

MMC, for surface mounting technology

Typical applications

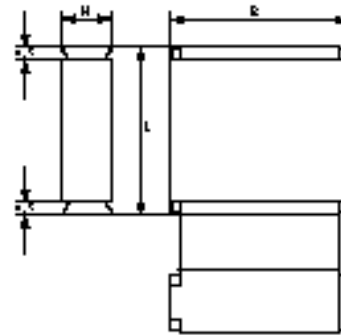
Bypassing, signal coupling. General purpose for highest reliability.

Construction

Polyester (PET) film capacitor for surface mounting. Encapsulation in self-extinguishing material meeting the requirements of UL 94V-0.

General data

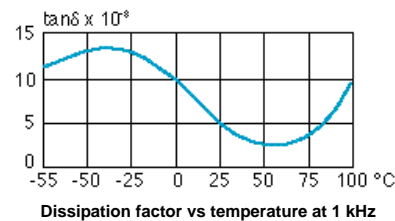
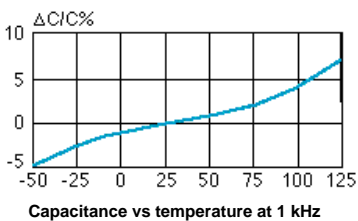
Rated voltage U_R VDC	50	63	100	250	400
Rated voltage U_R VAC	30	40	63	160	200
Capacitance range nF	1 - 10000	1 - 4700	1 - 3300	1 - 1000	1 - 470
Capacitance tolerance	±20% standard; other tolerances on request.				
Temperature range	-55°C to +100°C				
Voltage derating	The rated voltage is decreased with 1.25%/°C from +85°C.				
Climatic category	55/100/56				
Voltage proof	1.6* U_R , 60s				
Insulation resistance	Minimum value between terminals Measured at +20°C according to IEC 384-19				
		C 0.33 μ F	C > 0.33 μ F		
	U_R 100 V	10 000 M	3000 s		
	U_R > 100 V	30 000 M			
Dissipation factor		C 100 nF	100 nF < C 1 μ F		
Max values at +23°C	1 kHz	0.8%	0.8%		
	10 kHz	1.2%	1.2%		
	100 kHz	2.5%	3.0%		



Electrical characteristics

Pulse rise time

The capacitors can withstand an unlimited number of pulses with a dU/dt according to article table. For voltages (U) lower than the rated voltage (U_R), the specified dU/dt can be multiplied by U_R/U .



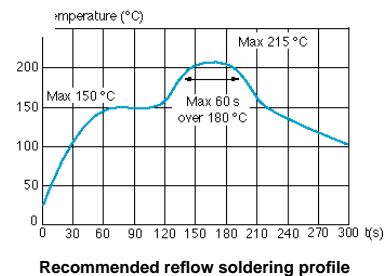
Recommended soldering conditions

Electrode temperature, Reflow soldering

Preheating temperature should be less than 150°C. The time above 180°C should be less than 1 minute. The peak temperature must not exceed 215°C.

Marking

- **Rated capacitance according to IEC 62**
- **Capacitance tolerance code**
- **Rated voltage**
- **Capacitor family code MMC**



