

## HU Series 105°C 3000H



### Features

#### Standard capacitors

#### Applications

- ◆ Switch-mode power supplies in industrial and entertainment electronics
- ◆ Uninterruptible power supplies

#### Features

- ◆ High reliability
- ◆ Long useful life
- ◆ High ripple current capability
- ◆ Aluminum case designed explosion-proof vent
- ◆ RoHS-compatible

#### Construction

- ◆ Charge-discharge proof, polar
- ◆ Aluminum case with insulating sleeve
- ◆ Aluminum case designed explosion-proof vent
- ◆ Snap-in solder pins to hold component in place on PC-board

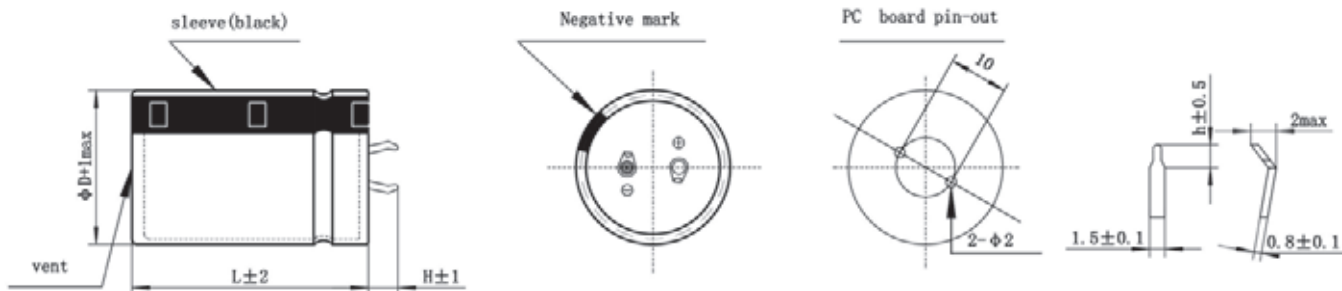
### Specifications

| Item   | Performance Characteristics   |                         |  |                                  |        |         |         |         |    |     |               |  |              |
|--|---|-------------------------|--|----------------------------------|--------|---------|---------|---------|----|-----|---------------|--|--------------|
| Operating Temperature Range                          | -40 to +105°C   | -25 to +105°C           |  |                                  |        |         |         |         |    |     |               |  |              |
| Rated voltage $V_R$                                  | 10 to 350 V DC  | 385 to 500 V DC         |  |                                  |        |         |         |         |    |     |               |  |              |
| Surge voltage $V_S$                                  | $V_R \leq 315V$ 1.15 $V_R$ $V_R > 315V$ 1.10 $V_R$  |                         |  |                                  |        |         |         |         |    |     |               |  |              |
| Rated capacitance $C_R$                              | 56 to 82000 $\mu F$   | 33 to 1200 $\mu F$      |  |                                  |        |         |         |         |    |     |               |  |              |
| Capacitance tolerance                                | $\pm 20\%$ (120Hz, +20°C)   |                         |  |                                  |        |         |         |         |    |     |               |  |              |
| Leakage Current $I_{leak}$ (+20°C, max.)             | $I \leq 3 \sqrt{CV}$ ( $\mu A$ ) After 5 minutes with rated working voltage applied   |                         |  |                                  |        |         |         |         |    |     |               |  |              |
| Dissipation Factor ( $\tan \delta$ , at 20°C, 120Hz) | Less than the value under table(%)  |                         |  |                                  |        |         |         |         |    |     |               |  |              |
|  | $\mu F/Vdc$   | 6.3                     | 10                                       | 16                               | 25     | 35      | 50      | 63      | 80 | 100 | 160~420       | 450~500                                  |              |
|  | $\leq 8200$   | -                       | 35                                       | 35                               | 30     | 25      | 20      | 20      | 15 | 15  | 15            | 20                                       |              |
|  | 10000 to 22000  | 55                      | 40                                       | 40                               | 35     | 30      | 30      | 25      | 15 | -   | -             | -  |              |
| $\geq 27000$   | 60  | 50                      | 40                                       | 35                               | 35     | 30      | 25      | -       | -  | -   | -             |  |              |
| Self-inductance ESL                                  | approx. 20 nH   |                         |  |                                  |        |         |         |         |    |     |               |  |              |
| Useful life<br>105°C; $V_R, I_{AC, R}$               | $V_R \leq 100V$ :   | Requirements:           |  |                                  |        |         |         |         |    |     |               | $V_R > 100V$                             |              |
|  | >5000 h   | $\Delta C/C$            | $\leq \pm 30\%$ of initial value         |                                  |        |         |         |         |    |     | $\Delta C/C$  | $\leq \pm 20\%$ of initial value         |              |
| $V_R > 100V$ :                                       | >8000 h   | $\tan \delta$           | $\leq 3$ times initial specified limit   |                                  |        |         |         |         |    |     | $\tan \delta$ | $\leq 2$ times initial specified limit   |              |
|  |   | $I_{leak}$              | $\leq$ initial specified limit           |                                  |        |         |         |         |    |     | $I_{leak}$    | $\leq$ initial specified limit           |              |
| Voltage Endurance test<br>105°C; $V_R$               | 3000 h  | Post test requirements: |  |                                  |        |         |         |         |    |     |               |  |              |
|  |   | $V_R \leq 100V$         | $\Delta C/C$                             | $\leq \pm 15\%$ of initial value |        |         |         |         |    |     |               | $V_R > 100V$                             | $\Delta C/C$ |
|  |   | $\tan \delta$           | $\leq 1.3$ times initial specified limit |                                  |        |         |         |         |    |     | $\tan \delta$ | $\leq 1.3$ times initial specified limit |              |
|  |   | $I_{leak}$              | $\leq$ initial specified limit           |                                  |        |         |         |         |    |     | $I_{leak}$    | $\leq$ initial specified limit           |              |
| Shelf Life<br>105°C                                  | 1000 h  | Post test requirements: |  |                                  |        |         |         |         |    |     |               |  |              |
|  |   | $V_R \leq 100V$         | $\Delta C/C$                             | $\leq \pm 15\%$ of initial value |        |         |         |         |    |     |               | $V_R > 100V$                             | $\Delta C/C$ |
|  |   | $\tan \delta$           | $\leq 1.3$ times initial specified limit |                                  |        |         |         |         |    |     | $\tan \delta$ | $\leq 1.3$ times initial specified limit |              |
|  |   | $I_{leak}$              | $\leq$ initial specified limit           |                                  |        |         |         |         |    |     | $I_{leak}$    | $\leq$ initial specified limit           |              |
| Vibration Resistance test                            | To IEC 60068-2-6, test Fc:<br>Displacement amplitude 0.75 mm, frequency range 10 ... 55 Hz, acceleration max. 10 g, duration 3x2 h. Capacitor mounted by its body which is rigidly clamped to the work surface. |                         |  |                                  |        |         |         |         |    |     |               |  |              |
| Characteristics at low temperature                   | Max. impedance ratio at 120 Hz  |                         |  |                                  |        |         |         |         |    |     |               |  |              |
|  | $V_R(V)$  | 6.3~16                  | 25                                       | 35                               | 50~100 | 160~250 | 300~350 | 400~500 |    |     |               |  |              |
|  | $Z_{25^\circ C} / Z_{20^\circ C}$   | 4                       | 3  | 3                                | 3      | 4       | 8       | 8       |    |     |               |  |              |
|  | $Z_{-40^\circ C} / Z_{20^\circ C}$  | 15                      | 10                                       | 8                                | 6      | 8       | 12      |         |    |     |               |  |              |
| Sectional specification                              | IEC 60384-4 and JIS-C-5101  |                         |  |                                  |        |         |         |         |    |     |               |  |              |

### Multiplier for Ripple Current vs. Frequency

| $V_R(V)/$ Frequency(Hz) | 50(60) | 120 | 300  | 1K   | 10K  | 50K-100K |
|-------------------------|--------|-----|------|------|------|----------|
| $10 \leq V_R \leq 100$  | 0.88   | 1   | 1.07 | 1.15 | 1.15 | 1.15     |
| $160 \leq V_R \leq 250$ | 0.81   | 1   | 1.17 | 1.32 | 1.45 | 1.5      |
| $315 \leq V_R \leq 600$ | 0.77   | 1   | 1.16 | 1.30 | 1.41 | 1.43     |

## Dimensional drawings



Standard snap-in terminals: length  $(6.0 \pm 1)$ mm  
 Also available with length of  $(4.0 \pm 1)$ mm

| H | h   |
|---|-----|
| 6 | 2.5 |
| 4 | 1.5 |

## Packing

| Capacitor diameter D(mm) | Length L(mm)        | Terminal length H(mm) | Each carton packing Qty units(pcs.) | Box/carton units(pcs.) | Each box packing Qty units(pcs.) |
|--------------------------|---------------------|-----------------------|-------------------------------------|------------------------|----------------------------------|
| 20                       | all                 | /                     | 720                                 | 6                      | 120                              |
| 22                       | < 55                | /                     | 600                                 | 6                      | 100                              |
| 22                       | $\geq 55$           | /                     | 400                                 | 4                      | 100                              |
| 25                       | < 65                | /                     | 500                                 | 5                      | 100                              |
| 25                       | $\geq 65$           | /                     | 400                                 | 4                      | 100                              |
| 30                       | $\leq 36$           | < 6(L=35、36)          | 400                                 | 8                      | 50                               |
| 30                       | $35 \leq L \leq 65$ | $\geq 6$ (L=35、36)    | 300                                 | 6                      | 50                               |
| 30                       | > 65                | /                     | 200                                 | 4                      | 50                               |
| 35                       | $\leq 25$           | /                     | 400                                 | 8                      | 50                               |
| 35                       | $25 < L < 45$       | /                     | 300                                 | 6                      | 50                               |
| 35                       | $45 \leq L \leq 85$ | /                     | 200                                 | 4                      | 50                               |
| 35                       | > 85                | /                     | 100                                 | 2                      | 50                               |
| 40                       | 35                  | < 6                   | 200                                 | 5                      | 40                               |
| 40                       | 35                  | $\geq 6$              | 160                                 | 4                      | 40                               |
| 40                       | $40 \leq L \leq 45$ | /                     | 160                                 | 4                      | 40                               |
| 40                       | $45 < L \leq 75$    | /                     | 120                                 | 3                      | 40                               |
| 40                       | > 75                | /                     | 80                                  | 2                      | 40                               |
| 45                       | $40 \leq L \leq 65$ | /                     | 140                                 | 4                      | 35                               |
| 45                       | $65 < L \leq 100$   | /                     | 70                                  | 2                      | 35                               |

