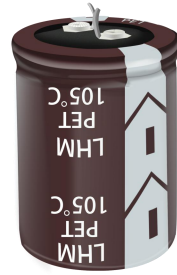


**LHM Series** 焊片/焊针型铝电解电容器长寿命品

Snap-in Type Aluminum Electrolytic Capacitors

RoHS compliance  
105°C 3000 hours  
High Ripple Power Supplies

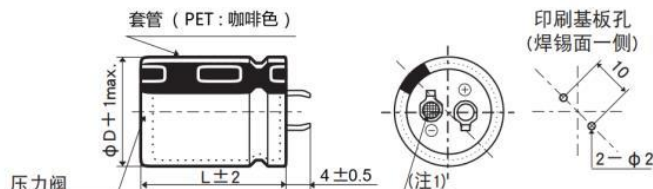


### ■主要技术性能 Specifications

| 使用温度范围<br>Operating Temperature Range                                  | -40 ~ +105°C  | -25 ~ +105°C |                              |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
|--|---|--------------|------------------------------|---|-----------------|------------------------------|------------------------------|---|---------|---------|-------------------------|------|------|------|----------|------|------|------|------|------|-------|------|------|------|------|------|
| 额定电压范围<br>Rated Voltage Range  | 16~100V DC  | 160~450V DC  |                              |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 标称容量允许偏差<br>Capacitance Tolerance                                      | ±20% (120Hz, 20°C)  |              |                              |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 漏电流 (20°C)<br>Leakage Current  | $I \leq 3 \sqrt{CV}$ (after 5 min)  |              |                              |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
|  | I=Leakage Current(μA), C=Capacitance(μF), V=Rated DC Working Voltage(V)   |              |                              |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 损耗角正切值<br>Dissipation Factor<br>(120Hz 20°C)                           | <table border="1"> <tr> <th>W.V.</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63~100</th> <th>160~400</th> <th>420~450</th> </tr> <tr> <td>tgδ</td> <td>0.50</td> <td>0.40</td> <td>0.35</td> <td>0.30</td> <td>0.20</td> <td>0.15</td> <td>0.20</td> </tr> </table> <p>0.02 is added to every 1000μF increase over 1000μF</p>  |              | W.V.                         | 16  | 25              | 35                           | 50                           | 63~100                                    | 160~400 | 420~450 | tgδ                     | 0.50 | 0.40 | 0.35 | 0.30     | 0.20 | 0.15 | 0.20 |      |      |       |      |      |      |      |      |
| W.V.   | 16  | 25           | 35                           | 50  | 63~100          | 160~400                      | 420~450                      |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| tgδ  | 0.50  | 0.40         | 0.35                         | 0.30  | 0.20            | 0.15                         | 0.20                         |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 温度特性 (120Hz)<br>Temperature Characteristics<br>Impedance Ratio (120Hz) | <table border="1"> <tr> <th>W.V.</th> <th>160~100</th> <th>160~200</th> <th>250~450V</th> </tr> <tr> <td><math>Z_{-25°C} / Z_{+20°C}</math></td> <td>4</td> <td>4</td> <td>4</td> </tr> <tr> <td><math>Z_{-40°C} / Z_{+20°C}</math></td> <td>15</td> <td>-</td> <td>-</td> </tr> </table>   |              | W.V.                         | 160~100                                       | 160~200         | 250~450V                     | $Z_{-25°C} / Z_{+20°C}$      | 4   | 4       | 4       | $Z_{-40°C} / Z_{+20°C}$ | 15   | -    | -    |          |      |      |      |      |      |       |      |      |      |      |      |
| W.V.   | 160~100   | 160~200      | 250~450V                     |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| $Z_{-25°C} / Z_{+20°C}$  | 4   | 4            | 4                            |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| $Z_{-40°C} / Z_{+20°C}$  | 15  | -            | -                            |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 耐久性<br>Load Life   | <p>在 105°C 环境施加额定工作电压 3000 小时后，电容器的特性符合下表要求。<br/>105°C environment d rated operating voltage after 3,000 hours, capacitor characteristics meet the requirements in the following table.