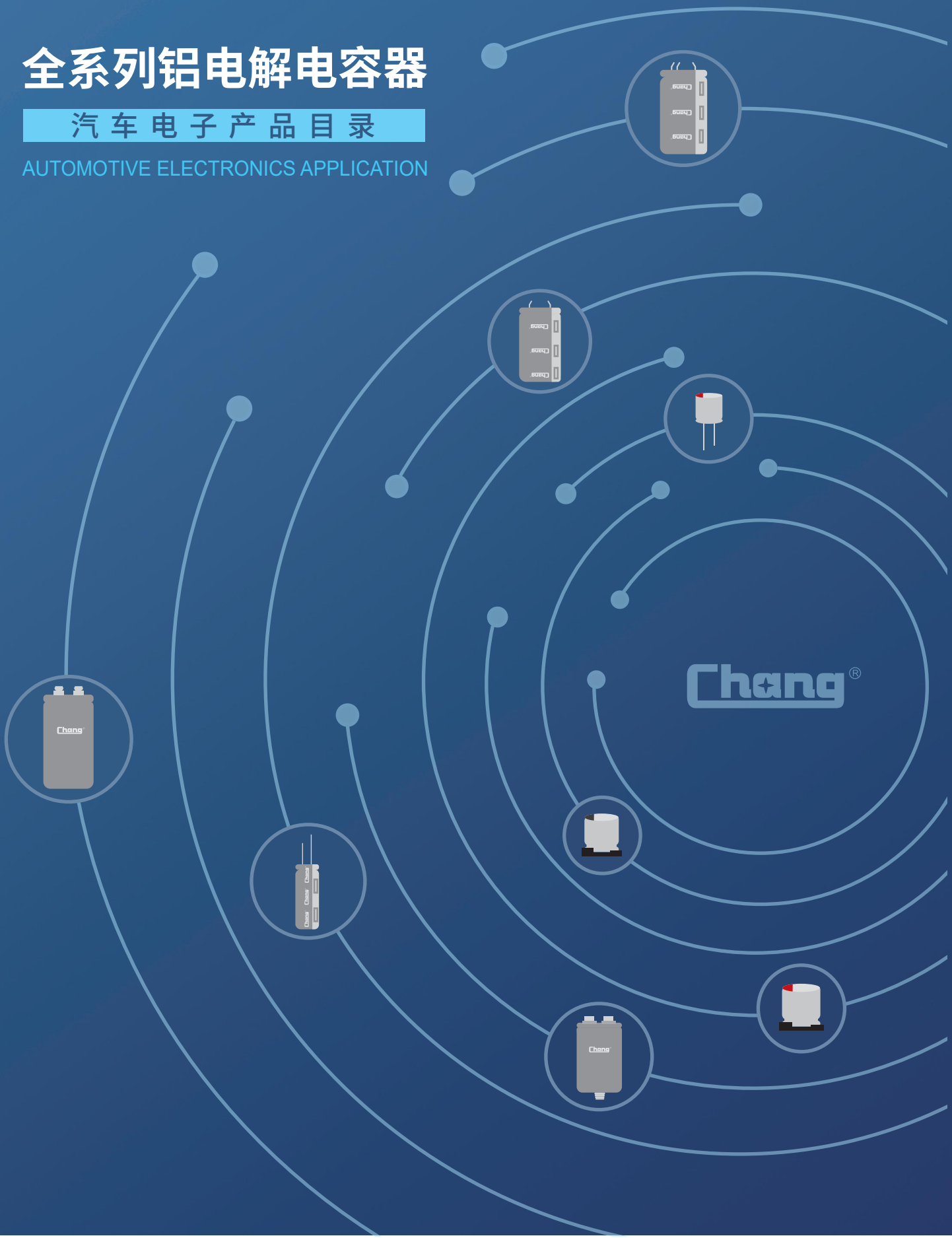
HWE ELECTRONICS 华威电子

全系列铝电解电容器

汽车电子产品目录

AUTOMOTIVE ELECTRONICS APPLICATION



ABOUT US

常州华威电子有限公司始建于1987年，是华威集团旗下一家专业从事全系列铝电解电容器产品设计研究、制造、销售的高新技术企业，自2003年起连续多年入选中国电子元器件百强。

公司获得“常州市市长质量奖”、“区长质量奖”、“全国电容器行业质量领军企业”等荣誉称号。Chang® 牌商标和产品分别获得“江苏省著名商标”和“江苏名牌产品”。

公司构建了覆盖全球的销售服务网络，拥有多个国内办事处和国外销售网点，公司产品远销日本、韩国、印尼、印度、土耳其、美国、俄罗斯、德国、巴西等国家，已在国内外客户中树立了良好的口碑和品牌，成为多家客户的战略合作伙伴和优秀供应商。

Changzhou Huawei Electronics Co., Ltd. was founded in 1987，as one of subsidiary companies of Huawei Group. It is a high-tech enterprise specialized in design, research, manufacturing and sales of a full range of aluminum electrolytic capacitor products. Huawei Electronics has entered the top 100 enterprise electronic components in China for consecutive years since 2003.

Huawei Electronics has honored many titles, such as " Changzhou Mayor Quality Award ", "District Leader Quality Award”，“National Leader in Capacitor Industry Quality" and so on. Our trademarks and products were awarded as "Jiangsu Famous Brand" and "Jiangsu Famous Brand Product".