## Packing of snap-in



## Case Size

| WV (Vdc) | Cap (uF) | Size (mm) | Rated Ripple current (Arms/105°C /120Hz) | Typ. ESR 20°C 120Hz (mΩ) | MAX ESR 20°C 120Hz (mΩ) |
|----------|----------|-----------|--|--------------------------|-------------------------|
| 10       | 4700     | 22x25     | 0.86                                     | 76                       | 99                      |
| 10       | 6800     | 22x25     | 1.31                                     | 53                       | 68                      |
| 10       | 8200     | 25x20     | 1.60                                     | 44                       | 57                      |
| 10       | 10000    | 25x20     | 1.81                                     | 36                       | 46                      |
| 10       | 12000    | 22x30     | 2.11                                     | 34                       | 44                      |
| 10       | 15000    | 22x35     | 2.31                                     | 27                       | 35                      |
| 10       | 18000    | 22x40     | 2.40                                     | 23                       | 29                      |
| 10       | 22000    | 25x35     | 2.60                                     | 19                       | 24                      |
| 10       | 27000    | 35x25     | 3.11                                     | 19                       | 25                      |
| 10       | 33000    | 35x30     | 3.42                                     | 15                       | 20                      |
| 10       | 39000    | 35x30     | 3.70                                     | 13                       | 17                      |
| 10       | 47000    | 35x35     | 4.21                                     | 11                       | 14                      |
| 10       | 56000    | 35x40     | 5.10                                     | 9                        | 12                      |
| 10       | 68000    | 35x50     | 5.51                                     | 8                        | 10                      |
| 16       | 3300     | 22x25     | 1.30                                     | 110                      | 140                     |
| 16       | 4700     | 22x25     | 1.52                                     | 76                       | 99                      |
| 16       | 6800     | 22x25     | 1.81                                     | 53                       | 68                      |
| 16       | 8200     | 22x30     | 2.05                                     | 44                       | 57                      |
| 16       | 10000    | 22x30     | 2.15                                     | 36                       | 46                      |
| 16       | 10000    | 25x25     | 2.20                                     | 36                       | 46                      |
| 16       | 12000    | 22x35     | 2.31                                     | 34                       | 44                      |
| 16       | 12000    | 25x30     | 2.32                                     | 34                       | 44                      |
| 16       | 12000    | 30x25     | 2.40                                     | 34                       | 44                      |
| 16       | 15000    | 22x40     | 2.70                                     | 27                       | 35                      |
| 16       | 15000    | 25x35     | 2.71                                     | 27                       | 35                      |
| 16       | 15000    | 30x30     | 2.73                                     | 27                       | 35                      |
| 16       | 18000    | 22x45     | 2.98                                     | 23                       | 29                      |
| 16       | 18000    | 25x40     | 3.17                                     | 23                       | 29                      |
| 16       | 18000    | 30x30     | 3.20                                     | 23                       | 29                      |
| 16       | 22000    | 25x45     | 3.41                                     | 19                       | 24                      |
| 16       | 22000    | 30x35     | 3.42                                     | 19                       | 24                      |
| 16       | 22000    | 35x30     | 3.43                                     | 19                       | 24                      |
| 16       | 27000    | 25x50     | 3.85                                     | 15                       | 20                      |
| 16       | 27000    | 30x40     | 3.86                                     | 15                       | 20                      |
| 16       | 27000    | 35x30     | 3.87                                     | 15                       | 20                      |
| 16       | 33000    | 30x45     | 4.40                                     | 12                       | 16                      |
| 16       | 33000    | 35x35     | 4.42                                     | 12                       | 16                      |
| 16       | 39000    | 30x50     | 4.82                                     | 10                       | 14                      |
| 16       | 39000    | 35x40     | 4.83                                     | 10                       | 14                      |
| 16       | 47000    | 35x45     | 5.54                                     | 9                        | 11                      |
| 16       | 56000    | 35x50     | 5.90                                     | 7                        | 10                      |
| 16       | 68000    | 35x60     | 6.60                                     | 6                        | 8                       |
| 16       | 82000    | 40x60     | 7.66                                     | 5                        | 7                       |
| 25       | 2200     | 22x25     | 1.30                                     | 140                      | 180                     |
| 25       | 3300     | 22x25     | 1.31                                     | 92                       | 120                     |
| 25       | 4700     | 22x25     | 1.62                                     | 65                       | 85                      |
| 25       | 5600     | 22x30     | 1.80                                     | 55                       | 71                      |
| 25       | 6800     | 25x25     | 1.92                                     | 45                       | 59                      |
| 25       | 8200     | 22x35     | 2.15                                     | 37                       | 49                      |
| 25       | 8200     | 30x25     | 2.30                                     | 37                       | 49                      |
| 25       | 10000    | 22x40     | 2.50                                     | 31                       | 40                      |
| 25       | 10000    | 25x30     | 2.50                                     | 31                       | 40                      |
| 25       | 10000    | 30x30     | 2.68                                     | 31                       | 40                      |
| 25       | 12000    | 22x45     | 2.76                                     | 30                       | 39                      |
| 25       | 12000    | 25x40     | 2.81                                     | 30                       | 39                      |
| 25       | 12000    | 30x30     | 2.82                                     | 30                       | 39                      |
| 25       | 15000    | 25x45     | 3.28                                     | 24                       | 31                      |
| 25       | 15000    | 30x35     | 3.29                                     | 24                       | 31                      |

| WV (Vdc) | Cap (uF) | Size (mm) | Rated Ripple current (Arms/105°C /120Hz) | Typ. ESR 20°C 120Hz (mΩ) | MAX ESR 20°C 120Hz (mΩ) |
|----------|----------|-----------|--|--------------------------|-------------------------|
| 25       | 15000    | 35x30     | 3.30                                     | 24                       | 31                      |
| 25       | 18000    | 25x50     | 3.55                                     | 20                       | 26                      |
| 25       | 18000    | 30x40     | 3.56                                     | 20                       | 26                      |
| 25       | 22000    | 30x45     | 4.25                                     | 16                       | 21                      |
| 25       | 22000    | 35x35     | 4.26                                     | 16                       | 21                      |
| 25       | 27000    | 35x45     | 4.76                                     | 13                       | 17                      |
| 25       | 33000    | 35x50     | 5.50                                     | 11                       | 14                      |
| 35       | 2200     | 25x25     | 1.52                                     | 120                      | 150                     |
| 35       | 3300     | 22x25     | 1.53                                     | 77                       | 100                     |
| 35       | 3900     | 22x30     | 1.70                                     | 65                       | 85                      |
| 35       | 4700     | 22x35     | 2.03                                     | 54                       | 71                      |
| 35       | 4700     | 25x25     | 2.04                                     | 54                       | 71                      |
| 35       | 5600     | 22x35     | 2.13                                     | 46                       | 59                      |
| 35       | 5600     | 25x30     | 2.14                                     | 46                       | 59                      |
| 35       | 5600     | 30x25     | 2.15                                     | 46                       | 59                      |
| 35       | 6800     | 22x40     | 2.60                                     | 38                       | 49                      |
| 35       | 6800     | 25x35     | 2.60                                     | 38                       | 49                      |
| 35       | 6800     | 30x25     | 2.55                                     | 38                       | 49                      |
| 35       | 8200     | 22x50     | 2.85                                     | 31                       | 40                      |
| 35       | 8200     | 25x40     | 2.86                                     | 31                       | 40                      |
| 35       | 8200     | 30x30     | 2.87                                     | 31                       | 40                      |
| 35       | 10000    | 25x45     | 3.07                                     | 26                       | 33                      |
| 35       | 10000    | 30x35     | 3.08                                     | 26                       | 33                      |
| 35       | 12000    | 25x50     | 3.37                                     | 26                       | 33                      |
| 35       | 12000    | 30x40     | 3.38                                     | 26                       | 33                      |
| 35       | 12000    | 35x30     | 3.40                                     | 26                       | 33                      |
| 35       | 15000    | 30x45     | 3.75                                     | 20                       | 27                      |
| 35       | 15000    | 35x35     | 3.76                                     | 20                       | 27                      |
| 35       | 18000    | 35x40     | 4.37                                     | 17                       | 22                      |
| 35       | 22000    | 35x50     | 4.95                                     | 14                       | 18                      |
| 50       | 1500     | 25x20     | 1.15                                     | 140                      | 180                     |
| 50       | 1800     | 22x25     | 1.35                                     | 120                      | 150                     |
| 50       | 2200     | 22x25     | 1.55                                     | 92                       | 120                     |
| 50       | 2700     | 22x30     | 1.75                                     | 76                       | 98                      |
| 50       | 2700     | 25x25     | 1.76                                     | 76                       | 98                      |
| 50       | 3300     | 22x35     | 1.99                                     | 62                       | 80                      |
| 50       | 3300     | 25x30     | 2.00                                     | 62                       | 80                      |
| 50       | 3900     | 22x40     | 2.25                                     | 52                       | 68                      |
| 50       | 3900     | 30x25     | 2.26                                     | 52                       | 68                      |
| 50       | 4700     | 22x45     | 2.56                                     | 43                       | 56                      |
| 50       | 4700     | 25x35     | 2.62                                     | 43                       | 56                      |
| 50       | 4700     | 30x30     | 2.63                                     | 43                       | 56                      |
| 50       | 5600     | 22x50     | 2.89                                     | 36                       | 47                      |
| 50       | 5600     | 25x40     | 2.90                                     | 36                       | 47                      |
| 50       | 5600     | 30x30     | 2.95                                     | 36                       | 47                      |
| 50       | 6800     | 25x45     | 3.37                                     | 30                       | 39                      |
| 50       | 6800     | 30x35     | 3.39                                     | 30                       | 39                      |
| 50       | 6800     | 35x30     | 3.40                                     | 30                       | 39                      |
| 50       | 8200     | 30x40     | 3.71                                     | 25                       | 32                      |
| 50       | 8200     | 35x35     | 3.72                                     | 25                       | 32                      |
| 50       | 10000    | 30x50     | 4.09                                     | 20                       | 27                      |
| 50       | 10000    | 35x40     | 4.10                                     | 20                       | 27                      |
| 50       | 12000    | 35x45     | 4.56                                     | 26                       | 33                      |
| 50       | 15000    | 35x50     | 4.77                                     | 20                       | 27                      |
| 63       | 1000     | 22x25     | 1.17                                     | 210                      | 270                     |
| 63       | 1200     | 22x25     | 1.25                                     | 170                      | 220                     |
| 63       | 1500     | 22x30     | 1.48                                     | 140                      | 180                     |
| 63       | 1500     | 25x25     | 1.50                                     | 140                      | 180                     |

