

**■ MA 系列铝电解电容器**
**MA Series Aluminum Electrolytic Capacitor**

**◆ 特征**
**Feature**

- \* 寿命: 105°C 2000 小时  
Load life: 105°C 2000 hours.
- \* 高频超低阻抗  
Ultra low impedance value at high frequency.
- \* 符合 RoHS  
Compliant to the RoHS Directive.

**◆ 应用**
**Application**

- \* 适用于开关电源、通信设备及其它各种电子产品  
Ideally suited for switching power supplies, telecommunication and other electronic products.
- \* 适用于自动表面贴装技术和高密度电路  
Ideally suited for automatic SMT and high density circuits.

**◆ 型号表示法**
**Part Number**

<b>8</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>L</b>	<b>F</b>	<b>M</b>	<b>A</b>	<b>A</b>	<b>0</b>	<b>5</b>	<b>M</b>	<b>A</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>T</b>
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩								

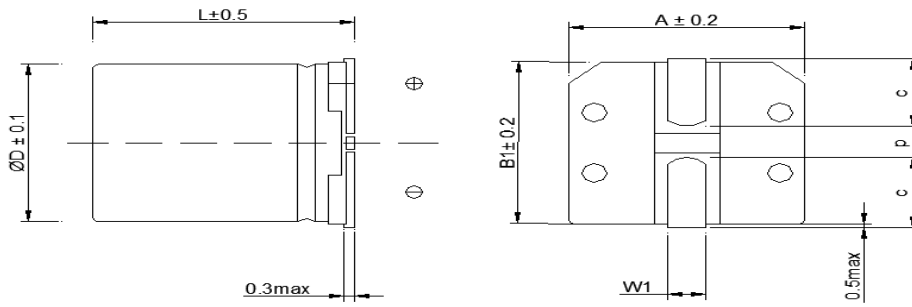
代码 Code	产品类别 Type	代码 Code	电压 Voltage	代码 Code	尺寸 Dimensions ΦDxL(mm)	代码 Code	商标 Trademark	代码 Code	内码 Internal Code
8	成品 Product	LO	4	0405	Φ4x5.5	0	无商标	01	贴片品 Chip type
		LA	6.3	0505	Φ5x5.5				
		LB	10	AA05	Φ6.3x5.5				
		LC	16	AA07	Φ6.3x7.7				
		LD	25	0810	Φ8x10.5				
		LE	35	1010	Φ10x10.5				
		LF	50						
		LG	63						
		MA	100						

代码 Code	标称容量 Nominal Capacitance	代码 Code	误差 Tolerance	代码 Code	型号 Series	代码 Code	胶管颜色 Sleeve Color
1R0	1uF	K	±10%	MA	MA	0	无胶管 No label
2R2	2.2uF	V	± <sup>20</sup> <sub>10</sub> %				
220	22uF	M	±20%				
221	220uF	Q	± <sup>30</sup> <sub>10</sub> %				

代码 Code	产品脚型 Lead Forming Type
0	散装品 Bulk
T	贴片编带品 Chip tape

**◆产品结构**
**Product Structure**


$\phi D \pm 0.5$	L	$A \pm 0.2$	$B_1$	$C \pm 0.2$	$W_1$	$P \pm 0.2$
4	$5.5 \pm 0.2$	4.3	4.3	1.8	0.5~0.8	1.0
5	$5.5 \pm 0.2$	5.3	5.3	2.1	0.5~0.8	1.4
6.3	$5.5 \pm 0.2$	6.6	6.6	2.5	0.5~0.8	2.0
6.3	$7.7 \pm 0.3$	6.6	6.6	2.5	0.5~0.8	2.0
8	$10.5 \pm 0.5$	8.5	8.5	2.9	0.8~1.1	3.1
10	$10.5 \pm 0.5$	10.3	10.3	3.2	0.8~1.1	4.5

