

### ■ FEATURES

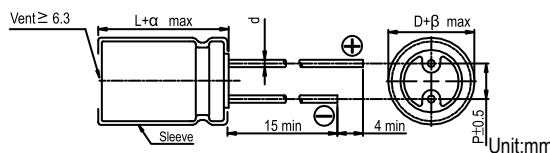
- Long life, 105°C, 4,000-12,000 hours.
- High performance, high reliability.
- Low impedance, high ripple current.

### ■ SPECIFICATIONS

| Items                                                            | Performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                  |                   |      |           |           |         |      |      |          |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------|------|-----------|-----------|---------|------|------|----------|------|------|-----------------------|-------|-------|------|------|------|------|------|------|------|------|----------------------|---|---|---|---|--|--|--|--|--|---|
| Category Temperature Range                                       | -40°C ~ +105°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                  |                   |      |           |           |         |      |      |          |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| Rated Voltage Range                                              | 6.3 ~ 120V <sub>dc</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                  |                   |      |           |           |         |      |      |          |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| Capacitance Tolerance                                            | ±20% (+20°C, 120Hz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                  |                   |      |           |           |         |      |      |          |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| Leakage Current                                                  | I ≤0.01CV or 3μA, whichever is greater.<br>Leakage current (μA), C: Nominal capacitance (μF) V: Rated Voltage (V)(20°C, 2 minutes)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                  |                   |      |           |           |         |      |      |          |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| Dissipation Factor<br>(120Hz, +20°C)                             | <table><tr><td>Rated Voltage (V<sub>dc</sub>)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>80</td><td>100</td><td>120</td></tr><tr><td>Tan δ(Max)</td><td>0.22</td><td>0.19</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.09</td><td>0.08</td><td>0.08</td><td>0.12</td></tr></table> <p>When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase</p>                                                                                                                                                                                                 | Rated Voltage (V <sub>dc</sub> ) | 6.3               | 10   | 16        | 25        | 35      | 50   | 63   | 80       | 100  | 120  | Tan δ(Max)            | 0.22  | 0.19  | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.08 | 0.12 |                      |   |   |   |   |  |  |  |  |  |   |
| Rated Voltage (V <sub>dc</sub> )                                 | 6.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 10                               | 16                | 25   | 35        | 50        | 63      | 80   | 100  | 120      |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| Tan δ(Max)                                                       | 0.22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.19                             | 0.16              | 0.14 | 0.12      | 0.10      | 0.09    | 0.08 | 0.08 | 0.12     |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| Temperature Characteristics<br>(Max. Impedance Ratio)<br>(120Hz) | <table><tr><td>Rated Voltage (V<sub>dc</sub>)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>80</td><td>100</td><td>120</td></tr><tr><td>Z (-25°C) / Z (+20°C)</td><td>4</td><td>3</td><td colspan="7">2</td><td>3</td></tr><tr><td>Z (40°C) / Z (+20°C)</td><td>8</td><td>6</td><td>4</td><td colspan="6">3</td><td>6</td></tr></table>                                                                                                                                                                                                                                                                       | Rated Voltage (V <sub>dc</sub> ) | 6.3               | 10   | 16        | 25        | 35      | 50   | 63   | 80       | 100  | 120  | Z (-25°C) / Z (+20°C) | 4     | 3     | 2    |      |      |      |      |      |      | 3    | Z (40°C) / Z (+20°C) | 8 | 6 | 4 | 3 |  |  |  |  |  | 6 |
| Rated Voltage (V <sub>dc</sub> )                                 | 6.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 10                               | 16                | 25   | 35        | 50        | 63      | 80   | 100  | 120      |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| Z (-25°C) / Z (+20°C)                                            | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3                                | 2                 |      |           |           |         |      |      | 3        |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| Z (40°C) / Z (+20°C)                                             | 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6                                | 4                 | 3    |           |           |         |      |      | 6        |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| Load Life                                                        | <p>The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for a period of time at 105°C.</p> <p>Capacitance change: ±20% (6.3V, 10V:≤ ±30%)<br/>Dissipation factor: 200% of the initial specified value.<br/>Leakage Current: The initial specified value.</p> <table><tr><th rowspan="2">Dia.</th><th colspan="2">Load life (hours)</th></tr><tr><th>6.3 - 10V</th><th>16 - 120V</th></tr><tr><td>D ≤ 6.3</td><td>4000</td><td>5000</td></tr><tr><td>D = 8,10</td><td>6000</td><td>8000</td></tr><tr><td>D ≥ 12.5</td><td>10000</td><td>12000</td></tr></table> | Dia.                             | Load life (hours) |      | 6.3 - 10V | 16 - 120V | D ≤ 6.3 | 4000 | 5000 | D = 8,10 | 6000 | 8000 | D ≥ 12.5              | 10000 | 12000 |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| Dia.                                                             | Load life (hours)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                  |                   |      |           |           |         |      |      |          |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
|                                                                  | 6.3 - 10V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 16 - 120V                        |                   |      |           |           |         |      |      |          |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| D ≤ 6.3                                                          | 4000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5000                             |                   |      |           |           |         |      |      |          |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| D = 8,10                                                         | 6000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 8000                             |                   |      |           |           |         |      |      |          |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| D ≥ 12.5                                                         | 10000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 12000                            |                   |      |           |           |         |      |      |          |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |
| Shelf Life                                                       | <p>The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours:</p> <p>Capacitance change: ±20% of the initial value (6.3V, 10V:≤ ±30%)<br/>Dissipation factor: 200% of the initial specified value<br/>Leakage Current: 200% of the initial specified value</p>                                                                                                                                                                                                                                                                                               |                                  |                   |      |           |           |         |      |      |          |      |      |                       |       |       |      |      |      |      |      |      |      |      |                      |   |   |   |   |  |  |  |  |  |   |

### Multiplier for Ripple Current/Frequency Coefficient

### ■ DIMENSIONS



| D  | 5          | 6.3 | 8   | 10  | 12.5 | 16  | 18  |
|----|------------|-----|-----|-----|------|-----|-----|
| d  | 0.5        | 0.5 | 0.5 | 0.6 | 0.6  | 0.6 | 0.8 |
| F  | 2          | 2.5 | 3.5 | 5   | 5    | 7.5 | 7.5 |
| D' | D + 0.5max |     |     |     |      |     |     |
| L' | L + 2max   |     |     |     |      |     |     |

| Freq. (Hz)         | 120  | 1K   | 10K  | 100K |
|--------------------|------|------|------|------|
| Cap. (F)           |      |      |      |      |
| Cap. < 220         | 0.40 | 0.75 | 0.90 | 1.00 |
| 220 ≤ Cap. < 680   | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 ≤ Cap. < 2200  | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 ≤ Cap. < 4700 | 0.75 | 0.9  | 0.95 | 1    |
| Cap. ≥ 4700        | 0.85 | 0.95 | 0.98 | 1    |