Article table MMC

Capacitance µF	Dimensions in mm ±0.2			Quantity per package		Max dU/dt V/µs	Article code
	B	H	L	Bulk	Reel		
Case size 5.7							
50 VDC/30 VAC							
0.0010	5.0	2.5	5.7	2000	3100	40	MMC5.7 102M50 BULK
0.0015	5.0	2.5	5.7	2000	3100	40	MMC5.7 152M50 BULK
0.0022	5.0	2.5	5.7	2000	3100	40	MMC5.7 222M50 BULK
0.0033	5.0	2.5	5.7	2000	3100	40	MMC5.7 332M50 BULK
0.0047	5.0	2.5	5.7	2000	3100	40	MMC5.7 472M50 BULK
0.0068	5.0	2.5	5.7	2000	3100	40	MMC5.7 682M50 BULK
0.010	5.0	2.5	5.7	2000	3100	40	MMC5.7 103M50 BULK
0.015	5.0	2.5	5.7	2000	3100	30	MMC5.7 153M50 BULK
0.022	5.0	2.5	5.7	2000	3100	30	MMC5.7 223M50 BULK
0.033	5.0	2.5	5.7	2000	3100	30	MMC5.7 333M50 BULK
0.047	5.0	2.5	5.7	2000	3100	30	MMC5.7 473M50 BULK
0.068	5.0	2.5	5.7	2000	3100	20	MMC5.7 683M50 BULK
0.10	5.0	2.5	5.7	2000	3100	20	MMC5.7 104M50 BULK
0.15	5.0	3.0	5.7	2000	2500	20	MMC5.7 154M50 BULK
0.22	5.0	4.0	5.7	2000	2100	20	MMC5.7 224M50 BULK
100 VDC/63 VAC							
0.0010	5.0	2.5	5.7	2000	3100	40	MMC5.7 102M100 BULK
0.0015	5.0	2.5	5.7	2000	3100	40	MMC5.7 152M100 BULK
0.0022	5.0	2.5	5.7	2000	3100	40	MMC5.7 222M100 BULK
0.0033	5.0	2.5	5.7	2000	3100	40	MMC5.7 332M100 BULK
0.0047	5.0	2.5	5.7	2000	3100	40	MMC5.7 472M100 BULK
0.0068	5.0	2.5	5.7	2000	3100	40	MMC5.7 682M100 BULK
0.010	5.0	2.5	5.7	2000	3100	40	MMC5.7 103M100 BULK
0.015	5.0	2.5	5.7	2000	3100	30	MMC5.7 153M100 BULK
0.022	5.0	2.5	5.7	2000	3100	30	MMC5.7 223M100 BULK
0.033	5.0	2.5	5.7	2000	3100	30	MMC5.7 333M100 BULK
0.047	5.0	2.5	5.7	2000	3100	30	MMC5.7 473M100 BULK
0.068	5.0	3.0	5.7	2000	2500	30	MMC5.7 683M100 BULK
0.10	5.0	4.0	5.7	2000	2100	30	MMC5.7 104M100 BULK
250 VDC/160 VAC							
0.0010	5.0	2.5	5.7	2000	3100	40	MMC5.7 102M250 BULK
0.0015	5.0	2.5	5.7	2000	3100	40	MMC5.7 152M250 BULK
0.0022	5.0	2.5	5.7	2000	3100	40	MMC5.7 222M250 BULK
0.0033	5.0	2.5	5.7	2000	3100	40	MMC5.7 332M250 BULK
0.0047	5.0	2.5	5.7	2000	3100	40	MMC5.7 472M250 BULK
0.0068	5.0	2.5	5.7	2000	3100	40	MMC5.7 682M250 BULK
0.010	5.0	2.5	5.7	2000	3100	40	MMC5.7 103M250 BULK
0.015	5.0	3.0	5.7	2000	2500	40	MMC5.7 153M250 BULK
0.022	5.0	4.0	5.7	2000	2100	40	MMC5.7 223M250 BULK
Case size 7.3							
50 VDC/30 VAC							
0.0010	6.0	2.5	7.3	2000	3100	50	MMC7.3 102M50 BULK
0.0015	6.0	2.5	7.3	2000	3100	50	MMC7.3 152M50 BULK
0.0022	6.0	2.5	7.3	2000	3100	50	MMC7.3 222M50 BULK
0.0033	6.0	2.5	7.3	2000	3100	50	MMC7.3 332M50 BULK
0.0047	6.0	2.5	7.3	2000	3100	50	MMC7.3 472M50 BULK
0.0068	6.0	2.5	7.3	2000	3100	40	MMC7.3 682M50 BULK
0.010	6.0	2.5	7.3	2000	3100	40	MMC7.3 103M50 BULK
0.015	6.0	2.5	7.3	2000	3100	40	MMC7.3 153M50 BULK
0.022	6.0	2.5	7.3	2000	3100	30	MMC7.3 223M50 BULK
0.033	6.0	2.5	7.3	2000	3100	30	MMC7.3 333M50 BULK
0.047	6.0	2.5	7.3	2000	3100	30	MMC7.3 473M50 BULK

