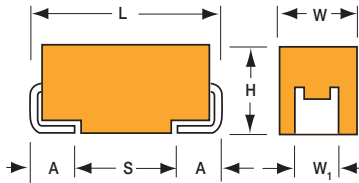




**THE DATASHEET OF  
NOJP475M006RWJ**

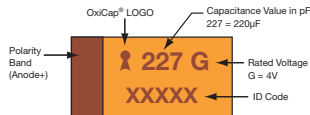


## Low Profile

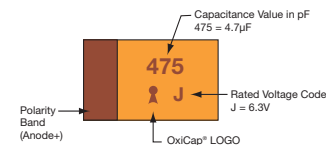


### MARKING

#### F, S, T, W, X, Y CASE



#### P CASE



### HOW TO ORDER

| NOJ  | Y                            | 107   | M                   | 006   | R  | WJ   | -   |
|------|------------------------------|---|---------------------|---|--|--|---|
| Type | Case Size<br>See table above | Capacitance Code<br>1st two digits represent significant figures, 3rd digit represents multiplier in pF | Tolerance<br>M=±20% | Rated DC Voltage<br>001 = 1.8Vdc<br>002 = 2.5Vdc<br>004 = 4Vdc<br>006 = 6.3Vdc<br>010 = 10Vdc | Packaging<br>R = Pure Tin 7" Reel<br>S = Pure Tin 13" Reel | Specification Suffix<br>WJ = Standard Suffix | Additional characters may be added for special requirements<br>V = Dry pack Option (selected codes only) with exception of X, Y cases |

### TECHNICAL SPECIFICATIONS

|                                    |   |     |     |     |     |    |  |
|------------------------------------|---|-----|-----|-----|-----|----|--|
| Technical Data:                    | All technical data relate to an ambient temperature of +25°C is not stated  |     |     |     |     |    |  |
| Capacitance Range:                 | 2.2 μF to 470 μF  |     |     |     |     |    |  |
| Capacitance Tolerance:             | ±20%  |     |     |     |     |    |  |
| Leakage Current DCL:               | 0.02CV or 1.0μA whichever is the greater  |     |     |     |     |    |  |
| Rated Voltage DC (V <sub>R</sub> ) | ≤ +85°C:  | 1.8 | 2.5 | 4   | 6.3 | 10 |  |
| Category Voltage (V <sub>C</sub> ) | ≤ +105°C:   | 1.2 | 1.7 | 2.7 | 4   | 7  |  |
| Surge Voltage (V <sub>S</sub> )    | ≤ +85°C:  | 2.3 | 3.3 | 5.2 | 8   | 13 |  |
| Surge Voltage (V <sub>S</sub> )    | ≤ +105°C:   | 1.6 | 2.2 | 3.4 | 5   | 8  |  |
| Temperature Range:                 | -55°C to +105°C   |     |     |     |     |    |  |
| Reliability:                       | 0.5% per 1000 hours at 85°C, V <sub>R</sub> , 0.1Ω/V series impedance, 60% confidence level<br>Meets requirements of AEC-Q200 |     |     |     |     |    |  |

### FEATURES

- Non-burn safe technology
- Reliability level: 0.5%/1000 hrs.
- CV range: 2.2-470μF / 1.8-10V
- 7 case sizes in low profile available
- IBM global approval received in 2004
- Elektra Award received in 2005

### APPLICATIONS

- Downsized industrial and automotive DC/DCs



Elektra Award 2005

### CASE DIMENSIONS: millimeters (inches)

| Code | EIA Code | EIA Metric | L±0.20 (0.008) | W+0.20 (0.008) -0.10 (0.004) | H Max        | W <sub>1</sub> ±0.20 (0.008) | A+0.30 (0.012) -0.20 (0.008) | S Min.       |
|------|----------|------------|----------------|------------------------------|--------------|------------------------------|------------------------------|--------------|
| F    | 2312     | 6032-20    | 6.00 (0.236)   | 3.20 (0.126)                 | 2.00 (0.079) | 2.20 (0.087)                 | 1.30 (0.051)                 | 2.90 (0.114) |
| P    | 0805     | 2012-15    | 2.05 (0.081)   | 1.35 (0.053)                 | 1.50 (0.059) | 1.00±0.10 (0.039±0.004)      | 0.50 (0.020)                 | 0.85 (0.033) |
| S    | 1206     | 3216-12    | 3.20 (0.126)   | 1.60 (0.063)                 | 1.20 (0.047) | 1.20 (0.047)                 | 0.80 (0.031)                 | 1.10 (0.043) |
| T    | 1210     | 3528-12    | 3.50 (0.138)   | 2.80 (0.110)                 | 1.20 (0.047) | 2.20 (0.087)                 | 0.80 (0.031)                 | 1.40 (0.055) |
| W    | 2312     | 6032-15    | 6.00 (0.236)   | 3.20 (0.126)                 | 1.50 (0.059) | 2.20 (0.087)                 | 1.30 (0.051)                 | 2.90 (0.114) |
| X    | 2917     | 7343-15    | 7.30 (0.287)   | 4.30 (0.169)                 | 1.50 (0.059) | 2.40 (0.094)                 | 1.30 (0.051)                 | 4.40 (0.173) |
| Y    | 2917     | 7343-20    | 7.30 (0.287)   | 4.30 (0.169)                 | 2.00 (0.079) | 2.40 (0.094)                 | 1.30 (0.051)                 | 4.40 (0.173) |