Huawei Electronics has established a global sales service network, with multiple domestic offices and foreign sales branches. Our products are exported to Japan, Korea, Indonesia, India, Turkey, the United States, Russia, Germany, Brazil and other countries. We have established a good reputation and brand among customers, and become a strategic partner and excellent supplier for many customers.

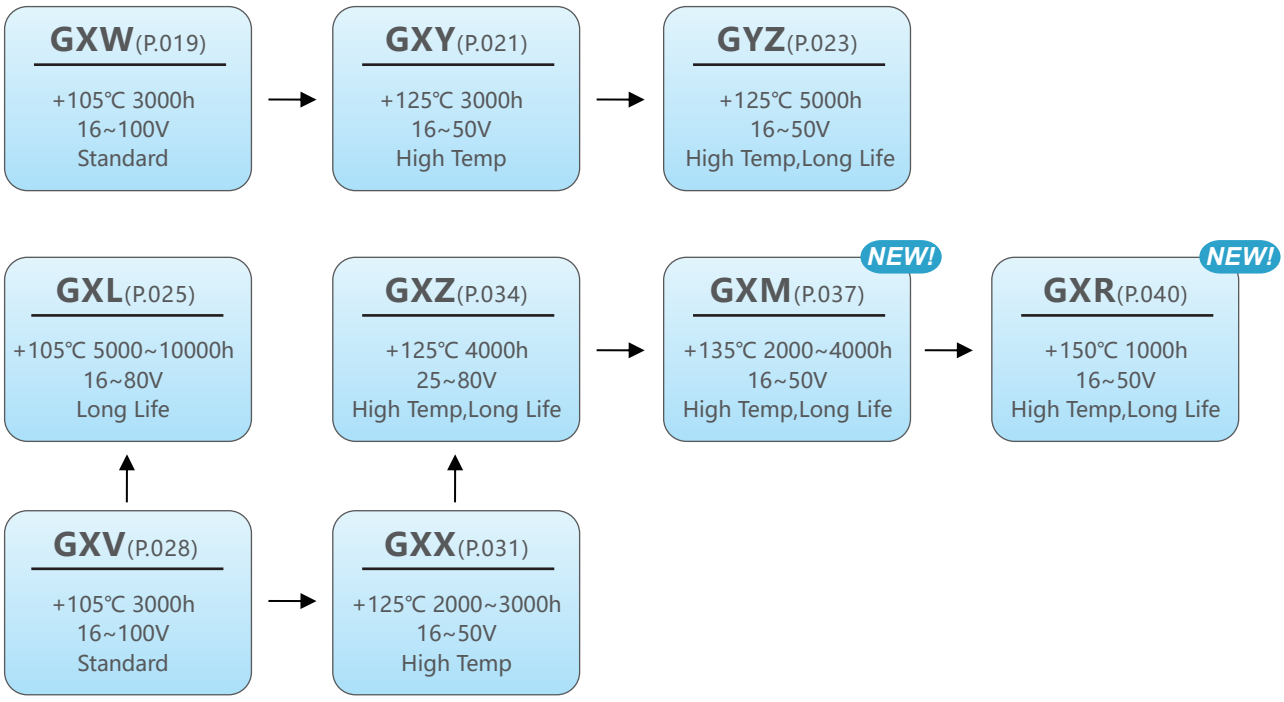
汽车电子产品指南 AUTOMOTIVE PRODUCT GUIDE

导电性高分子混合型铝电解电容器
Conductive Polymer Hybrid Aluminum Electrolytic Capacitors

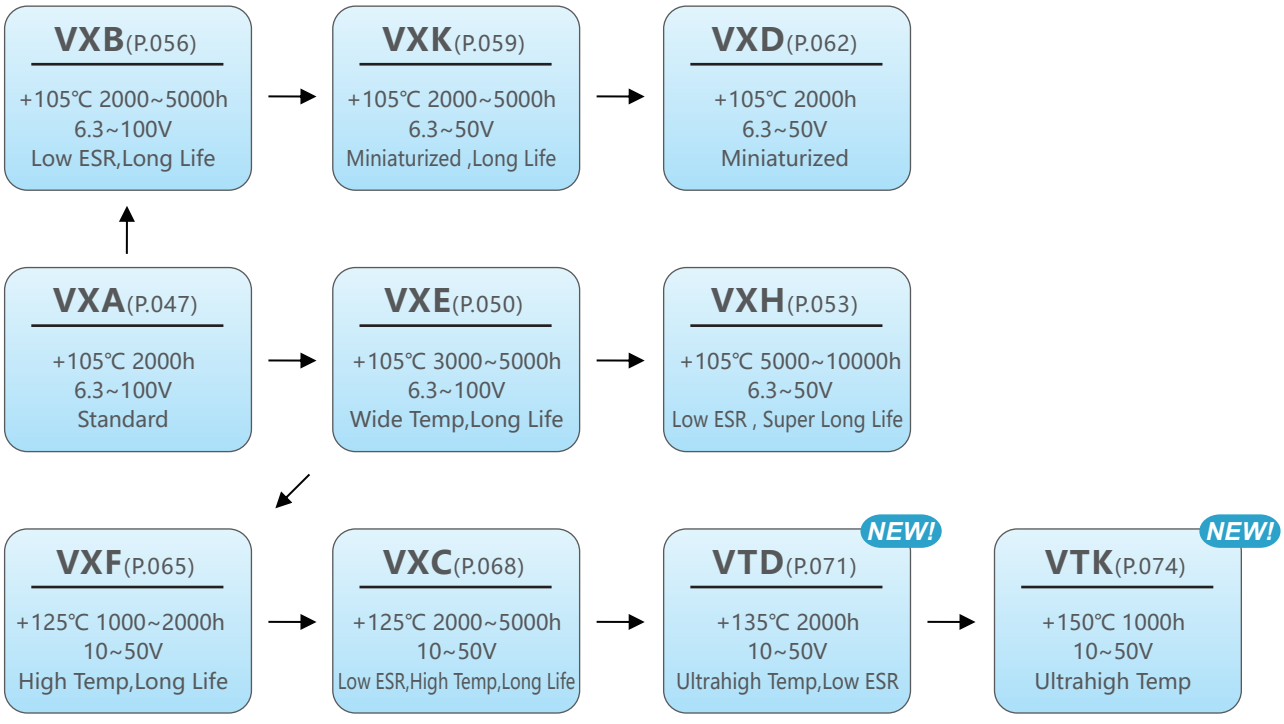
铝电解电容器
Aluminum Electrolytic Capacitors

汽车电子产品体系图 SERIES CHART

导电高分子混合型铝电解电容器 Hybrid Polymer Alu-Capacitor（AEC-Q200）

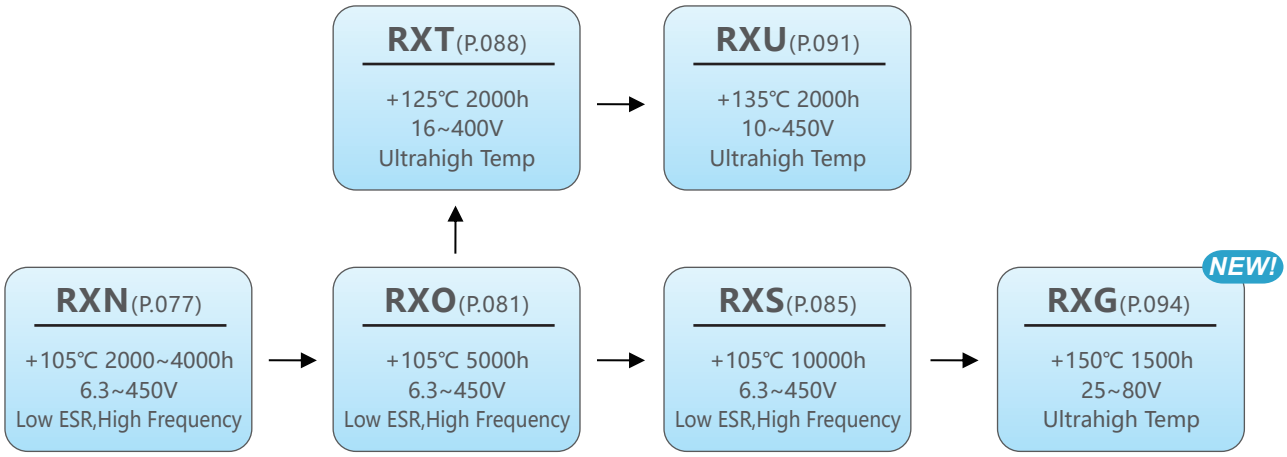


贴片式铝电解电容器 V-chip Liquid Alu-Capacitor（AEC-Q200）