</p> <table border="1"> <tr> <td>电容量变化率<br/>Capacitance Change</td> <td>≤±20%初始测量值<br/>≤±20% of Initial measured value</td> </tr> <tr> <td>漏电流值<br/>Leakage</td> <td>≤规定值<br/>≤The specified value</td> </tr> <tr> <td>损耗角正切值<br/>Dissipation Factor</td> <td>≤2 倍规定值<br/>≤200% of the specified value</td> </tr> </table> |              | 电容量变化率<br>Capacitance Change | ≤±20%初始测量值<br>≤±20% of Initial measured value | 漏电流值<br>Leakage | ≤规定值<br>≤The specified value | 损耗角正切值<br>Dissipation Factor | ≤2 倍规定值<br>≤200% of the specified value   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 电容量变化率<br>Capacitance Change   | ≤±20%初始测量值<br>≤±20% of Initial measured value   |              |                              |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 漏电流值<br>Leakage  | ≤规定值<br>≤The specified value  |              |                              |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 损耗角正切值<br>Dissipation Factor   | ≤2 倍规定值<br>≤200% of the specified value   |              |                              |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 高温贮存<br>Shelf Life   | <p>试验时间：105°C, 1000 小时；电压应用处理：根据 JIS C5101-4.1<br/>Test time :105°C, 1000hours；Voltage application treatment : According to JIS C5101-4 4.1</p> <table border="1"> <tr> <td>电容量变化率<br/>Capacitance Change</td> <td>≤±15%初始测量值<br/>≤±15% of Initial measured value</td> </tr> <tr> <td>漏电流值<br/>Leakage</td> <td>≤规定值<br/>≤The specified value</td> </tr> <tr> <td>损耗角正切值<br/>Dissipation Factor</td> <td>≤1.5 倍规定值<br/>≤150% of the specified value</td> </tr> </table>   |              | 电容量变化率<br>Capacitance Change | ≤±15%初始测量值<br>≤±15% of Initial measured value | 漏电流值<br>Leakage | ≤规定值<br>≤The specified value | 损耗角正切值<br>Dissipation Factor | ≤1.5 倍规定值<br>≤150% of the specified value |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 电容量变化率<br>Capacitance Change   | ≤±15%初始测量值<br>≤±15% of Initial measured value   |              |                              |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 漏电流值<br>Leakage  | ≤规定值<br>≤The specified value  |              |                              |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 损耗角正切值<br>Dissipation Factor   | ≤1.5 倍规定值<br>≤150% of the specified value   |              |                              |   |                 |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 额定纹波电流频率系数<br>Coefficient of Frequency for<br>Rated Ripple Current     | <table border="1"> <tr> <th>Frequency<br/>Voltage</th> <th>50Hz</th> <th>120Hz</th> <th>1KHz</th> <th>10KHz</th> <th>≥50KHz</th> </tr> <tr> <td>≤100V</td> <td>0.95</td> <td>1.00</td> <td>1.13</td> <td>1.19</td> <td>1.20</td> </tr> <tr> <td>160~250V</td> <td>0.87</td> <td>1.00</td> <td>1.32</td> <td>1.45</td> <td>1.50</td> </tr> <tr> <td>≥315V</td> <td>0.80</td> <td>1.00</td> <td>1.30</td> <td>1.41</td> <td>1.43</td> </tr> </table>  |              | Frequency<br>Voltage         | 50Hz  | 120Hz           | 1KHz                         | 10KHz                        | ≥50KHz                                    | ≤100V   | 0.95    | 1.00                    | 1.13 | 1.19 | 1.20 | 160~250V | 0.87 | 1.00 | 1.32 | 1.45 | 1.50 | ≥315V | 0.80 | 1.00 | 1.30 | 1.41 | 1.43 |
| Frequency<br>Voltage   | 50Hz  | 120Hz        | 1KHz                         | 10KHz   | ≥50KHz          |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| ≤100V  | 0.95  | 1.00         | 1.13                         | 1.19  | 1.20            |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| 160~250V   | 0.87  | 1.00         | 1.32                         | 1.45  | 1.50            |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |
| ≥315V  | 0.80  | 1.00         | 1.30                         | 1.41  | 1.43            |                              |                              |   |         |         |                         |      |      |      |          |      |      |      |      |      |       |      |      |      |      |      |

