

# 铝电解电容器（表面贴装型）

## 表面贴装型

系列：VD

## 高温无铅回流焊应对产品



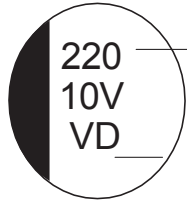
- 低阻抗、长寿命
- 适用于高密度表面组装
- 工作温度范围宽
- 已应对RoHS指令

项目 Items	特性 Characteristics									
工作温度范围 Operating Temperature Range	-55℃ ~ +105℃									
额定电压范围 Rated Voltage Range	6.3V ~ 100V									
标称容量范围 Nominal Capacitance Range	1 ~ 8200 μF									
标称容量允许偏差 Nominal Capacitance Tolerance	±20% (20℃, 120Hz)									
漏电流 Leakage Current	$I \leq 0.01 C_R V_R$ or $3(\mu A)$ , 取较大者 (2分钟) $C_R$ : 标称容量 ( $\mu F$ ) $U_R$ : 额定电压 (V) $I \leq 0.01 C_R V_R$ or $3(\mu A)$ Whichever is greater (at 20℃, after 2 minutes) $C_R$ : Nominal Capacitance ( $\mu F$ ) $U_R$ : Rated voltages (V)									
损耗角正切 (tgδ) Dissipation Factor (Max) 20℃, 120Hz	$U_R$ (V)	6.3	10	16	25	35	50	63	80	100
	tgδ	0.30	0.26	0.22	0.16	0.13	0.10	0.08	0.08	0.07
量大于1000uF者, 每增加1000uF, 其损耗角正切值增加0.02, 注: ( ) 为Φ8以上产品。 When nominal capacitance exceeds 1000uF, add 0.02 to the value above for each 1000uF increase										
耐久性 Load Life	+105℃施加额定电压条件, 电容器应满足以下要求: ΦD=4, 5和6.3为2000小时; ΦD=8, 10为5000小时; ΦD=12.5, 16和18为8000小时 ΦD=4, 5 and 6.3:2000H; ΦD=8, 10:5000H; ΦD=12.5, 16 and 18:8000H; application of rated voltage at 105℃, the capacitor shall meet the following requirement:									
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value								
	损耗角正切 Dissipation Factor	≤ 300%初始规定值 Not more than 300% of the initial specified value								
	漏电流 Leakage Current	≤ 初始规定值 Not more than the initial specified value								
高温贮存 Shelf Life	+105℃贮存1000小时后, 电容器应满足以上耐久性要求 After storage for 1000 hours at +105℃, the capacitors shall meet the requirement of load life above									
低温特性 Low Temperature Stability 阻抗比 Impedance Ratio (120Hz)	$U_R$ (V)	6.3	10	16	25	35	50	63	80	100
	$Z(-25^\circ C)/Z(+20^\circ C)$	3	2	2	2	2	2	2	2	2
	$Z(-55^\circ C)/Z(+20^\circ C)$	5	4	4	3	3	3	3	3	3
耐焊接热 Resistance to Soldering Heat	在250℃的条件下, 电容器在热板上保持30秒, 然后从热板上取出电容器, 让其在室温下恢复, 电容器应满足以下要求: The capacitors shall be kept on the hot plate maintained at 250℃ for 30 seconds. After removing from the hot plate and restored at room temperature, they meet the following requirement.									
	电容量变化率 Capacitance Change	±10%初始值以内 Within ±10% of the initial value								
	损耗角正切 (tgδ) Dissipation Factor	≤ 初始规定值 Not more than the initial specified value								
	漏电流 Leakage Current	≤ 初始规定值 Not more than the initial specified value								
AEC-Q200	符合AEC-Q200									

