MCC81 Series

Tantalum Electrolytic Capacitors

Features:

- Lead-free.
- General purpose surface mount type.
- Compact size and wide CV range.
- High solderabillity and stable characteristics for soldering.

Specification Table

Item	Performance Characteristics
Operating Temperature Range	-55 to +125°C (> 85°C with rated voltage derating)
Capacitance Tolerance	±20% ±10% (120 Hz, +20°C)
Leakage Current	Note more than 0.01 CV (μA) or 0.5 μA whichever is greater
tan δ (120 Hz, +20°C)	0.04 max. for ≤ 1 μF
	0.06 max. for 1.5 to 68 μF
	0.08 max. for 100 to 470 μF
Characteristics at High and Low Temperature	-55°C: Capacitance Change: ±12% of initial measured value at +20°C +105°C: Leakage Current: ≤ 12.5% of initial measured value +105°C: Capacitance Change: ±15% of initial measured value at +20°C
Moisture Resistance	**Test Conditions** Relative humidity : 90 to 95% without load Ambient temperature : +40°C Duration : 500 hrs Post test requirements at +20°C Leakage current : ≤ Initial specified value Capacitance change : ±10% of initial measure value tan δ : ≤ Initial specified value

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Specification Table

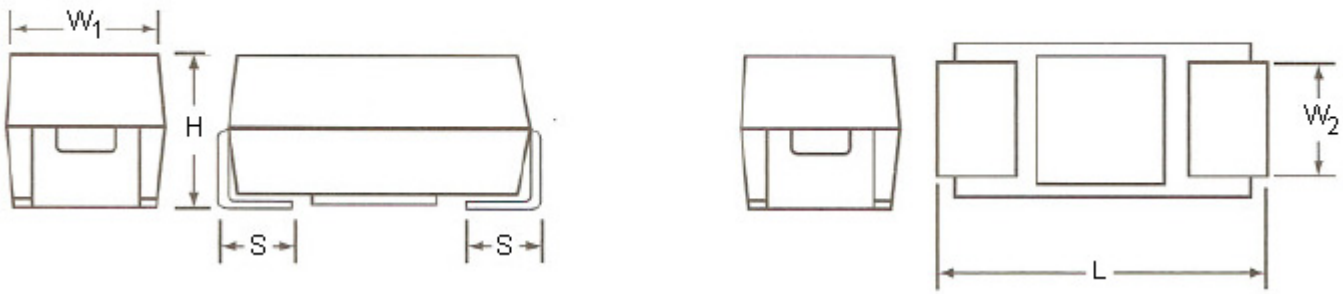
<table>
<tr><th>Item</th><th>Performance Characteristics</th></tr>
<tr><td>Endurance</td><td>
Test Conditions
<table>
<tr><th>Conditions / Item</th><th>Derating</th><th>Rating</th></tr>
<tr><td>Duration</td><td>1,000 hrs</td><td>1,000 hrs</td></tr>
<tr><td>Ambient Temperature</td><td>+105°C</td><td>+85°C</td></tr>
<tr><td>Applied Voltage</td><td>Derated Working Voltage</td><td>Rated Working Voltage</td></tr>
<tr><td>Source Impedance</td><td>1Ω / V</td><td>1Ω / V</td></tr>
</table>
Derating Voltage +105°C
<table>
<tr><td>Working Voltage V dc</td><td>6.3</td><td>10</td><td>16</td><td>20</td><td>25</td><td>35</td><td>50</td></tr>
<tr><td>Derating Voltage V dc</td><td>4</td><td>6.3</td><td>10</td><td>13</td><td>16</td><td>22</td><td>32</td></tr>
</table>
Post Test Requirements at +20°C

Leakage current : ≤ 125% of initial specified value
Capacitance change : ±10% of initial measured value
tan δ : ≤ Initial specified value
</td></tr>
<tr><td>Shelf Life</td><td>
Test Conditions