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.  
Pad Stand-off is 0.1±0.1.

## Low Profile

### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

| Capacitance   |      | Rated Voltage DC ( $V_r$ ) to 85°C |          |        |          |         |
|---------------|------|------------------------------------|----------|--------|----------|---------|
| $\mu\text{F}$ | Code | 1.8V (x)                           | 2.5V (e) | 4V (G) | 6.3V (J) | 10V (A) |
| 1.0           | 105  |                                    |          |        |          |         |
| 1.5           | 155  |                                    |          |        |          |         |
| 2.2           | 225  |                                    |          |        |          | P       |
| 3.3           | 335  |                                    |          |        |          | P       |
| 4.7           | 475  |                                    |          |        | P/S      | T       |
| 6.8           | 685  |                                    |          | P/S    | P/S/T    | T       |
| 10            | 106  |                                    | P/S      | P/S/T  | P/T      | T       |
| 15            | 156  | P/S                                | P/S/T    | P/T    |          |         |
| 22            | 226  | P/S/T                              | P/T      | T      | T        |         |
| 33            | 336  | T                                  | T        | T      | W        |         |
| 47            | 476  | T                                  | T        | W      | W        |         |
| 68            | 686  |                                    | W        | W      | X/Y      |         |
| 100           | 107  | W                                  | W        | W/X    | F/Y      |         |
| 150           | 157  |                                    | X        | Y      | F/Y      |         |
| 220           | 227  | X                                  | Y        | F/Y    | Y        |         |
| 330           | 337  | Y                                  | Y        | Y      |          |         |
| 470           | 477  | Y                                  |          |        |          |         |

#### Available Ratings

Note: Voltage ratings are minimum values. AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards.