### ■外形图 Outline Drawing

●端子代码: LP (φ 22~35) : 标准品



(注1) 阴极端子的铆钉部网眼刻印。

■ 标称电容量、额定电压、额定纹波电流与外形尺寸对应表  
Nominal capacitance, rated voltage, rated ripple current and case size table

| WV<br>Cap(μF) | 16V                     |                      | 25V                     |                      | 35V                              |                              | 50V                     |                      | 63V                              |                              | 80V                              |                              | 100V                             |                              |
|---------------|-------------------------|----------------------|-------------------------|----------------------|----------------------------------|------------------------------|-------------------------|----------------------|----------------------------------|------------------------------|----------------------------------|------------------------------|----------------------------------|------------------------------|
|               | ΦD×L<br>(mm)            | I<br>(Arms)          | ΦD×L<br>(mm)            | I<br>(Arms)          | ΦD×L<br>(mm)                     | I<br>(Arms)                  | ΦD×L<br>(mm)            | I<br>(Arms)          | ΦD×L<br>(mm)                     | I<br>(Arms)                  | ΦD×L<br>(mm)                     | I<br>(Arms)                  | ΦD×L<br>(mm)                     | I<br>(Arms)                  |
| 560           |                         |                      |                         |                      |                                  |                              |                         |                      |                                  |                              |                                  |                              | 22×25                            | 1.07                         |
| 680           |                         |                      |                         |                      |                                  |                              |                         |                      |                                  |                              |                                  |                              | 22×30                            | 1.20                         |
| 820           |                         |                      |                         |                      |                                  |                              |                         |                      |                                  |                              | 22×25                            | 1.11                         | 22×30<br>25×25                   | 1.35<br>1.35                 |
| 1000          |                         |                      |                         |                      |                                  |                              |                         |                      |                                  |                              | 22×25                            | 1.25                         | 22×35<br>25×30                   | 1.54<br>1.56                 |
| 1200          |                         |                      |                         |                      |                                  |                              |                         |                      | 22×25                            | 1.25                         | 22×30<br>25×25                   | 1.39<br>1.39                 | 22×40<br>25×35<br>30×25          | 1.74<br>1.76<br>1.71         |
| 1500          |                         |                      |                         |                      |                                  |                              |                         |                      | 22×25                            | 1.39                         | 22×35<br>25×30                   | 1.61<br>1.62                 | 22×45<br>25×40<br>30×30<br>35×25 | 1.99<br>2.03<br>2.00<br>2.07 |
| 1800          |                         |                      |                         |                      |                                  |                              | 22×25                   | 1.31                 | 22×30<br>25×25                   | 1.52<br>1.52                 | 22×40<br>30×25                   | 1.83<br>1.81                 | 25×45<br>30×35                   | 2.28<br>2.27                 |
| 2200          |                         |                      |                         |                      |                                  |                              | 22×30                   | 1.45                 | 22×35<br>25×30                   | 1.73<br>1.75                 | 22×45<br>25×35<br>30×30<br>35×25 | 2.09<br>2.01<br>2.10<br>2.17 | 25×50<br>30×40<br>35×30          | 2.57<br>2.59<br>2.52         |
| 2700          |                         |                      |                         |                      |                                  |                              | 22×30<br>25×25          | 1.70<br>1.70         | 22×40<br>25×35<br>30×25          | 1.97<br>1.99<br>1.93         | 25×45<br>30×35                   | 2.43<br>2.43                 | 30×45<br>35×35                   | 2.94<br>2.90                 |
| 3300          |                         |                      |                         |                      | 22×25                            | 1.43                         | 22×35<br>25×30          | 1.98<br>2.00         | 22×50<br>25×40<br>30×30<br>35×25 | 2.32<br>2.27<br>2.24<br>2.41 | 25×50<br>30×40<br>35×30          | 2.76<br>2.78<br>2.71         | 30×50<br>35×40                   | 3.32<br>3.31                 |