Article table MMC

Capacitance µF	Dimensions in mm ±0.2			Quantity per package		Max dU/dt V/µs	Article code
	B	H	L	Bulk	Reel		
Case size 7.3							
50 VDC/30 VAC							
0.068	6.0	2.5	7.3	2000	3100	30	MMC7.3 683M50 BULK
0.10	6.0	2.5	7.3	2000	3100	30	MMC7.3 104M50 BULK
0.15	6.0	2.5	7.3	2000	3100	25	MMC7.3 154M50 BULK
0.22	6.0	3.0	7.3	2000	2500	25	MMC7.3 224M50 BULK
0.33	6.0	3.5	7.3	2000	2300	25	MMC7.3 334M50 BULK
0.47	6.0	3.5	7.3	2000	2300	25	MMC7.3 474M50 BULK
0.68	6.0	4.5	7.3	1000	1700	12	MMC7.3 684M50 BULK
1.0	6.0	4.5	7.3	1000	1700	12	MMC7.3 105M50 BULK
63 VDC/40 VAC							
0.0010	6.0	2.5	7.3	2000	3100	50	MMC7.3 102M63 BULK
0.0015	6.0	2.5	7.3	2000	3100	50	MMC7.3 152M63 BULK
0.0022	6.0	2.5	7.3	2000	3100	50	MMC7.3 222M63 BULK
0.0033	6.0	2.5	7.3	2000	3100	50	MMC7.3 332M63 BULK
0.0047	6.0	2.5	7.3	2000	3100	50	MMC7.3 472M63 BULK
0.0068	6.0	2.5	7.3	2000	3100	40	MMC7.3 682M63 BULK
0.010	6.0	2.5	7.3	2000	3100	40	MMC7.3 103M63 BULK
0.015	6.0	2.5	7.3	2000	3100	40	MMC7.3 153M63 BULK
0.022	6.0	2.5	7.3	2000	3100	30	MMC7.3 223M63 BULK
0.033	6.0	2.5	7.3	2000	3100	30	MMC7.3 333M63 BULK
0.047	6.0	2.5	7.3	2000	3100	30	MMC7.3 473M63 BULK
0.068	6.0	2.5	7.3	2000	3100	30	MMC7.3 683M63 BULK
0.10	6.0	2.5	7.3	2000	3100	30	MMC7.3 104M63 BULK
0.15	6.0	2.5	7.3	2000	3100	25	MMC7.3 154M63 BULK
0.22	6.0	3.0	7.3	2000	2500	25	MMC7.3 224M63 BULK
0.33	6.0	3.5	7.3	2000	2300	25	MMC7.3 334M63 BULK
0.47	6.0	3.5	7.3	2000	2300	25	MMC7.3 474M63 BULK
100 VDC/63 VAC							
0.0010	6.0	2.5	7.3	2000	3100	50	MMC7.3 102M100 BULK
0.0015	6.0	2.5	7.3	2000	3100	50	MMC7.3 152M100 BULK
0.0022	6.0	2.5	7.3	2000	3100	50	MMC7.3 222M100 BULK
0.0033	6.0	2.5	7.3	2000	3100	50	MMC7.3 332M100 BULK
0.0047	6.0	2.5	7.3	2000	3100	50	MMC7.3 472M100 BULK
0.0068	6.0	2.5	7.3	2000	3100	40	MMC7.3 682M100 BULK
0.010	6.0	2.5	7.3	2000	3100	40	MMC7.3 103M100 BULK
0.015	6.0	2.5	7.3	2000	3100	40	MMC7.3 153M100 BULK
0.022	6.0	2.5	7.3	2000	3100	30	MMC7.3 223M100 BULK
0.033	6.0	2.5	7.3	2000	3100	30	MMC7.3 333M100 BULK
0.047	6.0	2.5	7.3	2000	3100	30	MMC7.3 473M100 BULK
0.068	6.0	2.5	7.3	2000	3100	30	MMC7.3 683M100 BULK
0.10	6.0	2.5	7.3	2000	3100	30	MMC7.3 104M100 BULK
0.15	6.0	3.5	7.3	2000	2300	30	MMC7.3 154M100 BULK
0.22	6.0	4.5	7.3	1000	1700	30	MMC7.3 224M100 BULK
250 VDC/160 VAC							
0.0010	6.0	2.5	7.3	2000	3100	50	MMC7.3 102M250 BULK
0.0015	6.0	2.5	7.3	2000	3100	50	MMC7.3 152M250 BULK
0.0022	6.0	2.5	7.3	2000	3100	50	MMC7.3 222M250 BULK
0.0033	6.0	2.5	7.3	2000	3100	50	MMC7.3 332M250 BULK
0.0047	6.0	2.5	7.3	2000	3100	50	MMC7.3 472M250 BULK
0.0068	6.0	2.5	7.3	2000	3100	40	MMC7.3 682M250 BULK
0.010	6.0	2.5	7.3	2000	3100	40	MMC7.3 103M250 BULK
0.015	6.0	2.5	7.3	2000	3100	40	MMC7.3 153M250 BULK
0.022	6.0	3.0	7.3	2000	2500	40	MMC7.3 223M250 BULK
0.033	6.0	3.5	7.3	2000	2300	40	MMC7.3 333M250 BULK
0.047	6.0	4.5	7.3	1000	1700	40	MMC7.3 473M250 BULK