## Low Profile

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.           | Case Size | Capacitance (µF) | Rated Voltage (V) | Rated Temperature (°C) | Category Voltage (V) | Category Temperature (°C) | DCL Max. (µA) | DF Max. (%) | ESR Max. @ 100kHz (Ω) | MSL | 100kHz RMS Current (A) |       |       |
|------------------------|-----------|------------------|-------------------|------------------------|----------------------|---------------------------|---------------|-------------|-----------------------|-----|------------------------|-------|-------|
|                        |           |                  |                   |                        |                      |                           |               |             |                       |     | 25°C                   | 85°C  | 105°C |
| <b>1.8 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                       |     |                        |       |       |
| NOJP156M001#WJ         | P         | 15               | 1.8               | 85                     | 1.2                  | 105                       | 1.0           | 10          | 4.1                   | 1   | 0.133                  | 0.119 | 0.053 |
| NOJS156M001#WJ         | S         | 15               | 1.8               | 85                     | 1.2                  | 105                       | 1.0           | 6           | 2                     | 1   | 0.197                  | 0.178 | 0.079 |
| NOJP226M001#WJ         | P         | 22               | 1.8               | 85                     | 1.2                  | 105                       | 1.0           | 10          | 3.8                   | 1   | 0.138                  | 0.124 | 0.055 |
| NOJS226M001#WJ         | S         | 22               | 1.8               | 85                     | 1.2                  | 105                       | 1.0           | 8           | 1.9                   | 1   | 0.203                  | 0.182 | 0.081 |
| NOJT226M001#WJ         | T         | 22               | 1.8               | 85                     | 1.2                  | 105                       | 1.0           | 6           | 1.8                   | 1   | 0.231                  | 0.208 | 0.092 |
| NOJT336M001#WJ         | T         | 33               | 1.8               | 85                     | 1.2                  | 105                       | 1.2           | 6           | 1.7                   | 1   | 0.238                  | 0.214 | 0.095 |
| NOJT476M001#WJ         | T         | 47               | 1.8               | 85                     | 1.2                  | 105                       | 1.7           | 10          | 1.6                   | 1   | 0.245                  | 0.220 | 0.098 |
| NOJW107M001#WJ         | W         | 100              | 1.8               | 85                     | 1.2                  | 105                       | 3.6           | 6           | 0.4                   | 1   | 0.520                  | 0.468 | 0.208 |
| NOJX227M001#WJ         | X         | 220              | 1.8               | 85                     | 1.2                  | 105                       | 8.0           | 8           | 0.4                   | 3   | 0.548                  | 0.493 | 0.219 |
| NOJY337M001#WJ         | Y         | 330              | 1.8               | 85                     | 1.2                  | 105                       | 11.9          | 8           | 0.3                   | 3   | 0.707                  | 0.636 | 0.283 |
| NOJY477M001#WJ         | Y         | 470              | 1.8               | 85                     | 1.2                  | 105                       | 17.0          | 8           | 0.3                   | 3   | 0.707                  | 0.636 | 0.283 |
| <b>2.5 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                       |     |                        |       |       |
| NOJP106M002#WJ         | P         | 10               | 2.5               | 85                     | 1.7                  | 105                       | 1.0           | 6           | 4.5                   | 1   | 0.126                  | 0.114 | 0.051 |
| NOJS106M002#WJ         | S         | 10               | 2.5               | 85                     | 1.7                  | 105                       | 1.0           | 6           | 2.2                   | 1   | 0.188                  | 0.169 | 0.075 |
| NOJP156M002#WJ         | P         | 15               | 2.5               | 85                     | 1.7                  | 105                       | 1.0           | 6           | 4                     | 1   | 0.134                  | 0.121 | 0.054 |
| NOJS156M002#WJ         | S         | 15               | 2.5               | 85                     | 1.7                  | 105                       | 1.0           | 8           | 2                     | 1   | 0.197                  | 0.178 | 0.079 |
| NOJT156M002#WJ         | T         | 15               | 2.5               | 85                     | 1.7                  | 105                       | 1.0           | 6           | 2                     | 1   | 0.219                  | 0.197 | 0.088 |
| NOJP226M002#WJ         | P         | 22               | 2.5               | 85                     | 1.7                  | 105                       | 1.1           | 10          | 3.8                   | 1   | 0.138                  | 0.124 | 0.055 |
| NOJT226M002#WJ         | T         | 22               | 2.5               | 85                     | 1.7                  | 105                       | 1.1           | 6           | 1.9                   | 1   | 0.225                  | 0.202 | 0.090 |
| NOJT336M002#WJ         | T         | 33               | 2.5               | 85                     | 1.7                  | 105                       | 1.7           | 6           | 1.7                   | 1   | 0.238                  | 0.214 | 0.095 |