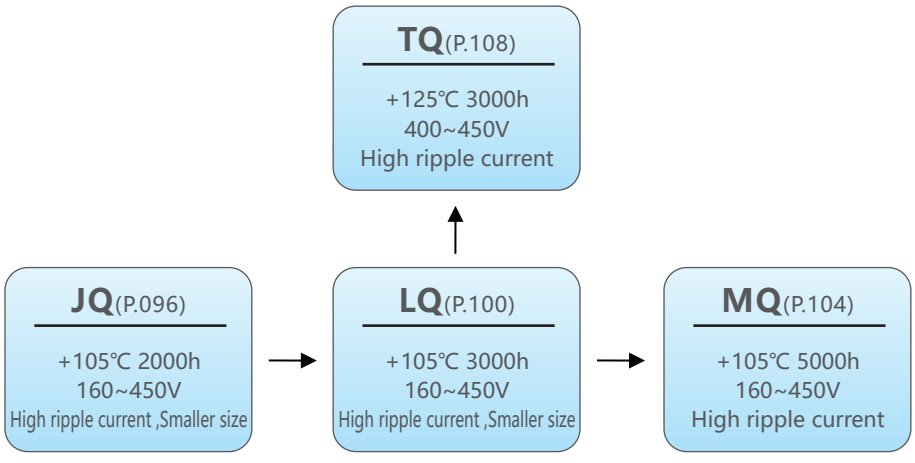


汽车电子产品体系图 SERIES CHART

引线式铝电解电容器 Radial Lead Liquid Alu-Capacitor（AEC-Q200）



焊针式铝电解电容器 Snap-in Liquid Alu-Capacitor（AEC-Q200）



汽车电子铝电解电容器品种一览表

Schedule of Automotive Electronics Aluminum Electrolytic Capacitors' Variety

■ 高分子混合型铝电解电容器 Polymer Hybrid Aluminum Electrolytic Capacitors

引出方式	系列名称	额定电压	温度范围	寿命	标准化	小型化	长寿命	低阻抗	AEC-Q200	页码
Radial	GXW	16~100V	-55~105℃	3000H	●			●	●	019
	GXY	16~50V	-55~125℃	3000H				●	●	021
	GYZ	16~50V	-55~125℃	5000H			●	●	●	023
SMD	GXL	16~80V	-55~105℃	5000~10000H			●	●	●	025
	GXV	16~100V	-55~105℃	3000H	●			●	●	028
	GXX	16~50V	-55~125℃	2000~3000H	●			●	●	031
	GXZ	25~80V	-55~125℃	4000H			●	●	●	034
	NEW! GXM	16~50V	-55~135℃	2000~4000H				●	●	037
	NEW! GXR	16~50V	-55~150℃	1000H				●	●	040

