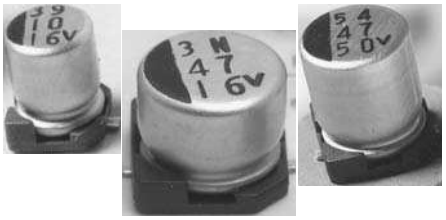
FEATURES

- Cylindrical leadless type for surface mounting.
- Low cost, general purpose, 2000 hours at 85°C.
- New expanded CV range.
- Solvent resistant (2 minutes).
- Designed for automatic mounting and reflow soldering.

Note: Unless otherwise specified here, the capacitor shall conform to JIC-C-5141 and 5102.



PART NUMBERING

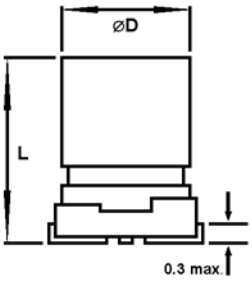
Part Number Example: MXM-016/100M4X5TR13F									
MXM	**-**	**016**	**/**	**100**	**M**	**4X5**	**TR**	**13**	**F**
Type		Rated DC Voltage		Capacitance Code (µF)*	Tolerance Code	Size	Package Code**	Reel Size	RoHs Compliant
* Capacitance Code: First two digits represent significant figure, third digit represents multiplier (number of zeros).									
** Package Code: TR = Tape & Reel.									

SPECIFICATIONS

Performance Characteristics											
Operating Temperature Range	-40°C ~ +85°C.										
Temperature Characteristics (120Hz)	Impedance Ratio										
	Rated Voltage (WVDC)		4.0	6.3	10	16	25	35	50	63	100
	3Ø ~ 8Ø	Z (-40°C) / Z (+20°C)	7	3	3	2	2	2	2	2	2
		Z (-55°C) / Z (+20°C)	15	8	6	4	4	3	3	3	3
	10Ø	Z (-25°C) / Z (+20°C)		4	3	2	2	2	2	2	2
		Z (-25°C) / Z (+20°C)		8	6	4	4	3	3	3	3
Voltage Range	4VDC ~ 100VDC.										
Surge Voltage (20°C, 120Hz)	VDC		5.0	8.0	13	20	32	44	63	79	125
Capacitance Range	0.1µF ~ 6800µF.										
Capacitance Tolerance	±10% & ±20%.										
Maximum Dissipation Factor (20°C, 120Hz)	Rated Voltage (WVDC)		4.0	6.3	10	16	25	35	50	63	100
	DF %	3Ø ~ 8Ø	40	30	24	19	16	14	14	12	12
		10Ø		34	24	20	16	14	12	12	12
Max leakage current (20°C) after 2 minutes	0.01CV or 3µA, whichever is greater.										
Load life test (85°C 2000 hours)	Capacitance change		Within +- 30% initial measured value								
	DF%		Less than 300% initial specified value								
	Leakage current		Within maximum specified value								

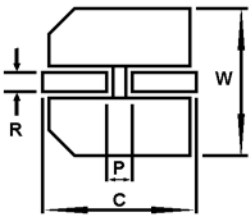
STANDARD PRODUCT TABLE (dØ X L(mm))

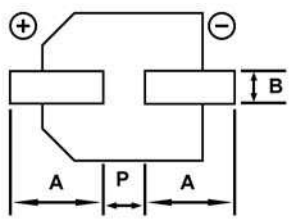
Cap. (µF)	WVDC								
	4	6.3	10	16	25	35	50	63	100
0.10							(3 x 5.5) 4 x 5.5	4 x 5.5	
0.22							(3 x 5.5) 4 x 5.5	4 x 5.5	
0.33							(3 x 5.5) 4 x 5.5	4 x 5.5	
0.47							(3 x 5.5) 4 x 5.5	4 x 5.5	
1.0							(3 x 5.5) 4 x 5.5	4 x 5.5	4 x 6.3
2.2						(3 x 5.5)	4 x 5.5	4 x 5.5	6.3 x 6.3
3.3						(3 x 5.5)	4 x 5.5	5 x 5.5	6.3 x 6.3
4.7					(3 x 5.5) 4 x 5.5	4 x 5.5	5 x 5.5	5 x 5.5	6.3 x 6.3
10				(3 x 5.5) 4 x 5.5	5 x 5.5	5 x 5.5	6.3 x 5.5	6.3 x 5.5	6.3 x 8
22	(3 x 5.5)	4 x 5.5	5 x 5.5	5 x 5.5	6.3 x 5.5	6.3 x 5.5	6.3 x 6.3	6.3 x 8	8 x 10.5
33	4 x 5.5	5 x 5.5	5 x 5.5	6.3 x 5.5	6.3 x 5.5	6.3 x 6.3	6.3 x 8	8 x 10.5	10 x 10.5
47	4 x 5.5	5 x 5.5	6.3 x 5.5	6.3 x 5.5	6.3 x 6.3	6.3 x 6.3	6.3 x 8	8 x 10.5	12.5 x 14
68	5 x 5.5	6.3 x 5.5	6.3 x 5.5	6.3 x 5.5	6.3 x 6.3	6.3 x 8	8 x 10.5		
82							10 x 8		
100	5 x 5.5	6.3 x 5.5	6.3 x 5.5	6.3 x 5.5	6.3 x 8	6.3 x 8	8 x 10.5	10 x 10.5	
150	6.3 x 5.5	6.3 x 5.5	6.3 x 6.3	6.3 x 8	8 x 10.5	8 x 10.5 (10 x 8)			16 x 17
220	6.3 x 5.5	6.3 x 6.3	6.3 x 8	6.3 x 8	8 x 10.5 (10 x 8)	8 x 10.5	10 x 10.5	12.5 x 14	
330	6.3 x 6.3	6.3 x 8	8 x 10.5	8 x 10.5 (10 x 8)	8 x 10.5	10 x 10.5			
390							12.5 x 14		
470	6.3 x 8	8 x 10.5	8 x 10.5 (10 x 8)	8 x 10.5	10 x 10.5	12.5 x 14		16 x 17	
680		10 x 8		10 x 10.5		12.5 x 14			
820			10 x 10.5						
1000	10 x 8	8 x 10.5	10 x 10.5	12.5 x 14	12.5 x 14		16 x 17		
1500		10 x 10.5		12.5 x 14		16 x 17			
2200			12.5 x 14		16 x 17				
3300		12.5 x 14		16 x 17					
4700			16 x 17						
6800		16 x 17							