**◆主要特性表**
**Main specifications**

项目 Item	主要特性 Performance Characteristics	
额定工作电压范围 Rated Voltage Range	6.3~50V.DC	
使用温度范围 Operating Temperature Range	-55°C~+105°C	
标称静电容量范围 Nominal Capacitance Range	4.7~100 $\mu$ F	
静电容量允许偏差 Capacitance Tolerance	$\pm 20\%$ (M, +25°C, 120Hz)	
漏电流 Leakage Current (25°C)	额定工作电压(V) Rated working voltage	6.3~50
	漏电流 Leakage current	2 分钟后 $I \leq 0.01CV$ 或 $3(\mu A)$ , 取最大值 After 2 min. $I \leq 0.01CV$ or $3(\mu A)$ , Whichever is greater.
C: 标称静电容量 ( $\mu$ F) Nominal Capacitance in $\mu$ F V: 额定工作电压 (V) Rated working voltage in V		
损耗角正切 DF Dissipation Factor	额定工作电压(V) Rated working voltage	6.3    10    16    25    35~50
	DF(MAX) (25°C, 120Hz)	0.22    0.19    0.16    0.14    0.12

浪涌电压 Surge Voltage	额定工作电压(V) Rated working voltage	6.3	10	16	25	35	50
	浪涌电压(V) Surge voltage	8	13	20	32	44	63
温度特性 Temperature Stability	额定工作电压(V) Rated working voltage	6.3	10	16	25	35~50	
	阻抗比(120Hz) Impedance Ratio	z-25°C/z+25°C		3	2	2	2
		z-40°C/z+25°C		5	4	4	3
高温负荷特性 Load life	<p>在+105°C 环境中施加额定工作电压和最大允许纹波电流 1000 小时后,电容器的性能符合下面要求:</p> <p>After application of rated working voltage with max permissible ripple current specified at +105°C for 1000 hours, capacitors meet the characteristics requirements measured at +20°C listed at below:</p> <p>1、电容量变化率:±20%初始测量值以内 Capacitance change : ±20% initial measured value</p> <p>2、漏电流: ≤初始规定值 Leakage current: ≤initial specified value</p> <p>3、损耗角正切值≤300%倍初始规定值 Dissipation factor: ≤300% initial specified value</p>						
高温贮存特性 Shelf life	<p>在+105°C环境无负荷放置 1000 小时后, 根据 JIS-C-5101-4, 加额定电压 30min.,常温放置 24~48 小时后测试, 电容器的性能符合下面要求:</p> <p>After leaving capacitors under no load at +105°Cfor 1000 hours, According to JIS-C-5101-4, apply the rated DC voltage for 30 minutes and store the capacitors under room temperature for 24-48 hours. The capacitors meet the characteristics listed as below:</p> <p>1、电容量变化率:±30%初始测量值以内 Capacitance change : ±30% initial measured value</p> <p>2、漏电流: ≤初始规定值 Leakage current:≤initial specified value</p> <p>3、损耗角正切值≤300%倍初始规定值 Dissipation factor: ≤200% initial specified value</p>						

**◆尺寸表、允许纹波、电流纹波电流频率因子**

Dimensions and ripple current and frequency coefficient

纹波电流频率因子

Ripple current frequency coefficient

Freq (Hz) Cap (μF)	50 (60)	100 (120)	1K	10K	≥100K
4.7	0.30	0.42	0.60	0.80	1.00
10~47	0.45	0.55	0.75	0.90	1.00
100	0.65	0.70	0.85	0.95	1.00