### DIMENSIONS & PERMISSIBLE RIPPLE CURRENT AND MAX IMPEDANCE

Dimension: D x L (mm)  
Ripple Current: mA/rms at 100Hz, 105°C

| V. DC<br><br>Code<br><br>µF |     | 6.3V (0J)                         |                                           |       | 10V (1A)                          |                                           |         | 16V (1C)                          |                                           |       | 25V (1E)                          |                                           |      |
|-----------------------------|-----|-----------------------------------|-------------------------------------------|-------|-----------------------------------|-------------------------------------------|---------|-----------------------------------|-------------------------------------------|-------|-----------------------------------|-------------------------------------------|------|
|                             |     | Impedance<br>(Ω, Max /<br>100KHz) | Ripple<br>Current<br>(mA / rms.<br>105°C) | D x L | Impedance<br>(Ω, Max /<br>100KHz) | Ripple<br>Current<br>(mA / rms.<br>105°C) | D x L   | Impedance<br>(Ω, Max /<br>100KHz) | Ripple<br>Current<br>(mA / rms.<br>105°C) | D x L | Impedance<br>(Ω, Max /<br>100KHz) | Ripple<br>Current<br>(mA / rms.<br>105°C) |      |
|                             |     |                                   |                                           |       |                                   |                                           |         |                                   |                                           |       |                                   |                                           | 20°C |
| 47                          | 470 |                                   |                                           |       |                                   |                                           |         |                                   |                                           |       | 5 x 11                            | 0.57                                      | 200  |
|                             |     |                                   |                                           |       |                                   |                                           |         |                                   |                                           |       | 6.3 x 9                           | 0.74                                      | 180  |
| 56                          | 560 |                                   |                                           |       |                                   |                                           |         | 5 x 11                            | 0.57                                      | 200   |                                   |                                           |      |
|                             |     |                                   |                                           |       |                                   |                                           |         | 6.3 x 9                           | 0.74                                      | 180   |                                   |                                           |      |
| 100                         | 101 |                                   |                                           |       | 5 x 11                            | 0.57                                      | 200     |                                   |                                           |       | 6.3 x 11                          | 0.21                                      | 350  |
|                             |     |                                   |                                           |       | 6.3 x 9                           | 0.74                                      | 180     |                                   |                                           |       | 8 x 9                             | 0.27                                      | 310  |
| 120                         | 121 |                                   |                                           |       |                                   |                                           |         | 6.3 x 11                          | 0.21                                      | 350   |                                   |                                           |      |
|                             |     |                                   |                                           |       |                                   |                                           |         | 8 x 9                             | 0.27                                      | 310   |                                   |                                           |      |
| 150                         | 151 | 5 x 11                            | 0.57                                      | 200   |                                   |                                           |         |                                   |                                           |       |                                   |                                           |      |
|                             |     | 6.3 x 9                           | 0.74                                      | 180   |                                   |                                           |         |                                   |                                           |       |                                   |                                           |      |
| 220                         | 221 |                                   |                                           |       | 6.3 x 11                          | 0.21                                      | 350     |                                   |                                           |       | 8 x 12                            | 0.13                                      | 660  |
|                             |     |                                   |                                           |       | 8 x 9                             | 0.27                                      | 310     |                                   |                                           |       | 10 x 9                            | 0.17                                      | 590  |
| 330                         | 331 | 6.3 x 11                          | 0.21                                      | 350   |                                   |                                           |         | 8 x 12                            | 0.13                                      | 660   | 8 x 16                            | 0.086                                     | 850  |
|                             |     | 8 x 9                             | 0.27                                      | 310   |                                   |                                           |         | 10 x 9                            | 0.17                                      | 590   | 10 x 12.5                         | 0.08                                      | 850  |
| 470                         | 471 |                                   |                                           |       | 8 x 12                            | 0.13                                      | 660     | 8 x 16                            | 0.087                                     | 850   | 8 x 20                            | 0.069                                     | 1050 |
|                             |     |                                   |                                           |       | 10 x 9                            | 0.17                                      | 590     | 10 x 12.5                         | 0.08                                      | 870   | 10 x 16                           | 0.6                                       | 1230 |
| 680                         | 681 |                                   |                                           |       |                                   |                                           |         |                                   |                                           |       | 10 x 20                           | 0.046                                     | 1400 |
|                             |     |                                   |                                           |       |                                   |                                           |         |                                   |                                           |       | 12.5 x 16                         | 0.049                                     | 1450 |
| 820                         | 821 | 10 x 12.5                         | 0.08                                      | 870   |                                   |                                           |         |                                   |                                           |       | 10 x 25                           | 0.042                                     | 1650 |
|                             |     |                                   |                                           |       |                                   |                                           |         |                                   |                                           |       | 10 x 30                           | 0.03                                      | 1920 |
| 1,000                       | 102 | 8 x 16                            | 0.086                                     | 850   | 8 x 20                            | 0.069                                     | 1050    | 10 x 20                           | 0.046                                     | 1400  | 12.5 x 20                         | 0.035                                     | 1910 |
|                             |     |                                   |                                           |       | 10 x 16                           | 0.06                                      | 1230    | 12.5 x 16                         | 0.049                                     | 1450  | 16 x 15                           | 0.041                                     | 1950 |
| 1,200                       | 122 | 8 x 20                            | 0.07                                      | 1050  | 10 x 20                           | 0.046                                     | 1400    | 10 x 25                           | 0.042                                     | 1650  |                                   |                                           |      |
|                             |     | 10 x 16                           | 0.06                                      | 1230  |                                   |                                           |         |                                   |                                           |       |                                   |                                           |      |
| 1,500                       | 152 | 10 x 20                           | 0.046                                     | 1400  | 10 x 25                           | 0.042                                     | 1650    | 10 x 30                           | 0.031                                     | 1920  | 12.5 x 25                         | 0.026                                     | 2230 |