| VV (Vdc) | Cap (uF) | Size (mm) | Rated Ripple current (Arms/105°C /120Hz) | Typ. ESR 20°C 120Hz (mΩ) | MAX ESR 20°C 120Hz (mΩ) |
|----------|----------|-----------|--|--------------------------|-------------------------|
| 63       | 1800     | 22x30     | 1.59                                     | 120                      | 150                     |
| 63       | 1800     | 25x25     | 1.60                                     | 120                      | 150                     |
| 63       | 2200     | 22x35     | 1.83                                     | 92                       | 120                     |
| 63       | 2200     | 25x30     | 1.84                                     | 92                       | 120                     |
| 63       | 2700     | 22x40     | 2.05                                     | 76                       | 98                      |
| 63       | 2700     | 25x35     | 2.05                                     | 76                       | 98                      |
| 63       | 2700     | 30x25     | 2.03                                     | 76                       | 98                      |
| 63       | 3300     | 22x45     | 2.33                                     | 62                       | 80                      |
| 63       | 3300     | 30x30     | 2.40                                     | 62                       | 80                      |
| 63       | 3900     | 25x40     | 2.54                                     | 52                       | 68                      |
| 63       | 3900     | 30x35     | 2.57                                     | 52                       | 68                      |
| 63       | 4700     | 25x50     | 2.98                                     | 43                       | 56                      |
| 63       | 4700     | 30x40     | 3.02                                     | 43                       | 56                      |
| 63       | 4700     | 35x30     | 3.05                                     | 43                       | 56                      |
| 63       | 5600     | 30x40     | 3.28                                     | 36                       | 47                      |
| 63       | 5600     | 35x35     | 3.31                                     | 36                       | 47                      |
| 63       | 6800     | 30x50     | 3.73                                     | 30                       | 39                      |
| 63       | 6800     | 35x40     | 3.75                                     | 30                       | 39                      |
| 63       | 8200     | 35x45     | 4.20                                     | 25                       | 32                      |
| 63       | 10000    | 35x50     | 4.70                                     | 20                       | 27                      |
| 80       | 680      | 22x25     | 1.00                                     | 220                      | 290                     |
| 80       | 820      | 22x25     | 1.15                                     | 180                      | 240                     |
| 80       | 1000     | 22x25     | 1.29                                     | 150                      | 200                     |
| 80       | 1200     | 22x30     | 1.63                                     | 130                      | 170                     |
| 80       | 1200     | 25x25     | 1.65                                     | 130                      | 170                     |
| 80       | 1500     | 22x30     | 1.75                                     | 100                      | 130                     |
| 80       | 1500     | 25x25     | 1.76                                     | 100                      | 130                     |
| 80       | 1800     | 22x35     | 1.83                                     | 85                       | 110                     |
| 80       | 1800     | 25x30     | 1.86                                     | 85                       | 110                     |
| 80       | 1800     | 30x25     | 1.87                                     | 85                       | 110                     |
| 80       | 2200     | 22x40     | 2.09                                     | 70                       | 90                      |
| 80       | 2200     | 25x35     | 2.10                                     | 70                       | 90                      |
| 80       | 2200     | 30x25     | 2.11                                     | 70                       | 90                      |
| 80       | 2700     | 25x40     | 2.43                                     | 57                       | 74                      |
| 80       | 2700     | 30x30     | 2.44                                     | 57                       | 74                      |
| 80       | 3300     | 25x45     | 2.76                                     | 46                       | 60                      |
| 80       | 3300     | 30x35     | 2.79                                     | 46                       | 60                      |
| 80       | 3300     | 35x30     | 2.80                                     | 46                       | 60                      |
| 80       | 3900     | 25x50     | 3.09                                     | 39                       | 51                      |
| 80       | 3900     | 30x40     | 3.12                                     | 39                       | 51                      |
| 80       | 3900     | 35x30     | 3.13                                     | 39                       | 51                      |
| 80       | 4700     | 30x45     | 3.52                                     | 33                       | 42                      |
| 80       | 4700     | 35x35     | 3.53                                     | 33                       | 42                      |
| 80       | 5600     | 30x50     | 3.80                                     | 27                       | 36                      |
| 80       | 5600     | 35x40     | 3.87                                     | 27                       | 36                      |
| 80       | 6800     | 35x45     | 4.19                                     | 23                       | 29                      |
| 100      | 330      | 22x20     | 0.80                                     | 460                      | 600                     |
| 100      | 470      | 22x25     | 0.92                                     | 320                      | 420                     |
| 100      | 470      | 25x20     | 1.00                                     | 320                      | 420                     |
| 100      | 560      | 22x25     | 1.10                                     | 280                      | 360                     |
| 100      | 680      | 22x30     | 1.22                                     | 220                      | 290                     |
| 100      | 680      | 25x25     | 1.24                                     | 220                      | 290                     |
| 100      | 820      | 22x30     | 1.88                                     | 180                      | 240                     |
| 100      | 820      | 25x25     | 1.96                                     | 180                      | 240                     |
| 100      | 1000     | 22x30     | 1.93                                     | 150                      | 200                     |
| 100      | 1000     | 25x25     | 1.92                                     | 150                      | 200                     |
| 100      | 1200     | 22x40     | 2.08                                     | 130                      | 170                     |
| 100      | 1200     | 25x30     | 2.08                                     | 130                      | 170                     |
| 100      | 1200     | 30x25     | 2.08                                     | 130                      | 170                     |
| 100      | 1500     | 22x45     | 2.15                                     | 100                      | 130                     |

