   | 4.23                                   | 45                                       | 280                        | 1940                                                              | 8x8              |
| 47                  | 35   | 476ULG035MFF   | 4.23                                   | 90                                       | 329                        | 1500                                                              | 8x6              |
| 100                 | 20   | 107ULG020MFH   | 1.99                                   | 34                                       | 400                        | 2670                                                              | 8x11.5           |
| 100                 | 25   | 107ULG025MFH   | 1.99                                   | 40                                       | 500                        | 2500                                                              | 8x11.5           |
| 100                 | 35   | 107ULG035MGU   | 1.99                                   | 65                                       | 700                        | 1870                                                              | 10x12.5          |
| 150                 | 20   | 157ULG020MGU   | 1.33                                   | 35                                       | 600                        | 2672                                                              | 10x12.5          |
| 180                 | 16   | 187ULG016MFH   | 1.11                                   | 16                                       | 576                        | 4360                                                              | 8x11.5           |
| 220                 | 25   | 227ULG025MGU   | 0.9                                    | 35                                       | 1100                       | 3100                                                              | 10x12.5          |
| 220                 | 35   | 227ULG035MGU   | 0.9                                    | 55                                       | 1540                       | 2450                                                              | 10x12.5          |
| 330                 | 16   | 337ULG016MGU   | 0.6                                    | 14                                       | 1056                       | 5050                                                              | 10x12.5          |
| 330                 | 35   | 337ULG035MGU   | 0.6                                    | 45                                       | 2310                       | 2700                                                              | 10x12.5          |