Article table MMC

Capacitance µF	Dimensions in mm ±0.2			Quantity per package		Max dU/dt V/µs	Article code
	B	H	L	Bulk	Reel		
Case size 7.3							
400 VDC/200 VAC							
0.0010	6.0	2.5	7.3	2000	3100	50	MMC7.3 102M400 BULK
0.0015	6.0	2.5	7.3	2000	3100	50	MMC7.3 152M400 BULK
0.0022	6.0	2.5	7.3	2000	3100	50	MMC7.3 222M400 BULK
0.0033	6.0	2.5	7.3	2000	3100	50	MMC7.3 332M400 BULK
0.0047	6.0	2.5	7.3	2000	3100	50	MMC7.3 472M400 BULK
0.0068	6.0	3.0	7.3	2000	2500	50	MMC7.3 682M400 BULK
0.010	6.0	3.5	7.3	2000	2300	50	MMC7.3 103M400 BULK
0.015	6.0	4.5	7.3	2000	1700	50	MMC7.3 153M400 BULK
Case size 10.2 and larger							
50 VDC/30 VAC							
1.5	9.1	5.5	10.2	1000		12	MMC10.2 155M50 BULK
2.2	9.1	5.5	10.2	1000		12	MMC10.2 225M50 BULK
3.3	11.5	6.5	12.7	1000		8	MMC12.7 335M50 BULK
4.7	11.5	6.5	12.7	1000		8	MMC12.7 475M50 BULK
6.8	15.0	7.0	16.5	800		5	MMC16.5 685M50 BULK
10.0	15.0	7.0	16.5	800		5	MMC16.5 106M50 BULK
63 VDC/40 VAC							
0.68	9.1	5.5	10.2	1000		12	MMC10.2 684M63 BULK
1.0	9.1	5.5	10.2	1000		12	MMC10.2 105M63 BULK
1.5	9.1	5.5	10.2	1000		12	MMC10.2 155M63 BULK
2.2	11.5	6.5	12.7	1000		8	MMC12.7 225M63 BULK
3.3	11.5	6.5	12.7	1000		8	MMC12.7 335M63 BULK
4.7	15.0	7.0	16.5	800		5	MMC16.5 475M63 BULK
100 VDC/63 VAC							
0.22	9.1	5.5	10.2	1000		20	MMC10.2 224M100 BULK
0.33	9.1	5.5	10.2	1000		20	MMC10.2 334M100 BULK
0.47	9.1	5.5	10.2	1000		20	MMC10.2 474M100 BULK
0.47	11.5	6.5	12.7	1000		12	MMC12.7 474M100 BULK
0.68	11.5	6.5	12.7	1000		12	MMC12.7 684M100 BULK
1.0	11.5	6.5	12.7	1000		12	MMC12.7 105M100 BULK
1.5	15.0	7.0	16.5	800		8	MMC16.5 155M100 BULK
2.2	15.0	7.0	16.5	800		8	MMC16.5 225M100 BULK
3.3	15.0	7.0	16.5	800		8	MMC16.5 335M100 BULK
250 VDC/160 VAC							
0.068	9.1	5.5	10.2	1000		40	MMC10.2 683M250 BULK
0.10	9.1	5.5	10.2	1000		30	MMC10.2 104M250 BULK
0.15	9.1	5.5	10.2	1000		30	MMC10.2 154M250 BULK
0.22	11.5	6.5	12.7	1000		20	MMC12.7 224M250 BULK
0.33	11.5	6.5	12.7	1000		20	MMC12.7 334M250 BULK
0.47	11.5	6.5	12.7	1000		20	MMC12.7 474M250 BULK
0.47	15.0	7.0	16.5	800		12	MMC16.5 474M250 BULK
0.68	15.0	7.0	16.5	800		12	MMC16.5 684M250 BULK
1.0	15.0	7.0	16.5	800		12	MMC16.5 105M250 BULK

Reel package for case sizes 10.2 and larger in preparation.

Article table MMC

Capacitance µF	Dimensions in mm ±0.2			Quantity per package		Max dU/dt V/µs	Article code
	B	H	L	Bulk	Reel		
Case size 10 and larger							
400 VDC/200 VAC							
0.022	9.1	5.5	10.2	1000		40	MMC10.2 223M400 BULK
0.033	9.1	5.5	10.2	1000		40	MMC10.2 333M400 BULK
0.047	9.1	5.5	10.2	1000		40	MMC10.2 473M400 BULK
0.068	9.1	5.5	10.2	1000		40	MMC10.2 683M400 BULK
0.10	11.5	6.5	12.7	1000		30	MMC12.7 104M400 BULK
0.15	11.5	6.5	12.7	1000		30	MMC12.7 154M400 BULK
0.22	15.0	7.0	16.5	800		20	MMC16.5 224M400 BULK
0.33	15.0	7.0	16.5	800		20	MMC16.5 334M400 BULK
0.47	15.0	7.0	16.5	800		20	MMC16.5 474M400 BULK

Reel package for case sizes 10.2 and larger in preparation.