DIMENSIONS (mm)

D +0.5 Max.	L	W ± 0.2	H ± 0.2	C ± 0.2	R	P ± 0.2
3.0	5.4 +0.1, -0.2	3.3	3.3	3.9	0.45 ~ 0.75	0.6
4.0	5.4 +0.1, -0.2	4.3	4.3	5.0	0.5 ~ 0.8	1.0
5.0	5.4 +0.1, -0.2	5.3	5.3	6.0	0.5 ~ 0.8	1.4
6.3	5.4 +0.1, -0.2	6.6	6.6	7.3	0.5 ~ 0.8	2.2
4.0	6.0 ± 0.3	4.3	4.3	5.0	0.5 ~ 0.8	1.0
6.3	6.0 ± 0.3	6.6	6.6	7.3	0.5 ~ 0.8	2.2
6.3	7.7 ± 0.3	6.6	6.6	7.3	0.5 ~ 0.8	2.2
8.0	10.2 ± 0.3	8.3	8.3	9.0	0.7 ~ 1.0	3.2
10.0	7.7 ± 0.3	10.3	10.3	11.0	1.1 ~ 1.4	4.6
10.0	10.2 ± 0.3	10.3	10.3	11.0	1.1 ~ 1.4	4.6
12.5	13.5 ± 0.5	12.8	12.8	13.5	1.1 ~ 1.4	4.6
16	16.5 ± 0.5	16.3	16.3	17.0	1.18 ~ 2.1	7.0





RECOMMENDED LAND PATTERN (mm)

Case Size	A	B	P
3 x 5.5	2.2	1.6	0.8
4 x 5.5	2.6	1.6	1.0
5 x 5.5	3.0	1.6	1.4
6.3 x 5.5	3.5	1.6	2.1
6.3 x 6.3			
6.3 x 8			
8 x 10.5	4.15	1.9	2.8
10 x 10.5	4.4	1.9	4.3
12.5 x 14	5.65	2.1	4.3
16 x 17	6.5	5.0	6.6

MAXIMUM RIPPLE (mA rms @ 120Hz & 105°C)

Cap. (µF)	WVDC								
	4	6.3	10	16	25	35	50	63	100
0.1						1.0	1.0		
0.22						2.3	2.3		
0.33						3.5	3.5		
0.47						5	5.0		
1.0							(8)	10	10
							10	10	10
2.2						8	15	15	20
3.3						10	8	20	28
4.7					(12)	20	23	23	35
					19				
10				(20)	28	30	34	34	50
				25					
22	19	31	35	39	52	54	56	70	120
33	26	39	43	57	63	60	85	160	190
47	34	47	59	68	68	70	90	170	330
68	52	63	66	75	80	110	120		
82							20		
100	61	71	76	86	130	130	200	280	
150	74	78	88	135	200	220			560
220	82	95	150	150	250	270	320	410	
330	102	150	280	280	310	340			
390							550		
470	150	300	300	330	430			700	
680		300		450		610			
820			450						
1000	330	400	450		660		940		
1500		450		710		1060			
2200			730		1150				
3300		750		1200					
4700			1260						
6800		1330							

MAXIMUM ESR (Ω @ 120Hz & 20°C)

Cap. (µF)	WVDC								
	4	6.3	10	16	25	35	50	63	100
0.1							1660	1520	
0.22							754	675	
0.33							503	417	
0.47							353	311	
1.0							166	126	109
2.2							75.4	69.1	60.2
3.3							50.3	42.0	35.0
4.7					49.4	42.3	35.3	31.3	27.2
10				26.5	23.2	19.9	16.6	12.7	9.3
22	18.1	15.1	12.1	10.6	9.05	7.54	5.30	3.71	
33	17.6	12.6	10.1	8.04	7.04	6.04	5.03	4.2	3.22
47	12.4	8.47	7.06	5.65	4.95	4.24	3.53	3.02	2.63
68	8.54	5.86	4.88	3.91	3.42	2.93	2.44	1.99	1.11
100	5.80	3.98	3.32	2.66	2.32	1.99	1.66	1.40	1.00
150	3.87	2.66	2.21	1.77	1.55	1.33			0.90
220	2.64	1.81	1.51	1.21	1.06	0.91	0.91	1.55	
330	1.76	1.21	1.01	0.81	0.71	0.71			
470	1.24	0.85	0.71	0.57	0.57		0.71		
680				0.49		0.50			
820			0.49						
1000	0.70	0.40	0.40		0.31				
1500		0.33		0.30					
2200			0.30						
3300		0.18							
4700			0.24						
6800		0.11							

RIPPLE CURRENT CORRECTION FACTOR

Frequency (Hz)	100 ≤ f < 1K	1K ≤ f < 10K	10K ≤ f < 100K	100K ≤ f
C 4.7µF	1.0	1.3	1.5	2.0
4.7 < C 33µF	1.0	1.2	1.3	1.45
33 < CµF	1.0	1.1	1.2	1.3