

**Alchip™-MZR Series** *Upgrade!*

- Downsizing and Lower ESR, 2,000hours at 105°C
- Rated voltage range : 6.3 to 50V, Nominal capacitance range : 22 to 2,200μF
- Solvent resistant type(see PRECAUTIONS AND GUIDELINES)
- Vibration resistance structure
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

**MZR**

↑  
Downsized  
MZZ



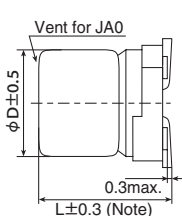
◆ **SPECIFICATIONS**

Items	Characteristics																												
<b>Category</b>	-55 to +105°C																												
<b>Temperature Range</b>	-55 to +105°C																												
<b>Rated Voltage Range</b>	6.3 to 50V <sub>dc</sub>																												
<b>Capacitance Tolerance</b>	±20% (M) (at 20°C, 120Hz)																												
<b>Leakage Current</b>	I=0.01CV or 3μA, whichever is greater. Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C after 2 minutes)																												
<b>Dissipation Factor (tan δ)</b>	<table border="1"> <tr> <td>Rated voltage (V<sub>dc</sub>)</td> <td>6.3V</td> <td>10V</td> <td>16V</td> <td>25V</td> <td>35V</td> <td>50V</td> </tr> <tr> <td>tan δ (Max.)</td> <td>0.26</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> </tr> </table> (at 20°C, 120Hz)	Rated voltage (V <sub>dc</sub> )	6.3V	10V	16V	25V	35V	50V	tan δ (Max.)	0.26	0.19	0.16	0.14	0.12	0.10														
Rated voltage (V <sub>dc</sub> )	6.3V	10V	16V	25V	35V	50V																							
tan δ (Max.)	0.26	0.19	0.16	0.14	0.12	0.10																							
<b>Low Temperature Characteristics (Max. Impedance Ratio)</b>	<table border="1"> <tr> <td>Rated voltage (V<sub>dc</sub>)</td> <td>6.3V</td> <td>10V</td> <td>16V</td> <td>25V</td> <td>35V</td> <td>50V</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>4</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table> (at 120Hz)	Rated voltage (V <sub>dc</sub> )	6.3V	10V	16V	25V	35V	50V	Z(-25°C)/Z(+20°C)	2	2	2	2	2	2	Z(-40°C)/Z(+20°C)	3	3	3	3	3	3	Z(-55°C)/Z(+20°C)	4	4	4	3	3	3
Rated voltage (V <sub>dc</sub> )	6.3V	10V	16V	25V	35V	50V																							
Z(-25°C)/Z(+20°C)	2	2	2	2	2	2																							
Z(-40°C)/Z(+20°C)	3	3	3	3	3	3																							
Z(-55°C)/Z(+20°C)	4	4	4	3	3	3																							
<b>Endurance</b>	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 105°C. <table border="1"> <tr> <td>Capacitance change</td> <td>≤ ±30% of the initial value</td> </tr> <tr> <td>D.F. (tan δ)</td> <td>≤200% of the initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>≤The initial specified value</td> </tr> </table>	Capacitance change	≤ ±30% of the initial value	D.F. (tan δ)	≤200% of the initial specified value	Leakage current	≤The initial specified value																						
Capacitance change	≤ ±30% of the initial value																												
D.F. (tan δ)	≤200% of the initial specified value																												
Leakage current	≤The initial specified value																												
<b>Shelf Life</b>	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. <table border="1"> <tr> <td>Capacitance change</td> <td>≤ ±30% of the initial value</td> </tr> <tr> <td>D.F. (tan δ)</td> <td>≤200% of the initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>≤The initial specified value</td> </tr> </table>	Capacitance change	≤ ±30% of the initial value	D.F. (tan δ)	≤200% of the initial specified value	Leakage current	≤The initial specified value																						
Capacitance change	≤ ±30% of the initial value																												
D.F. (tan δ)	≤200% of the initial specified value																												
Leakage current	≤The initial specified value																												
<b>Surge Voltage Test</b>	The capacitors shall be subjected to 1,000 cycles each consisting of charging with the specified surge voltage for 30±5 seconds through a protective resistor (as required for RC=0.1±0.05sec) and open-circuiting for 5.5 minutes at a room temperature of 15 to 35°C. <table border="1"> <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> </tr> <tr> <td>Surge voltage (V<sub>dc</sub>)</td> <td>7.2</td> <td>12</td> <td>18</td> <td>29</td> <td>40</td> <td>58</td> </tr> </table> <table border="1"> <tr> <td>Appearance</td> <td>No significant damage</td> </tr> <tr> <td>Capacitance change</td> <td>≤ ±20% of the initial value</td> </tr> <tr> <td>D.F. (tan δ)</td> <td>≤200% of the initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>≤The initial specified value</td> </tr> </table> (Caution) Surge Voltage Test intends to evaluate capacitors in durability of an exceptional excessive voltage under specific conditions. It does not imply long-term use at all.	Rated voltage (V <sub>dc</sub> )	6.3	10	16	25	35	50	Surge voltage (V <sub>dc</sub> )	7.2	12	18	29	40	58	Appearance	No significant damage	Capacitance change	≤ ±20% of the initial value	D.F. (tan δ)	≤200% of the initial specified value	Leakage current	≤The initial specified value						
Rated voltage (V <sub>dc</sub> )	6.3	10	16	25	35	50																							
Surge voltage (V <sub>dc</sub> )	7.2	12	18	29	40	58																							
Appearance	No significant damage																												
Capacitance change	≤ ±20% of the initial value																												
D.F. (tan δ)	≤200% of the initial specified value																												
Leakage current	≤The initial specified value																												

