

**ZLH SERIES**

105°C Miniaturized, Long Life, Low Impedance

\*Load Life : 105°C 6000~10000 hours.

RoHS  
compliance



◆SPECIFICATIONS

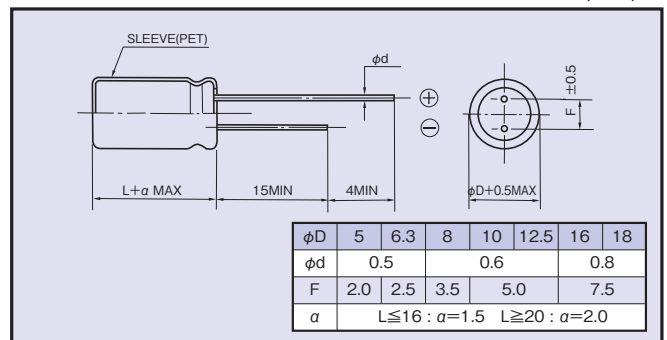
| Items                                          | Characteristics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |      |      |      |      |      |      |      |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|--|---------------------|-----------------------------------------------------------|----|----|----|----|----|----|----|-----|--------------------|--------------------------------------------|------|------|------|------|------|------|------|------|-----------------|------------------------------------|---|---|---|---|---|---|---|---|-----------|-----------------|---------|------|-------|------|--------|-------|
| Category Temperature Range                     | -40~+105℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |      |      |      |      |      |      |      |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| Rated Voltage Range                            | 6.3~100Vdc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |      |      |      |      |      |      |      |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| Capacitance Tolerance                          | ±20% (20℃,120Hz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |      |      |      |      |      |      |      |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| Leakage Current(MAX)                           | I=0.01CV or 3μA whichever is greater.(After 2 minutes)<br>I=Leakage Current(μA)                      C=Capacitance(μF)                      V=Rated Voltage(Vdc)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |      |      |      |      |      |      |      |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| Dissipation Factor(MAX) (tanδ)                 | <table><tr><td>Rated Voltage (Vdc)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>80</td><td>100</td></tr><tr><td>tanδ</td><td>0.22</td><td>0.19</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.09</td><td>0.08</td><td>0.08</td></tr></table> (20℃,120Hz)<br><br>When capacitance is over 1000μF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF.                                                                                                                                                                                                                             |      |      |      |      |      |      |      |      |  | Rated Voltage (Vdc) | 6.3                                                       | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | tanδ               | 0.22                                       | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.08 |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| Rated Voltage (Vdc)                            | 6.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 10   | 16   | 25   | 35   | 50   | 63   | 80   | 100  |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| tanδ                                           | 0.22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.08 |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| Endurance                                      | <p>After applying rated voltage with rated ripple current for specified time at 105℃, the capacitors shall meet the following requirements.</p> <table><tr><td>Capacitance Change</td><td colspan="9">Within ±25% of the initial value.<br/>(6.3Vdc, 10Vdc:±30%)</td></tr><tr><td>Dissipation Factor</td><td colspan="9">Not more than 200% of the specified value.</td></tr><tr><td>Leakage Current</td><td colspan="9">Not more than the specified value.</td></tr></table> <table><tr><td>Case Size</td><td>Life Time (hrs)</td></tr><tr><td>φD≤ 6.3</td><td>6000</td></tr><tr><td>φD= 8</td><td>8000</td></tr><tr><td>φD≥ 10</td><td>10000</td></tr></table> |      |      |      |      |      |      |      |      |  | Capacitance Change  | Within ±25% of the initial value.<br>(6.3Vdc, 10Vdc:±30%) |    |    |    |    |    |    |    |     | Dissipation Factor | Not more than 200% of the specified value. |      |      |      |      |      |      |      |      | Leakage Current | Not more than the specified value. |   |   |   |   |   |   |   |   | Case Size | Life Time (hrs) | φD≤ 6.3 | 6000 | φD= 8 | 8000 | φD≥ 10 | 10000 |
| Capacitance Change                             | Within ±25% of the initial value.<br>(6.3Vdc, 10Vdc:±30%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |      |      |      |      |      |      |      |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| Dissipation Factor                             | Not more than 200% of the specified value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |      |      |      |      |      |      |      |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| Leakage Current                                | Not more than the specified value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |      |      |      |      |      |      |      |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| Case Size                                      | Life Time (hrs)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |      |      |      |      |      |      |      |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| φD≤ 6.3                                        | 6000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |      |      |      |      |      |      |      |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| φD= 8                                          | 8000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |      |      |      |      |      |      |      |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| φD≥ 10                                         | 10000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |      |      |      |      |      |      |      |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| Low Temperature Stability Impedance Ratio(MAX) | <table><tr><td>Rated Voltage (Vdc)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>80</td><td>100</td></tr><tr><td>Z(-25℃)/Z(20℃)</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td></tr><tr><td>Z(-40℃)/Z(20℃)</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td></tr></table> (120Hz)                                                                                                                                                                                                                                            |      |      |      |      |      |      |      |      |  | Rated Voltage (Vdc) | 6.3                                                       | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | Z(-25℃)/Z(20℃)     | 2                                          | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | Z(-40℃)/Z(20℃)  | 3                                  | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |           |                 |         |      |       |      |        |       |
| Rated Voltage (Vdc)                            | 6.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 10   | 16   | 25   | 35   | 50   | 63   | 80   | 100  |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| Z(-25℃)/Z(20℃)                                 | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |
| Z(-40℃)/Z(20℃)                                 | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |  |                     |                                                           |    |    |    |    |    |    |    |     |                    |                                            |      |      |      |      |      |      |      |      |                 |                                    |   |   |   |   |   |   |   |   |           |                 |         |      |       |      |        |       |

