

MKR Series

Features

- Endurance with ripple current at: 85°C, 5,000 hours
- High speed charge-discharge
- Suitable for high frequency regenerative voltage for AC servomotor, general inverter
- Suitable for equipment used at voltage fluctuating area and rectifier circuit of voltage doubler
- Application of charge-discharge DC voltage for 50 million times
- RoHS Compliance

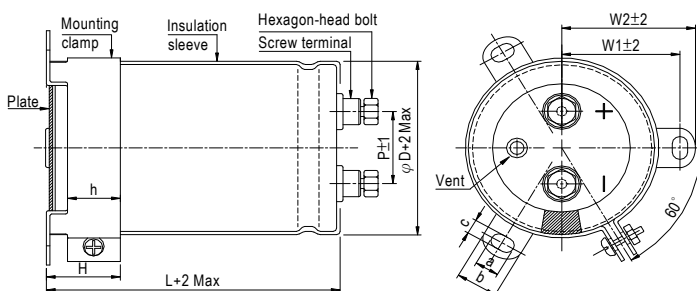


Sleeve & Marking Color: Black & Golden

Specifications

Items	Performance												
Category Temperature Range	-25°C ~ +85°C												
Capacitance Tolerance	±20% (at 120Hz, 20°C)												
Leakage Current (at 20°C)	$I = 3\sqrt{CV}$ or 5 (mA) whichever is smaller (after 5 minutes) Where, C= rated capacitance in μF . V = rated DC working voltage in V.												
Tan δ (at 120 Hz, 20°C)	See the Dimensions & Permissible Ripple Current												
Low Temperature Characteristics (at 120Hz)	Capacitance change : $C(-25^\circ\text{C}) / C(+20^\circ\text{C}) \geq 0.7$												
Endurance of Charge / Discharge behavior	After an application of charge-discharge voltage for 50 million times, capacitors shall meet the characteristics requirement listed below. Charge discharge voltage (ΔV) = rated voltage \times 0.3 Frequency: 3 Hz Temperature: 15 ~ 35°C												
	<table border="1"> <tr> <td>Capacitance Change</td> <td>Within $\pm 20\%$ of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Less than 200% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> <tr> <td>Appearance</td> <td>There shall be found to remarkable abnormality on the capacitor</td> </tr> </table>	Capacitance Change	Within $\pm 20\%$ of initial value	Tan δ	Less than 200% of specified value	Leakage Current	Within specified value	Appearance	There shall be found to remarkable abnormality on the capacitor				
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* The above Specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with rated ripple current applied for 5,000 hrs at 85°C.													
Shelf Life Test	<table border="1"> <tr> <td>Test Time</td> <td>1,000 hrs</td> </tr> <tr> <td>Capacitance Change</td> <td>Within $\pm 20\%$ of initial value</td> </tr> <tr> <td>Tanδ</td> <td>Less than 200% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Within specified value</td> </tr> </table>	Test Time	1,000 hrs	Capacitance Change	Within $\pm 20\%$ of initial value	Tan δ	Less than 200% of specified value	Leakage Current	Within specified value				
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* The above Specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hrs at 85°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements (Refer to JIS C 5102-4.4).													
Ripple Current & Frequency Multipliers	<table border="1"> <tr> <th>Frequency (Hz)</th> <th>50 / 60</th> <th>100 / 120</th> <th>300</th> <th>1k</th> <th>10k up</th> </tr> <tr> <td>Multiplier</td> <td>0.7</td> <td>1.0</td> <td>1.1</td> <td>1.3</td> <td>1.4</td> </tr> </table>	Frequency (Hz)	50 / 60	100 / 120	300	1k	10k up	Multiplier	0.7	1.0	1.1	1.3	1.4
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Failure percentage Failure rate	$\leq 3\%$ (During useful life) 70 fit (70 $10^{-9}/\text{h}$)												

Diagram of Dimensions



Unit: mm

ϕD	P	W1	W2	H	h	a	b	c
51	22.0	31.8	36.5	30	24	7	14.0	4.5
64	28.6	38.1	42.6	30	24	7	14.0	4.5
77	32.0	44.5	49.2	30	24	7	14.0	5.0
90	32.0	50.8	55.6	30	24	7	14.0	5.0

Screw Specifications:
Plus hexagon-headed screw: M5 \times 0.8 \times 10
Max. screw tightening torque: 3.23Nm