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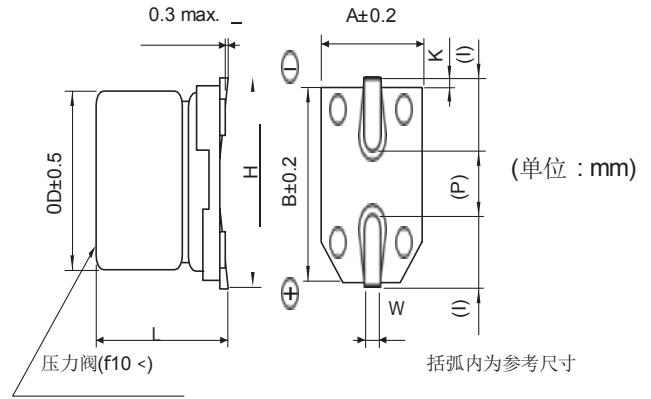
## 标示

例：10V.DC 220uF VD系列



标示颜色：黑色

## 外观尺寸



φ D	L	A, B	H.	I	W	P	K
4	5.4±0.3	4.3	5.5	1.8	0.5~0.8	1.0	0.35 <sup>+0.15</sup> -0.20
5	5.4±0.3	5.3	6.5	2.1	0.5~0.8	1.3	
6.3	5.4±0.3	6.6	7.8	2.4	0.5~0.8	2.2	
6.3	7.7±0.3	6.6	7.8	2.4	0.5~0.8	2.2	
8	6.2±0.5	8.3	10	3.4	0.5~0.8	2.2	0.70±0.20
8	10.5±0.5	8.3	10	3.4	0.8~1.1	3.1	0.70±0.20
8	12.5±0.5	8.3	10	3.4	0.8~1.1	3.1	0.70±0.20
10	10.5±0.5	10.3	12	3.5	0.8~1.1	4.5	0.70±0.20
10	12.5±0.5	10.3	12	3.5	0.8~1.1	4.5	0.70±0.20
12.5	13.5±0.5	13.5	15	4.7	1.1~1.4	4.4	0.70±0.20
12.5	16.5±0.5	13.5	15	4.7	1.1~1.4	4.4	0.70±0.20
16	16.5±0.5	17	19	5.5	1.1~1.4	6.4	0.70±0.20
16	21.5±0.5	17	19	5.5	1.1~1.4	6.4	0.70±0.20
18	16.5±0.5	19	21	6.7	1.1~1.4	6.4	0.70±0.20
18	21.5±0.5	19	21	6.7	1.1~1.4	6.4	0.70±0.20

## ■特性一览表

额定电压 (V.DC)	静电容量 (±20%) (uF)	产品尺寸(mm)		电气特性			料号	最小包装 数量 (PCS)
		φ D	L	额定纹波电流 (100KHZ) (+105℃) (mA r.m.s)	tanδ (120HZ) (+20℃)	Impedance (100Khz) (+20℃) (Ω)		
6.3	27	4	5.4	80	0.30	1.8	VD0J270MB054000LP0	2000
	33	5	5.4	150	0.30	0.76	VD0J330MC054000LP0	1000
	47	5	5.4	150	0.30	0.76	VD0J470MC054000LP0	1000
	56	5	5.4	150	0.30	0.76	VD0J560MC054000LP0	1000
	68	6.3	5.4	230	0.30	0.44	VD0J680MF054000LP0	1000
	100	6.3	5.4	230	0.30	0.44	VD0J101MF054000LP0	1000
	150	6.3	5.4	230	0.30	0.44	VD0J151MF054000LP0	1000
	220	6.3	5.4	230	0.30	0.44	VD0J221MF054000LP0	1000
	330	6.3	7.7	280	0.30	0.34	VD0J331ME077000LP0	1000
	330	8	6.2	280	0.30	0.36	VD0J331MF065000LP0	1000
	470	8	10.5	450	0.30	0.17	VD0J471MF105000LP0	500
	680	8	10.5	450	0.30	0.17	VD0J681MF105000LP0	500
	1000	8	10.5	450	0.30	0.17	VD0J102MF105000LP0	500
	1500	10	10.5	670	0.30	0.09	VD0J152MG105000LP0	500
	2200	12.5	13.5	820	0.30	0.07	VD0J222MI135000LP0	200
	3300	12.5	16.5	950	0.30	0.06	VD0J332MI165000LP0	200