◆MULTIPLIER FOR RIPPLE CURRENT

| Frequency (Hz) | 120  | 1k   | 10k  | 100k≤ |
|----------------|------|------|------|-------|
| 8.2~33µF       | 0.42 | 0.70 | 0.90 | 1.00  |
| 47~270µF       | 0.50 | 0.73 | 0.92 | 1.00  |
| 330~680µF      | 0.55 | 0.77 | 0.94 | 1.00  |
| 820~1800µF     | 0.60 | 0.80 | 0.96 | 1.00  |
| 2200~8200µF    | 0.70 | 0.85 | 0.98 | 1.00  |

◆DIMENSIONS

(mm)



◆PART NUMBER

□□□    **ZLH**    □□□□□    **M**    □□□    □□    **DxL**  
 Rated Voltage    Series    Capacitance    Capacitance Tolerance    Option    Lead Forming    Case Size

◆OPTION

|            | Code |
|------------|------|
| PET Sleeve | EFC  |

**◆STANDARD SIZE**

| Rated Voltage<br>(Vdc) | Capacitance<br>( $\mu$ F) | Size<br>$\phi$ D×L(mm) | Rated ripple current<br>(mA r.m.s./105°C, 100kHz) | Impedance<br>( $\Omega$ MAX) |               |
|------------------------|---------------------------|------------------------|---------------------------------------------------|------------------------------|---------------|
|                        |                           |                        |                                                   | 20°C, 100kHz                 | -10°C, 100kHz |
| 6.3                    | 220                       | 5×11                   | 345                                               | 0.22                         | 0.80          |
|                        | 470                       | 6.3×11                 | 540                                               | 0.094                        | 0.35          |
|                        | 820                       | 8×11.5                 | 945                                               | 0.056                        | 0.19          |
|                        | 1200                      | 8×16                   | 1250                                              | 0.045                        | 0.15          |
|                        | 1200                      | 10×12.5                | 1330                                              | 0.039                        | 0.14          |
|                        | 1500                      | 8×20                   | 1500                                              | 0.029                        | 0.11          |
|                        | 1800                      | 10×16                  | 1760                                              | 0.028                        | 0.10          |
|                        | 2200                      | 10×20                  | 1960                                              | 0.020                        | 0.060         |
|                        | 2700                      | 10×23                  | 2250                                              | 0.018                        | 0.054         |
|                        | 3900                      | 12.5×20                | 2480                                              | 0.017                        | 0.043         |
|                        | 4700                      | 12.5×25                | 2900                                              | 0.015                        | 0.038         |
|                        | 5600                      | 12.5×30                | 3450                                              | 0.013                        | 0.033         |
|                        | 6800                      | 16×20                  | 3250                                              | 0.015                        | 0.038         |
|                        | 6800                      | 12.5×35                | 3570                                              | 0.012                        | 0.031         |
|                        | 8200                      | 16×25                  | 3630                                              | 0.013                        | 0.035         |
| 10                     | 150                       | 5×11                   | 345                                               | 0.22                         | 0.80          |
|                        | 330                       | 6.3×11                 | 540                                               | 0.094                        | 0.35          |
|                        | 680                       | 8×11.5                 | 945                                               | 0.056                        | 0.19          |
|                        | 1000                      | 8×16                   | 1250                                              | 0.045                        | 0.15          |
|                        | 1000                      | 10×12.5                | 1330                                              | 0.039                        | 0.14          |
|                        | 1500                      | 8×20                   | 1500                                              | 0.029                        | 0.11          |
|                        | 1500                      | 10×16                  | 1760                                              | 0.028                        | 0.10          |
|                        | 1800                      | 10×20                  | 1960                                              | 0.020                        | 0.060         |
|                        | 2200                      | 10×23                  | 2250                                              | 0.018                        | 0.054         |
|                        | 3300                      | 12.5×20                | 2480                                              | 0.017                        | 0.043         |
|                        | 3900                      | 12.5×25                | 2900                                              | 0.015                        | 0.038         |