|                             |     |                                   |                                           |       | 12.5 x 16                         | 0.049                                     | 1450    | 12.5 x 20                         | 0.035                                     | 1910  |                                   |                                           |      |
|                             |     |                                   |                                           |       |                                   |                                           | 16 x 15 | 0.041                             | 1950                                      |       |                                   |                                           |      |
| 1800                        | 182 | 12.5 x 6                          | 0.049                                     | 1450  |                                   |                                           |         |                                   |                                           |       | 12.5 x 30                         | 0.024                                     | 2650 |
|                             |     |                                   |                                           |       |                                   |                                           |         |                                   |                                           |       | 16 x 20                           | 0.027                                     | 2650 |
| 2,200                       | 222 | 10 x 20                           | 0.042                                     | 1650  | 10 x 30                           | 0.03                                      | 1920    | 12.5 x 25                         | 0.027                                     | 2230  | 12.5 x 35                         | 0.02                                      | 2880 |
|                             |     |                                   |                                           |       | 12.5 x 20                         | 0.035                                     | 1910    |                                   |                                           |       |                                   |                                           |      |
|                             |     |                                   |                                           |       | 16 x 15                           | 0.041                                     | 1950    |                                   |                                           |       | 18 x 20                           | 0.026                                     | 2860 |
| 2,700                       | 272 | 10 x 30                           | 0.03                                      | 1920  |                                   |                                           |         | 12.5 x 30                         | 0.024                                     | 2650  | 12.5 x 40                         | 0.017                                     | 3350 |
|                             |     | 16 x 15                           | 0.041                                     | 1950  |                                   |                                           |         | 16 x 20                           | 0.027                                     | 2530  | 16 x 25                           | 0.021                                     | 2930 |
| 3300                        | 332 | 12.5 x 20                         | 0.035                                     | 1910  | 12.5 x 25                         | 0.026                                     | 2230    | 12.5 x 35                         | 0.02                                      | 2880  | 16 x 30                           | 0.017                                     | 3450 |
|                             |     |                                   |                                           |       |                                   |                                           |         |                                   |                                           |       | 18 x 25                           | 0.019                                     | 3140 |
| 3,900                       | 392 | 12.5 x 25                         | 0.026                                     | 2230  | 12.5 x 30                         | 0.024                                     | 2650    | 12.5 x 40                         | 0.017                                     | 3350  | 16 x 30                           | 0.015                                     | 3610 |
|                             |     |                                   |                                           |       |                                   |                                           |         | 16 x 25                           | 0.021                                     | 2930  |                                   |                                           |      |
|                             |     |                                   |                                           |       | 16 x 20                           | 0.027                                     | 2530    | 18 x 20                           | 0.026                                     | 2860  | 18 x 30                           | 0.015                                     | 4170 |
| 4700                        | 472 | 12.5 x 30                         | 0.024                                     | 2650  | 12.5 x 35                         | 0.02                                      | 2880    | 16 x 30                           | 0.017                                     | 3450  | 16 x 40                           | 0.013                                     | 4100 |
|                             |     |                                   |                                           |       |                                   |                                           |         | 18 x 25                           | 0.019                                     | 3140  | 18 x 35                           | 0.014                                     | 4220 |
| 5,600                       | 562 |                                   |                                           |       | 12.5 x 40                         | 0.017                                     | 3350    | 16 x 35                           | 0.015                                     | 3610  | 18 x 40                           | 0.012                                     | 4300 |
|                             |     | 12.5 x 35                         | 0.02                                      | 2880  | 16 x 25                           | 0.021                                     | 2930    | 18 x 30                           | 0.015                                     | 4170  |                                   |                                           |      |
|                             |     | 16 x 20                           | 0.027                                     | 2530  | 18 x 20                           | 0.026                                     | 2860    |                                   |                                           |       |                                   |                                           |      |
| 6,800                       | 682 | 12.5 x 40                         | 0.017                                     | 3350  | 16 x 30                           | 0.017                                     | 3450    | 16 x 40                           | 0.013                                     | 4100  |                                   |                                           |      |
|                             |     | 16 x 25                           | 0.02                                      | 2930  | 18 x 25                           | 0.019                                     | 3140    |                                   |                                           |       |                                   |                                           |      |
|                             |     | 18 x 20                           | 0.026                                     | 2860  |                                   |                                           |         |                                   |                                           |       |                                   |                                           |      |
| 8200                        | 822 | 16 x 30                           | 0.017                                     | 3450  | 16 x 35                           | 0.015                                     | 3610    | 18 x 35                           | 0.014                                     | 4220  |                                   |                                           |      |
|                             |     |                                   |                                           |       | 18 x 30                           | 0.015                                     | 4170    |                                   |                                           |       |                                   |                                           |      |
| 10,000                      | 103 | 16 x 35                           | 0.015                                     | 3610  | 16 x 40                           | 0.013                                     | 4100    | 18 x 40                           | 0.012                                     | 4300  |                                   |                                           |      |
|                             |     | 18 x 25                           | 0.019                                     | 3140  | 18 x 35                           | 0.014                                     | 4220    |                                   |                                           |       |                                   |                                           |      |
| 12,000                      | 123 | 16 x 40                           | 0.013                                     | 4100  | 18 x 40                           | 0.012                                     | 4300    |                                   |                                           |       |                                   |                                           |      |
|                             |     | 18 x 30                           | 0.015                                     | 4170  |                                   |                                           |         |                                   |                                           |       |                                   |                                           |      |
| 15,000                      | 153 | 18 x 35                           | 0.014                                     | 4220  |                                   |                                           |         |                                   |                                           |       |                                   |                                           |      |
| 18,000                      | 183 | 18 x 40                           | 0.012                                     | 4300  |                                   |                                           |         |                                   |                                           |       |                                   |                                           |      |