■ 铝电解电容器 Aluminum Electrolytic Capacitors

引出方式	系列名称	额定电压	温度范围	寿命	标准化	小型化	长寿命	低阻抗	AEC-Q200	页码
SMD	VXA	6.3~100V	-55~105℃	2000H	●	●			●	047
	VXE	6.3~100V	-55~105℃	3000~5000H	●	●	●		●	050
	VXH	6.3~50V	-55~105℃	5000~10000H			●		●	053
	VXB	6.3~100V	-55~105℃	2000~5000H	●		●	●	●	056
	VXK	6.3~50V	-55~105℃	2000~5000H			●	●	●	059
	VXD	6.3~50V	-55~105℃	2000H		●		●	●	062
	VXF	10~50V	-40~125℃	1000~2000H	●				●	065
	VXC	10~50V	-40~125℃	3000H			●	●	●	068
	NEW! VTD	10~50V	-40~135℃	2000H				●	●	071
	NEW! VTK	10~50V	-55~150℃	1000H					●	074

■ 铝电解电容器 Aluminum Electrolytic Capacitors

引出方式	系列名称	额定电压	温度范围	寿命	标准化	小型化	长寿命	低阻抗	AEC-Q200	页码
Radial	RXN	6.3~100V	-40~105℃	4000H	●			●	●	077
		160~450V	-25~105℃							
	RXO	6.3~100V	-40~105℃	5000H			●	●	●	081
		160~450V	-25~105℃							
	RXS	6.3~100V	-40~105℃	10000H			●	●	●	085
		160~450V	-25~105℃							
	RXT	16~100V	-40~125℃	2000H					●	088
		200~400V								
	RXU	10~100V	-40~135℃	2000H					●	091
		160~450V								
	NEW! RXG	25~80V	-40~150℃	1500H					●	094
Snap-in	JQ	160~450V	-40~105℃	2000H		●			●	096
	LQ	160~450V	-40~105℃	3000H		●			●	100
	MQ	160~450V	-40~105℃	5000H			●		●	104
	TQ	400~450V	-40~125℃	3000H			●		●	108

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	19	20
① Series		② Voltage		③ Capacitance			④ Tolerance	⑤ Size code				⑥ Terminal Code			⑦ Brand	⑧ Sleeve	⑨ Other	⑩ Supplement Code	

① Series
Series name is code with 2 digits. If the series name has 3 digits, take the last two digits.
For example:: RXN→XN,GXZ→XZ,VXA→XA,GYZ→YZ.

② Voltage
Voltage in volts(V) is represented by a one-digit and one-letter code.
Example:

Voltage(V)	2.5	4	6.3	10	16	25	35	50	63	80	100
Code	0E	0G	0J	1A	1C	1E	1V	1H	1J	1K	2A

Voltage(V)	160	200	250	315	350	400	420	450	500	550	600
Code	2C	2D	2E	2F	2V	2G	2M	2W	2H	2L	2T

③ Capacitance
Capacitance in μF is represented by a three-digit code.The first two digit are significant and the third digit indicates the number of zeros following the significant figure "R" represents the decimal point for capacitance under 10μF.
Example:

Capacitance(μF)	0.1	0.47	1	4.7	10	47	100	470	1000	4700	10000
Code	0R1	R47	010	4R7	100	470	101	471	102	472	103

④ Tolerance
Tolerance is represented by a one-letter code.
Example:

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

⑤ Size code
Size code is represented by four code. The first one-letter indicate case diameter in mm .The last three digits indicate case length in mm, When the height of a product exceeds 100mm, if the last digit is 0,it is represented by A, otherwise, it is represented by B .
Example:

ΦD	4	5	6.3	8	8.2	10	10.2	12.5	13	16	18	20	22	25	30	35	40	50	51	63.5	76	89
Code	B	C	E	F	4	G	9	I	J	L	M	O	P	Q	R	S	T	U	V	W	X	Y

L	5	5.4	9	10	11	11.5	12	14	16	20	25	50	100	105	110	115	120	200	205
Code	050	054	090	100	110	115	120	140	160	200	250	500	10A	10B	11A	11B	12A	20A	20B

Note:When a case size is required and not shown in the table ,please contact with us for further discussion.

⑥ Terminal Code
Terminal Code is represented by a combination of letters or numbers
SMD Type terminal code (please refer to page 6)
Radial type terminal code (please refer to page 7~10)
Snap-in Type and Screw Type terminal code (please refer to page 11)
Note: When a terminal code is required and not shown in the table, please contact with us for further discussion.

⑦ Brand
The CHANG trademark is represented by the letter "C" .

⑧ Sleeve
The sleeve material is represented by the letter E for PET, V for PVC, A for PE.

⑨ Other
It is represented by a letter or number for rubber shape or other information. 0 represents the flat rubber and H represents the convex rubber.