| VV (Vdc) | Cap (uF) | Size (mm) | Rated Ripple current (Arms/105°C /120Hz) | Typ. ESR 20°C 120Hz (mΩ) | MAX ESR 20°C 120Hz (mΩ) |
|----------|----------|-----------|--|--------------------------|-------------------------|
| 100      | 1500     | 25x35     | 2.15                                     | 100                      | 130                     |
| 100      | 1500     | 30x30     | 2.15                                     | 100                      | 130                     |
| 100      | 1500     | 35x25     | 2.15                                     | 100                      | 130                     |
| 100      | 1800     | 25x40     | 2.37                                     | 85                       | 110                     |
| 100      | 1800     | 30x35     | 2.37                                     | 85                       | 110                     |
| 100      | 2200     | 25x50     | 2.65                                     | 70                       | 90                      |
| 100      | 2200     | 30x35     | 2.61                                     | 70                       | 90                      |
| 100      | 2200     | 35x30     | 2.75                                     | 70                       | 90                      |
| 100      | 2700     | 25x50     | 2.76                                     | 57                       | 74                      |
| 100      | 2700     | 30x45     | 2.96                                     | 57                       | 74                      |
| 100      | 2700     | 35x35     | 2.96                                     | 57                       | 74                      |
| 100      | 3300     | 30x50     | 3.34                                     | 46                       | 60                      |
| 100      | 3300     | 35x40     | 3.34                                     | 46                       | 60                      |
| 100      | 3900     | 35x45     | 3.69                                     | 39                       | 51                      |
| 100      | 4700     | 35x50     | 4.15                                     | 33                       | 42                      |
| 160      | 220      | 20x25     | 0.81                                     | 470                      | 900                     |
| 160      | 220      | 22x20     | 0.78                                     | 470                      | 900                     |
| 160      | 270      | 22x25     | 1.01                                     | 390                      | 740                     |
| 160      | 270      | 25x20     | 1.01                                     | 390                      | 740                     |
| 160      | 330      | 22x25     | 1.17                                     | 320                      | 600                     |
| 160      | 330      | 25x20     | 1.17                                     | 320                      | 600                     |
| 160      | 390      | 22x30     | 1.43                                     | 270                      | 510                     |
| 160      | 390      | 25x25     | 1.43                                     | 270                      | 510                     |
| 160      | 470      | 22x30     | 1.52                                     | 220                      | 420                     |
| 160      | 470      | 25x25     | 1.52                                     | 220                      | 420                     |
| 160      | 470      | 30x20     | 1.53                                     | 220                      | 420                     |
| 160      | 680      | 22x40     | 1.53                                     | 150                      | 290                     |
| 160      | 680      | 25x30     | 1.53                                     | 150                      | 290                     |
| 160      | 680      | 30x25     | 1.53                                     | 150                      | 290                     |
| 160      | 680      | 35x20     | 1.56                                     | 150                      | 290                     |
| 160      | 820      | 22x45     | 1.96                                     | 130                      | 240                     |
| 160      | 820      | 25x35     | 1.96                                     | 130                      | 240                     |
| 160      | 820      | 30x30     | 1.96                                     | 130                      | 240                     |
| 160      | 820      | 35x25     | 1.96                                     | 130                      | 240                     |
| 160      | 1000     | 25x40     | 2.23                                     | 110                      | 200                     |
| 160      | 1200     | 25x45     | 2.40                                     | 89                       | 170                     |
| 160      | 1200     | 30x35     | 2.40                                     | 89                       | 170                     |
| 160      | 1200     | 35x30     | 2.40                                     | 89                       | 170                     |
| 160      | 1500     | 25x50     | 2.60                                     | 68                       | 130                     |
| 160      | 1500     | 30x40     | 2.60                                     | 68                       | 130                     |
| 160      | 1500     | 35x30     | 2.60                                     | 68                       | 130                     |
| 160      | 1800     | 30x45     | 2.82                                     | 58                       | 110                     |
| 160      | 1800     | 35x35     | 2.82                                     | 58                       | 110                     |
| 160      | 2200     | 30x50     | 3.32                                     | 48                       | 90                      |
| 160      | 2200     | 35x45     | 3.50                                     | 48                       | 90                      |
| 160      | 2700     | 35x50     | 3.78                                     | 39                       | 74                      |
| 160      | 3300     | 35x55     | 3.86                                     | 32                       | 60                      |
| 180      | 180      | 22x20     | 0.76                                     | 580                      | 1110                    |
| 180      | 220      | 25x20     | 0.90                                     | 470                      | 900                     |
| 180      | 270      | 22x25     | 1.02                                     | 390                      | 740                     |
| 180      | 270      | 25x20     | 1.03                                     | 390                      | 740                     |
| 180      | 330      | 20x30     | 1.20                                     | 320                      | 600                     |
| 180      | 330      | 22x25     | 1.20                                     | 320                      | 600                     |
| 180      | 330      | 25x20     | 1.22                                     | 320                      | 600                     |
| 180      | 390      | 22x30     | 1.32                                     | 270                      | 510                     |
| 180      | 390      | 25x25     | 1.35                                     | 270                      | 510                     |
| 180      | 390      | 30x20     | 1.35                                     | 270                      | 510                     |
| 180      | 470      | 22x35     | 1.53                                     | 220                      | 420                     |
| 180      | 470      | 25x30     | 1.54                                     | 220                      | 420                     |
| 180      | 470      | 30x25     | 1.55                                     | 220                      | 420                     |

| VV (Vdc) | Cap (uF) | Size (mm) | Rated Ripple current (Arms/105°C /120Hz) | Typ. ESR 20°C 120Hz (mΩ) | MAX ESR 20°C 120Hz (mΩ) |
|----------|----------|-----------|--|--------------------------|-------------------------|
| 180      | 560      | 22x40     | 1.67                                     | 190                      | 360                     |
| 180      | 560      | 25x30     | 1.67                                     | 190                      | 360                     |
| 180      | 560      | 30x25     | 1.67                                     | 190                      | 360                     |
| 180      | 560      | 35x20     | 1.67                                     | 190                      | 360                     |
| 180      | 680      | 22x45     | 1.78                                     | 150                      | 290                     |
| 180      | 680      | 25x35     | 1.78                                     | 150                      | 290                     |
| 180      | 680      | 30x30     | 1.78                                     | 150                      | 290                     |
| 180      | 680      | 35x25     | 1.78                                     | 150                      | 290                     |
| 180      | 820      | 22x50     | 2.09                                     | 130                      | 240                     |
| 180      | 820      | 25x40     | 2.09                                     | 130                      | 240                     |
| 180      | 820      | 30x30     | 2.09                                     | 130                      | 240                     |
| 180      | 820      | 35x25     | 2.09                                     | 130                      | 240                     |
| 180      | 1000     | 22x50     | 2.15                                     | 110                      | 200                     |
| 180      | 1000     | 25x45     | 2.15                                     | 110                      | 200                     |
| 180      | 1000     | 30x35     | 2.15                                     | 110                      | 200                     |
| 180      | 1000     | 35x30     | 2.15                                     | 110                      | 200                     |
| 180      | 1200     | 22x60     | 2.22                                     | 89                       | 170                     |
| 180      | 1200     | 25x50     | 2.22                                     | 89                       | 170                     |
| 180      | 1200     | 30x40     | 2.22                                     | 89                       | 170                     |
| 180      | 1200     | 35x30     | 2.22                                     | 89                       | 170                     |
| 180      | 1500     | 25x50     | 2.24                                     | 68                       | 130                     |
| 180      | 1500     | 30x45     | 2.24                                     | 68                       | 130                     |
| 180      | 1500     | 35x35     | 2.24                                     | 68                       | 130                     |
| 180      | 1800     | 30x50     | 2.88                                     | 58                       | 110                     |
| 180      | 1800     | 35x35     | 2.88                                     | 58                       | 110                     |
| 180      | 1800     | 35x40     | 2.94                                     | 58                       | 110                     |
| 180      | 2200     | 30x55     | 3.12                                     | 48                       | 90                      |
| 180      | 2200     | 35x45     | 3.12                                     | 48                       | 90                      |
| 180      | 2200     | 35x50     | 3.23                                     | 48                       | 90                      |
| 180      | 2200     | 35x55     | 3.32                                     | 48                       | 90                      |
| 180      | 2700     | 35x50     | 3.81                                     | 39                       | 74                      |
| 200      | 150      | 20x20     | 0.74                                     | 700                      | 1330                    |
| 200      | 180      | 22x20     | 0.76                                     | 580                      | 1110                    |
| 200      | 220      | 20x25     | 1.01                                     | 470                      | 900                     |
| 200      | 220      | 22x25     | 1.05                                     | 470                      | 900                     |
| 200      | 220      | 25x20     | 1.06                                     | 470                      | 900                     |
| 200      | 270      | 20x25     | 1.07                                     | 390                      | 740                     |
| 200      | 270      | 22x25     | 1.11                                     | 390                      | 740                     |
| 200      | 330      | 20x30     | 1.21                                     | 320                      | 600                     |
| 200      | 330      | 22x30     | 1.26                                     | 320                      | 600                     |
| 200      | 330      | 25x25     | 1.27                                     | 320                      | 600                     |
| 200      | 390      | 20x35     | 1.35                                     | 270                      | 510                     |
| 200      | 390      | 22x25     | 1.35                                     | 270                      | 510                     |
| 200      | 390      | 22x30     | 1.36                                     | 270                      | 510                     |
| 200      | 390      | 25x25     | 1.37                                     | 270                      | 510                     |
| 200      | 470      | 20x40     | 1.55                                     | 220                      | 420                     |
| 200      | 470      | 22x30     | 1.56                                     | 220                      | 420                     |
| 200      | 470      | 22x35     | 1.57                                     | 220                      | 420                     |
| 200      | 470      | 25x30     | 1.58                                     | 220                      | 420                     |
| 200      | 470      | 30x25     | 1.59                                     | 220                      | 420                     |
| 200      | 560      | 20x45     | 1.73                                     | 190                      | 360                     |
| 200      | 560      | 22x35     | 1.73                                     | 190                      | 360                     |
| 200      | 560      | 22x40     | 1.77                                     | 190                      | 360                     |
| 200      | 560      | 25x30     | 1.77                                     | 190                      | 360                     |
| 200      | 560      | 30x25     | 1.77                                     | 190                      | 360                     |
| 200      | 680      | 22x40     | 2.12                                     | 150                      | 290                     |
| 200      | 680      | 22x45     | 2.15                                     | 150                      | 290                     |
| 200      | 680      | 25x35     | 2.15                                     | 150                      | 290                     |
| 200      | 680      | 30x30     | 2.15                                     | 150                      | 290                     |
| 200      | 680      | 35x25     | 2.15                                     | 150                      | 290                     |