### DIMENSIONS & PERMISSIBLE RIPPLE CURRENT AND MAX IMPEDANCE

Dimension: D x L(mm)  
105°C

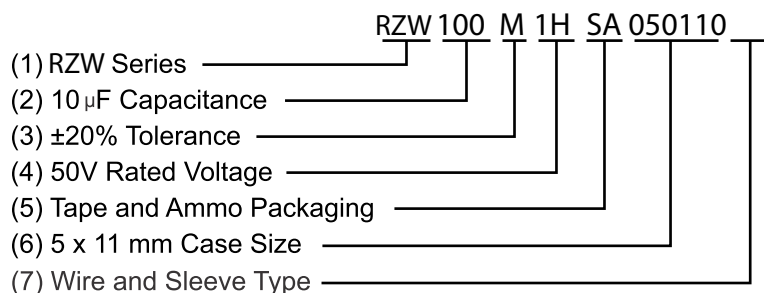
| V. DC<br>Code<br>µF | 35V (1V) |                                   |                                        | 50V (1H) |                                   |                                        | 63V (1J)  |                                   |                                        |
|---------------------|----------|-----------------------------------|----------------------------------------|----------|-----------------------------------|----------------------------------------|-----------|-----------------------------------|----------------------------------------|
|                     | D x L    | Impedance<br>(Ω, Max /<br>100KHz) | Ripple Current<br>(mA / rms.<br>105°C) | D x L    | Impedance<br>(Ω, Max /<br>100KHz) | Ripple Current<br>(mA / rms.<br>105°C) | D x L     | Impedance<br>(Ω, Max /<br>100KHz) | Ripple Current<br>(mA / rms.<br>105°C) |
|                     |          | 20°C                              | 100KHz                                 |          | 20°C                              | 100KHz                                 |           | 20°C                              | 100KHz                                 |
| 15                  | 150      |                                   |                                        |          |                                   |                                        | 5 x 11    | 0.88                              | 165                                    |
|                     |          |                                   |                                        |          |                                   |                                        | 6.3 x 9   | 1.15                              | 145                                    |
| 22                  | 220      |                                   |                                        | 5 x 12   | 0.68                              | 190                                    |           |                                   |                                        |
|                     |          |                                   |                                        | 6.3 x 9  | 0.89                              | 170                                    |           |                                   |                                        |
| 33                  | 330      | 5 x 11                            | 0.57                                   | 200      |                                   |                                        | 6.3 x 12  | 0.35                              | 265                                    |
|                     |          | 6.3 x 9                           | 0.74                                   | 180      |                                   |                                        | 8 x 9     | 0.46                              | 235                                    |
| 56                  | 560      | 6.3 x 11                          | 0.21                                   | 350      | 6.3 x 11                          | 0.3                                    | 300       | 8 x 12                            | 0.22                                   |
|                     |          | 8 x 9                             | 0.27                                   | 310      | 8 x 9                             | 0.39                                   | 270       | 10 x 9                            | 0.29                                   |
| 82                  | 820      |                                   |                                        |          |                                   |                                        | 8 x 16    | 0.16                              | 665                                    |
|                     |          |                                   |                                        |          |                                   |                                        | 10 x 12.5 | 0.11                              | 690                                    |
| 100                 | 101      | 8 x 12                            | 0.17                                   | 560      | 8 x 12                            | 0.17                                   | 560       |                                   |                                        |
|                     |          |                                   |                                        |          | 10 x 9                            | 0.22                                   | 500       |                                   |                                        |
| 120                 | 121      |                                   |                                        |          |                                   |                                        | 8 x 20    | 0.12                              | 820                                    |
|                     |          |                                   |                                        |          | 8 x 16                            | 0.12                                   | 740       | 10 x 16                           | 0.076                                  |
| 150                 | 151      | 8 x 12                            | 0.13                                   | 660      | 10 x 12.5                         | 0.12                                   | 0.12      |                                   |                                        |
|                     |          | 10 x 9                            | 0.17                                   | 590      |                                   |                                        |           |                                   |                                        |
| 180                 | 181      |                                   |                                        |          |                                   |                                        | 10 x 20   | 0.056                             | 1150                                   |
|                     |          |                                   |                                        |          | 8 x 20                            | 0.09                                   | 910       | 12.5 x 16                         | 0.072                                  |
| 220                 | 221      | 8 x 16                            | 0.086                                  | 850      | 10 x 16                           | 0.084                                  | 1050      | 10 x 25                           | 0.046                                  |
|                     |          | 10 x 12.5                         | 0.08                                   | 870      |                                   |                                        |           |                                   | 1350                                   |
| 270                 | 271      | 8 x 20                            | 0.069                                  | 1050     | 10 x 20                           | 0.058                                  | 1230      |                                   |                                        |
|                     |          |                                   |                                        |          | 12.5 x 16                         | 0.061                                  | 1260      |                                   |                                        |
| 330                 | 331      | 10 x 16                           | 0.06                                   | 1230     | 10 x 25                           | 0.055                                  | 1440      | 12.5 x 20                         | 0.041                                  |
| 390                 | 391      |                                   |                                        |          |                                   |                                        |           | 12.5 x 25                         | 0.031                                  |
|                     |          |                                   |                                        |          | 10 x 30                           | 0.043                                  | 1700      | 12.5 x 30                         | 0.028                                  |
| 470                 | 471      | 10 x 20                           | 0.46                                   | 1400     | 12.5 x 20                         | 0.045                                  | 1660      |                                   |                                        |
|                     |          | 12.5 x 16                         | 0.046                                  | 1400     | 16 x 15                           | 0.055                                  | 1690      | 16 x 20                           | 0.032                                  |
| 560                 | 561      | 10 x 25                           | 0.042                                  | 1650     | 12.5 x 25                         | 0.034                                  | 1960      | 12.5 x 35                         | 0.024                                  |
|                     |          | 10 x 30                           | 0.03                                   | 1920     |                                   |                                        |           | 12.5 x 40                         | 0.021                                  |
| 680                 | 681      | 12.5 x 20                         | 0.035                                  | 1910     | 12.5 x 30                         | 0.03                                   | 2310      | 16 x 25                           | 0.025                                  |
|                     |          | 16 x 15                           | 0.041                                  | 1950     |                                   |                                        |           | 18 x 20                           | 0.03                                   |
| 820                 | 821      |                                   |                                        |          | 12.5 x 35                         | 0.025                                  | 2510      | 16 x 30                           | 0.021                                  |
|                     |          |                                   |                                        |          | 16 x 20                           | 0.034                                  | 2210      | 18 x 25                           | 0.024                                  |
| 1000                | 102      | 12.5 x 25                         | 0.026                                  | 2230     | 12.5 x 40                         | 0.021                                  | 2920      | 16 x 35                           | 0.019                                  |
|                     |          |                                   |                                        |          | 16 x 25                           | 0.025                                  | 2560      |                                   | 2900                                   |
|                     |          |                                   |                                        |          | 18 x 20                           | 0.036                                  | 2490      |                                   |                                        |
| 1,200               | 122      | 12.5 x 30                         | 0.024                                  | 2650     | 16 x 30                           | 0.021                                  | 3010      | 16 x 40                           | 0.018                                  |
|                     |          | 16 x 20                           | 0.028                                  | 2247     |                                   |                                        |           |                                   | 3400                                   |
|                     |          | 16 x 25                           | 0.027                                  | 2530     | 18 x 25                           | 0.026                                  | 2740      | 18 x 30                           | 0.02                                   |
| 1,500               | 152      | 12.5 x 35                         | 0.02                                   | 2880     | 16 x 35                           | 0.019                                  | 3150      | 18 x 35                           | 0.018                                  |
|                     |          | 12.5 x 40                         | 0.017                                  | 3350     | 16 x 40                           | 0.016                                  | 3710      |                                   | 3400                                   |
| 1,800               | 182      | 16 x 25                           | 0.021                                  | 2930     |                                   |                                        |           | 18 x 40                           | 0.017                                  |
|                     |          | 18 x 20                           | 0.015                                  | 4170     | 18 x 30                           | 0.021                                  | 3640      |                                   | 3500                                   |
| 2,200               | 222      | 16 x 30                           | 0.017                                  | 3450     | 18 x 35                           | 0.017                                  | 3680      |                                   |                                        |
|                     |          | 18 x 25                           | 0.019                                  | 3140     |                                   |                                        |           |                                   |                                        |
| 2,700               | 272      | 16 x 35                           | 0.015                                  | 3610     | 18 x 40                           | 0.014                                  | 3800      |                                   |                                        |
|                     |          | 18 x 30                           | 0.015                                  | 4170     |                                   |                                        |           |                                   |                                        |
| 3,300               | 332      | 16 x 40                           | 0.012                                  | 4100     |                                   |                                        |           |                                   |                                        |
|                     |          | 18 x 35                           | 0.014                                  | 4220     |                                   |                                        |           |                                   |                                        |
| 3,900               | 392      | 18 x 40                           | 0.011                                  | 4300     |                                   |                                        |           |                                   |                                        |