⑩ Supplement Code
For special control purposes

For example: RT 16V 2200μF ±20% 12.5×25 taping F=5.0 Brand: Chang PET Sleeve

R	T	1	C	2	2	2	M	I	2	5	0	B	5	0	C	E	0

铝电解电容的编带、包装
Aluminum Electrolytic Capacitors，T&R Packing-SMD

贴片型编带 SMD Type Carrier Tape

Fig.1-1

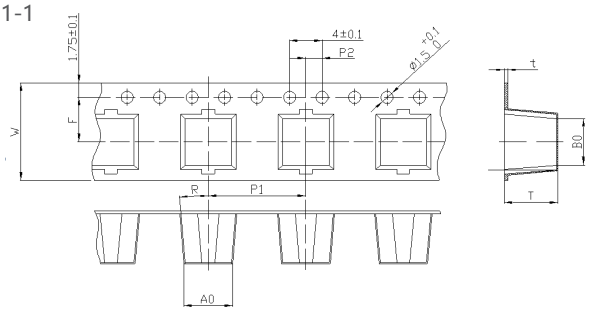
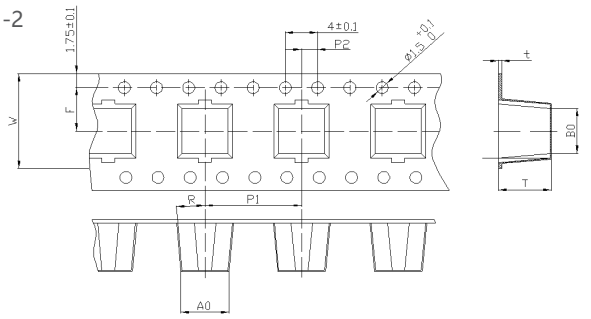
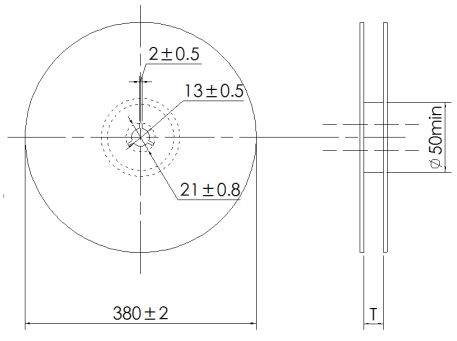


Fig.1-2



ΦD×L	W±0.3	A0±0.1	B0±0.1	P1±0.1	P2±0.1	t±0.05	F±0.1	T±0.2	Fig.N0
4*5.4	12.0	4.7	4.7	8.0	2.0	0.4	5.5	5.8	Fig.1-1
4*5.8								6.3	
5*5.4		5.7	5.7	12.0				5.8	
5*5.8								6.3	
5*7.0								7.2	
6.3*5.4	16.0	7.0	7.0				7.5	5.8	
6.3*5.8								6.3	
6.5*5.8								6.3	
6.3*7.0								7.2	
6.3*7.7								8.1	
6.5*7.7								8.1	
6.3*8.7								9.0	
8*6.5		8.7	8.7					6.8	
8*10L	24.0			16.0		0.5	11.5	11.0	
8.2*10.5								11.0	
8*12.5								13.0	
10*7.7								8.1	
10*10L		10.7	10.7					11.0	
10.2*10.5								11.0	
10*12.5								13.1	
12.5*13.5	32.0	13.4	13.4	24.0			14.2	14.5	Fig.1-2
12.5*16								17.5	
16*16.5	44.0	17.5	17.5	28			20.2	17.5	
16*21.5								22.5	
18*16.5		19.5	19.5	32				17.5	
18*21.5								22.5	

贴片型编带包装盘 SMD Type Reel



编带包装盘尺寸 Reel Size

ΦD	Quantity/Reel 数量PCS / 每盘	Quantity /Inner-Carton 数量pcs/内箱
Φ4	2000	24000
Φ5	1000	12000
Φ6.3 Φ6.5 Φ8×6.5	1000	10000
Φ6.3×8.7	800	8000
Φ8 Φ8.2 Φ 10Φ 10.2	500	3500
Φ 10×7.7	500	3500
Φ8×12.5 Φ 10×12.5	400	2800
Φ12.5×13.5	250	1500
Φ12.5×16	200	1200
Φ16×16.5	125	500
Φ16×21.5	75	300
Φ18×16.5	125	500
Φ18×21.5	75	300

编带包装盘尺寸 Reel Size

单位 Unit: mm

ΦD	4	5	6.3/6.5	8×6.5	8/8.2	10/10.2	12.5	16	18
T	14	14	18	18	26	26	34	46	46

注：部分尺寸公差以敝司提供规格书为准。
Note: Partial dimensional tolerances are subject to specifications.

铝电解电容的编带、包装
Aluminum Electrolytic Capacitors，Ammo Packing-Radial

Fig-1

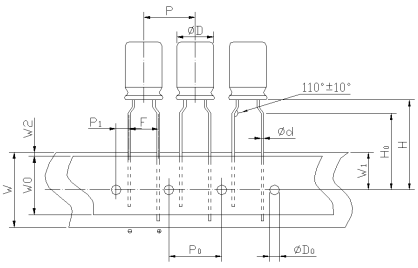


Fig-2

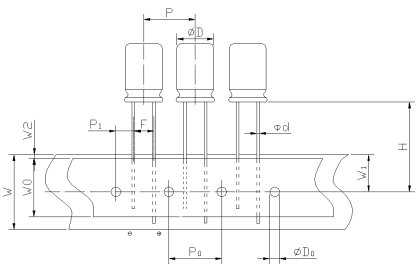
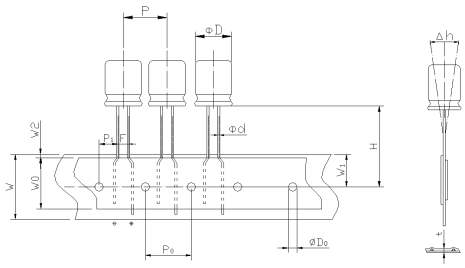