| 3900          |                         |                      |                         |                      | 22×30                            | 1.65                         | 22×40<br>25×35<br>30×25 | 2.25<br>2.28<br>2.22 | 25×45<br>30×35                   | 2.54<br>2.55                 | 30×45<br>35×35                   | 3.12<br>3.07                 | 35×45                            | 3.69                         |
| 4700          |                         |                      | 22×25                   | 1.55                 | 25×25                            | 1.78                         | 22×45<br>30×30<br>35×25 | 2.56<br>2.58<br>2.67 | 25×50<br>30×40<br>35×30          | 2.88<br>2.90<br>2.83         | 30×50<br>35×40                   | 3.56<br>3.50                 | 35×50                            | 4.14                         |
| 5600          |                         |                      | 25×25                   | 1.70                 | 22×35<br>25×30<br>30×25          | 2.02<br>2.04<br>2.12         | 22×50<br>25×40<br>30×35 | 2.89<br>2.81<br>2.95 | 30×45<br>35×35                   | 3.28<br>3.24                 | 35×45                            | 3.87                         |                                  |                              |
| 6800          | 22×25                   | 1.60                 | 22×30<br>25×25          | 1.91<br>1.91         | 22×40<br>25×35                   | 2.28<br>2.31                 | 25×50<br>30×40<br>35×30 | 3.37<br>3.39<br>3.31 | 30×50<br>35×40                   | 3.73<br>3.71                 | 35×50                            | 4.19                         |                                  |                              |
| 8200          | 25×25                   | 1.80                 | 22×35<br>25×30<br>30×25 | 2.14<br>2.16<br>2.25 | 22×50<br>25×40<br>30×30<br>35×25 | 2.67<br>2.60<br>2.56<br>2.78 | 30×45<br>35×35          | 3.71<br>3.66         | 35×45                            | 4.16                         |                                  |                              |                                  |                              |
| 10000         | 22×30<br>25×25          | 1.99<br>1.99         | 22×40<br>25×35          | 2.40<br>2.44         | 25×45<br>30×35                   | 2.92<br>2.92                 | 30×50<br>35×40          | 4.09<br>4.07         | 35×50                            | 4.69                         |                                  |                              |                                  |                              |
| 12000         | 22×35<br>25×30<br>30×25 | 2.28<br>2.30<br>2.38 | 22×45<br>25×40<br>30×30 | 2.69<br>2.74<br>2.70 | 25×50<br>30×40<br>35×30          | 3.26<br>2.28<br>3.20         | 35×45                   | 4.50                 |                                  |                              |                                  |                              |                                  |                              |
| 15000         | 22×40<br>25×35          | 2.64<br>2.68         | 25×45<br>30×35<br>35×30 | 3.15<br>3.13<br>3.22 | 30×45<br>35×35                   | 3.74<br>3.69                 |                         |                      |                                  |                              |                                  |                              |                                  |                              |
| 18000         | 22×45<br>25×40<br>30×30 | 2.98<br>3.04<br>3.00 | 25×50<br>30×40          | 3.54<br>3.54         | 35×40                            | 4.16                         |                         |                      |                                  |                              |                                  |                              |                                  |                              |
| 22000         | 25×45<br>30×35          | 3.40<br>3.39         | 30×45<br>35×35          | 4.24<br>3.96         | 35×50                            | 4.92                         |                         |                      |                                  |                              |                                  |                              |                                  |                              |
| 27000         | 25×50<br>30×40<br>35×30 | 3.81<br>3.83<br>3.74 | 35×45                   | 4.75                 |                                  |                              |                         |                      |                                  |                              |                                  |                              |                                  |                              |
| 33000         | 30×45<br>35×35          | 4.30<br>4.24         | 35×50                   | 5.39                 |                                  |                              |                         |                      |                                  |                              |                                  |                              |                                  |                              |
| 39000         | 30×50<br>35×40          | 4.74<br>4.72         |                         |                      |                                  |                              |                         |                      |                                  |                              |                                  |                              |                                  |                              |
| 47000         | 35×45                   | 5.27                 |                         |                      |                                  |                              |                         |                      |                                  |                              |                                  |                              |                                  |                              |