**DIMENSIONS & PERMISSIBLE RIPPLE CURRENT  
AND MAX IMPEDANCE**

 Dimension: D x L(mm)  
105°C

| <div> <div>V DC</div> <div>Code</div> <div>μF</div> </div> | 80V (1K) |                                   |                                           | 100V (2A) |                                   |                                           | 120V (2B) |                                   |                                           |
|------------------------------------------------------------|----------|-----------------------------------|-------------------------------------------|-----------|-----------------------------------|-------------------------------------------|-----------|-----------------------------------|-------------------------------------------|
|                                                            | D x L    | Impedance<br>(Ω, Max /<br>100KHz) | Ripple<br>Current<br>(mA / rms.<br>105°C) | D x L     | Impedance<br>(Ω, Max /<br>100KHz) | Ripple<br>Current<br>(mA / rms.<br>105°C) | D x L     | Impedance<br>(Ω, Max /<br>100KHz) | Ripple<br>Current<br>(mA / rms.<br>105°C) |
|                                                            |          | 20°C                              | 100KHz                                    |           | 20°C                              | 100KHz                                    |           | 20°C                              | 100KHz                                    |
| 6.8                                                        | 6R8      |                                   |                                           | 5 x 11    | 1.4                               | 125                                       |           |                                   |                                           |
|                                                            |          |                                   |                                           | 6.3 x 9   | 1.9                               | 110                                       |           |                                   |                                           |
| 10                                                         | 100      |                                   |                                           |           |                                   |                                           | 6.3 x 11  | 6                                 | 85                                        |
| 15                                                         | 150      |                                   |                                           | 6.3 x 12  | 0.57                              | 205                                       | 6.3 x 12  | 5                                 | 110                                       |
|                                                            |          |                                   |                                           | 8 x 9     | 0.75                              | 180                                       |           |                                   |                                           |
| 18                                                         | 180      |                                   |                                           |           |                                   |                                           | 8 x 9     | 4.5                               | 125                                       |
| 22                                                         | 220      |                                   |                                           |           |                                   |                                           | 8 x 12    | 4                                 | 140                                       |
| 27                                                         | 270      |                                   |                                           | 8 x 12    | 0.36                              | 355                                       |           |                                   |                                           |
|                                                            |          |                                   |                                           | 10 x 9    | 0.45                              | 310                                       |           |                                   |                                           |
| 33                                                         | 330      |                                   |                                           |           |                                   |                                           | 8 x 16    | 3.5                               | 245                                       |
|                                                            |          |                                   |                                           |           |                                   |                                           | 10 x 12.5 | 3.5                               | 245                                       |
| 39                                                         | 390      |                                   |                                           | 8 x 16    | 0.25                              | 450                                       |           |                                   |                                           |
| 47                                                         | 470      |                                   |                                           | 10 x 12.5 | 0.17                              | 480                                       | 8 x 20    | 2.8                               | 300                                       |
|                                                            |          |                                   |                                           |           |                                   |                                           | 10 x 16   | 2.8                               | 315                                       |
| 56                                                         | 560      |                                   |                                           | 8 x 20    | 0.19                              | 565                                       | 10 x 16   | 2.5                               | 315                                       |
| 68                                                         | 680      | 10 x 12.5                         | 0.17                                      | 10 x 16   | 0.11                              | 600                                       | 10 x 16   | 2.2                               | 315                                       |
| 82                                                         | 820      |                                   |                                           | 10 x 20   | 0.084                             | 800                                       | 10 x 20   | 2                                 | 330                                       |
| 100                                                        | 101      | 10 x 16                           | 0.11                                      | 12.5 x 16 | 0.11                              | 750                                       | 10 x 25   | 1.7                               | 417                                       |
| 120                                                        | 121      | 10 x 20                           | 0.084                                     | 10 x 25   | 0.069                             | 900                                       | 12.5 x 20 | 1.5                               | 470                                       |
| 150                                                        | 151      | 10 x 25                           | 0.069                                     | 12.5 x 20 | 0.062                             | 1100                                      | 12.5 x 25 | 1                                 | 620                                       |
|                                                            |          | 12.5 x 16                         | 0.11                                      |           |                                   |                                           |           |                                   |                                           |
| 220                                                        | 221      | 12.5 x 20                         | 0.062                                     | 12.5 x 25 | 0.047                             | 1250                                      | 13 x 30   | 0.85                              | 760                                       |
|                                                            |          |                                   |                                           |           |                                   |                                           | 16 x 20   | 0.85                              | 760                                       |
| 270                                                        | 271      |                                   |                                           | 12.5 x 30 | 0.042                             | 1500                                      | 16 x 25   | 0.6                               | 860                                       |
|                                                            |          |                                   |                                           |           |                                   |                                           | 18 x 20   | 0.6                               | 860                                       |
| 330                                                        | 331      | 12.5 x 25                         | 0.047                                     | 12.5 x 35 | 0.036                             | 1650                                      | 16 x 30   | 0.46                              | 930                                       |
|                                                            |          |                                   |                                           | 16 x 25   | 0.038                             | 1700                                      |           |                                   |                                           |
|                                                            |          | 16 x 20                           | 0.048                                     | 18 x 20   | 0.045                             | 1500                                      | 18 x 25   | 0.46                              | 930                                       |
| 390                                                        | 391      | 12.5 x 30                         | 0.042                                     | 12.5 x 40 | 0.032                             | 1800                                      |           |                                   |                                           |
| 470                                                        | 471      | 12.5 x 35                         | 0.036                                     | 16 x 30   | 0.032                             | 1850                                      | 16 x 40   | 0.33                              | 1035                                      |
|                                                            |          | 16 x 25                           | 0.038                                     |           |                                   |                                           |           |                                   |                                           |
|                                                            |          | 18 x 20                           | 0.045                                     | 18 x 25   | 0.036                             | 1750                                      | 18 x 30   | 0.33                              | 1035                                      |
| 560                                                        | 561      | 12.5 x 40                         | 0.032                                     | 16 x 35   | 0.029                             | 2250                                      |           |                                   |                                           |
|                                                            |          |                                   |                                           | 18 x 30   | 0.03                              | 2200                                      |           |                                   |                                           |
| 680                                                        | 681      | 16 x 30                           | 0.036                                     | 16 x 40   | 0.027                             | 2600                                      |           |                                   |                                           |
|                                                            |          | 18 x 25                           | 0.036                                     | 18 x 35   | 0.027                             | 2600                                      |           |                                   |                                           |
| 820                                                        | 821      | 16 x 35                           | 0.029                                     | 18 x 40   | 0.026                             | 2700                                      |           |                                   |                                           |
|                                                            |          | 18 x 30                           | 0.03                                      |           |                                   |                                           |           |                                   |                                           |
| 1000                                                       | 102      | 16 x 40                           | 0.027                                     |           |                                   |                                           |           |                                   |                                           |
|                                                            |          | 18 x 35                           | 0.027                                     |           |                                   |                                           |           |                                   |                                           |
| 1,200                                                      | 122      | 18 x 40                           | 0.026                                     | 2750      |                                   |                                           |           |                                   |                                           |

## ■ HOW TO MAKE A PART NUMBER (Example below)



### 1. Series: RZW

2. Capacitance: Rated capacitance in µF is represented by a three digit number. The first two digits are the significant figures of the nominal capacitance and the third digit indicates the number of zeros following these figures. The decimal point is represented by the capital letter R. Please refer to the following example.

| µF          | 0.1 | 0.47 | 1   | 4.7 | 10  | 47  | 100 | 470 | 1000 | 4700 | 10000 |
|-------------|-----|------|-----|-----|-----|-----|-----|-----|------|------|-------|
| Part Number | 0R1 | R47  | 010 | 4R7 | 100 | 470 | 101 | 471 | 102  | 472  | 103   |

### 3. Tolerance: (20% IS Typical)

| Code      | K     | M     | T            | W             |
|-----------|-------|-------|--------------|---------------|
| Tolerance | ± 10% | ± 20% | + 50% / -10% | + 100% / -10% |

4. Rated Voltage: Voltage in volts (V) is represented by a two digit code showing the rated working voltage indicated as follows:

| Voltage (WV) | 6.3 | 10 | 16 | 25 | 35 | 40 | 50 | 63 | 80 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
|--------------|-----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| Code         | 0J  | 1A | 1C | 1E | 1V | 1G | 1H | 1J | 1K | 2A  | 2C  | 2D  | 2E  | 2V  | 2G  | 2W  |

### 5. Lead Forming & Package

| Code | Lead Description           | Packaging    |
|------|----------------------------|--------------|
| BC   | Bending Cut                | Bulk Packing |
| BK   | Straight Lead              | Bulk Packing |
| CC   | Lead Cutting               | Bulk Packing |
| FC   | Lead Forming & Cutting     | Bulk Packing |
| FF   | Lead Forming               | Bulk Packing |
| SC   | Snap-in & Cutting          | Bulk Packing |
| SD   | Cathode Lead Beading       | Bulk Packing |
| SF   | Snap-in, Forming & Cutting | Bulk Packing |
| SA   | Straight Lead              | Tape & Ammo  |
| TA   | Lead Forming               | Tape & Ammo  |
| SR   | Straight Lead              | Tape & Reel  |
| TR   | Lead Forming               | Tape & Reel  |

### 6. Can Size

Diameter (mm)x10 & Length (mm)x10. Can Size 063110, represents 6.3mm diameter by 11mm length.

### 7. Sleeve Type\* = (Omit) PVC Sleeve

P = PET Sleeve

\*Note: All standard RFE Aluminum Electrolytic Capacitors are Lead (Pb) free and RoHS compliant. PET sleeve is available for those companies that also require PVC free product.