Duration : 1,000 hrs
Ambient temperature : +125°C
Applied voltage : (none)
Post test requirements at +20°C
Same limits for “Endurance”
</td></tr>
<tr><td>Solder Heat Resistance</td><td>The capacitor shall withstand dipping into solder bath for 5 ±1 s at 260 ±5°C</td></tr>
</table>

Tantalum Capacitor Outline Drawings

Anode (+) End View **Side View** **Cathode (-) End View** **Bottom View**



MCC81 Series

Tantalum Electrolytic Capacitors

Dimensions Millimetres (Inch)

Case Size	L ±0.2 (0.008)	W_1 ±0.2 (0.008)	H ±0.2 (0.008)	S ±0.2 (0.008)	W_2 ±0.2 (0.008)
A	3.2 (0.126)	1.6 (0.063)	1.6 (0.063)	0.8 (0.031)	1.2 (0.047)
B	3.5 (0.137)	2.8 (0.11)	1.9 (0.075)	0.8 (0.031)	2.2 (0.087)
C	6 (0.236)	3.2 (0.126)	2.5 (0.098)	1.3 (0.051)	2.2 (0.087)
D	7.3 (0.287)	4.3 (0.169)	2.8 (0.11)	1.3 (0.051)	2.4 (0.094)

Rated Voltage, Capacitance of Capacitors

Rated Voltage (V)	6.3	10	16	20	25	35	50
Code	6R3	010	016	020	025	035	050
Capacitance (µF)	Case Size						
0.1 (104)	-	-	-	-	-	A	A
0.22 (224)	-	-	-	-	-	A	B
0.33 (334)	-	-	-	-	-	A	B
0.47 (474)	-	-	-	-	A	A/B	C
0.68 (684)	-	-	-	A	A	A/B	C
1 (105)	A	A	A	A	A/B	A/B	C
1.5 (155)	A	A	A	A/B	B	B/C	C/D
2.2 (225)	A	A	A/B	A/B	B	B/C	D
3.3 (335)	A	A	A/B	A/B/C	B/C	B/C/D	D
4.7 (475)	A	A/B	A/B	A/B/C	B/C	C/D	D
6.8 (685)	A/B	B	A/B/C	B/C/D	C/D	C/D	D
10 (106)	A/B	B	A/B/C	C/D	C/D	C/D	-
15 (156)	A/B	B/C	B/C	C/D	C/D	-	-
22 (226)	A/B	B/C	B/C/D	C/D	D	-	-
33 (336)	B/C	C/D	C/D	D	D	-	-
47 (476)	B/C	C/D	C/D	D	-	-	-
68 (686)	C/D	D	D	D	-	-	-
100 (107)	C/D	C/D	D	-	-	-	-
150 (157)	D	-	-	-	-	-	-
220 (227)	D	D	-	-	-	-	-
470 (477)	-	-	-	-	-	-	-

Ratings and Part Number Reference

Case Size	Capacitance µF	DCL (µA) Max.	DF % Max.	ESR Max. (Ω) at 100 kHz	Part Number
6.3 Volt at 85°C (4 Volt, at 125°C)					
A	10	1.6	6	5	MCC81-B6R3106M
A	2.2	0.5	6	9	MCC81-B6R3225M
A	22	1.38	6	3.5	MCC81-B6R3226K
A	22	1.38	6	3.5	MCC81-B6R3226M
A	3.3	0.5	6	7	MCC81-B6R3335M
A	4.7	0.5	6	6	MCC81-B6R3475K
A	4.7	0.5	6	6	MCC81-B6R3475M
B	10	0.63	6	3	MCC81-C6R3106K
B	10	0.63	6	3	MCC81-C6R3106M
B	33	2.07	6	2	MCC81-C6R3336M
B	47	2.96	6	2	MCC81-C6R3476K
B	47	2.96	6	2	MCC81-C6R3476M
C	100	6.3	8	1.4	MCC81-D6R3107K
C	22	1.38	6	2.5	MCC81-D6R3226K
C	47	2.96	6	1.6	MCC81-D6R3476K
D	100	6.3	8	0.9	MCC81-E6R3107K
D	220	13.86	8	0.7	MCC81-E6R3227M
D	68	4.28	6	0.9	MCC81-E6R3686K
10 Volt at 85°C (6.3 Volt, at 125°C)					
A	10	1	6	3	MCC81-B010106K
A	10	1	6	3	MCC81-B010106M
S	2.2	0.5	6	15	MCC81-B010225M
S	3.3	0.5	6	10	MCC81-B010335K
S	3.3	0.5	6	10	MCC81-B010335M
A	4.7	0.5	6	5	MCC81-B010475K
A	4.7	0.5	6	5	MCC81-B010475M
A	6.8	0.68	6	4	MCC81-B010685K
B	10	1.0	6	2.5	MCC81-C010106K
B	10	1.0	6	2.5	MCC81-C010106M
B	15	1.5	6	2.8	MCC81-C010156K
B	15	1.5	6	2.8	MCC81-C010156M
B	22	2.2	6	2.4	MCC81-C010226K