| VV (Vdc) | Cap (uF) | Size (mm) | Rated Ripple current (Arms/105°C /120Hz) | Typ. ESR 20°C 120Hz (mΩ) | MAX ESR 20°C 120Hz (mΩ) |
|----------|----------|-----------|--|--------------------------|-------------------------|
| 200      | 820      | 22x50     | 2.19                                     | 130                      | 240                     |
| 200      | 820      | 25x45     | 2.19                                     | 130                      | 240                     |
| 200      | 820      | 30x25     | 2.20                                     | 130                      | 240                     |
| 200      | 820      | 30x30     | 2.24                                     | 130                      | 240                     |
| 200      | 820      | 35x25     | 2.24                                     | 130                      | 240                     |
| 200      | 1000     | 25x40     | 2.24                                     | 110                      | 200                     |
| 200      | 1000     | 30x30     | 2.24                                     | 110                      | 200                     |
| 200      | 1000     | 30x35     | 2.50                                     | 110                      | 200                     |
| 200      | 1000     | 35x30     | 2.50                                     | 110                      | 200                     |
| 200      | 1200     | 25x50     | 2.95                                     | 89                       | 170                     |
| 200      | 1200     | 30x35     | 2.70                                     | 89                       | 170                     |
| 200      | 1200     | 30x40     | 2.95                                     | 89                       | 170                     |
| 200      | 1200     | 35x30     | 2.95                                     | 89                       | 170                     |
| 200      | 1200     | 35x35     | 3.13                                     | 89                       | 170                     |
| 200      | 1500     | 30x50     | 3.20                                     | 68                       | 130                     |
| 200      | 1500     | 35x40     | 3.20                                     | 68                       | 130                     |
| 200      | 1800     | 30x50     | 3.30                                     | 58                       | 110                     |
| 200      | 1800     | 35x40     | 3.30                                     | 58                       | 110                     |
| 200      | 1800     | 35x45     | 3.55                                     | 58                       | 110                     |
| 200      | 2200     | 35x45     | 3.85                                     | 48                       | 90                      |
| 200      | 2200     | 35x50     | 4.00                                     | 48                       | 90                      |
| 200      | 2700     | 35x55     | 4.30                                     | 39                       | 74                      |
| 220      | 150      | 20x20     | 0.71                                     | 700                      | 1330                    |
| 220      | 180      | 22x20     | 0.77                                     | 580                      | 1110                    |
| 220      | 220      | 20x30     | 1.07                                     | 470                      | 900                     |
| 220      | 220      | 22x25     | 1.07                                     | 470                      | 900                     |
| 220      | 270      | 20x35     | 1.16                                     | 390                      | 740                     |
| 220      | 270      | 22x30     | 1.17                                     | 390                      | 740                     |
| 220      | 270      | 25x25     | 1.18                                     | 390                      | 740                     |
| 220      | 330      | 20x35     | 1.27                                     | 320                      | 600                     |
| 220      | 330      | 22x35     | 1.28                                     | 320                      | 600                     |
| 220      | 330      | 25x25     | 1.28                                     | 320                      | 600                     |
| 220      | 330      | 30x20     | 1.30                                     | 320                      | 600                     |
| 220      | 390      | 20x40     | 1.35                                     | 270                      | 510                     |
| 220      | 390      | 22x35     | 1.41                                     | 270                      | 510                     |
| 220      | 390      | 25x30     | 1.42                                     | 270                      | 510                     |
| 220      | 470      | 20x45     | 1.63                                     | 220                      | 420                     |
| 220      | 470      | 22x40     | 1.65                                     | 220                      | 420                     |
| 220      | 470      | 25x35     | 1.65                                     | 220                      | 420                     |
| 220      | 470      | 30x25     | 1.64                                     | 220                      | 420                     |
| 220      | 560      | 22x40     | 1.79                                     | 190                      | 360                     |
| 220      | 560      | 22x45     | 1.81                                     | 190                      | 360                     |
| 220      | 560      | 25x40     | 1.83                                     | 190                      | 360                     |
| 220      | 560      | 30x30     | 1.84                                     | 190                      | 360                     |
| 220      | 680      | 25x45     | 2.23                                     | 150                      | 290                     |
| 220      | 680      | 30x35     | 2.23                                     | 150                      | 290                     |
| 220      | 680      | 35x25     | 2.23                                     | 150                      | 290                     |
| 220      | 820      | 25x50     | 2.25                                     | 130                      | 240                     |
| 220      | 820      | 30x40     | 2.25                                     | 130                      | 240                     |
| 220      | 820      | 35x30     | 2.25                                     | 130                      | 240                     |
| 220      | 1000     | 25x55     | 2.28                                     | 110                      | 200                     |
| 220      | 1000     | 30x45     | 2.28                                     | 110                      | 200                     |
| 220      | 1000     | 35x35     | 2.28                                     | 110                      | 200                     |
| 220      | 1200     | 30x50     | 2.32                                     | 89                       | 170                     |
| 220      | 1200     | 35x40     | 2.32                                     | 89                       | 170                     |
| 220      | 1500     | 30x55     | 3.13                                     | 68                       | 130                     |
| 220      | 1500     | 35x45     | 3.23                                     | 68                       | 130                     |
| 220      | 1800     | 35x50     | 3.89                                     | 58                       | 110                     |
| 220      | 2200     | 35x60     | 3.95                                     | 48                       | 90                      |
| 250      | 150      | 20x20     | 0.67                                     | 700                      | 1330                    |

| VV (Vdc) | Cap (uF) | Size (mm) | Rated Ripple current (Arms/105°C /120Hz) | Typ. ESR 20°C 120Hz (mΩ) | MAX ESR 20°C 120Hz (mΩ) |
|----------|----------|-----------|--|--------------------------|-------------------------|
| 250      | 150      | 22x25     | 0.76                                     | 700                      | 1330                    |
| 250      | 150      | 25x20     | 0.77                                     | 700                      | 1330                    |
| 250      | 180      | 22x25     | 0.79                                     | 580                      | 1110                    |
| 250      | 180      | 25x25     | 0.91                                     | 580                      | 1110                    |
| 250      | 220      | 22x25     | 1.11                                     | 470                      | 900                     |
| 250      | 220      | 25x25     | 1.12                                     | 470                      | 900                     |
| 250      | 270      | 22x30     | 1.22                                     | 390                      | 740                     |
| 250      | 270      | 25x30     | 1.25                                     | 390                      | 740                     |
| 250      | 270      | 30x25     | 1.25                                     | 390                      | 740                     |
| 250      | 330      | 22x35     | 1.44                                     | 320                      | 600                     |
| 250      | 330      | 25x25     | 1.43                                     | 320                      | 600                     |
| 250      | 330      | 25x30     | 1.45                                     | 320                      | 600                     |
| 250      | 330      | 30x25     | 1.45                                     | 320                      | 600                     |
| 250      | 390      | 22x35     | 1.72                                     | 270                      | 510                     |
| 250      | 390      | 22x40     | 1.75                                     | 270                      | 510                     |
| 250      | 390      | 25x35     | 1.77                                     | 270                      | 510                     |
| 250      | 390      | 30x25     | 1.78                                     | 270                      | 510                     |
| 250      | 470      | 22x40     | 1.85                                     | 220                      | 420                     |
| 250      | 470      | 22x45     | 1.86                                     | 220                      | 420                     |
| 250      | 470      | 25x40     | 1.87                                     | 220                      | 420                     |
| 250      | 470      | 30x35     | 1.88                                     | 220                      | 420                     |
| 250      | 470      | 35x30     | 1.89                                     | 220                      | 420                     |
| 250      | 560      | 22x45     | 2.16                                     | 190                      | 360                     |
| 250      | 560      | 25x45     | 2.17                                     | 190                      | 360                     |
| 250      | 560      | 30x30     | 2.18                                     | 190                      | 360                     |
| 250      | 560      | 35x25     | 2.19                                     | 190                      | 360                     |
| 250      | 680      | 22x50     | 2.25                                     | 150                      | 290                     |
| 250      | 680      | 25x40     | 2.25                                     | 150                      | 290                     |
| 250      | 680      | 30x30     | 2.25                                     | 150                      | 290                     |
| 250      | 680      | 30x35     | 2.40                                     | 150                      | 290                     |
| 250      | 680      | 35x30     | 2.40                                     | 150                      | 290                     |
| 250      | 820      | 25x50     | 2.52                                     | 130                      | 240                     |
| 250      | 820      | 30x40     | 2.52                                     | 130                      | 240                     |
| 250      | 820      | 35x35     | 2.52                                     | 130                      | 240                     |
| 250      | 1000     | 30x40     | 2.75                                     | 110                      | 200                     |
| 250      | 1000     | 30x50     | 2.88                                     | 110                      | 200                     |
| 250      | 1000     | 35x40     | 2.88                                     | 110                      | 200                     |
| 250      | 1200     | 30x50     | 3.15                                     | 89                       | 170                     |
| 250      | 1200     | 30x60     | 3.35                                     | 89                       | 170                     |
| 250      | 1200     | 35x45     | 3.28                                     | 89                       | 170                     |
| 250      | 1500     | 35x45     | 3.76                                     | 68                       | 130                     |
| 250      | 1800     | 35x50     | 4.06                                     | 58                       | 110                     |
| 315      | 68       | 22x20     | 0.48                                     | 1540                     | 2930                    |
| 315      | 82       | 22x20     | 0.52                                     | 1280                     | 2430                    |
| 315      | 100      | 25x20     | 0.58                                     | 1050                     | 1990                    |
| 315      | 120      | 22x25     | 0.76                                     | 870                      | 1660                    |
| 315      | 120      | 30x20     | 0.77                                     | 870                      | 1660                    |
| 315      | 150      | 22x30     | 0.83                                     | 700                      | 1330                    |
| 315      | 150      | 25x25     | 0.85                                     | 700                      | 1330                    |
| 315      | 150      | 30x20     | 0.86                                     | 700                      | 1330                    |
| 315      | 180      | 22x30     | 0.93                                     | 580                      | 1110                    |
| 315      | 180      | 25x25     | 0.95                                     | 580                      | 1110                    |
| 315      | 220      | 22x40     | 1.17                                     | 470                      | 900                     |
| 315      | 220      | 25x30     | 1.14                                     | 470                      | 900                     |
| 315      | 220      | 30x25     | 1.14                                     | 470                      | 900                     |
| 315      | 270      | 22x45     | 1.28                                     | 390                      | 740                     |
| 315      | 270      | 25x35     | 1.26                                     | 390                      | 740                     |
| 315      | 270      | 30x25     | 1.27                                     | 390                      | 740                     |
| 315      | 330      | 22x50     | 1.49                                     | 320                      | 600                     |
| 315      | 330      | 25x40     | 1.49                                     | 320                      | 600                     |