#### LEADED TAPING & PACKAGING SPECIFICATIONS Taping Specification for Radial Lead Type

Fig. 1

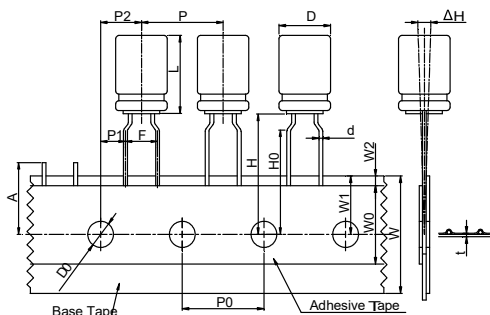


Fig. 2

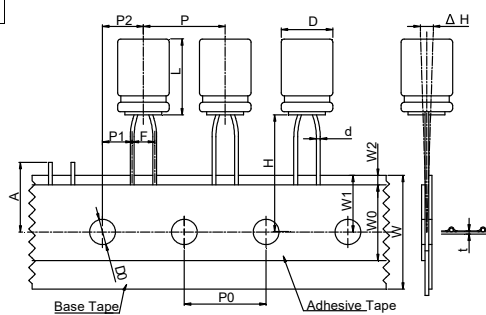


Fig. 3

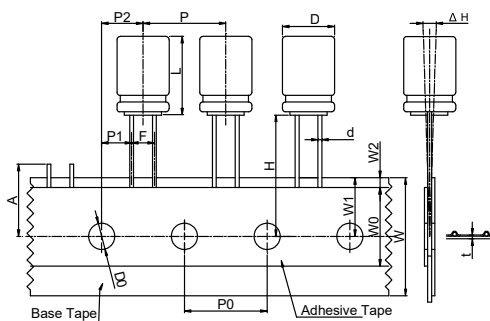
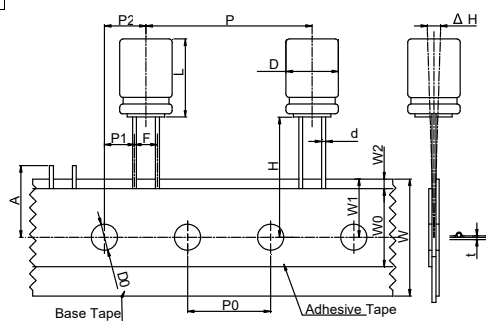


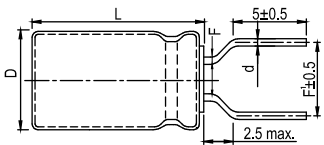
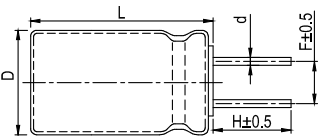
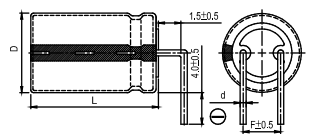
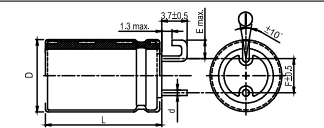
Fig. 4

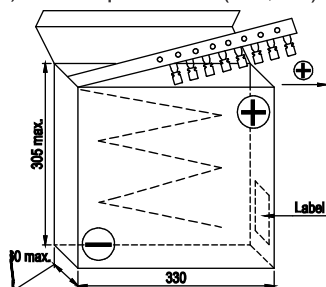


| Packing  | TA, TR (Fig. 1) |      |      |      |         |      |      |      | SA, SR (Fig. 2, 3, 4) |      |      |      |         |      |      |      |           |      |      |           |
|----------|-----------------|------|------|------|---------|------|------|------|-----------------------|------|------|------|---------|------|------|------|-----------|------|------|-----------|
| L        | L ≤ 7mm         |      |      |      | L ≥ 7mm |      |      |      | L ≤ 7mm               |      |      |      | L ≥ 7mm |      |      |      |           |      |      |           |
| D        | 3               | 4    | 5    | 6.3  | 8       | 5    | 6.3  | 8    | 3                     | 4    | 5    | 6.3  | 8       | 5    | 6.3  | 8    | Tol.      | 10   | 13   | Tol.      |
| Symbol   | 3               | 4    | 5    | 6.3  | 8       | 5    | 6.3  | 8    | 3                     | 4    | 5    | 6.3  | 8       | 5    | 6.3  | 8    | Tol.      | 10   | 13   | Tol.      |
| d        | 0.4             | 0.45 | 0.5  | 0.5  | 0.5     | 0.5  | 0.5  | 0.6  | 0.4                   | 0.45 | 0.45 | 0.45 | 0.45    | 0.5  | 0.5  | 0.6  | ± 0.05    | 0.6  | 0.6  | ± 0.05    |
| F        | 5.0             | 5.0  | 5.0  | 5.0  | 5.0     | 5.0  | 5.0  | 5.0  | 2.5                   | 2.5  | 2.5  | 2.5  | 3.5     | 2.5  | 2.5  | 3.5  | -0.2/+0.8 | 5.0  | 5.0  | -0.2/+0.8 |
| P        | 12.7            | 12.7 | 12.7 | 12.7 | 12.7    | 12.7 | 12.7 | 12.7 | 12.7                  | 12.7 | 12.7 | 12.7 | 12.7    | 12.7 | 12.7 | 12.7 | ± 1.0     | 12.7 | 25.4 | ± 1.0     |
| P0       | 12.7            | 12.7 | 12.7 | 12.7 | 12.7    | 12.7 | 12.7 | 12.7 | 12.7                  | 12.7 | 12.7 | 12.7 | 12.7    | 12.7 | 12.7 | 12.7 | ± 0.2     | 12.7 | 12.7 | ± 0.30    |
| P2       | 6.35            | 6.35 | 6.35 | 6.35 | 6.35    | 6.35 | 6.35 | 6.35 | 6.35                  | 6.35 | 6.35 | 6.35 | 6.35    | 6.35 | 6.35 | 6.35 | ± 1.0     | 6.35 | 6.35 | ± 1.3     |
| P1       | 3.85            | 3.85 | 3.85 | 3.85 | 3.85    | 3.85 | 3.85 | 3.85 | 5.1                   | 5.1  | 5.1  | 5.1  | 4.6     | 5.1  | 5.1  | 4.6  | ± 0.5     | 3.85 | 3.85 | ± 0.7     |
| H        | 17.5            | 17.5 | 17.5 | 17.5 | 17.5    | 18.5 | 18.5 | 20.0 | 17.5                  | 17.5 | 17.5 | 17.5 | 17.5    | 18.5 | 18.5 | 18.5 | ± 0.75    | 18.5 | 18.5 | ± 0.75    |
| H0       | 16.0            | 16.0 | 16.0 | 16.0 | 16.0    | 16.0 | 16.0 | 16.0 | --                    | --   | --   | --   | --      | --   | --   | --   | ± 0.5     | --   | --   | ± 0.5     |
| W        | 18.0            | 18.0 | 18.0 | 18.0 | 18.0    | 18.0 | 18.0 | 18.0 | 18.0                  | 18.0 | 18.0 | 18.0 | 18.0    | 18.0 | 18.0 | 18.0 | ± 0.5     | 18.0 | 18.0 | ± 0.5     |
| W0       | 12.0            | 12.0 | 12.0 | 12.0 | 12.0    | 12.0 | 12.0 | 12.0 | 12.0                  | 12.0 | 12.0 | 12.0 | 12.0    | 12.0 | 12.0 | 12.0 | Min.      | 12.0 | 12.0 | Min.      |
| W1       | 9.0             | 9.0  | 9.0  | 9.0  | 9.0     | 9.0  | 9.0  | 9.0  | 9.0                   | 9.0  | 9.0  | 9.0  | 9.0     | 9.0  | 9.0  | 9.0  | ± 0.5     | 9.0  | 9.0  | ± 0.5     |
| W2       | 1.5             | 1.5  | 1.5  | 1.5  | 1.5     | 1.5  | 1.5  | 1.5  | 1.5                   | 1.5  | 1.5  | 1.5  | 1.5     | 1.5  | 1.5  | 1.5  | Max.      | 1.5  | 1.5  | Max.      |
| D0       | 4.0             | 4.0  | 4.0  | 4.0  | 4.0     | 4.0  | 4.0  | 4.0  | 4.0                   | 4.0  | 4.0  | 4.0  | 4.0     | 4.0  | 4.0  | 4.0  | ± 0.2     | 4.0  | 4.0  | ± 0.2     |
| t        | 0.7             | 0.7  | 0.7  | 0.7  | 0.7     | 0.7  | 0.7  | 0.7  | 0.7                   | 0.7  | 0.7  | 0.7  | 0.7     | 0.7  | 0.7  | 0.7  | ± 0.2     | 0.7  | 0.7  | ± 0.2     |
| ΔH       | 0               | 0    | 0    | 0    | 0       | 0    | 0    | 0    | 0                     | 0    | 0    | 0    | 0       | 0    | 0    | 0    | ± 1.0     | 0    | 0    | ± 1.0     |
| ι        | 1.0             | 1.0  | 1.0  | 1.0  | 1.0     | 1.0  | 1.0  | 1.0  | 1.0                   | 1.0  | 1.0  | 1.0  | 1.0     | 1.0  | 1.0  | 1.0  | Max.      | 1.0  | 1.0  | Max.      |
| A        | 11              | 11   | 11   | 11   | 11      | 11   | 11   | 11   | 11                    | 11   | 11   | 11   | 11      | 11   | 11   | 11   | Max.      | 11   | 11   | Max.      |
| Fig. No. | 1               | 1    | 1    | 1    | 1       | 1    | 1    | 1    | 2                     | 2    | 2    | 3    | 3       | 2    | 3    | 3    |           | 3    | 3,4  |           |