Ratings and Part Number Reference

Case Size	Capacitance µF	DCL (µA) Max.	DF % Max.	ESR Max. (Ω) at 100 kHz	Part Number
10 Volt at 85°C (6.3 Volt, at 125°C)					
B	22	2.2	6	2.4	MCC81-C010226M
B	6.8	0.68	6	3	MCC81-C010685K
B	6.8	0.68	6	3	MCC81-C010685M
C	100	10	6	1.3	MCC81-D010107K
C	100	10	6	1.3	MCC81-D010107M
C	15	1.5	6	2.2	MCC81-D010156K
C	15	1.5	6	2.2	MCC81-D010156M
C	22	2.2	6	1.8	MCC81-D010226K
C	22	2.2	6	1.8	MCC81-D010226M
C	33	3.3	6	1.6	MCC81-D010336K
C	33	3.3	6	1.6	MCC81-D010336M
C	47	4.7	6	1.2	MCC81-D010476K
C	47	4.7	6	1.2	MCC81-D010476M
D	100	10	6	0.9	MCC81-E010107K
D	100	10	6	0.9	MCC81-E010107M
D	220	22	8	0.5	MCC81-E010227K
D	220	22	8	0.5	MCC81-E010227M
D	33	3.3	6	1.1	MCC81-E010336K
D	33	3.3	6	1.1	MCC81-E010336M
D	47	4.7	6	0.9	MCC81-E010476K
D	47	4.7	6	0.9	MCC81-E010476M
D	68	6.8	6	0.9	MCC81-E010686K
D	68	6.8	6	0.9	MCC81-E010686M
16 Volt at 85°C (10 Volt, at 125°C)					
A	1	0.5	6	11	MCC81-B016105K
A	1	0.5	6	11	MCC81-B016105M
A	10	1.6	6	5	MCC81-B016106K
A	10	1.6	6	5	MCC81-B016106M
A	1.5	0.5	6	8	MCC81-B016155K
A	1.5	0.5	6	8	MCC81-B016155M
A	2.2	0.5	6	6.5	MCC81-B016225K
A	2.2	0.5	6	6.5	MCC81-B016225M

