



# MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

## DSA Series

- Non-solvent proof.
- Height 5mm.
- For CAR-Audio, Tuner

• 85°C 2,000Hrs assured.

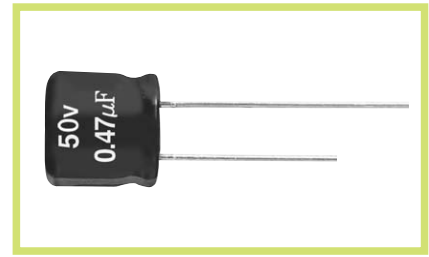
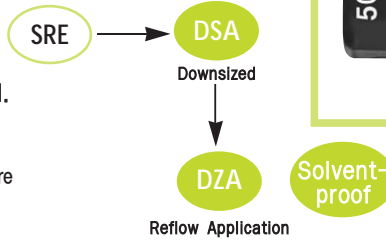
- RoHS compliant.
- Halogen-free capacitors are also available.

## DZA Series

- Solvent proof.
- Height 5mm.
- Reflow Application.
- For CAR-Audio, Tuner

• 85°C 2,000Hrs assured.

- RoHS compliant.
- Halogen-free capacitors are also available.



## SPECIFICATIONS

Item	Characteristics																					
Rated Voltage Range	4 ~ 50 V <sub>DC</sub>																					
Operating Temperature Range	- 40 ~ +85°C																					
Capacitance Tolerance	±20% (M) (at 20°C, 120Hz)																					
Leakage Current	I=0.01CV(µA) or 3µA, whichever is greater. Where, I:Max. Leakage current(µA), C:Nominal capacitance(µF), V:Rated voltage(V <sub>DC</sub> ) (at 20°C, 2 minutes)																					
Dissipation Factor(Tan δ)	<table border="1"> <tr> <td>Rated Voltage(V<sub>DC</sub>)</td> <td>4</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> </tr> <tr> <td>Tan δ(Max.)</td> <td>0.38</td> <td>0.35</td> <td>0.32</td> <td>0.30</td> <td>0.18</td> <td>0.14</td> <td>0.12</td> </tr> </table> (at 20°C, 120Hz)	Rated Voltage(V <sub>DC</sub> )	4	6.3	10	16	25	35	50	Tan δ(Max.)	0.38	0.35	0.32	0.30	0.18	0.14	0.12					
Rated Voltage(V <sub>DC</sub> )	4	6.3	10	16	25	35	50															
Tan δ(Max.)	0.38	0.35	0.32	0.30	0.18	0.14	0.12															
Temperature Characteristics (Max. Impedance ratio)	<table border="1"> <tr> <td>Rated Voltage(V<sub>DC</sub>)</td> <td>4</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35~50</td> </tr> <tr> <td>Z(-25°C)/Z(20°C)</td> <td>7</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C)/Z(20°C)</td> <td>15</td> <td>10</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> </tr> </table> (at 120Hz)	Rated Voltage(V <sub>DC</sub> )	4	6.3	10	16	25	35~50	Z(-25°C)/Z(20°C)	7	4	3	2	2	2	Z(-40°C)/Z(20°C)	15	10	8	5	4	3
Rated Voltage(V <sub>DC</sub> )	4	6.3	10	16	25	35~50																
Z(-25°C)/Z(20°C)	7	4	3	2	2	2																
Z(-40°C)/Z(20°C)	15	10	8	5	4	3																
Load Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 85°C. Capacitance change ≤ ±20% of the initial value Tan δ ≤ 200% of the initial specified value Leakage current ≤ The initial specified value																					
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change ≤ ±20% of the initial value Tan δ ≤ 200% of the initial specified value Leakage current ≤ 200% of the initial specified value																					
Others	Satisfied characteristics KS C IEC 60384-4																					

## DIMENSIONS OF DSA/DZA

Unit (mm)

Marking- DSA : BLACK SLEEVE, WHITE INK  
DZA : GREEN SLEEVE, BLACK INK

ø D	3	3.5	4	5	6.3	8
ø d	0.4	0.4	0.45	0.45	0.45	0.45
F	1.0	1.0	1.5	2.0	2.5	2.5
ø D'	ø D + 0.5 max.					
L'	L + 1.0 max.					L + 1.5 max.

**RATINGS OF DSA/DZA Series**

$\mu F$ \ V <sub>DC</sub>	4	6.3	10	16	25	35	50
0.1							3×5 1.3
0.15							3×5 2.0
0.22							3×5 2.9
0.33							3×5 3.5
0.47							3×5 4.2
0.68							3×5 5.1
1							3×5 6.2
1.5							3×5 7.3
2.2						3×5 8.3	3×5 9.0
3.3					3×5 9.5	3×5 10	3.5×5 12
4.7				3×5 10	3×5 11	3.5×5 13	4×5 17
6.8			3×5 11	3×5 12	3.5×5 14	4×5 18	5×5 22
10		3×5 12	3×5 13	3×5 15	4×5 21	5×5 25	5×5 27
15	3×5 10	3×5 15	3.5×5 18	4×5 24	5×5 28	5×5 31	6.3×5 36
22	3.5×5 15	3.5×5 21	4×5 27	5×5 32	5×5 35	6.3×5 40	6.3×5 45
33	3.5×5 20	4×5 30	5×5 35	5×5 40	6.3×5 45	6.3×5 50	8×5 61
47	4×5 28	4×5 36	5×5 43	6.3×5 50	6.3×5 59	8×5 65	
68	5×5 33	5×5 48	6.3×5 54	6.3×5 60	8×5 74		
100	5×5 48	6.3×5 60	6.3×5 72	6.3×5 77	8×5 90		
150	6.3×5 70	6.3×5 72	8×5 88				
220	6.3×5 79	8×5 93	8×5 98				
330	8×5 95	8×5 141					

← Case Size  $\phi D \times L$  (mm)  
 ← Rated Ripple Current (mA rms/ 85°C, 120Hz )

**RECOMMENDED REFLOW SOLDERING CONDITIONS(For DZA Series)**

**TEMPERATURE PROFILE**

Time of Preheat temp. (from 150°C to 200°C)	Time to be Maintained Above 217°C	Time to be Maintained Above 230°C	Peak Temp.	Reflow Cycle
60 ~ 100 Sec	60 ~ 70 Sec	20 ~ 30 Sec	250 (10 Sec ↓)	1 TIME