|                        | 4700                      | 12.5×30                | 3450                                              | 0.013                        | 0.033         |
|                        | 4700                      | 16×20                  | 3250                                              | 0.015                        | 0.038         |
|                        | 5600                      | 12.5×35                | 3570                                              | 0.012                        | 0.031         |
|                        | 6800                      | 16×25                  | 3630                                              | 0.013                        | 0.035         |
| 16                     | 100                       | 5×11                   | 345                                               | 0.22                         | 0.80          |
|                        | 220                       | 6.3×11                 | 540                                               | 0.094                        | 0.35          |
|                        | 470                       | 8×11.5                 | 945                                               | 0.056                        | 0.19          |
|                        | 680                       | 8×16                   | 1250                                              | 0.045                        | 0.15          |
|                        | 680                       | 10×12.5                | 1330                                              | 0.039                        | 0.14          |
|                        | 1000                      | 8×20                   | 1500                                              | 0.029                        | 0.11          |
|                        | 1000                      | 10×16                  | 1760                                              | 0.028                        | 0.10          |
|                        | 1500                      | 10×20                  | 1960                                              | 0.020                        | 0.060         |
|                        | 1800                      | 10×23                  | 2250                                              | 0.018                        | 0.054         |
|                        | 2200                      | 12.5×20                | 2480                                              | 0.017                        | 0.043         |
|                        | 2700                      | 12.5×25                | 2900                                              | 0.015                        | 0.038         |
|                        | 3300                      | 12.5×30                | 3450                                              | 0.013                        | 0.033         |
|                        | 3300                      | 16×20                  | 3250                                              | 0.015                        | 0.038         |
|                        | 3900                      | 12.5×35                | 3570                                              | 0.012                        | 0.031         |
|                        | 4700                      | 16×25                  | 3630                                              | 0.013                        | 0.035         |
| 25                     | 68                        | 5×11                   | 345                                               | 0.22                         | 0.80          |
|                        | 150                       | 6.3×11                 | 540                                               | 0.094                        | 0.35          |
|                        | 330                       | 8×11.5                 | 945                                               | 0.056                        | 0.19          |
|                        | 390                       | 8×16                   | 1250                                              | 0.045                        | 0.15          |
|                        | 470                       | 10×12.5                | 1330                                              | 0.039                        | 0.14          |
|                        | 560                       | 8×20                   | 1500                                              | 0.029                        | 0.11          |
|                        | 680                       | 10×16                  | 1760                                              | 0.028                        | 0.10          |
|                        | 820                       | 10×20                  | 1960                                              | 0.020                        | 0.060         |
|                        | 1000                      | 10×23                  | 2250                                              | 0.018                        | 0.054         |
|                        | 1500                      | 12.5×20                | 2480                                              | 0.017                        | 0.043         |
|                        | 1800                      | 12.5×25                | 2900                                              | 0.015                        | 0.038         |
|                        | 2200                      | 12.5×30                | 3450                                              | 0.013                        | 0.033         |
|                        | 2200                      | 16×20                  | 3250                                              | 0.015                        | 0.038         |