| NOJT476M002#WJ         | T         | 47               | 2.5               | 85                     | 1.7                  | 105                       | 2.4           | 10          | 1.6                   | 1   | 0.245                  | 0.220 | 0.098 |
| NOJW686M002#WJ         | W         | 68               | 2.5               | 85                     | 1.7                  | 105                       | 3.4           | 6           | 0.4                   | 1   | 0.520                  | 0.468 | 0.208 |
| NOJW107M002#WJ         | W         | 100              | 2.5               | 85                     | 1.7                  | 105                       | 5.0           | 6           | 0.4                   | 1   | 0.520                  | 0.468 | 0.208 |
| NOJX157M002#WJ         | X         | 150              | 2.5               | 85                     | 1.7                  | 105                       | 7.5           | 6           | 0.4                   | 3   | 0.548                  | 0.493 | 0.219 |
| NOJY227M002#WJ         | Y         | 220              | 2.5               | 85                     | 1.7                  | 105                       | 11.0          | 8           | 0.4                   | 3   | 0.612                  | 0.551 | 0.245 |
| NOJY337M002#WJ         | Y         | 330              | 2.5               | 85                     | 1.7                  | 105                       | 16.5          | 10          | 0.3                   | 3   | 0.707                  | 0.636 | 0.283 |
| <b>4 Volt @ 85°C</b>   |           |                  |                   |                        |                      |                           |               |             |                       |     |                        |       |       |
| NOJP685M004#WJ         | P         | 6.8              | 4                 | 85                     | 2.7                  | 105                       | 1.0           | 6           | 5.3                   | 1   | 0.117                  | 0.105 | 0.047 |
| NOJS685M004#WJ         | S         | 6.8              | 4                 | 85                     | 2.7                  | 105                       | 1.0           | 6           | 2.6                   | 1   | 0.173                  | 0.156 | 0.069 |
| NOJP106M004#WJ         | P         | 10               | 4                 | 85                     | 2.7                  | 105                       | 1.0           | 20          | 4.5                   | 1   | 0.126                  | 0.114 | 0.051 |
| NOJS106M004#WJ         | S         | 10               | 4                 | 85                     | 2.7                  | 105                       | 1.0           | 8           | 2.2                   | 1   | 0.188                  | 0.169 | 0.075 |
| NOJT106M004#WJ         | T         | 10               | 4                 | 85                     | 2.7                  | 105                       | 1.0           | 6           | 2.2                   | 1   | 0.209                  | 0.188 | 0.084 |
| NOJP156M004#WJ         | P         | 15               | 4                 | 85                     | 2.7                  | 105                       | 1.2           | 10          | 4.1                   | 1   | 0.133                  | 0.119 | 0.053 |
| NOJT156M004#WJ         | T         | 15               | 4                 | 85                     | 2.7                  | 105                       | 1.2           | 6           | 2                     | 1   | 0.219                  | 0.197 | 0.088 |
| NOJT226M004#WJ         | T         | 22               | 4                 | 85                     | 2.7                  | 105                       | 1.8           | 6           | 1.8                   | 1   | 0.231                  | 0.208 | 0.092 |
| NOJT336M004#WJ         | T         | 33               | 4                 | 85                     | 2.7                  | 105                       | 2.6           | 14          | 2                     | 1   | 0.219                  | 0.197 | 0.088 |
| NOJW476M004#WJ         | W         | 47               | 4                 | 85                     | 2.7                  | 105                       | 3.8           | 6           | 0.5                   | 1   | 0.465                  | 0.418 | 0.186 |
| NOJW686M004#WJ         | W         | 68               | 4                 | 85                     | 2.7                  | 105                       | 5.4           | 6           | 0.4                   | 1   | 0.520                  | 0.468 | 0.208 |
| NOJW107M004#WJ         | W         | 100              | 4                 | 85                     | 2.7                  | 105                       | 8.0           | 8           | 0.4                   | 1   | 0.520                  | 0.468 | 0.208 |
| NOJX107M004#WJ         | X         | 100              | 4                 | 85                     | 2.7                  | 105                       | 8.0           | 6           | 0.4                   | 3   | 0.548                  | 0.493 | 0.219 |
| NOJY157M004#WJ         | Y         | 150              | 4                 | 85                     | 2.7                  | 105                       | 12.0          | 6           | 0.4                   | 3   | 0.612                  | 0.551 | 0.245 |
| NOJF227M004#WJ         | F         | 220              | 4                 | 85                     | 2.7                  | 105                       | 17.6          | 10          | 0.4                   | 1   | 0.548                  | 0.493 | 0.219 |
| NOJY227M004#WJ         | Y         | 220              | 4                 | 85                     | 2.7                  | 105                       | 17.6          | 10          | 0.4                   | 3   | 0.612                  | 0.551 | 0.245 |
| NOJY337M004#WJ         | Y         | 330              | 4                 | 85                     | 2.7                  | 105                       | 26.4          | 12          | 0.3                   | 3   | 0.707                  | 0.636 | 0.283 |