## RADIAL FORMING

Lead Forming &amp; Cutting Specifications for Radial Type (Unit: mm)

| Forming Method            | Code | Shape                                                                               | Dimensions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|---------------------------|------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|--------|-----|-------|---------------|-----|-----|---------------|-------|------|-----|-----|-----|-------|------|-----|-----|-----|-------------|------|-----|-----|-----|-------|------|-----|-----|------|------------|-----|-----|-----|-----|------------|-----|-----|-----|-----|-----------|-----|-----|-----|-----|---------------|-----|-----|-----|-----|----|-----|-----|---|-----|------|-----|-----|---|-----|----|-----|-----|---|-----|----|-----|-----|---|-----|----|-----|------|---|-----|----|-----|------|---|-----|
| Forming Cut<br>( 4 ~ 8 )  | FC   |    | <table><tr><th>D x L</th><th>d</th><th>F</th><th>F'</th><th>H</th></tr><tr><td>3 x 5</td><td>0.40</td><td>1.0</td><td>5.0</td><td>5.0</td></tr><tr><td>4 x 5</td><td>0.45</td><td>1.5</td><td>5.0</td><td>5.0</td></tr><tr><td>5 x 5</td><td>0.45</td><td>2.0</td><td>5.0</td><td>5.0</td></tr><tr><td>6.3 ~ 8 x 5</td><td>0.45</td><td>2.5</td><td>5.0</td><td>5.0</td></tr><tr><td>4 x 7</td><td>0.45</td><td>1.5</td><td>5.0</td><td>5.0</td></tr><tr><td>5 x 7 ~ 11</td><td>0.5</td><td>2.0</td><td>5.0</td><td>5.0</td></tr><tr><td>6 x 7 ~ 15</td><td>0.5</td><td>2.5</td><td>5.0</td><td>5.0</td></tr><tr><td>8 x 7 ~ 9</td><td>0.5</td><td>3.5</td><td>5.0</td><td>5.0</td></tr><tr><td>8 x 11.5 ~ 20</td><td>0.6</td><td>3.5</td><td>5.0</td><td>5.0</td></tr><tr><td>10</td><td>0.6</td><td>5.0</td><td>-</td><td>4.5</td></tr><tr><td>12.5</td><td>0.6</td><td>5.0</td><td>-</td><td>4.5</td></tr><tr><td>16</td><td>0.8</td><td>7.5</td><td>-</td><td>4.5</td></tr><tr><td>18</td><td>0.8</td><td>7.5</td><td>-</td><td>4.5</td></tr><tr><td>22</td><td>1.0</td><td>10.0</td><td>-</td><td>4.5</td></tr><tr><td>25</td><td>1.0</td><td>12.5</td><td>-</td><td>4.5</td></tr></table> | D x L | d     | F     | F'     | H   | 3 x 5 | 0.40          | 1.0 | 5.0 | 5.0           | 4 x 5 | 0.45 | 1.5 | 5.0 | 5.0 | 5 x 5 | 0.45 | 2.0 | 5.0 | 5.0 | 6.3 ~ 8 x 5 | 0.45 | 2.5 | 5.0 | 5.0 | 4 x 7 | 0.45 | 1.5 | 5.0 | 5.0  | 5 x 7 ~ 11 | 0.5 | 2.0 | 5.0 | 5.0 | 6 x 7 ~ 15 | 0.5 | 2.5 | 5.0 | 5.0 | 8 x 7 ~ 9 | 0.5 | 3.5 | 5.0 | 5.0 | 8 x 11.5 ~ 20 | 0.6 | 3.5 | 5.0 | 5.0 | 10 | 0.6 | 5.0 | - | 4.5 | 12.5 | 0.6 | 5.0 | - | 4.5 | 16 | 0.8 | 7.5 | - | 4.5 | 18 | 0.8 | 7.5 | - | 4.5 | 22 | 1.0 | 10.0 | - | 4.5 | 25 | 1.0 | 12.5 | - | 4.5 |
|                           |      |                                                                                     | D x L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | d     | F     | F'    | H      |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 3 x 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.40  | 1.0   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 4 x 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.45  | 1.5   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 5 x 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.45  | 2.0   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 6.3 ~ 8 x 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.45  | 2.5   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 4 x 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.45  | 1.5   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 5 x 7 ~ 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.5   | 2.0   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 6 x 7 ~ 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.5   | 2.5   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 8 x 7 ~ 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.5   | 3.5   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 8 x 11.5 ~ 20             | 0.6  | 3.5                                                                                 | 5.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5.0   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 10                        | 0.6  | 5.0                                                                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.5   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 12.5                      | 0.6  | 5.0                                                                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.5   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 16                        | 0.8  | 7.5                                                                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.5   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 18                        | 0.8  | 7.5                                                                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.5   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 22                        | 1.0  | 10.0                                                                                | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.5   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 25                        | 1.0  | 12.5                                                                                | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.5   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| Cut ( 3 ~ 25 )            | CC   |    | <table><tr><th>D x L</th><th>d</th><th>F</th><th>F'</th><th>H</th></tr><tr><td>3 x 5</td><td>0.40</td><td>1.0</td><td>5.0</td><td>5.0</td></tr><tr><td>4 x 5</td><td>0.45</td><td>1.5</td><td>5.0</td><td>5.0</td></tr><tr><td>5 x 5</td><td>0.45</td><td>2.0</td><td>5.0</td><td>5.0</td></tr><tr><td>6.3 ~ 8 x 5</td><td>0.45</td><td>2.5</td><td>5.0</td><td>5.0</td></tr><tr><td>4 x 7</td><td>0.45</td><td>1.5</td><td>5.0</td><td>5.0</td></tr><tr><td>5 x 7 ~ 11</td><td>0.5</td><td>2.0</td><td>5.0</td><td>5.0</td></tr><tr><td>6 x 7 ~ 15</td><td>0.5</td><td>2.5</td><td>5.0</td><td>5.0</td></tr><tr><td>8 x 7 ~ 9</td><td>0.5</td><td>3.5</td><td>5.0</td><td>5.0</td></tr><tr><td>8 x 11.5 ~ 20</td><td>0.6</td><td>3.5</td><td>5.0</td><td>5.0</td></tr><tr><td>10</td><td>0.6</td><td>5.0</td><td>-</td><td>4.5</td></tr><tr><td>12.5</td><td>0.6</td><td>5.0</td><td>-</td><td>4.5</td></tr><tr><td>16</td><td>0.8</td><td>7.5</td><td>-</td><td>4.5</td></tr><tr><td>18</td><td>0.8</td><td>7.5</td><td>-</td><td>4.5</td></tr><tr><td>22</td><td>1.0</td><td>10.0</td><td>-</td><td>4.5</td></tr><tr><td>25</td><td>1.0</td><td>12.5</td><td>-</td><td>4.5</td></tr></table> | D x L | d     | F     | F'     | H   | 3 x 5 | 0.40          | 1.0 | 5.0 | 5.0           | 4 x 5 | 0.45 | 1.5 | 5.0 | 5.0 | 5 x 5 | 0.45 | 2.0 | 5.0 | 5.0 | 6.3 ~ 8 x 5 | 0.45 | 2.5 | 5.0 | 5.0 | 4 x 7 | 0.45 | 1.5 | 5.0 | 5.0  | 5 x 7 ~ 11 | 0.5 | 2.0 | 5.0 | 5.0 | 6 x 7 ~ 15 | 0.5 | 2.5 | 5.0 | 5.0 | 8 x 7 ~ 9 | 0.5 | 3.5 | 5.0 | 5.0 | 8 x 11.5 ~ 20 | 0.6 | 3.5 | 5.0 | 5.0 | 10 | 0.6 | 5.0 | - | 4.5 | 12.5 | 0.6 | 5.0 | - | 4.5 | 16 | 0.8 | 7.5 | - | 4.5 | 18 | 0.8 | 7.5 | - | 4.5 | 22 | 1.0 | 10.0 | - | 4.5 | 25 | 1.0 | 12.5 | - | 4.5 |