|                        | 2700                      | 12.5×35                | 3570                                              | 0.012                        | 0.031         |
|                        | 3300                      | 16×25                  | 3630                                              | 0.013                        | 0.035         |
| 35                     | 47                        | 5×11                   | 345                                               | 0.22                         | 0.80          |
|                        | 100                       | 6.3×11                 | 540                                               | 0.094                        | 0.35          |
|                        | 220                       | 8×11.5                 | 945                                               | 0.056                        | 0.19          |
|                        | 270                       | 8×16                   | 1250                                              | 0.045                        | 0.15          |
|                        | 330                       | 10×12.5                | 1330                                              | 0.039                        | 0.14          |
|                        | 390                       | 8×20                   | 1500                                              | 0.029                        | 0.11          |
|                        | 470                       | 10×16                  | 1760                                              | 0.028                        | 0.10          |
|                        | 560                       | 10×20                  | 1960                                              | 0.020                        | 0.060         |
|                        | 680                       | 10×23                  | 2250                                              | 0.018                        | 0.054         |
|                        | 1000                      | 12.5×20                | 2480                                              | 0.017                        | 0.043         |
|                        | 1200                      | 12.5×25                | 2900                                              | 0.015                        | 0.038         |
|                        | 1500                      | 12.5×30                | 3450                                              | 0.013                        | 0.033         |
|                        | 1500                      | 16×20                  | 3250                                              | 0.015                        | 0.038         |
|                        | 1800                      | 12.5×35                | 3570                                              | 0.012                        | 0.031         |
|                        | 2200                      | 16×25                  | 3630                                              | 0.013                        | 0.035         |
| 50                     | 27                        | 5×11                   | 238                                               | 0.34                         | 1.18          |
|                        | 56                        | 6.3×11                 | 385                                               | 0.14                         | 0.50          |
|                        | 100                       | 8×11.5                 | 724                                               | 0.074                        | 0.22          |
|                        | 120                       | 8×16                   | 950                                               | 0.061                        | 0.18          |
|                        | 150                       | 10×12.5                | 979                                               | 0.061                        | 0.18          |
|                        | 180                       | 8×20                   | 1190                                              | 0.046                        | 0.14          |
|                        | 220                       | 10×16                  | 1370                                              | 0.042                        | 0.12          |
|                        | 270                       | 10×20                  | 1580                                              | 0.030                        | 0.090         |
|                        | 330                       | 10×23                  | 1870                                              | 0.028                        | 0.085         |
|                        | 470                       | 12.5×20                | 2050                                              | 0.027                        | 0.068         |
|                        | 560                       | 12.5×25                | 2410                                              | 0.023                        | 0.059         |
|                        | 680                       | 12.5×30                | 2860                                              | 0.021                        | 0.052         |
|                        | 820                       | 12.5×35                | 2960                                              | 0.019                        | 0.051         |
|                        | 820                       | 16×20                  | 2730                                              | 0.023                        | 0.059         |
|                        | 1000                      | 16×25                  | 3010                                              | 0.021                        | 0.056         |