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## ■特性一览表

额定电压 (V.DC)	静电容量 (±20%) ( $\mu$ F)	产品尺寸(mm)		电气特性			料号	最小包装 数量 (PCS)
		$\phi$ D	L	额定纹波电流 (100KHZ) (+105℃) (mA r.m.s)	$\tan\delta$ (120HZ) (+20℃)	Impedance (100KHZ) (+20℃) ( $\Omega$ )		
6.3	4700	16	16.5	1260	0.30	0.054	VD0J472MJ165000LP0	125
	6800	18	16.5	1500	0.30	0.048	VD0J682MK165000LP0	125
	8200	18	21.5	1750	0.30	0.038	VD0J822MK215000LP0	125
10	22	4	5.4	80	0.26	1.8	VD1A220MB054000LP0	2000
	27	5	5.4	150	0.26	0.76	VD1A270MB054000LP0	1000
	33	5	5.4	150	0.26	0.76	VD1A330MB054000LP0	1000
	47	6.3	5.4	230	0.26	0.44	VD1A470ME054000LP0	1000
	56	6.3	5.4	230	0.26	0.44	VD1A560ME054000LP0	1000
	68	6.3	5.4	230	0.26	0.44	VD1A680ME054000LP0	1000
	100	6.3	5.4	230	0.26	0.44	VD1A101ME054000LP0	1000
	150	6.3	5.4	230	0.26	0.44	VD1A151ME054000LP0	1000
	220	6.3	7.7	280	0.26	0.34	VD1A221ME077000LP0	1000
	220	8	6.2	280	0.26	0.34	VD1A221MF065000LP0	1000
	330	8	10.5	450	0.26	0.17	VD1A331MF105000LP0	500
	470	8	10.5	450	0.26	0.17	VD1A471MF105000LP0	500
	680	10	10.5	670	0.26	0.09	VD1A681MG105000LP0	500
	1000	10	10.5	670	0.26	0.09	VD1A102MG105000LP0	500
	1500	12.5	13.5	820	0.26	0.07	VD1A152MI135000LP0	200
	2200	12.5	16.5	950	0.26	0.06	VD1A222MI165000LP0	200
	3300	16	16.5	1260	0.26	0.054	VD1A332MJ165000LP0	125
	4700	16	16.5	1260	0.26	0.054	VD1A472MJ165000LP0	125
6800	18	16.5	1500	0.26	0.048	VD1A682MK165000LP0	125	
8200	18	21.5	1750	0.26	0.038	VD1A822MK215000LP0	125	
16	15	4	5.4	80	0.22	1.8	VD1C150MB054000LP0	2000
	22	5	5.4	80	0.22	0.76	VD1C220MC054000LP0	1000
	27	5	5.4	150	0.22	0.76	VD1C270MC054000LP0	1000
	33	6.3	5.4	230	0.22	0.44	VD1C330ME054000LP0	1000
	47	6.3	5.4	230	0.22	0.44	VD1C470ME054000LP0	1000
	56	6.3	5.4	230	0.22	0.44	VD1C560ME054000LP0	1000
	68	6.3	5.4	230	0.22	0.44	VD1C680ME054000LP0	1000
	100	6.3	5.4	230	0.22	0.44	VD1C101ME054000LP0	1000
	150	8	6.2	280	0.22	0.36	VD1C151MF065000LP0	1000
	150	8	10.5	280	0.22	0.34	VD1C151MF105000LP0	500
	220	6.3	7.7	280	0.22	0.34	VD1C221ME077000LP0	1000
	330	8	10.5	450	0.22	0.17	VD1C331MF105000LP0	500
	470	8	10.5	450	0.22	0.17	VD1C471MF105000LP0	500
	680	10	10.5	670	0.22	0.09	VD1C681MG105000LP0	500
	1000	10	10.5	670	0.22	0.09	VD1C102MG105000LP0	500
	1500	12.5	13.5	820	0.22	0.07	VD1C152MI135000LP0	200
	2200	12.5	16.5	1260	0.22	0.06	VD1C222MI165000LP0	200
	3300	16	16.5	1260	0.22	0.054	VD1C332MJ165000LP0	125
4700	18	16.5	1260	0.22	0.048	VD1C472MK165000LP0	125	