|                           |      |                                                                                     | D x L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | d     | F     | F'    | H      |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 3 x 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.40  | 1.0   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 4 x 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.45  | 1.5   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 5 x 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.45  | 2.0   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 6.3 ~ 8 x 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.45  | 2.5   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 4 x 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.45  | 1.5   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 5 x 7 ~ 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.5   | 2.0   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 6 x 7 ~ 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.5   | 2.5   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 8 x 7 ~ 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.5   | 3.5   | 5.0   | 5.0    |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 8 x 11.5 ~ 20             | 0.6  | 3.5                                                                                 | 5.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5.0   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 10                        | 0.6  | 5.0                                                                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.5   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 12.5                      | 0.6  | 5.0                                                                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.5   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 16                        | 0.8  | 7.5                                                                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.5   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 18                        | 0.8  | 7.5                                                                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.5   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 22                        | 1.0  | 10.0                                                                                | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.5   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 25                        | 1.0  | 12.5                                                                                | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.5   |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| Bending Cut<br>( 5 ~ 25 ) | BC   |   | <table><tr><th>D x L</th><th>d</th><th>F±0.5</th></tr><tr><td>5 X 11</td><td>0.5</td><td>2.0</td></tr><tr><td>6.3 X 11 ~ 15</td><td>0.5</td><td>2.5</td></tr><tr><td>8 X 11.5 ~ 20</td><td>0.6</td><td>3.5</td></tr><tr><td>10</td><td>0.6</td><td>5.0</td></tr><tr><td>12.5</td><td>0.6</td><td>5.0</td></tr><tr><td>16</td><td>0.8</td><td>7.5</td></tr><tr><td>18</td><td>0.8</td><td>7.5</td></tr><tr><td>22</td><td>1.0</td><td>10.0</td></tr><tr><td>25</td><td>1.0</td><td>12.5</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | D x L | d     | F±0.5 | 5 X 11 | 0.5 | 2.0   | 6.3 X 11 ~ 15 | 0.5 | 2.5 | 8 X 11.5 ~ 20 | 0.6   | 3.5  | 10  | 0.6 | 5.0 | 12.5  | 0.6  | 5.0 | 16  | 0.8 | 7.5         | 18   | 0.8 | 7.5 | 22  | 1.0   | 10.0 | 25  | 1.0 | 12.5 |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | D x L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | d     | F±0.5 |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 5 X 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.5   | 2.0   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 6.3 X 11 ~ 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.5   | 2.5   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 8 X 11.5 ~ 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.6   | 3.5   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.6   | 5.0   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 12.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.6   | 5.0   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.8   | 7.5   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.8   | 7.5   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1.0   | 10.0  |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 25                        | 1.0  | 12.5                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| ( 10 ~ 25 )               | SD   |  | <table><tr><th>D x L</th><th>d</th><th>F±0.5</th></tr><tr><td>5 X 11</td><td>0.5</td><td>2.0</td></tr><tr><td>6.3 X 11 ~ 15</td><td>0.5</td><td>2.5</td></tr><tr><td>8 X 11.5 ~ 20</td><td>0.6</td><td>3.5</td></tr><tr><td>10</td><td>0.6</td><td>5.0</td></tr><tr><td>12.5</td><td>0.6</td><td>5.0</td></tr><tr><td>16</td><td>0.8</td><td>7.5</td></tr><tr><td>18</td><td>0.8</td><td>7.5</td></tr><tr><td>22</td><td>1.0</td><td>10.0</td></tr><tr><td>25</td><td>1.0</td><td>12.5</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | D x L | d     | F±0.5 | 5 X 11 | 0.5 | 2.0   | 6.3 X 11 ~ 15 | 0.5 | 2.5 | 8 X 11.5 ~ 20 | 0.6   | 3.5  | 10  | 0.6 | 5.0 | 12.5  | 0.6  | 5.0 | 16  | 0.8 | 7.5         | 18   | 0.8 | 7.5 | 22  | 1.0   | 10.0 | 25  | 1.0 | 12.5 |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | D x L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | d     | F±0.5 |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 5 X 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.5   | 2.0   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 6.3 X 11 ~ 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.5   | 2.5   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 8 X 11.5 ~ 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.6   | 3.5   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.6   | 5.0   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 12.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.6   | 5.0   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.8   | 7.5   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.8   | 7.5   |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
|                           |      |                                                                                     | 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1.0   | 10.0  |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |
| 25                        | 1.0  | 12.5                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |       |       |        |     |       |               |     |     |               |       |      |     |     |     |       |      |     |     |     |             |      |     |     |     |       |      |     |     |      |            |     |     |     |     |            |     |     |     |     |           |     |     |     |     |               |     |     |     |     |    |     |     |   |     |      |     |     |   |     |    |     |     |   |     |    |     |     |   |     |    |     |      |   |     |    |     |      |   |     |

 Ammo pack box.(SA,TA) Reel pack box.(SR,TR)  
 10 Boxes per carton


## Packaging Quantity

| D      | 3    | 4    | 5    | 6.3  | 8    | 10  | 13  |
|--------|------|------|------|------|------|-----|-----|
| TA, SA | 3000 | 2000 | 2000 | 2000 | 1000 | 500 | 250 |
| TR, SR | 3000 | 1500 | 1200 | 1000 | 800  | 500 | 500 |

## NOTES:

- The above quantities are typical. Quantities may vary.
- The component will be oriented on the tape so that the positive lead is leading or the negative lead is leading, depending on the customer's request