| VV (Vdc) | Cap (uF) | Size (mm) | Rated Ripple current (Arms/105°C /120Hz) | Typ. ESR 20°C 120Hz (mΩ) | MAX ESR 20°C 120Hz (mΩ) |
|----------|----------|-----------|--|--------------------------|-------------------------|
| 315      | 330      | 30x30     | 1.49                                     | 320                      | 600                     |
| 315      | 330      | 35x25     | 1.49                                     | 320                      | 600                     |
| 315      | 390      | 25x45     | 1.86                                     | 270                      | 510                     |
| 315      | 390      | 30x35     | 1.86                                     | 270                      | 510                     |
| 315      | 390      | 35x30     | 1.86                                     | 270                      | 510                     |
| 315      | 470      | 25x50     | 1.96                                     | 220                      | 420                     |
| 315      | 470      | 30x40     | 1.97                                     | 220                      | 420                     |
| 315      | 470      | 35x35     | 1.99                                     | 220                      | 420                     |
| 315      | 560      | 30x45     | 2.35                                     | 190                      | 360                     |
| 315      | 560      | 35x35     | 2.36                                     | 190                      | 360                     |
| 315      | 680      | 30x50     | 2.37                                     | 150                      | 290                     |
| 315      | 680      | 35x40     | 2.37                                     | 150                      | 290                     |
| 315      | 820      | 35x45     | 2.38                                     | 130                      | 240                     |
| 315      | 1000     | 35x45     | 2.46                                     | 110                      | 200                     |
| 350      | 56       | 22x20     | 0.42                                     | 1870                     | 3550                    |
| 350      | 68       | 25x20     | 0.52                                     | 1540                     | 2930                    |
| 350      | 82       | 25x20     | 0.55                                     | 1280                     | 2430                    |
| 350      | 100      | 22x30     | 0.71                                     | 1050                     | 1990                    |
| 350      | 120      | 25x25     | 0.77                                     | 870                      | 1660                    |
| 350      | 120      | 30x20     | 0.77                                     | 870                      | 1660                    |
| 350      | 150      | 22x30     | 0.87                                     | 700                      | 1330                    |
| 350      | 150      | 25x25     | 0.87                                     | 700                      | 1330                    |
| 350      | 150      | 30x20     | 0.89                                     | 700                      | 1330                    |
| 350      | 180      | 22x35     | 0.95                                     | 580                      | 1110                    |
| 350      | 180      | 25x30     | 0.96                                     | 580                      | 1110                    |
| 350      | 180      | 30x25     | 1.05                                     | 580                      | 1110                    |
| 350      | 220      | 22x45     | 1.25                                     | 470                      | 900                     |
| 350      | 220      | 25x35     | 1.26                                     | 470                      | 900                     |
| 350      | 220      | 35x25     | 1.28                                     | 470                      | 900                     |
| 350      | 270      | 22x50     | 1.30                                     | 390                      | 740                     |
| 350      | 270      | 25x40     | 1.31                                     | 390                      | 740                     |
| 350      | 270      | 30x30     | 1.31                                     | 390                      | 740                     |
| 350      | 270      | 35x25     | 1.32                                     | 390                      | 740                     |
| 350      | 330      | 25x45     | 1.52                                     | 320                      | 600                     |
| 350      | 330      | 30x35     | 1.54                                     | 320                      | 600                     |
| 350      | 330      | 35x30     | 1.55                                     | 320                      | 600                     |
| 350      | 390      | 25x50     | 1.94                                     | 270                      | 510                     |
| 350      | 390      | 30x35     | 1.88                                     | 270                      | 510                     |
| 350      | 390      | 35x30     | 1.88                                     | 270                      | 510                     |
| 350      | 470      | 25x50     | 2.10                                     | 220                      | 420                     |
| 350      | 470      | 30x40     | 2.10                                     | 220                      | 420                     |
| 350      | 470      | 35x40     | 2.10                                     | 220                      | 420                     |
| 350      | 560      | 30x45     | 2.39                                     | 190                      | 360                     |
| 350      | 560      | 35x40     | 2.39                                     | 190                      | 360                     |
| 350      | 680      | 30x50     | 2.40                                     | 150                      | 290                     |
| 350      | 680      | 35x40     | 2.41                                     | 150                      | 290                     |
| 350      | 820      | 35x45     | 2.45                                     | 130                      | 240                     |
| 385      | 33       | 22x20     | 0.20                                     | 3170                     | 6030                    |
| 385      | 39       | 20x20     | 0.35                                     | 2680                     | 5100                    |
| 385      | 56       | 22x20     | 0.43                                     | 1870                     | 3550                    |
| 385      | 68       | 22x25     | 0.52                                     | 1540                     | 2930                    |
| 385      | 68       | 25x20     | 0.52                                     | 1540                     | 2930                    |
| 385      | 82       | 22x25     | 0.64                                     | 1280                     | 2430                    |
| 385      | 82       | 25x20     | 0.64                                     | 1280                     | 2430                    |
| 385      | 100      | 22x25     | 0.69                                     | 1050                     | 1990                    |
| 385      | 100      | 22x30     | 0.75                                     | 1050                     | 1990                    |
| 385      | 100      | 25x25     | 0.75                                     | 1050                     | 1990                    |
| 385      | 120      | 22x35     | 0.80                                     | 870                      | 1660                    |
| 385      | 120      | 25x25     | 0.80                                     | 870                      | 1660                    |
| 385      | 120      | 30x20     | 0.80                                     | 870                      | 1660                    |

| VV (Vdc) | Cap (uF) | Size (mm) | Rated Ripple current (Arms/105°C /120Hz) | Typ. ESR 20°C 120Hz (mΩ) | MAX ESR 20°C 120Hz (mΩ) |
|----------|----------|-----------|--|--------------------------|-------------------------|
| 385      | 150      | 22x35     | 0.92                                     | 700                      | 1330                    |
| 385      | 150      | 25x35     | 0.92                                     | 700                      | 1330                    |
| 385      | 150      | 30x30     | 0.92                                     | 700                      | 1330                    |
| 385      | 180      | 22x35     | 1.22                                     | 580                      | 1110                    |
| 385      | 180      | 22x40     | 1.25                                     | 580                      | 1110                    |
| 385      | 180      | 25x30     | 1.32                                     | 580                      | 1110                    |
| 385      | 180      | 30x30     | 1.34                                     | 580                      | 1110                    |
| 385      | 180      | 35x25     | 1.34                                     | 580                      | 1110                    |
| 385      | 270      | 30x30     | 1.47                                     | 390                      | 740                     |
| 385      | 270      | 35x30     | 1.48                                     | 390                      | 740                     |
| 385      | 390      | 25x50     | 1.95                                     | 270                      | 510                     |
| 385      | 390      | 30x40     | 1.95                                     | 270                      | 510                     |
| 385      | 390      | 35x30     | 1.95                                     | 270                      | 510                     |
| 385      | 470      | 30x50     | 2.32                                     | 220                      | 420                     |
| 385      | 470      | 35x35     | 2.32                                     | 220                      | 420                     |
| 385      | 680      | 30x55     | 2.55                                     | 150                      | 290                     |
| 385      | 680      | 35x50     | 2.55                                     | 150                      | 290                     |
| 385      | 820      | 35x55     | 2.65                                     | 130                      | 240                     |
| 400      | 47       | 22x20     | 0.40                                     | 2230                     | 4230                    |
| 400      | 56       | 22x20     | 0.44                                     | 1870                     | 3550                    |
| 400      | 68       | 22x25     | 0.53                                     | 1540                     | 2930                    |
| 400      | 68       | 25x20     | 0.53                                     | 1540                     | 2930                    |
| 400      | 82       | 22x25     | 0.58                                     | 1280                     | 2430                    |
| 400      | 82       | 25x20     | 0.58                                     | 1280                     | 2430                    |
| 400      | 82       | 25x25     | 0.63                                     | 1280                     | 2430                    |
| 400      | 100      | 22x25     | 0.66                                     | 1050                     | 1990                    |
| 400      | 100      | 22x30     | 0.69                                     | 1050                     | 1990                    |
| 400      | 100      | 25x25     | 0.69                                     | 1050                     | 1990                    |
| 400      | 120      | 22x30     | 0.76                                     | 870                      | 1660                    |
| 400      | 120      | 22x35     | 0.81                                     | 870                      | 1660                    |
| 400      | 120      | 25x25     | 0.81                                     | 870                      | 1660                    |
| 400      | 120      | 25x30     | 0.84                                     | 870                      | 1660                    |
| 400      | 120      | 30x20     | 0.81                                     | 870                      | 1660                    |
| 400      | 120      | 30x25     | 0.84                                     | 870                      | 1660                    |
| 400      | 150      | 22x35     | 0.90                                     | 700                      | 1330                    |
| 400      | 150      | 22x40     | 0.95                                     | 700                      | 1330                    |
| 400      | 150      | 25x25     | 0.90                                     | 700                      | 1330                    |
| 400      | 150      | 25x30     | 0.95                                     | 700                      | 1330                    |
| 400      | 150      | 30x20     | 0.90                                     | 700                      | 1330                    |
| 400      | 150      | 30x25     | 0.95                                     | 700                      | 1330                    |
| 400      | 180      | 22x35     | 0.99                                     | 580                      | 1110                    |
| 400      | 180      | 22x40     | 1.05                                     | 580                      | 1110                    |
| 400      | 180      | 22x45     | 1.10                                     | 580                      | 1110                    |
| 400      | 180      | 25x30     | 1.05                                     | 580                      | 1110                    |
| 400      | 180      | 25x35     | 1.10                                     | 580                      | 1110                    |
| 400      | 180      | 30x30     | 1.05                                     | 580                      | 1110                    |
| 400      | 180      | 35x25     | 1.05                                     | 580                      | 1110                    |
| 400      | 220      | 22x45     | 1.12                                     | 470                      | 900                     |
| 400      | 220      | 22x50     | 1.16                                     | 470                      | 900                     |
| 400      | 220      | 25x35     | 1.12                                     | 470                      | 900                     |
| 400      | 220      | 25x40     | 1.16                                     | 470                      | 900                     |
| 400      | 220      | 25x45     | 1.16                                     | 470                      | 900                     |
| 400      | 220      | 30x25     | 1.12                                     | 470                      | 900                     |
| 400      | 220      | 30x30     | 1.16                                     | 470                      | 900                     |
| 400      | 220      | 30x35     | 1.19                                     | 470                      | 900                     |
| 400      | 220      | 35x25     | 1.16                                     | 470                      | 900                     |
| 400      | 270      | 22x50     | 1.29                                     | 390                      | 740                     |
| 400      | 270      | 25x40     | 1.29                                     | 390                      | 740                     |
| 400      | 270      | 25x45     | 1.32                                     | 390                      | 740                     |
| 400      | 270      | 25x50     | 1.38                                     | 390                      | 740                     |