**◆STANDARD SIZE**

| Rated Voltage<br>(Vdc) | Capacitance<br>( $\mu$ F) | Size<br>$\phi$ D×L(mm) | Rated ripple current<br>(mA r.m.s./105°C, 100kHz) | Impedance<br>( $\Omega$ MAX) |               |
|------------------------|---------------------------|------------------------|---------------------------------------------------|------------------------------|---------------|
|                        |                           |                        |                                                   | 20°C, 100kHz                 | -10°C, 100kHz |
| 63                     | 18                        | 5×11                   | 173                                               | 0.88                         | 3.5           |
|                        | 47                        | 6.3×11                 | 278                                               | 0.35                         | 1.4           |
|                        | 82                        | 8×11.5                 | 525                                               | 0.22                         | 0.88          |
|                        | 100                       | 8×16                   | 688                                               | 0.16                         | 0.64          |
|                        | 120                       | 10×12.5                | 725                                               | 0.15                         | 0.60          |
|                        | 150                       | 8×20                   | 861                                               | 0.12                         | 0.48          |
|                        | 180                       | 10×16                  | 998                                               | 0.11                         | 0.44          |
|                        | 270                       | 10×20                  | 1200                                              | 0.078                        | 0.31          |
|                        | 270                       | 12.5×16                | 1200                                              | 0.082                        | 0.27          |
|                        | 330                       | 10×23                  | 1410                                              | 0.069                        | 0.28          |
|                        | 390                       | 12.5×20                | 1570                                              | 0.060                        | 0.19          |
|                        | 470                       | 12.5×25                | 1990                                              | 0.043                        | 0.14          |
|                        | 560                       | 12.5×30                | 2410                                              | 0.035                        | 0.13          |
|                        | 560                       | 16×20                  | 2100                                              | 0.043                        | 0.14          |
|                        | 680                       | 12.5×35                | 2620                                              | 0.033                        | 0.11          |
|                        | 820                       | 12.5×40                | 2940                                              | 0.027                        | 0.090         |
|                        | 820                       | 16×25                  | 2730                                              | 0.032                        | 0.096         |
|                        | 820                       | 18×20                  | 2500                                              | 0.038                        | 0.10          |
|                        | 1200                      | 16×31.5                | 2990                                              | 0.024                        | 0.068         |
|                        | 1200                      | 18×25                  | 2800                                              | 0.031                        | 0.084         |
|                        | 1500                      | 16×35.5                | 3040                                              | 0.021                        | 0.057         |
|                        | 1500                      | 18×31.5                | 3300                                              | 0.025                        | 0.068         |
|                        | 1800                      | 16×40                  | 3570                                              | 0.019                        | 0.057         |
|                        | 1800                      | 18×35.5                | 3570                                              | 0.020                        | 0.054         |
|                        | 2200                      | 18×40                  | 3670                                              | 0.018                        | 0.049         |
| 80                     | 12                        | 5×11                   | 163                                               | 1.4                          | 5.6           |
|                        | 33                        | 6.3×11                 | 267                                               | 0.57                         | 2.3           |
|                        | 56                        | 8×11.5                 | 462                                               | 0.36                         | 1.4           |
|                        | 68                        | 8×16                   | 585                                               | 0.25                         | 1.0           |
|                        | 82                        | 10×12.5                | 624                                               | 0.23                         | 0.96          |
|                        | 100                       | 8×20                   | 735                                               | 0.19                         | 0.76          |
|                        | 120                       | 10×16                  | 780                                               | 0.17                         | 0.72          |
|                        | 180                       | 10×20                  | 1040                                              | 0.12                         | 0.52          |
|                        | 180                       | 12.5×16                | 975                                               | 0.13                         | 0.43          |
|                        | 220                       | 10×23                  | 1170                                              | 0.11                         | 0.47          |
|                        | 270                       | 12.5×20                | 1430                                              | 0.085                        | 0.31          |
|                        | 330                       | 12.5×25                | 1620                                              | 0.060                        | 0.23          |
|                        | 390                       | 12.5×30                | 1950                                              | 0.051                        | 0.21          |
|                        | 390                       | 16×20                  | 1750                                              | 0.058                        | 0.21          |
|                        | 470                       | 12.5×35                | 2140                                              | 0.043                        | 0.17          |
|                        | 560                       | 12.5×40                | 2340                                              | 0.036                        | 0.15          |
|                        | 560                       | 16×25                  | 2210                                              | 0.044                        | 0.16          |
|                        | 560                       | 18×20                  | 1950                                              | 0.054                        | 0.18          |
|                        | 680                       | 16×31.5                | 2400                                              | 0.033                        | 0.12          |
|                        | 820                       | 16×35.5                | 2600                                              | 0.029                        | 0.10          |
|                        | 820                       | 18×25                  | 2270                                              | 0.038                        | 0.13          |
|                        | 1000                      | 16×40                  | 2860                                              | 0.027                        | 0.090         |
|                        | 1000                      | 18×31.5                | 2470                                              | 0.031                        | 0.11          |
|                        | 1200                      | 18×35.5                | 2860                                              | 0.027                        | 0.084         |
|                        | 1500                      | 18×40                  | 3510                                              | 0.026                        | 0.076         |