Fig-3



◯ 编带尺寸表 Size table

代号 Code	公差 Tol.	外径（D）						
		Ø5	Ø5~6.3	Ø6.3~8.2	Ø7.3~8.2		Ø10~10.2	Ø12.5	Ø13
d	±0.05	0.5、0.6	0.5、0.6	0.5、0.6	0.5、0.6		0.6	0.6	0.6
P	±1.0	12.7	12.7	12.7	12.7		12.7	15.0	15.0
P_0	±0.2	12.7	12.7	12.7	12.7		12.7	15.0	15.0
P_1	±0.5	5.35	3.85	5.1	4.6	3.85	3.85	5.0	5.0
F	+0.3 -0.2	2.0	5.0	2.5	3.5	5.0	5.0	5.0	5.0
W	±0.5	18.0					18.0		
W_1	±0.5	9.0					9.0		
W_2		≤1.5					≤1.5		
W_0		≥12					≥12		
H	±0.75	18.5					18.5		
H_0	±0.5	16					-		
D_0	±0.2	Ø4.0					Ø4.0		
t	±0.2	0.6					0.7		
Δ_h		≤2.0					≤2.0		
Reference figure		Fig-3	Fig-1	Fig-3	Fig-3	Fig-6	Fig-2		

代号 Code	公差 Tol.	外径（D）	
D	+0.5	Ø12.5~13	Ø14.5~18
P	±1.0	25.4	30.0
P_0	±0.2	12.7	15.0
F	+0.3 -0.2	5.0	7.5
W	±0.5	18.0	18.0
W_1	±0.5	9.0	9.0
H	±0.75	18.5	18.5
W_0		≥12.0	≥12.0
W_2		≤1.5	≤1.5
P_1	±0.5	3.85	3.75
P_2	±1.0	6.35	7.5
d	±0.05	0.6	0.8
Reference figure		Fig-5	

注：部分尺寸公差以敝司提供规格书为准。
Note: Partial dimensional tolerances are subject to specifications.

铝电解电容的编带、包装
Aluminum Electrolytic Capacitors，Ammo Packing-Radial

Fig-4

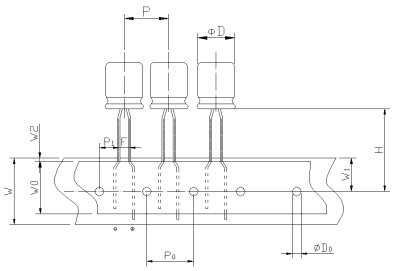


Fig-5

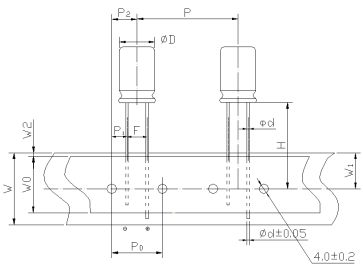
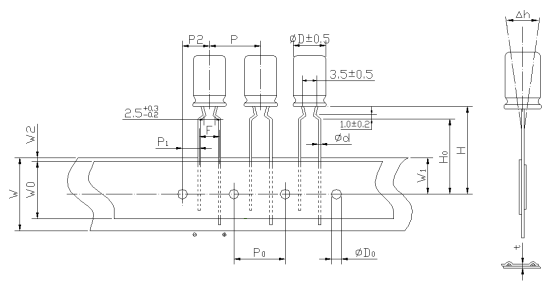


Fig-6



◯编带尺寸表 Size table

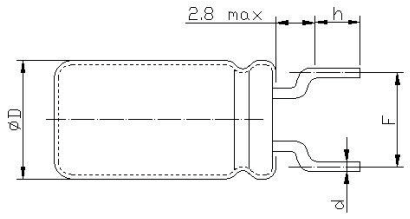
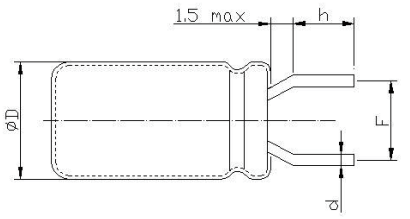
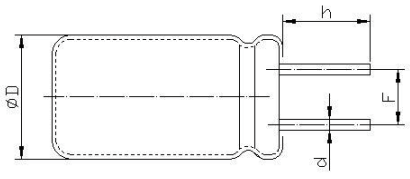
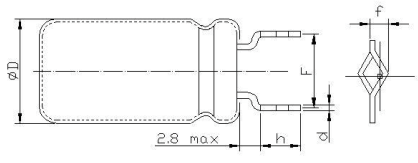
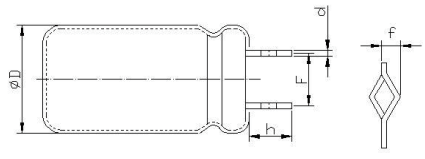
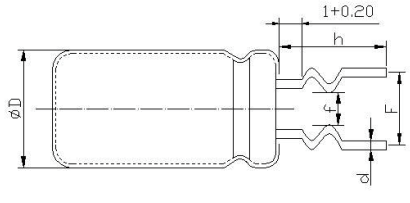
代号 Code	公差 Tol.	外径（D）							
		Ø4	Ø5	Ø6.3	Ø8		Ø4~5	Ø4~6.3	Ø8
d	±0.05	0.45		0.45、0.5	0.5		0.45、0.5	0.45、0.5	0.5
P	±1.0	12.7					12.7		
P_0	±0.2	12.7					12.7		
P_1	±0.5	5.6	5.35	5.1	5.1	4.6	5.1	3.85	3.85
F	+0.3 -0.2	1.5	2.0	2.5	2.5	3.5	2.5	5.0	5.0
W	±0.5	18.0					18.0		
W_1	±0.5	9.0					9.0		
W_2		≤3					≤3		
W_0		≥7.0					≥7.0		
H	±0.75	18.5					18.5		
H_0	±0.5	-					16		
D_0	±0.2	Ø4.0					Ø4.0		
t	±0.2	0.6					0.6		
Δ_h		≤2.0					≤2.0		
Reference figure		Fig-3					Fig-4	Fig-1	Fig-6