Ratings and Part Number Reference

Case Size	Capacitance µF	DCL (µA) Max.	DF % Max.	ESR Max. (Ω) at 100 kHz	Part Number
16 Volt at 85°C (10 Volt, at 125°C)					
A	3.3	0.52	6	5	MCC81-B016335K
A	3.3	0.52	6	5	MCC81-B016335M
A	4.7	0.75	6	4	MCC81-B016475K
A	4.7	0.75	6	4	MCC81-B016475M
A	6.8	1.08	6	5	MCC81-B016685K
B	10	1.6	6	2.8	MCC81-C016106K
B	10	1.6	6	2.8	MCC81-C016106M
B	15	2.4	6	3	MCC81-C016156K
B	2.2	0.5	6	5.5	MCC81-C016225K
B	2.2	0.5	6	5.5	MCC81-C016225M
B	22	3.52	6	2.8	MCC81-C016226K
B	22	3.52	6	2.8	MCC81-C016226M
B	3.3	0.52	6	4.5	MCC81-C016335K
B	3.3	0.52	6	4.5	MCC81-C016335M
B	4.7	0.75	6	3.5	MCC81-C016475K
B	4.7	0.75	6	3.5	MCC81-C016475M
B	6.8	1.08	6	3.5	MCC81-C016685K
B	6.8	1.08	6	3.5	MCC81-C016685M
C	10	1.6	6	2	MCC81-D016106K
C	10	1.6	6	2	MCC81-D016106M
C	15	2.4	6	1.8	MCC81-D016156K
C	15	2.4	6	1.8	MCC81-D016156M
C	22	3.52	6	1.6	MCC81-D016226K
C	22	3.52	6	1.6	MCC81-D016226M
C	33	5.28	6	1.5	MCC81-D016336K
C	33	5.28	6	1.5	MCC81-D016336M
C	47	7.52	6	1.4	MCC81-D016476K
C	47	7.52	6	1.4	MCC81-D016476M
D	100	16	8	0.9	MCC81-E016107K
D	100	16	8	0.9	MCC81-E016107M
D	22	3.52	6	1.1	MCC81-E016226K

Ratings and Part Number Reference

Case Size	Capacitance µF	DCL (µA) Max.	DF % Max.	ESR Max. (Ω) at 100 kHz	Part Number
16 Volt at 85°C (10 Volt, at 125°C)					
D	22	3.52	6	1.1	MCC81-E016226M
D	33	5.28	6	0.9	MCC81-E016336K
D	33	5.28	6	0.9	MCC81-E016336M
D	47	7.52	6	0.9	MCC81-E016476K
D	47	7.52	6	0.9	MCC81-E016476M
D	68	10.88	6	0.9	MCC81-E016686K
D	68	10.88	6	0.9	MCC81-E016686M
20 Volt at 85°C (13 Volt, at 125°C)					
A	1	0.5	4	9	MCC81-B020105K
A	1	0.5	4	9	MCC81-B020105M
A	1.5	0.5	6	6.5	MCC81-B020155K
A	2.2	0.5	6	5.3	MCC81-B020225K
A	2.2	0.5	6	5.3	MCC81-B020225M
A	3.3	0.66	6	7	MCC81-B020335J
A	4.7	0.94	6	6	MCC81-B020475K
A	4.7	0.94	6	6	MCC81-B020475M
B	10	2	6	3	MCC81-C020106K
B	10	2	6	3	MCC81-C020106M
B	2.2	0.5	6	3.5	MCC81-C020225K
B	2.2	0.5	6	3.5	MCC81-C020225M
B	3.3	0.66	6	3	MCC81-C020335K
B	3.3	0.66	6	3	MCC81-C020335M
B	4.7	0.94	6	3	MCC81-C020475K
B	4.7	0.94	6	3	MCC81-C020475M
B	6.8	1.36	6	3.5	MCC81-C020685K
C	10	2	6	1.8	MCC81-D020106K
C	10	2	6	1.8	MCC81-D020106M
C	15	3	6	1.7	MCC81-D020156K
C	4.7	0.94	6	2.8	MCC81-D020475K
C	4.7	0.94	6	2.8	MCC81-D020475M
C	6.8	1.36	6	2	MCC81-D020685K
D	22	4.4	6	0.9	MCC81-E020226K