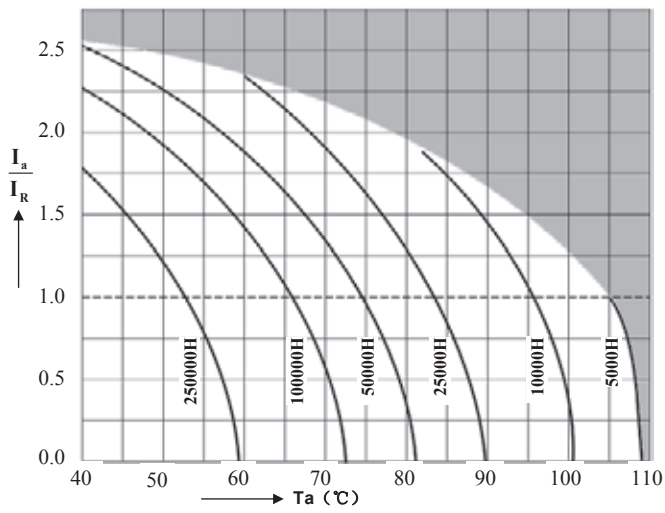
| VV (Vdc) | Cap (uF) | Size (mm) | Rated Ripple current (Arms/105°C /120Hz) | Typ. ESR 20°C 120Hz (mΩ) | MAX ESR 20°C 120Hz (mΩ) |
|----------|----------|-----------|--|--------------------------|-------------------------|
| 400      | 270      | 30x30     | 1.29                                     | 390                      | 740                     |
| 400      | 270      | 30x35     | 1.32                                     | 390                      | 740                     |
| 400      | 270      | 35x30     | 1.38                                     | 390                      | 740                     |
| 400      | 330      | 25x45     | 1.46                                     | 320                      | 600                     |
| 400      | 330      | 25x50     | 1.53                                     | 320                      | 600                     |
| 400      | 330      | 30x35     | 1.48                                     | 320                      | 600                     |
| 400      | 330      | 30x40     | 1.55                                     | 320                      | 600                     |
| 400      | 330      | 35x30     | 1.55                                     | 320                      | 600                     |
| 400      | 330      | 35x35     | 1.59                                     | 320                      | 600                     |
| 400      | 390      | 25x45     | 1.61                                     | 270                      | 510                     |
| 400      | 390      | 30x40     | 1.67                                     | 270                      | 510                     |
| 400      | 390      | 30x45     | 1.76                                     | 270                      | 510                     |
| 400      | 390      | 35x30     | 1.67                                     | 270                      | 510                     |
| 400      | 390      | 35x35     | 1.76                                     | 270                      | 510                     |
| 400      | 390      | 35x40     | 1.83                                     | 270                      | 510                     |
| 400      | 470      | 30x45     | 1.93                                     | 220                      | 420                     |
| 400      | 470      | 30x50     | 2.02                                     | 220                      | 420                     |
| 400      | 470      | 35x30     | 1.67                                     | 220                      | 420                     |
| 400      | 470      | 35x35     | 1.93                                     | 220                      | 420                     |
| 400      | 470      | 35x40     | 2.01                                     | 220                      | 420                     |
| 400      | 560      | 30x50     | 2.21                                     | 190                      | 360                     |
| 400      | 560      | 35x40     | 2.21                                     | 190                      | 360                     |
| 400      | 560      | 35x45     | 2.30                                     | 190                      | 360                     |
| 400      | 560      | 35x50     | 2.41                                     | 190                      | 360                     |
| 400      | 680      | 30x55     | 2.53                                     | 150                      | 290                     |
| 400      | 680      | 35x40     | 2.53                                     | 150                      | 290                     |
| 400      | 680      | 35x50     | 2.65                                     | 150                      | 290                     |
| 400      | 820      | 35x55     | 2.90                                     | 130                      | 240                     |
| 400      | 820      | 35x60     | 2.95                                     | 170                      | 320                     |
| 400      | 1000     | 35x60     | 3.00                                     | 140                      | 270                     |
| 400      | 1200     | 35x70     | 3.12                                     | 120                      | 220                     |
| 420      | 47       | 22x20     | 0.40                                     | 2970                     | 5640                    |
| 420      | 56       | 22x20     | 0.44                                     | 2490                     | 4740                    |
| 420      | 68       | 22x25     | 0.54                                     | 2050                     | 3900                    |
| 420      | 68       | 25x20     | 0.54                                     | 2050                     | 3900                    |
| 420      | 82       | 22x25     | 0.58                                     | 1700                     | 3230                    |
| 420      | 82       | 25x25     | 0.63                                     | 1700                     | 3230                    |
| 420      | 100      | 22x25     | 0.66                                     | 1390                     | 2650                    |
| 420      | 100      | 22x30     | 0.69                                     | 1390                     | 2650                    |
| 420      | 100      | 25x25     | 0.69                                     | 1390                     | 2650                    |
| 420      | 100      | 30x20     | 0.69                                     | 1390                     | 2650                    |
| 420      | 120      | 22x30     | 0.76                                     | 1160                     | 2210                    |
| 420      | 120      | 22x35     | 0.81                                     | 1160                     | 2210                    |
| 420      | 120      | 25x25     | 0.81                                     | 1160                     | 2210                    |
| 420      | 120      | 25x30     | 0.83                                     | 1160                     | 2210                    |
| 420      | 120      | 30x25     | 0.83                                     | 1160                     | 2210                    |
| 420      | 120      | 35x20     | 0.83                                     | 1160                     | 2210                    |
| 420      | 150      | 22x35     | 0.90                                     | 930                      | 1770                    |
| 420      | 150      | 22x40     | 0.96                                     | 930                      | 1770                    |
| 420      | 150      | 25x30     | 0.96                                     | 930                      | 1770                    |
| 420      | 150      | 25x35     | 0.97                                     | 930                      | 1770                    |
| 420      | 150      | 30x25     | 0.97                                     | 930                      | 1770                    |
| 420      | 180      | 25x35     | 1.06                                     | 770                      | 1470                    |
| 420      | 180      | 30x30     | 1.11                                     | 770                      | 1470                    |
| 420      | 180      | 35x25     | 1.11                                     | 770                      | 1470                    |
| 420      | 220      | 22x45     | 1.11                                     | 640                      | 1210                    |
| 420      | 220      | 22x50     | 1.16                                     | 640                      | 1210                    |
| 420      | 220      | 25x35     | 1.11                                     | 640                      | 1210                    |
| 420      | 220      | 25x45     | 1.19                                     | 640                      | 1210                    |
| 420      | 220      | 30x30     | 1.12                                     | 640                      | 1210                    |