◯ 编带产品包装量 Packaging Specification

Case size	Box(pcs)	Carton(pcs)	Case size	Box(pcs)	Carton(pcs)
Ø4*5~7	2500	25000	Ø10~10.2*18~30	500	4000
Ø5*5~12	2000	20000	Ø 12.5~13*13~30	450	1800
Ø6.3*5~17	1500	15000	14.5*12~22	350	1400
Ø7.3*14~19	1000	10000	16*15~26	250	1000
Ø8~8.2*5~17	1000	10000	16*30	250	1500
Ø8~8.2*17.5~22	1000	8000	18*15~25	250	1000
Ø10~10.2*8~17	500	5000	18*30	250	500

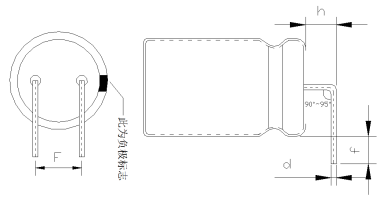
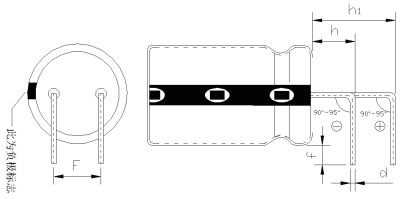
注：部分尺寸公差以敝司提供规格书为准。
Note: Partial dimensional tolerances are subject to specifications.

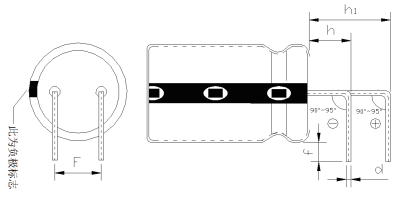
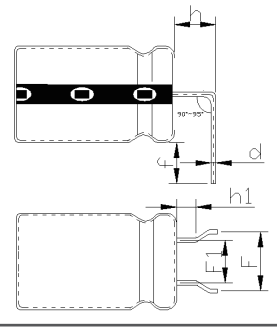
引线成形产品外形图及规格表
Leads forming size table and figure

类别代码 Code	尺寸 Size					外形图 Figure
	D	d±0.05	F±0.3	h	f	
M**	Ø4	0.45	5.0	3.8±0.2	–	
	Ø5	0.45、0.5	5.0	3.8±0.2	–	
	Ø6.3	0.45、0.5	5.0	3.8±0.2	–	
	Ø8	0.5、0.6	5.0	3.8±0.2	–	
Q**	Ø4	0.45	2.5	3.8±0.2	–	
	Ø5	0.45、0.5	2.5	3.8±0.2	–	
Z**	Ø4	0.45	1.5	3.8±0.2	–	
	Ø5	0.45、0.5	2.0	3.8±0.2	–	
	Ø6.3	0.45、0.5	2.5	3.8±0.2	–	
	Ø8	0.5、0.6	3.5	3.8±0.2	–	
	Ø10~13	0.6	5.0	3.8±0.2	–	
	Ø16~Ø18	0.8	7.5	3.8±0.2	–	
W**	Ø5	0.45、0.5	5.0	4.2±0.2	1.1±0.1	
	Ø6~Ø6.3	0.45、0.5	5.0	4.2±0.2	1.1±0.1	
	Ø8	0.5、0.6	5.0	4.2±0.2	1.1±0.1	
J**	Ø10~13	0.6	5.0	4.5±0.2	1.2±0.1	
	Ø16~Ø18	0.8	7.5	4.5±0.2	1.3±0.1	
E**	Ø5~6.3	0.45、0.5	5.0	12±0.2	3.3±0.2	
	Ø8	0.5、0.6				

注：部分尺寸公差以敝司提供规格书为准。
Note: Partial dimensional tolerances are subject to specifications.

引线成形产品外形图及规格表
Leads forming size table and figure

类别代码 Code	尺寸 Size					外形图 Figure
	D	d±0.05	F±0.3	h	f	
X**	Ø5	0.5	2.0	2.0±0.3	3.5±0.3	
	Ø6.3	0.5	2.5	2.5±0.3	3.5±0.3	
	Ø8	0.5、0.6	3.5	2.5±0.3	3.5±0.3	
	Ø10~13	0.6	5.0	2.5±0.3	3.5±0.3	
	Ø16~ Ø 20	0.8	7.5	2.5±0.3	4.5±0.3	
L**	Ø5	0.5	2.0	2.0±0.3	3.5±0.3	
	Ø6.3	0.5	2.5	2.5±0.3	3.5±0.3	
	Ø8	0.5、0.6	3.5	2.5±0.3	3.5±0.3	
	Ø10~13	0.6	5.0	2.5±0.3	3.5±0.3	
	Ø16~ Ø 20	0.8	7.5	2.5±0.3	4.5±0.3	