I~额定纹波电流 Rated ripple current: (A, 105°C, 120Hz)

■ 标称电容量、额定电压、额定纹波电流与外形尺寸对应表  
Nominal capacitance, rated voltage, rated ripple current and case size table

| WV<br>Cap(μF) | 160V                             |                              | 200V                             |                              | 250V                    |                      | 350V                    |                      | 400V                             |                              | 450V                             |                              |
|---------------|----------------------------------|------------------------------|----------------------------------|------------------------------|-------------------------|----------------------|-------------------------|----------------------|----------------------------------|------------------------------|----------------------------------|------------------------------|
|               | ΦD×L<br>(mm)                     | I<br>(Arms)                  | ΦD×L<br>(mm)                     | I<br>(Arms)                  | ΦD×L<br>(mm)            | I<br>(Arms)          | ΦD×L<br>(mm)            | I<br>(Arms)          | ΦD×L<br>(mm)                     | I<br>(Arms)                  | ΦD×L<br>(mm)                     | I<br>(Arms)                  |
| 56            |                                  |                              |                                  |                              |                         |                      |                         |                      |                                  |                              | 22×25                            | 0.50                         |
| 68            |                                  |                              |                                  |                              |                         |                      | 22×25                   | 0.70                 | 22×25                            | 0.48                         | 22×30                            | 0.60                         |
| 82            |                                  |                              |                                  |                              |                         |                      |                         |                      | 22×30<br>25×25                   | 0.57<br>0.56                 | 22×35                            | 0.65                         |
| 100           |                                  |                              |                                  |                              |                         |                      | 22×30<br>25×25          | 0.87<br>0.87         | 22×35<br>25×25                   | 0.65<br>0.65                 | 22×35<br>25×30<br>30×25          | 0.72<br>0.72<br>0.72         |
| 120           |                                  |                              |                                  |                              |                         |                      | 22×35                   | 0.90                 | 22×35<br>25×30<br>30×25          | 0.71<br>0.71<br>0.71         | 22×45<br>25×35                   | 0.80<br>0.80                 |
| 150           |                                  |                              |                                  |                              |                         |                      | 22×40<br>25×30<br>30×25 | 0.98<br>1.02<br>1.02 | 22×40<br>25×35<br>30×25          | 0.85<br>0.85<br>0.85         | 22×50<br>25×40<br>30×30<br>35×25 | 0.95<br>0.95<br>0.95<br>0.95 |
| 180           |                                  |                              |                                  |                              | 22×25                   | 1.00                 | 22×45<br>25×35<br>30×30 | 1.11<br>1.11<br>1.12 | 22×50<br>25×40<br>30×30<br>35×25 | 1.00<br>1.00<br>1.00<br>1.00 | 25×45<br>30×35                   | 1.05<br>1.05                 |
| 220           |                                  |                              | 22×25                            | 1.10                         | 22×30<br>25×25          | 1.20<br>1.20         | 22×50<br>25×40<br>35×25 | 1.16<br>1.20<br>1.20 | 25×45<br>30×35<br>35×30          | 1.20<br>1.20<br>1.20         | 25×50<br>30×40<br>35×30          | 1.30<br>1.30<br>1.30         |