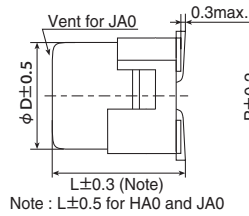
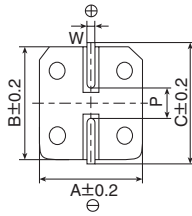
◆ **DIMENSIONS [mm]**

- Terminal Code : A
- Size code : E61 to JA0

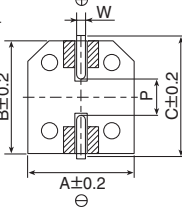
- Terminal Code : G(Vibration resistant structure)
- Size code : F61 to JA0



Note : L±0.5 for HA0 and JA0



Note : L±0.5 for HA0 and JA0



▨ : Dummy terminals

Size code	D	L	A	B	C	W	P
E61	5	5.8	5.3	5.3	5.9	0.5 to 0.8	1.4
F61	6.3	5.8	6.6	6.6	7.2	0.5 to 0.8	1.9
F80	6.3	7.7	6.6	6.6	7.2	0.5 to 0.8	1.9
HA0	8	10.0	8.3	8.3	9.0	0.7 to 1.1	3.1
JA0	10	10.0	10.3	10.3	11.0	0.7 to 1.1	4.5

◆ **MARKING**

EX) 35V330μF



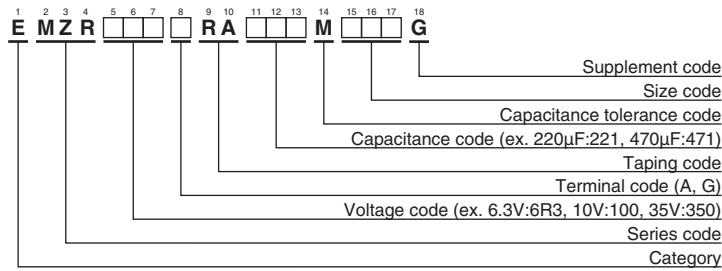
- Rated voltage symbol

Rated voltage (V <sub>dc</sub> )	6.3	10	16	25	35	50
Symbol	j	A	C	E	V	H

Applying voltage over the rated voltages causes the capacitors to have short lifetime. Besides, applying voltage over the specified surge voltages may cause to have short circuit failure. A protection circuit should be used if applied voltage will exceed the rated voltages.