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## ■特性一览表

额定电压 (V.DC)	静电容量 (±20%) ( $\mu$ F)	产品尺寸(mm)		电气特性			料号	最小包装 数量 (PCS)
		$\phi$ D	L	额定纹波电流 (100KHZ) (+105℃) (mA r.m.s)	$\tan\delta$ (120HZ) (+20℃)	Impedance (100KHZ) (+20℃) ( $\Omega$ )		
25	10	4	5.4	80	0.16	1.8	VD1E100MB054000LP0	2000
	15	5	5.4	150	0.16	0.76	VD1E150MC054000LP0	1000
	22	5	5.4	80	0.16	0.76	VD1E220MC054000LP0	1000
	27	6.3	5.4	230	0.16	0.44	VD1E270ME054000LP0	1000
	33	6.3	5.4	230	0.16	0.44	VD1E330ME054000LP0	1000
	47	6.3	5.4	230	0.16	0.44	VD1E470ME054000LP0	1000
	56	6.3	5.4	230	0.16	0.44	VD1E560ME054000LP0	1000
	68	6.3	5.4	230	0.16	0.44	VD1E680ME054000LP0	1000
	100	6.3	7.7	280	0.16	0.34	VD1E101ME077000LP0	1000
	100	8	6.2	280	0.16	0.36	VD1E101MF065000LP0	1000
	150	6.3	7.7	450	0.16	0.17	VD1E151MF077000LP0	1000
	220	8	10.5	450	0.16	0.17	VD1E221MF105000LP0	500
	330	8	10.5	450	0.16	0.17	VD1E331MF105000LP0	500
	470	10	10.5	670	0.16	0.09	VD1E471MG105000LP0	500
	680	10	10.5	670	0.16	0.09	VD1E681MG105000LP0	500
	1000	12.5	13.5	820	0.16	0.07	VD1E102MG135000LP0	200
	1500	12.5	16.5	950	0.16	0.06	VD1E152MG165000LP0	200
	2200	16	16.5	1260	0.16	0.054	VD1E222MJ165000LP0	125
3300	18	21.5	1260	0.16	0.038	VD1E332MK215000LP0	125	
35	4.7	4	5.4	80	0.13	1.8	VD1V4R7MB054000LP0	2000
	10	5	5.4	150	0.13	0.76	VD1V100MC054000LP0	1000
	15	5	5.4	150	0.13	0.76	VD1V150MC054000LP0	1000
	22	5	5.4	80	0.13	0.76	VD1V220MC054000LP0	1000
	27	6.3	5.4	230	0.13	0.44	VD1V270ME054000LP0	1000
	33	6.3	5.4	230	0.13	0.44	VD1V330ME054000LP0	1000
	47	6.3	5.4	230	0.13	0.44	VD1V470ME054000LP0	1000
	56	6.3	7.7	280	0.13	0.34	VD1V560ME077000LP0	1000
	68	6.3	7.7	280	0.13	0.34	VD1V680ME077000LP0	1000
	68	8	6.2	280	0.13	0.36	VD1V680MF065000LP0	1000
	100	8	10.5	300	0.13	0.17	VD1V101MF105000LP0	500
	150	8	10.5	300	0.13	0.17	VD1V151MF105000LP0	500
	220	8	10.5	450	0.13	0.17	VD1V221MF105000LP0	500
	330	10	10.5	670	0.13	0.09	VD1V331MG105000LP0	500
	470	10	10.5	670	0.13	0.09	VD1V471MG105000LP0	500
	680	12.5	13.5	820	0.13	0.07	VD1V681MI135000LP0	200
	1000	16	16.5	1260	0.13	0.054	VD1V102MJ165000LP0	125
	1500	18	16.5	1500	0.13	0.048	VD1V152MK165000LP0	125
2200	18	21.5	1750	0.13	0.038	VD1V222MK215000LP0	125	
50	1	4	5.4	30	0.10	5.0	VD1H1R0MB054000LP0	2000
	2.2	4	5.4	30	0.10	5.0	VD1H2R2MB054000LP0	2000
	3.3	4	5.4	30	0.10	5.0	VD1H3R3MB054000LP0	2000
	4.7	5	5.4	85	0.10	1.52	VD1H4R7MC054000LP0	1000
	10	6.3	5.4	165	0.10	0.88	VD1H100ME054000LP0	1000
	15	6.3	5.4	165	0.10	0.88	VD1H150ME054000LP0	1000
	22	6.3	5.4	165	0.10	0.88	VD1H220ME054000LP0	1000