| <b>6.3 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                       |     |                        |       |       |
| NOJP475M006#WJ         | P         | 4.7              | 6.3               | 85                     | 4                    | 105                       | 1.0           | 6           | 6.1                   | 1   | 0.109                  | 0.098 | 0.043 |
| NOJS475M006#WJ         | S         | 4.7              | 6.3               | 85                     | 4                    | 105                       | 1.0           | 6           | 3.2                   | 1   | 0.156                  | 0.141 | 0.062 |
| NOJP685M006#WJ         | P         | 6.8              | 6.3               | 85                     | 4                    | 105                       | 1.0           | 10          | 5.2                   | 1   | 0.118                  | 0.106 | 0.047 |
| NOJS685M006#WJ         | S         | 6.8              | 6.3               | 85                     | 4                    | 105                       | 1.0           | 8           | 2.7                   | 1   | 0.170                  | 0.153 | 0.068 |
| NOJT685M006#WJ         | T         | 6.8              | 6.3               | 85                     | 4                    | 105                       | 1.0           | 6           | 2.6                   | 1   | 0.192                  | 0.173 | 0.077 |
| NOJP106M006#WJ         | P         | 10               | 6.3               | 85                     | 4                    | 105                       | 1.2           | 10          | 4.5                   | 1   | 0.126                  | 0.114 | 0.051 |
| NOJT106M006#WJ         | T         | 10               | 6.3               | 85                     | 4                    | 105                       | 1.2           | 6           | 2.2                   | 1   | 0.209                  | 0.188 | 0.084 |
| NOJT226M006#WJ         | T         | 22               | 6.3               | 85                     | 4                    | 105                       | 2.6           | 8           | 1.8                   | 1   | 0.231                  | 0.208 | 0.092 |
| NOJW336M006#WJ         | W         | 33               | 6.3               | 85                     | 4                    | 105                       | 4.0           | 6           | 0.5                   | 1   | 0.465                  | 0.418 | 0.186 |
| NOJW476M006#WJ         | W         | 47               | 6.3               | 85                     | 4                    | 105                       | 5.7           | 6           | 0.5                   | 1   | 0.465                  | 0.418 | 0.186 |
| NOJX686M006#WJ         | X         | 68               | 6.3               | 85                     | 4                    | 105                       | 8.2           | 6           | 0.5                   | 3   | 0.490                  | 0.441 | 0.196 |
| NOJY686M006#WJ         | Y         | 68               | 6.3               | 85                     | 4                    | 105                       | 8.2           | 6           | 0.5                   | 3   | 0.548                  | 0.493 | 0.219 |
| NOJF107M006#WJ         | F         | 100              | 6.3               | 85                     | 4                    | 105                       | 12            | 8           | 0.4                   | 1   | 0.548                  | 0.493 | 0.219 |
| NOJY107M006#WJ         | Y         | 100              | 6.3               | 85                     | 4                    | 105                       | 12.0          | 6           | 0.4                   | 3   | 0.612                  | 0.551 | 0.245 |
| NOJF157M006#WJ         | F         | 150              | 6.3               | 85                     | 4                    | 105                       | 18.0          | 8           | 0.4                   | 1   | 0.548                  | 0.493 | 0.219 |
| NOJY157M006#WJ         | Y         | 150              | 6.3               | 85                     | 4                    | 105                       | 18.0          | 6           | 0.4                   | 3   | 0.612                  | 0.551 | 0.245 |
| NOJY227M006#WJ         | Y         | 220              | 6.3               | 85                     | 4                    | 105                       | 26.4          | 10          | 0.4                   | 3   | 0.612                  | 0.551 | 0.245 |
| <b>10 Volt @ 85°C</b>  |           |                  |                   |                        |                      |                           |               |             |                       |     |                        |       |       |
| NOJP225M010#WJ         | P         | 2.2              | 10                | 85                     | 7                    | 105                       | 1.0           | 8           | 8.3                   | 1   | 0.093                  | 0.084 | 0.037 |
| NOJP335M010#WJ         | P         | 3.3              | 10                | 85                     | 7                    | 105                       | 1.0           | 8           | 7                     | 1   | 0.101                  | 0.091 | 0.041 |
| NOJT475M010#WJ         | T         | 4.7              | 10                | 85                     | 7                    | 105                       | 1.0           | 6           | 3.1                   | 1   | 0.176                  | 0.158 | 0.070 |
| NOJT685M010#WJ         | T         | 6.8              | 10                | 85                     | 7                    | 105                       | 1.4           | 6           | 2.6                   | 1   | 0.192                  | 0.173 | 0.077 |
| NOJT106M010#WJ         | T         | 10               | 10                | 85                     | 7                    | 105                       | 2.0           | 6           | 2.2                   | 1   | 0.209                  | 0.188 | 0.084 |