| VV (Vdc) | Cap (uF) | Size (mm) | Rated Ripple current (Arms/105°C /120Hz) | Typ. ESR 20°C 120Hz (mΩ) | MAX ESR 20°C 120Hz (mΩ) |
|----------|----------|-----------|--|--------------------------|-------------------------|
| 420      | 220      | 30x35     | 1.19                                     | 640                      | 1210                    |
| 420      | 220      | 35x25     | 1.19                                     | 640                      | 1210                    |
| 420      | 270      | 25x40     | 1.25                                     | 520                      | 980                     |
| 420      | 270      | 30x30     | 1.25                                     | 520                      | 980                     |
| 420      | 270      | 30x35     | 1.32                                     | 520                      | 980                     |
| 420      | 270      | 30x40     | 1.39                                     | 520                      | 980                     |
| 420      | 270      | 35x25     | 1.32                                     | 520                      | 980                     |
| 420      | 270      | 35x30     | 1.39                                     | 520                      | 980                     |
| 420      | 330      | 25x50     | 1.53                                     | 420                      | 800                     |
| 420      | 330      | 30x35     | 1.46                                     | 420                      | 800                     |
| 420      | 330      | 30x40     | 1.53                                     | 420                      | 800                     |
| 420      | 330      | 30x45     | 1.62                                     | 420                      | 800                     |
| 420      | 330      | 35x30     | 1.62                                     | 420                      | 800                     |
| 420      | 330      | 35x35     | 1.63                                     | 420                      | 800                     |
| 420      | 390      | 30x40     | 1.67                                     | 360                      | 680                     |
| 420      | 390      | 30x45     | 1.76                                     | 360                      | 680                     |
| 420      | 390      | 30x50     | 1.84                                     | 360                      | 680                     |
| 420      | 390      | 35x35     | 1.77                                     | 360                      | 680                     |
| 420      | 390      | 35x40     | 1.84                                     | 360                      | 680                     |
| 420      | 470      | 30x50     | 2.02                                     | 290                      | 560                     |
| 420      | 470      | 30x60     | 2.19                                     | 290                      | 560                     |
| 420      | 470      | 35x40     | 2.01                                     | 290                      | 560                     |
| 420      | 470      | 35x45     | 2.11                                     | 290                      | 560                     |
| 420      | 560      | 35x45     | 2.30                                     | 250                      | 470                     |
| 420      | 560      | 35x50     | 2.41                                     | 250                      | 470                     |
| 420      | 680      | 35x50     | 2.41                                     | 210                      | 390                     |
| 420      | 680      | 35x55     | 2.76                                     | 210                      | 390                     |
| 420      | 820      | 30x60     | 2.90                                     | 170                      | 320                     |
| 420      | 820      | 35x55     | 2.95                                     | 170                      | 320                     |
| 420      | 820      | 35x60     | 3.00                                     | 170                      | 320                     |
| 450      | 56       | 22x25     | 0.47                                     | 2490                     | 4740                    |
| 450      | 68       | 22x25     | 0.52                                     | 2050                     | 3900                    |
| 450      | 68       | 22x30     | 0.56                                     | 2050                     | 3900                    |
| 450      | 68       | 25x25     | 0.57                                     | 2050                     | 3900                    |
| 450      | 82       | 22x25     | 0.56                                     | 1700                     | 3230                    |
| 450      | 82       | 22x30     | 0.62                                     | 1700                     | 3230                    |
| 450      | 82       | 25x25     | 0.62                                     | 1700                     | 3230                    |
| 450      | 100      | 22x30     | 0.68                                     | 1390                     | 2650                    |
| 450      | 100      | 22x35     | 0.73                                     | 1390                     | 2650                    |
| 450      | 100      | 25x25     | 0.73                                     | 1390                     | 2650                    |
| 450      | 100      | 25x30     | 0.76                                     | 1390                     | 2650                    |
| 450      | 100      | 30x25     | 0.76                                     | 1390                     | 2650                    |
| 450      | 120      | 22x35     | 0.80                                     | 1160                     | 2210                    |
| 450      | 120      | 22x40     | 0.84                                     | 1160                     | 2210                    |
| 450      | 120      | 25x30     | 0.84                                     | 1160                     | 2210                    |
| 450      | 120      | 25x35     | 0.86                                     | 1160                     | 2210                    |
| 450      | 120      | 30x25     | 0.86                                     | 1160                     | 2210                    |
| 450      | 150      | 22x40     | 0.94                                     | 930                      | 1770                    |
| 450      | 150      | 22x45     | 0.99                                     | 930                      | 1770                    |
| 450      | 150      | 25x30     | 0.94                                     | 930                      | 1770                    |
| 450      | 150      | 25x35     | 0.99                                     | 930                      | 1770                    |
| 450      | 150      | 25x40     | 1.01                                     | 930                      | 1770                    |
| 450      | 150      | 30x25     | 0.99                                     | 930                      | 1770                    |
| 450      | 150      | 30x30     | 1.01                                     | 930                      | 1770                    |
| 450      | 150      | 35x25     | 1.01                                     | 930                      | 1770                    |
| 450      | 180      | 25x35     | 1.05                                     | 770                      | 1470                    |
| 450      | 180      | 25x40     | 1.11                                     | 770                      | 1470                    |
| 450      | 180      | 25x45     | 1.18                                     | 770                      | 1470                    |
| 450      | 180      | 30x30     | 1.12                                     | 770                      | 1470                    |
| 450      | 180      | 30x35     | 1.18                                     | 770                      | 1470                    |
| 450      | 180      | 35x25     | 1.18                                     | 770                      | 1470                    |

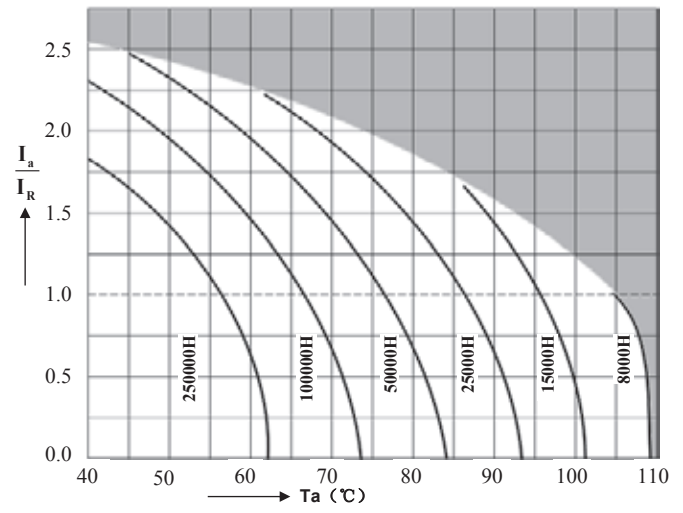
| VV (Vdc) | Cap (uF) | Size (mm) | Rated Ripple current (Arms/105°C /120Hz) | Typ. ESR 20°C 120Hz (mΩ) | MAX ESR 20°C 120Hz (mΩ) |
|----------|----------|-----------|--|--------------------------|-------------------------|
| 450      | 220      | 22x50     | 1.16                                     | 640                      | 1210                    |
| 450      | 220      | 25x40     | 1.16                                     | 640                      | 1210                    |
| 450      | 220      | 25x45     | 1.19                                     | 640                      | 1210                    |
| 450      | 220      | 25x50     | 1.25                                     | 640                      | 1210                    |
| 450      | 220      | 30x30     | 1.16                                     | 640                      | 1210                    |
| 450      | 220      | 30x35     | 1.19                                     | 640                      | 1210                    |
| 450      | 220      | 30x40     | 1.25                                     | 640                      | 1210                    |
| 450      | 220      | 35x25     | 1.19                                     | 640                      | 1210                    |
| 450      | 220      | 35x30     | 1.25                                     | 640                      | 1210                    |
| 450      | 270      | 25x50     | 1.38                                     | 520                      | 980                     |
| 450      | 270      | 30x30     | 1.18                                     | 520                      | 980                     |
| 450      | 270      | 30x35     | 1.32                                     | 520                      | 980                     |
| 450      | 270      | 30x40     | 1.39                                     | 520                      | 980                     |
| 450      | 270      | 30x45     | 1.46                                     | 520                      | 980                     |
| 450      | 270      | 35x30     | 1.40                                     | 520                      | 980                     |
| 450      | 270      | 35x35     | 1.47                                     | 520                      | 980                     |
| 450      | 330      | 30x40     | 1.54                                     | 420                      | 800                     |
| 450      | 330      | 30x45     | 1.62                                     | 420                      | 800                     |
| 450      | 330      | 30x50     | 1.69                                     | 420                      | 800                     |
| 450      | 330      | 35x35     | 1.63                                     | 420                      | 800                     |
| 450      | 330      | 35x40     | 1.70                                     | 420                      | 800                     |
| 450      | 390      | 30x50     | 1.84                                     | 360                      | 680                     |
| 450      | 390      | 35x40     | 1.86                                     | 360                      | 680                     |
| 450      | 390      | 35x45     | 1.92                                     | 360                      | 680                     |
| 450      | 470      | 35x40     | 2.01                                     | 290                      | 560                     |
| 450      | 470      | 35x45     | 2.11                                     | 290                      | 560                     |
| 450      | 560      | 30x60     | 2.39                                     | 250                      | 470                     |
| 450      | 560      | 35x50     | 2.41                                     | 250                      | 470                     |
| 450      | 560      | 35x55     | 2.51                                     | 250                      | 470                     |
| 450      | 680      | 35x50     | 2.65                                     | 210                      | 390                     |
| 450      | 680      | 35x55     | 2.76                                     | 210                      | 390                     |
| 500      | 39       | 22x25     | 0.36                                     | 3580                     | 6800                    |
| 500      | 47       | 22x25     | 0.40                                     | 2970                     | 5640                    |
| 500      | 56       | 22x30     | 0.47                                     | 2490                     | 4740                    |
| 500      | 68       | 22x30     | 0.52                                     | 2050                     | 3900                    |
| 500      | 68       | 25x25     | 0.53                                     | 2050                     | 3900                    |
| 500      | 82       | 22x35     | 0.61                                     | 1700                     | 3230                    |
| 500      | 82       | 25x30     | 0.62                                     | 1700                     | 3230                    |
| 500      | 82       | 30x25     | 0.65                                     | 1700                     | 3230                    |
| 500      | 100      | 22x40     | 0.71                                     | 1390                     | 2650                    |
| 500      | 100      | 25x35     | 0.72                                     | 1390                     | 2650                    |
| 500      | 100      | 30x25     | 0.70                                     | 1390                     | 2650                    |
| 500      | 120      | 22x45     | 0.70                                     | 1160                     | 2210                    |
| 500      | 120      | 25x35     | 0.70                                     | 1160                     | 2210                    |
| 500      | 120      | 30x30     | 0.82                                     | 1160                     | 2210                    |
| 500      | 120      | 35x30     | 0.91                                     | 1160                     | 2210                    |
| 500      | 150      | 22x50     | 0.96                                     | 930                      | 1770                    |
| 500      | 150      | 25x45     | 0.98                                     | 930                      | 1770                    |
| 500      | 150      | 30x35     | 0.98                                     | 930                      | 1770                    |
| 500      | 150      | 35x30     | 0.98                                     | 930                      | 1770                    |
| 500      | 180      | 25x50     | 1.13                                     | 770                      | 1470                    |
| 500      | 180      | 30x40     | 1.13                                     | 770                      | 1470                    |
| 500      | 180      | 35x30     | 1.13                                     | 770                      | 1470                    |
| 500      | 220      | 30x45     | 1.32                                     | 640                      | 1210                    |
| 500      | 220      | 35x35     | 1.32                                     | 640                      | 1210                    |
| 500      | 270      | 30x50     | 1.53                                     | 520                      | 980                     |
| 500      | 270      | 35x40     | 1.53                                     | 520                      | 980                     |
| 500      | 330      | 35x45     | 1.77                                     | 420                      | 800                     |
| 500      | 390      | 35x50     | 1.88                                     | 360                      | 680                     |
| 500      | 470      | 35x55     | 2.20                                     | 290                      | 560                     |



## Useful life



depending on ambient temperature  $T_a$  versus under ripple current operating conditions  $V_R \leq 100V$



depending on ambient temperature  $T_a$  versus under ripple current operating conditions  $V_R \geq 160V$