**尺寸表与允许纹波电流**
**Dimensions and ripple current**

WV/V Cap/ $\mu$ F	6.3			10			16			25			35			50		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
4.7										4×5.5	1.8	80	4×5.5	1.80	80	4×5.5	1.80	80
10										5×5.5	0.76	150	5×5.5	0.76	150	5×5.5	0.76	150
22				4×5.5	1.80	80	5×5.5	0.76	150	6.3×5.5	0.44	230	6.3×5.5	0.76	230	6.3×5.5	0.76	150
33				5×5.5	0.76	150	6.3×5.5	0.44	230	6.3×5.5	0.44	230	6.3×5.5	0.44	230	6.3×5.5	0.44	230
47	5×5.5	0.76	150	6.3×5.5	0.44	230	6.3×5.5	0.44	230	6.3×5.5	0.44	230	6.3×5.5	0.44	300	6.3×7.7	0.44	260
100	6.3×5.5	0.44	230	6.3×5.5	0.44	230	6.3×5.5	0.44	230	6.3×7.7	0.26	300	6.3×5.5	0.26	300	8×10.5	0.44	300
220	6.3×5.5	0.36	240	6.3×5.5	0.26	300	6.3×5.5	0.26	300	6.3×7.7	0.16	600	6.3×7.7	0.16	600	8×10.5	0.16	670
330	6.3×7.7	0.26	300	6.3×7.7	0.16	600	6.3×7.7	0.16	600	8×10.5	0.08	900	8×10.5	0.08	900	10×10.5	0.12	900

(1)外形尺寸 Case Size D×L(mm)

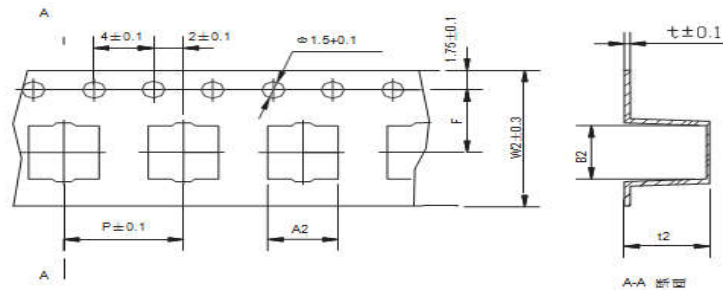
(2)100KHz 阻抗值 Impedance at 100KHz +25°C ( $\Omega$ )

(3)最大允许纹波电流 Max allowable ripple current (mA rms +105°C, 100KHz)

**◆包装**

Packaging

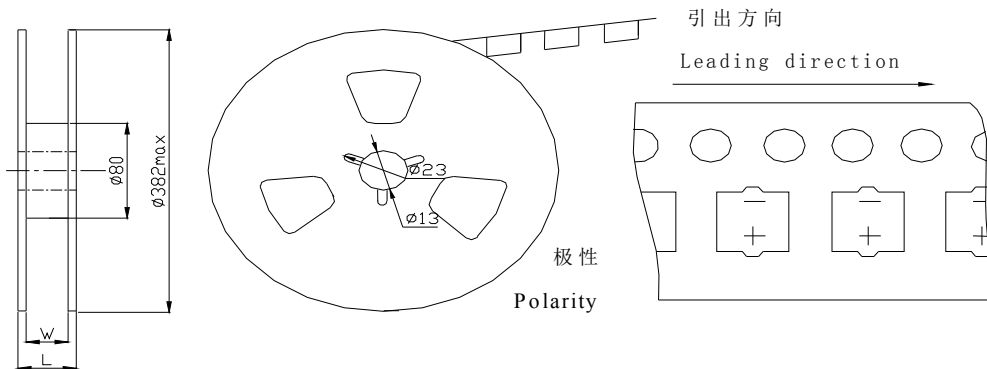
载带尺寸 Taping dimensions



尺寸 Size	W2	A2	B2	P	T2	F	t1
4x5.5	12.0	4.7	4.7	8	5.7	5.5	0.4
5x5.5	12.0	5.7	5.7	12	5.7	5.5	0.4
6.3x5.5	16.0	7.0	7.0	12	5.7	7.5	0.4
6.3x7.7	16.0	7.0	7.0	12	8.3	7.5	0.4
8x10	24.0	8.7	8.7	16	11	11.5	1.0
10x10	24.0	10.7	8.7	16	11	11.5	1.0

贴片品编带包装及数量

Taping reel and packing quantity



尺寸 Size	L	W <sub>3</sub>	数量 Quantity/reel
Φ4×5.5	19	14	2000pcs
Φ5×5.5	19	14	1000pcs
Φ6.3×5.5	23	18	1000pcs
Φ6.3×7.7	23	18	1000pcs
Φ8×10.5	30	26	500pcs
Φ10×10.5	28	26	500pcs