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## ■特性一览表

额定电压 (V.DC)	静电容量 (±20%) (uF)	产品尺寸(mm)		电气特性			料号	最小包装 数量 (PCS)
		φD	L	额定纹波电流 (100KHZ) (+105℃) (mA r.m.s)	tanδ (120HZ) (+20℃)	Impedance (100KHZ) (+20℃) (Ω)		
50	27	6.3	7.7	185	0.10	0.68	VD1H270ME077000LP0	1000
	33	6.3	7.7	185	0.10	0.68	VD1H330ME077000LP0	1000
	47	6.3	7.7	185	0.10	0.68	VD1H470ME077000LP0	1000
	47	8	6.2	185	0.10	0.68	VD1H470MF065000LP0	1000
	56	8	10.5	300	0.10	0.34	VD1H560MF105000LP0	500
	68	8	10.5	300	0.10	0.34	VD1H680MF105000LP0	500
	100	8	10.5	300	0.10	0.34	VD1H101MF105000LP0	500
	150	10	10.5	550	0.10	0.18	VD1H105MG105000LP0	500
	220	10	10.5	550	0.10	0.18	VD1H221MG105000LP0	500
	330	10	12.5	550	0.10	0.18	VD1H331MG125000LP0	500
	470	12	13.5	650	0.10	0.12	VD1H471MI135000LP0	200
	680	16	16.5	1000	0.10	0.073	VD1H681MJ165000LP0	125
	1000	18	16.5	1500	0.10	0.066	VD1H102MK165000LP0	125
1500	18	21.5	1620	0.10	0.05	VD1H152MK215000LP0	125	
63	4.7	5	5.4	70	0.08	1.9	VD1J4R7MC054000LP0	1000
	10	6.3	5.4	130	0.08	1.2	VD1J100ME054000LP0	1000
	22	6.3	7.7	150	0.08	0.9	VD1J220ME077000LP0	1000
	33	8	10.5	280	0.08	0.5	VD1J330MF105000LP0	500
	47	8	10.5	280	0.08	0.5	VD1J470MF105000LP0	500
	100	10	10.5	450	0.08	0.25	VD1J101MG105000LP0	500
	150	12.5	13.5	700	0.08	0.15	VD1J151MI135000LP0	200
	220	12.5	13.5	700	0.08	0.15	VD1J221MI135000LP0	200
	330	16	16.5	900	0.08	0.082	VD1J331MJ165000LP0	125
	470	16	16.5	900	0.08	0.082	VD1J471MJ165000LP0	125
	680	16	21.5	1150	0.08	0.080	VD1J681MJ215000LP0	125
	680	18	16.5	1150	0.08	0.080	VD1J681MK165000LP0	125
1000	18	21.5	1250	0.08	0.06	VD1J102MK215000LP0	125	
80	22	8	10.5	130	0.08	1.3	VD1K220MF105000LP0	500
	33	8	10.5	130	0.08	1.3	VD1K330MF105000LP0	500
	47	10	10.5	200	0.08	0.7	VD1K470MG105000LP0	500
	100	10	10.5	200	0.08	0.7	VD1K101MG105000LP0	500
	150	12.5	13.5	450	0.08	0.32	VD1K151MI135000LP0	200
	220	12.5	16.5	550	0.08	0.26	VD1K221MI165000LP0	200
	330	16	16.5	650	0.08	0.17	VD1K331MJ165000LP0	125
	470	16	21.5	900	0.08	0.15	VD1K471MJ215000LP0	125
	680	18	21.5	950	0.08	0.15	VD1K681MK215000LP0	125