Ratings and Part Number Reference

Case Size	Capacitance µF	DCL (µA) Max.	DF % Max.	ESR Max. (Ω) at 100 kHz	Part Number
20 Volt at 85°C (13 Volt, at 125°C)					
D	22	4.4	6	0.9	MCC81-E020226M
D	33	6.6	6	0.9	MCC81-E020336K
D	33	6.6	6	0.9	MCC81-E020336M
D	47	9.4	6	0.9	MCC81-E020476K
D	47	9.4	6	0.9	MCC81-E020476M
D	68	13.6	6	0.7	MCC81-E020686K
25 Volt at 85°C (16 Volt, at 125°C)					
A	1	0.5	4	8	MCC81-B025105K
A	1	0.5	4	8	MCC81-B025105M
A	0.47	0.5	4	14	MCC81-B025474K
B	1.5	0.5	6	5	MCC81-C025155K
B	2.2	0.55	6	4.5	MCC81-C025225K
B	2.2	0.55	6	4.5	MCC81-C025225M
B	3.3	0.82	6	4	MCC81-C025335K
B	3.3	0.82	6	4	MCC81-C025335M
B	4.7	1.17	6	3.5	MCC81-C025475K
B	4.7	1.17	6	3.5	MCC81-C025475M
C	10	2.5	6	1.8	MCC81-D025106K
C	10	2.5	6	1.8	MCC81-D025106M
C	3.3	0.82	6	2.8	MCC81-D025335K
C	4.7	1.7	6	2.4	MCC81-D025475K
C	4.7	1.7	6	2.4	MCC81-D025475M
C	6.8	1.7	6	2	MCC81-D025685K
D	10	2.5	6	1.2	MCC81-E025106M
D	15	3.75	6	1	MCC81-E025156K
D	22	5.5	6	0.9	MCC81-E025226M
D	33	8.25	6	0.7	MCC81-E025336K
35 Volt at 85°C (22 Volt, at 125°C)					
A	0.1	0.5	4	24	MCC81-B035104K
A	1	0.5	4	10	MCC81-B035105K
A	1	0.5	4	10	MCC81-B035105M
A	0.22	0.5	4	18	MCC81-B035224K
A	0.33	0.5	4	15	MCC81-B035334K

Ratings and Part Number Reference

Case Size	Capacitance µF	DCL (µA) Max.	DF % Max.	ESR Max. (Ω) at 100 kHz	Part Number
35 Volt at 85°C (22 Volt, at 125°C)					
A	0.47	0.5	4	12	MCC81-B035474K
B	1	0.5	4	6.5	MCC81-C035105K
B	1	0.5	4	6.5	MCC81-C035105M
B	1.5	0.5	6	5.2	MCC81-C035155K
B	2.2	0.77	6	4	MCC81-C035225K
B	2.2	0.77	6	4	MCC81-C035225M
B	3.3	1.15	6	3	MCC81-C035335K
B	3.3	1.15	6	3	MCC81-C035335M
B	0.47	0.5	4	10	MCC81-C035474K
C	10	3.5	6	1.2	MCC81-D035106K
C	10	3.5	6	1.2	MCC81-D035106M
C	2.2	0.77	6	3.5	MCC81-D035225K
C	2.2	0.77	6	3.5	MCC81-D035225M
C	3.3	1.15	6	2.5	MCC81-D035335K
C	3.3	1.15	6	2.5	MCC81-D035335M
C	4.7	1.64	6	2.2	MCC81-D035475M
C	6.8	2.38	6	2	MCC81-D035685K
D	10	3.5	6	1	MCC81-E035106M
D	4.7	1.64	6	1.5	MCC81-E035475K
D	4.7	1.64	6	1.5	MCC81-E035475M
D	6.8	2.38	6	1.3	MCC81-E035685K
D	6.8	2.38	6	1.3	MCC81-E035685M
50 Volt at 85°C (32 Volt, at 125°C)					
A	0.1	0.5	4	22	MCC81-B050104K
B	0.33	0.5	4	12	MCC81-C050334K
C	1	0.5	4	5.5	MCC81-D050105K
C	1	0.5	4	5.5	MCC81-D050105M
C	1.5	0.75	6	4.5	MCC81-D050155K
D	2.2	1.1	6	2.5	MCC81-E050225K
D	3.3	1.65	6	2	MCC81-E050335K