Alchip™ - **MZR** Upgrade! Series

◆PART NUMBERING SYSTEM



Please refer to "Product code guide (surface mount type)"

◆STANDARD RATINGS

WV (V <sub>dc</sub> )	Cap (µF)	Size code	tan δ	ESR (Ω max./20°C, 100kHz)	Rated ripple current (mA <sub>rms</sub> /105°C, 100kHz)	Part No.
6.3	220	E61	0.26	0.36	240	EMZR6R3ARA221ME61G
	330	F61	0.26	0.26	300	EMZR6R3 <input type="checkbox"/> RA331MF61G
	680	F80	0.26	0.16	600	EMZR6R3 <input type="checkbox"/> RA681MF80G
	1,500	HA0	0.26	0.08	850	EMZR6R3 <input type="checkbox"/> RA152MHA0G
	2,200	JA0	0.26	0.06	1,190	EMZR6R3 <input type="checkbox"/> RA222MJA0G
10	150	E61	0.19	0.36	240	EMZR100ARA151ME61G
	220	F61	0.19	0.26	300	EMZR100 <input type="checkbox"/> RA221MF61G
	470	F80	0.19	0.16	600	EMZR100 <input type="checkbox"/> RA471MF80G
	1,000	HA0	0.19	0.08	850	EMZR100 <input type="checkbox"/> RA102MHA0G
	1,500	JA0	0.19	0.06	1,190	EMZR100 <input type="checkbox"/> RA152MJA0G
16	100	E61	0.16	0.36	240	EMZR160ARA101ME61G
	220	F61	0.16	0.26	300	EMZR160 <input type="checkbox"/> RA221MF61G
	330	F80	0.16	0.16	600	EMZR160 <input type="checkbox"/> RA331MF80G
	680	HA0	0.16	0.08	850	EMZR160 <input type="checkbox"/> RA681MHA0G
	1,000	JA0	0.16	0.06	1,190	EMZR160 <input type="checkbox"/> RA102MJA0G
25	68	E61	0.14	0.36	240	EMZR250ARA680ME61G
	100	F61	0.14	0.26	300	EMZR250 <input type="checkbox"/> RA101MF61G
	220	F80	0.14	0.16	600	EMZR250 <input type="checkbox"/> RA221MF80G
	470	HA0	0.14	0.08	850	EMZR250 <input type="checkbox"/> RA471MHA0G
	820	JA0	0.14	0.06	1,190	EMZR250 <input type="checkbox"/> RA821MJA0G
35	47	E61	0.12	0.36	240	EMZR350ARA470ME61G
	100	F61	0.12	0.26	300	EMZR350 <input type="checkbox"/> RA101MF61G
	150	F80	0.12	0.16	600	EMZR350 <input type="checkbox"/> RA151MF80G
	330	HA0	0.12	0.08	850	EMZR350 <input type="checkbox"/> RA331MHA0G
	560	JA0	0.12	0.06	1,190	EMZR350 <input type="checkbox"/> RA561MJA0G
50	22	E61	0.10	0.88	165	EMZR500ARA220ME61G
	47	F61	0.10	0.68	195	EMZR500 <input type="checkbox"/> RA470MF61G
	100	F80	0.10	0.34	350	EMZR500 <input type="checkbox"/> RA101MF80G
	220	HA0	0.10	0.18	670	EMZR500 <input type="checkbox"/> RA221MHA0G
	330	JA0	0.10	0.12	900	EMZR500 <input type="checkbox"/> RA331MJA0G

: Enter the appropriate terminal code.

◆RATED RIPPLE CURRENT MULTIPLIERS

●Frequency Multipliers

Capacitance(µF)	Frequency(Hz)			
	120	1k	10k	100k
22 to 150	0.40	0.75	0.90	1.00
220 to 560	0.50	0.85	0.94	1.00
680 to 2,200	0.60	0.87	0.95	1.00

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.