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## ■特性一览表

额定电压 (V.DC)	静电容量 (±20%) (uF)	产品尺寸(mm)		电气特性			料号	最小包装 数量 (PCS)
		φ D	L	额定纹波电流 (100KHZ) (+105℃) (mA r.m.s)	tanδ (120HZ) (+20℃)	Impedance (100KHZ) (+20℃) (Ω)		
100	22	8	10.5	130	0.07	1.3	VD2A220MF105000LP0	500
	33	10	10.5	200	0.07	0.7	VD2A330MG105000LP0	500
	47	10	10.5	200	0.07	0.7	VD2A470MG105000LP0	500
	100	12.5	13.5	450	0.07	0.32	VD2A101MI135000LP0	200
	150	12.5	16.5	550	0.07	0.26	VD2A151MI165000LP0	200
	220	16	16.5	650	0.07	0.17	VD2A221MJ165000LP0	125
	220	18	21.5	950	0.07	0.15	VD2A221MK215000LP0	125
	330	16	21.5	900	0.07	0.15	VD2A331MJ215000LP0	125
	330	18	16.5	850	0.07	0.15	VD2A331MK165000LP0	125
	470	18	21.5	950	0.07	0.15	VD2A471MK215000LP0	125

## ■Frequency coefficient of ripple current

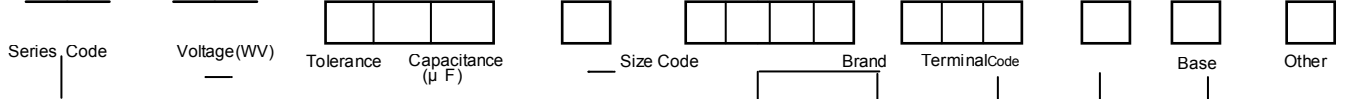
Frequency	50,60Hz	120Hz	1KHz	10K~100KHz
Coefficient	0.64	0.80	0.93	1.0

# 铝电解电容器（表面贴装型）

## 铝电解电容器产品编码体系表

### Product symbol system for Aluminum Electrolytic Capacitors

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
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Fill In Code Of Variety list

例:

Series	Code
VT	VT
JVD	JVD

Voltage	Code
4	OQ
6.3	OJ
10	1A
16	1C
25	1E
35	1V
50	1H
63	1J
80	1K
100	2A
125	2B
160	2C
180	2Z
200	2D
220	2P
250	2E
315	2F
330	2U
350	2V
400	2G
420	W6
450	2H

Cap (μF)	Code
0.1	0R1
0.22	R22
0.33	R33
0.47	R47
1	010
2.2	2R2
3.3	3R3
4.7	4R7
10	100
22	220
33	330
47	470
100	101
220	221
270	271
330	331
390	391
470	471
560	561
680	681
1000	102
2200	222
3300	332
4700	472
10000	103
22000	223

Tolerance(%)	Code
+5	J
-5	J
+10	K
-10	K
+15	Y
-15	Y
+20	M
-20	M
+20	R
-0	R
+20	H
-5	H
+20	V
-10	V
+30	F
-0	F
+30	G
+10	G
+30	Q
-10	Q
+20	E
-15	E

Φ D	Code	L	Code
3	A	5	050
4	B	5.4	054
5	C	5.8	058
6	D	6.2	062
6.3	E	7.7	077
8	F	9	090
10	G	10.5	105
12	H	12.5	125
12.5	I	13.5	135
16	J	14	140
18	K	16.5	165
		21.5	215
		25	250
		30	300
		35	350
		40	400
		45	450
		50	500
		55	550
		60	600