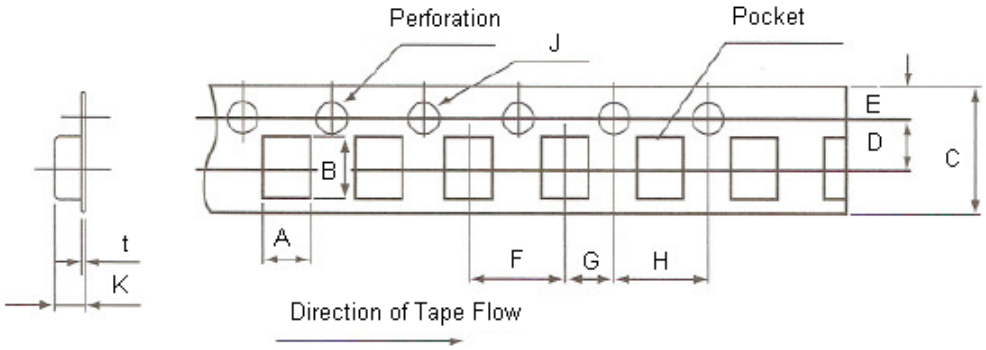
All technical data relates to an ambient temperature of +20°C measured at 120 Hz, 0.5 V RMS unless otherwise stated.
Insert tolerance, K for ±10% and M for ±20%.

For 10% tolerance, insert, “K” in (#) above. For 20% tolerance, insert, “M” in (#) above.

MCC81 Series

Tantalum Electrolytic Capacitors

Dimensions of the Carrier Tape and Standard Parts Quantity Per Reel.
Dimensions

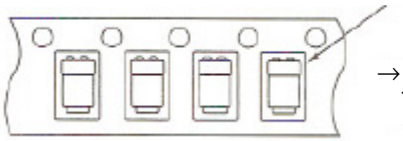


Case Size	A ±0.1	B ±0.1	C ±0.3	D ±0.1	E ±0.1	F ±0.1	G ±0.1	H ±0.1	J +0.1 -0	K Max.	t	Quantity Per Reel
A	1.9	3.5	8	3.5	1.75	4	2	4	1.5	2.5	0.2	2,000
B	3.1	3.8	8	3.5	1.75	4	2	4	1.5	2.5	0.2	2,000
C	3.6	6.4	12	5.5	1.75	8	2	4	1.5	3	0.3	500
D	4.7	7.7	12	5.5	1.75	8	2	4	1.5	3.4	0.3	500

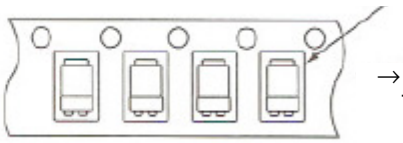
Dimensions : Millimetres

Inserting Direction (Polarity Orientation)

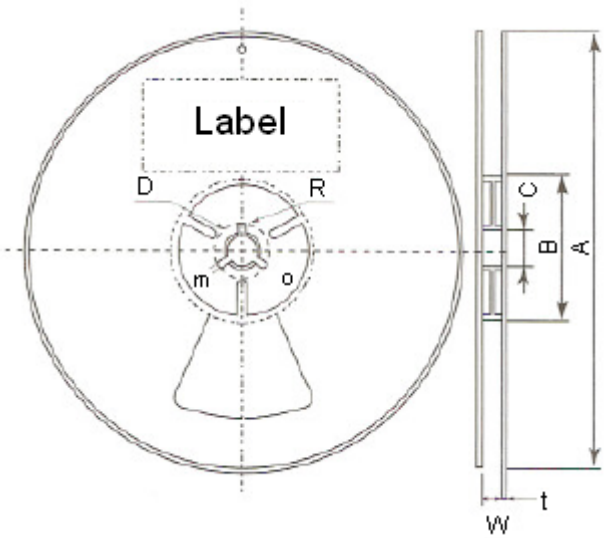
Polarity L : To be inserted with
the positive side to the feed hole.



Polarity R : To be inserted with
the negative side to the feed hole.



Reel Dimensions



Tape Width	8	12
A $^{0}_{-3}$	Ø180	←
B $^{+1}_{0}$	Ø60	←
C ±0.2	Ø13	←
D ±0.8	Ø21	←
E ±0.5	2	←
W ±0.3	9	13
t ±0.4	1.3	←
R ±0.4	10.5	←

Dimensions : Millimetres

Tape Leader and Tailer