| Rated Voltage<br>(Vdc) | Capacitance<br>( $\mu$ F) | Size<br>$\phi$ D×L(mm) | Rated ripple current<br>(mA r.m.s./105°C, 100kHz) | Impedance<br>( $\Omega$ MAX) |               |
|------------------------|---------------------------|------------------------|---------------------------------------------------|------------------------------|---------------|
|                        |                           |                        |                                                   | 20°C, 100kHz                 | -10°C, 100kHz |
| 100                    | 8.2                       | 5×11                   | 163                                               | 1.4                          | 5.6           |
|                        | 18                        | 6.3×11                 | 267                                               | 0.57                         | 2.3           |
|                        | 33                        | 8×11.5                 | 462                                               | 0.36                         | 1.4           |
|                        | 47                        | 8×16                   | 585                                               | 0.25                         | 1.0           |
|                        | 56                        | 10×12.5                | 624                                               | 0.23                         | 0.96          |
|                        | 68                        | 8×20                   | 735                                               | 0.19                         | 0.76          |
|                        | 82                        | 10×16                  | 780                                               | 0.17                         | 0.72          |
|                        | 100                       | 10×20                  | 1040                                              | 0.12                         | 0.52          |
|                        | 100                       | 12.5×16                | 975                                               | 0.13                         | 0.43          |
|                        | 120                       | 10×23                  | 1170                                              | 0.11                         | 0.47          |
|                        | 150                       | 12.5×20                | 1430                                              | 0.085                        | 0.31          |
|                        | 220                       | 12.5×25                | 1620                                              | 0.060                        | 0.23          |
|                        | 270                       | 12.5×30                | 1950                                              | 0.051                        | 0.21          |
|                        | 270                       | 16×20                  | 1750                                              | 0.058                        | 0.21          |
|                        | 330                       | 12.5×35                | 2140                                              | 0.043                        | 0.17          |
|                        | 390                       | 12.5×40                | 2340                                              | 0.036                        | 0.15          |
|                        | 390                       | 16×25                  | 2210                                              | 0.044                        | 0.16          |
|                        | 390                       | 18×20                  | 1950                                              | 0.054                        | 0.18          |
|                        | 470                       | 16×31.5                | 2400                                              | 0.033                        | 0.12          |
|                        | 470                       | 18×25                  | 2270                                              | 0.038                        | 0.13          |
|                        | 560                       | 16×35.5                | 2600                                              | 0.029                        | 0.10          |
|                        | 560                       | 18×31.5                | 2470                                              | 0.031                        | 0.11          |
|                        | 680                       | 16×40                  | 2860                                              | 0.027                        | 0.090         |
|                        | 680                       | 18×35.5                | 2860                                              | 0.027                        | 0.084         |
|                        | 820                       | 18×40                  | 3510                                              | 0.026                        | 0.076         |