Brand	Code
LH	L

Base	Code
PPA	P

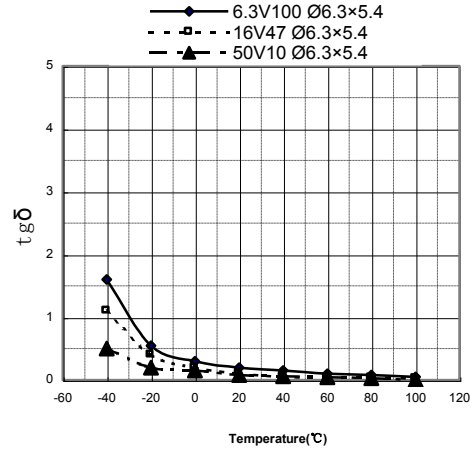
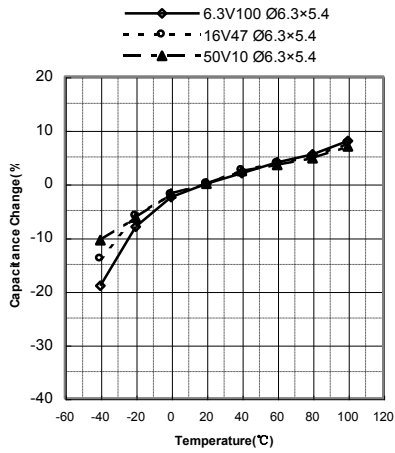
说明：系列别为二个英文字母时（如VT系列），此处(13-15码)代号为：000

例：VT 10V-220 6.3\*5.4 其料号编码为：VT1A221ME054000LPO

# 铝电解电容器（表面贴装型）

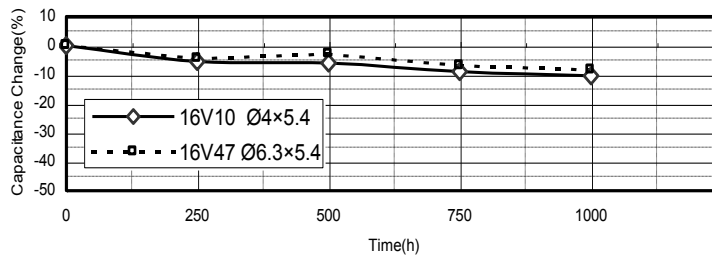
## 贴片型产品温度、特性曲线

### 温度特性曲线 Temperature Characteristics

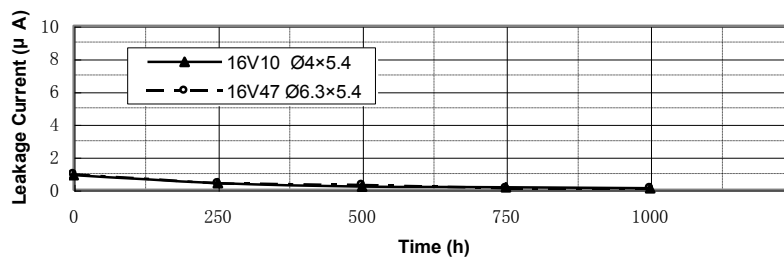
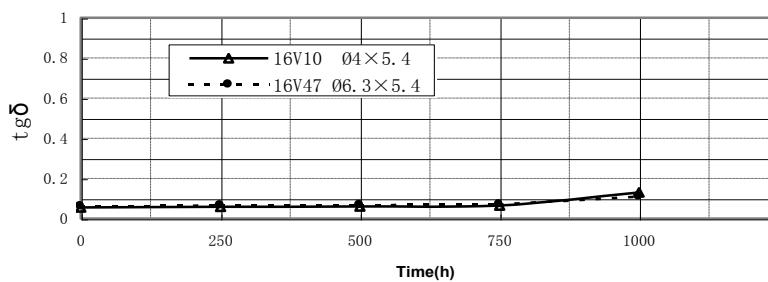


### 寿命曲线 Load Life Data

Post Test Requirement: ±20%(1000h)



Post Test Requirement: 0.32max.(1000h)