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts.

DCL is measured at rated voltage after 5 minutes.

The EIA & CECC standards for capacitors allow an ESR movement to 1.25 times catalog limit post mounting.

For typical weight and composition see page 223.

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**

### QUALIFICATION TABLE

| TEST                         | NOJ low profile series (Temperature range -55°C to +105°C)   |               |               |                    |                              |           |            |            |            |            |  |
|------------------------------|--|---------------|---------------|--------------------|------------------------------|-----------|------------|------------|------------|------------|--|
|                              | Condition  |               |               | Characteristics    |                              |           |            |            |            |            |  |
| <b>Endurance</b>             | Determine after application of rated voltage for 2000 +48/-0 hours at 85±2°C and then leaving 1-2 hours at room temperature. Also determine of 105°C temperature, category voltage for 2000 +48/-0 hours and then leaving 1-2 hours at room temperature. Power supply impedance to be ≤0.1Ω/V. |               |               | Visual examination | no visible damage            |           |            |            |            |            |  |
|                              |  |               |               | DCL                | initial limit                |           |            |            |            |            |  |
|                              |  |               |               | ΔC/C               | within ±10% of initial value |           |            |            |            |            |  |
|                              |  |               |               | DF                 | initial limit                |           |            |            |            |            |  |
|                              |  |               |               | ESR                | 1.25 x initial limit         |           |            |            |            |            |  |
| <b>Storage Life</b>          | 105°C, 0V, 2000h   |               |               | Visual examination | no visible damage            |           |            |            |            |            |  |
|                              |  |               |               | DCL                | initial limit                |           |            |            |            |            |  |
|                              |  |               |               | ΔC/C               | within ±10% of initial value |           |            |            |            |            |  |
|                              |  |               |               | DF                 | initial limit                |           |            |            |            |            |  |
|                              |  |               |               | ESR                | 1.25 x initial limit         |           |            |            |            |            |  |
| <b>Humidity</b>              | Determine after storage without applied voltage at 65±2°C and 95±2% relative humidity for 500 hrs and then recovery 1-2 hours at room temperature.   |               |               | Visual examination | no visible damage            |           |            |            |            |            |  |
|                              |  |               |               | DCL                | 1.5 x initial limit          |           |            |            |            |            |  |
|                              |  |               |               | ΔC/C               | within ±10% of initial value |           |            |            |            |            |  |
|                              |  |               |               | DF                 | 1.2 x initial limit          |           |            |            |            |            |  |
|                              |  |               |               | ESR                | 1.25 x initial limit         |           |            |            |            |            |  |
| <b>Biased Humidity</b>       | Determine after leaving for 1000 hours at 85±2°C, 85% relative humidity and rated voltage and then recovery 1-2 hours at room temperature.   |               |               | Visual examination | no visible damage            |           |            |            |            |            |  |
|                              |  |               |               | DCL                | 2 x initial limit            |           |            |            |            |            |  |
|                              |  |               |               | ΔC/C               | within ±10% of initial value |           |            |            |            |            |  |
|                              |  |               |               | DF                 | 1.2 x initial limit          |           |            |            |            |            |  |
|                              |  |               |               | ESR                | 1.25 x initial limit         |           |            |            |            |            |  |
| <b>Temperature Stability</b> | Step   | Temperature°C | Duration(min) |                    | +20°C                        | -55°C     | +20°C      | +85°C      | +105°C     | +20°C      |  |
|                              | 1  | +20±2         | 15            | DCL                | IL*                          | n/a       | IL*        | 10 x IL*   | 12.5 x IL* | IL*        |  |
|                              | 2  | -55+0/-3      | 15            | ΔC/C               | n/a                          | +0/-10%   | ±5%        | +10/-0%    | +12/-0%    | ±5%        |  |
|                              | 3  | +20±2         | 15            | DF                 | IL*                          | 1.5 x IL* | IL*        | 1.5 x IL*  | 2 x IL*    | IL*        |  |
|                              | 4  | +85+3/-0      | 15            | ESR                | 1.25 x IL*                   | 2.5 x IL* | 1.25 x IL* | 1.25 x IL* | 1.25 x IL* | 1.25 x IL* |  |
|                              | 5  | +105+3/-0     | 15            |                    |                              |           |            |            |            |            |  |
|                              | 6  | +20±2         | 15            |                    |                              |           |            |            |            |            |  |
| <b>Surge Voltage</b>         | Test temperature: 105°C+3/0°C<br>Test voltage: 1.3 x category voltage at 105°C<br>Series protection resistance 1000±100Ω<br>Discharge resistance: 1000Ω<br>Number of cycles: 1000x<br>Cycle duration: 6 min; 30 sec charge,<br>5 min 30 sec discharge  |               |               | Visual examination | no visible damage            |           |            |            |            |            |  |
|                              |  |               |               | DCL                | initial limit                |           |            |            |            |            |  |
|                              |  |               |               | ΔC/C               | within ±5% of initial value  |           |            |            |            |            |  |
|                              |  |               |               | DF                 | initial limit                |           |            |            |            |            |  |
|                              |  |               |               | ESR                | 1.25 x initial limit         |           |            |            |            |            |  |

\*Initial Limit

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