| 270           |                                  |                              | 22×25                            | 1.17                         | 22×35                   | 1.25                 | 25×50<br>30×35<br>35×30 | 1.26<br>1.31<br>1.26 | 25×50<br>30×40<br>35×30          | 1.35<br>1.35<br>1.35         | 30×45<br>35×35                   | 1.50<br>1.50                 |
| 330           | 22×25                            | 1.42                         | 22×30<br>25×25                   | 1.40<br>1.40                 | 22×40<br>25×30<br>30×25 | 1.30<br>1.35<br>1.35 | 30×45<br>30×50          | 1.45<br>1.45         | 30×45<br>35×35                   | 1.60<br>1.60                 | 30×50<br>35×40                   | 1.90<br>1.90                 |
| 390           | 25×25                            | 1.45                         | 22×30                            | 1.45                         | 22×45<br>25×35          | 1.40<br>1.45         | 30×50<br>35×40          | 1.58<br>1.58         | 30×50<br>35×40                   | 1.80<br>1.80                 | 35×45                            | 1.90                         |
| 470           | 22×35                            | 1.63                         | 22×35<br>25×30<br>30×25          | 1.55<br>1.55<br>1.60         | 22×50<br>30×30<br>35×25 | 1.65<br>1.65<br>1.65 | 35×45                   | 1.69                 | 35×45                            | 2.10                         | 35×50                            | 2.20                         |
| 560           | 22×35<br>25×30<br>30×25          | 1.75<br>1.75<br>1.75         | 22×45<br>25×35                   | 1.65<br>1.65                 | 25×45<br>30×35<br>35×30 | 1.85<br>1.85<br>1.85 | 35×50                   | 1.89                 | 35×50                            | 2.30                         |                                  |                              |
| 680           | 22×40<br>25×35                   | 1.98<br>1.98                 | 22×50<br>25×40<br>30×30<br>35×25 | 1.68<br>1.92<br>1.92<br>2.20 | 25×50<br>30×40          | 2.20<br>2.20         |                         |                      |                                  |                              |                                  |                              |
| 820           | 22×50<br>25×40<br>30×30<br>35×25 | 2.35<br>2.35<br>2.35<br>2.35 | 22×45<br>30×35<br>35×30          | 2.20<br>2.20<br>2.40         | 30×45<br>30×50          | 2.50<br>2.50         |                         |                      |                                  |                              |                                  |                              |
| 1000          | 22×45<br>30×35<br>35×30          | 2.50<br>2.50<br>2.50         | 30×40<br>35×35                   | 2.40<br>2.40                 | 30×50<br>35×40          | 2.90<br>2.90         |                         |                      |                                  |                              |                                  |                              |
| 1200          | 25×50<br>30×40<br>35×35          | 2.87<br>2.87<br>2.87         | 30×45<br>35×40                   | 2.75<br>2.75                 | 35×45                   | 3.30                 |                         |                      |                                  |                              |                                  |                              |
| 1500          | 30×45<br>35×40                   | 3.57<br>3.60                 | 35×40                            | 3.45                         | 35×50                   | 3.80                 |                         |                      |                                  |                              |                                  |                              |
| 1800          | 35×45                            | 4.15                         | 35×45                            | 4.00                         |                         |                      |                         |                      |                                  |                              |                                  |                              |
| 2200          | 35×50                            | 4.65                         | 35×50                            | 4.50                         |                         |                      |                         |                      |                                  |                              |                                  |                              |

I~额定纹波电流 Rated ripple current: (A, 105°C, 120Hz)