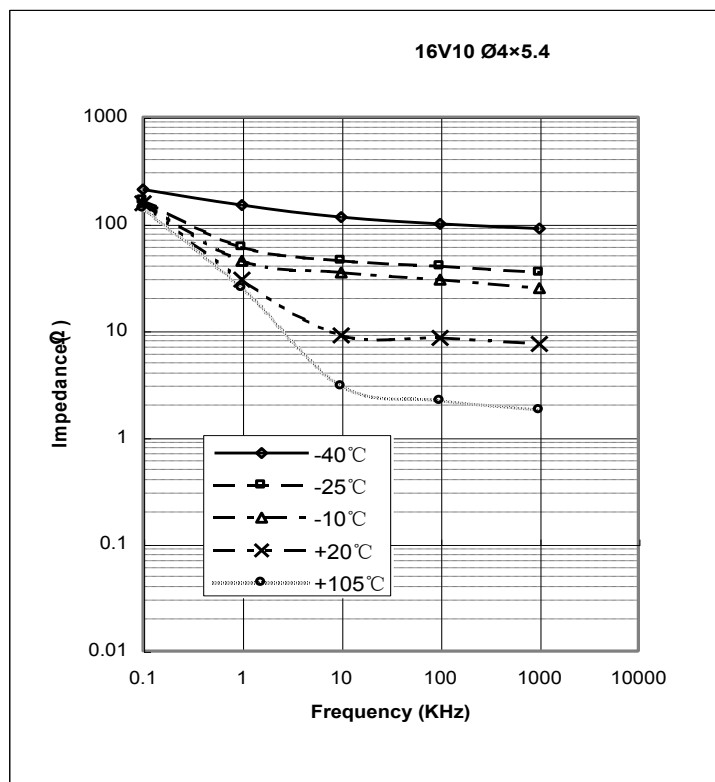




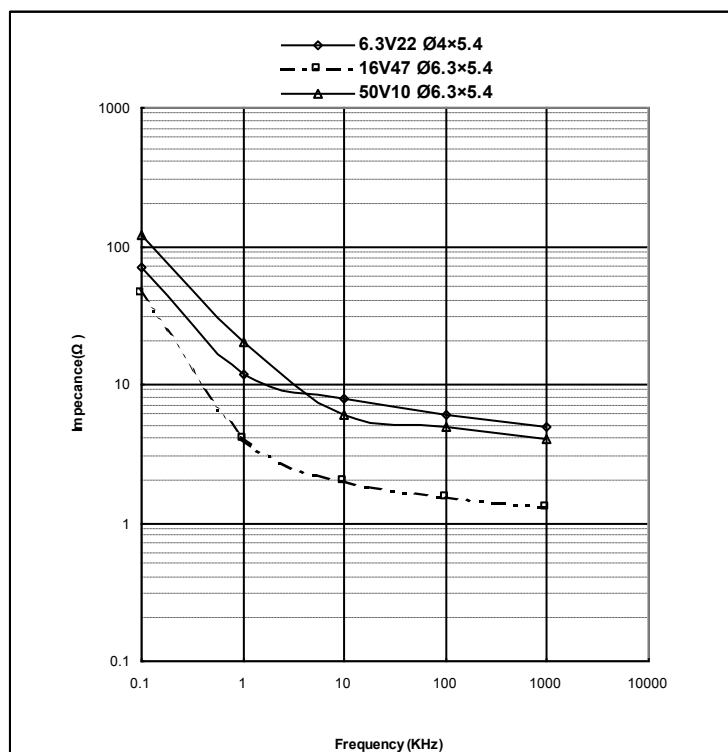
# 铝电解电容器（表面贴装型）

## 贴片型产品温度、特性曲线

### 温度特性曲线 Temperature Characteristics Data



### 频率特性曲线 Frequency Characteristics Data



# 铝电解电容器（表面贴装型）

## ■ Package quantity 包装数量

Φ D×L	Quantity / Reel 数量 / 每盘	pcs/Boxes 数量/小包装箱	pcs/Large packing cases 数量/大包装箱
4×5.4、4×5.8	2000pcs	24000pcs	48000pcs
5×5.4、5.5.8	1000pcs	12000pcs	24000pcs
6.3×5.4、6.3×5.8、6.3×7.7、8×6.2	1000pcs	10000pcs	20000pcs
8×10.5、10×7.7、10×10.5	500pcs	3500pcs	7000pcs
6.3×10.5	800pcs	8000pcs	16000pcs
8×12.5	400pcs	2800pcs	5600pcs
10×12.5	400pcs	2800pcs	5600pcs
12.5×13.5	200pcs	1200pcs	2400pcs
12.5×16.5	200pcs	1200pcs	2400pcs
16×16.5	125pcs	750pcs	1500pcs
16×21.5	125pcs	750pcs	1500pcs
18×16.5	125pcs	750pcs	1500pcs
18×21.5	125pcs	750pcs	1500pcs