Dimension & Permissible Ripple Current

Working Voltage V. DC	Capacitance 120Hz, 20°C μF	φ D×L mm	Ripple Current 120 Hz, 85°C A/rms	Tan δ at 120Hz, 20°C	ESR 120Hz, 20°C mΩ	LC 5 minutes mA	Part Number
350	1,200	51 × 75	5.6	0.15	166	1.94	MKR122M2V--B075
	1,500	51 × 75	6.3	0.15	133	2.17	MKR152M2V--B075
	1,800	51 × 96	7.7	0.15	111	2.38	MKR182M2V--B096
	2,200	51 × 96	8.5	0.15	90.5	2.63	MKR222M2V--B096
	2,700	51 × 130	10.7	0.15	73.7	2.92	MKR272M2V--B130
	3,300	51 × 130	11.9	0.15	60.3	3.22	MKR332M2V--B130
	3,900	64 × 115	13.8	0.15	51.0	3.50	MKR392M2V--C115
	4,700	64 × 130	15.9	0.15	42.3	3.85	MKR472M2V--C130
	5,600	64 × 155	18.6	0.15	35.5	4.20	MKR562M2V--C155
	5,600	77 × 115	18.6	0.15	35.5	4.20	MKR562M2V--D115
	6,800	77 × 130	21.6	0.15	29.3	4.63	MKR682M2V--D130
	8,200	77 × 155	25.7	0.15	24.3	5.00	MKR822M2V--D155
	10,000	90 × 157	28.8	0.15	19.9	5.00	MKR103M2V--E157
	12,000	90 × 157	31.5	0.15	16.6	5.00	MKR123M2V--E157
	15,000	90 × 196	38.9	0.15	13.3	5.00	MKR153M2V--E196
18,000	90 × 236	45.2	0.15	11.1	5.00	MKR183M2V--E236	
400	1,000	51 × 75	5.2	0.15	199	1.90	MKR102M2G--B075
	1,200	51 × 75	5.7	0.15	166	2.08	MKR122M2G--B075
	1,500	51 × 96	7.1	0.15	133	2.32	MKR152M2G--B096
	1,800	51 × 96	7.7	0.15	111	2.55	MKR182M2G--B096
	2,200	51 × 130	9.9	0.15	90.5	2.81	MKR222M2G--B130
	2,700	64 × 96	10.7	0.15	73.7	3.12	MKR272M2G--C096
	3,300	64 × 115	12.7	0.15	60.3	3.45	MKR332M2G--C115
	3,900	64 × 130	14.7	0.15	51.0	3.75	MKR392M2G--C130
	3,900	77 × 100	15.3	0.15	51.0	3.75	MKR392M2G--D100
	4,700	64 × 155	17.5	0.15	42.3	4.11	MKR472M2G--C155
	4,700	77 × 110	18.3	0.15	42.3	4.11	MKR472M2G--D110
	5,600	64 × 195	21.1	0.15	35.5	4.49	MKR562M2G--C195
	5,600	77 × 130	19.9	0.15	35.5	4.49	MKR562M2G--D130
	6,800	77 × 155	23.0	0.15	29.3	4.95	MKR682M2G--D155
	8,200	90 × 157	26.3	0.15	24.3	5.00	MKR822M2G--E157
10,000	90 × 157	28.8	0.15	19.9	5.00	MKR103M2G--E157	
12,000	90 × 196	34.6	0.15	16.6	5.00	MKR123M2G--E196	
15,000	90 × 236	41.9	0.15	13.3	5.00	MKR153M2G--E236	
450	1,000	51 × 75	4.5	0.15	199	2.01	MKR102M2W--B075
	1,200	51 × 96	5.3	0.15	166	2.20	MKR122M2W--B096
	1,500	51 × 115	6.8	0.15	133	2.46	MKR152M2W--B115
	1,800	51 × 130	7.9	0.15	111	2.70	MKR182M2W--B130
	2,200	64 × 96	8.4	0.15	90.5	2.98	MKR222M2W--C096
	2,700	64 × 115	10.5	0.15	73.7	3.31	MKR272M2W--C115
	3,300	64 × 130	12.5	0.15	60.3	3.66	MKR332M2W--C130
	3,900	77 × 115	14.3	0.15	51.0	3.97	MKR392M2W--D115
	4,700	64 × 195	17.5	0.15	42.3	4.36	MKR472M2W--C195
	4,700	77 × 130	16.1	0.15	42.3	4.36	MKR472M2W--D130
	5,600	77 × 155	19.2	0.15	35.5	4.76	MKR562M2W--D155
	6,800	90 × 157	23.6	0.15	29.3	5.00	MKR682M2W--E157
	8,200	90 × 157	25.3	0.15	24.3	5.00	MKR822M2W--E157
	10,000	90 × 196	30.2	0.15	19.9	5.00	MKR103M2W--E196
	12,000	90 × 236	35.0	0.15	16.6	5.00	MKR123M2W--E236

Part Numbering System

MKR series	3300μF	±20%	350V	Plain case + Mounting clamp	M5 Post	51 φ × 130L	Pb-free Terminal + PVC Sleeve
MKR	332	M	2V	-	-	B130	
Series name	Capacitance	Capacitance tolerance	Rated voltage	Case Type	Terminal type	Case size	Terminal and Sleeve Type
Example:		M = ±20% K = ±10%	Example:			Example:	
Cap.	Symbol		WV	Symbol		φ D×L	Code
1,000	102		350	2V		64×130	C130
3,300	332		400	2G		77×115	D115
10,000	103		450	2W		90×157	E157

Note: For more details, please refer to "Part Numbering System (Screw Type)" on page 14.