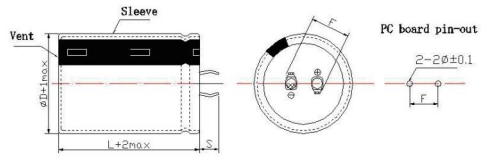
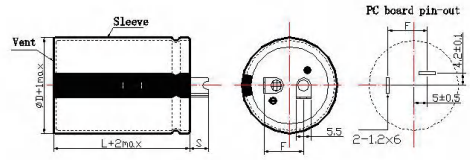
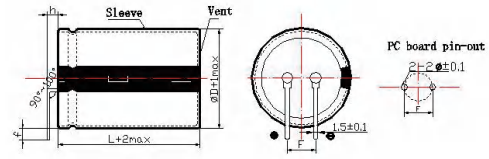
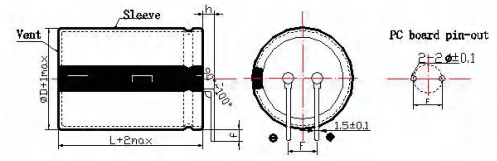
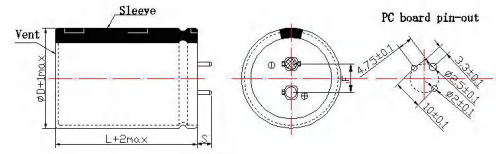
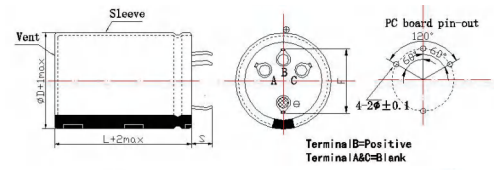
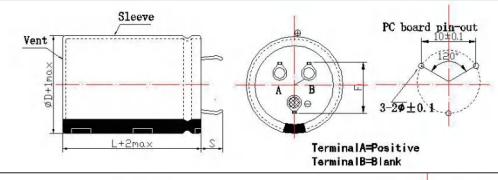
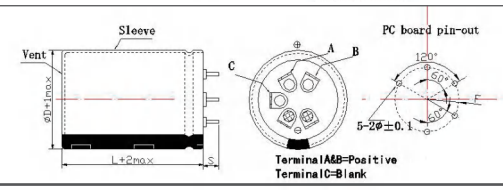
类别代码 Code	尺寸 Size							外形图 Figure
	D	d±0.05	F±0.3	F1	h	h_1	f	
Y**	Ø10	0.6	5.0	–	4.0±0.3	10±0.3	3.8±0.3	
	Ø12.5	0.6	5.0	–	4.0±0.3	10±0.3	3.8±0.3	
V**	Ø8	0.5	5.0	3.5±0.3	2.0~2.5	1 Max	3.5±0.3	

注：部分尺寸公差以敝司提供规格书为准。
Note: Partial dimensional tolerances are subject to specifications.

基板自立型产品端子尺寸及外形图
Aviailable terminals for Snap-in table and figure

◯ 焊针形状可以定制

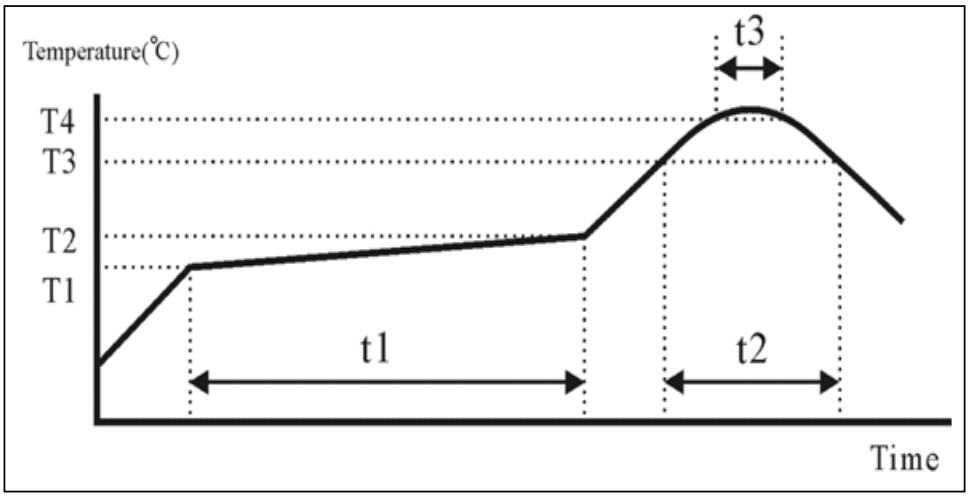
The following terminal options can be selected

类别代码 Code	尺寸 Size					外形图 Figure
	D	F±0.5	S±0.5	h±1.0	f±0.5	
S55(自锁) N55(不自锁)	Ø20~35	10	4.0	–	–	
S68(自锁) N68(不自锁)	Ø20~35	10	5.8	–	–	
K68	Ø30~40	14.3	5.8	–	–	
K52	Ø30~40	14.5	4.5	–	–	
X01	Ø20	8	–	3.0	4.0	
	Ø22~35	10	–			
L01	Ø20	8	–	4.0	3.5	
	Ø22~35	10	–			
E55	Ø20~35	12.3	4.0	–	–	
C55	Ø35~40	22.5	4.5	–	–	
C68	Ø35~40	22.5	5.8	–	–	
B68	Ø25	12.5	5.8	–	–	
O38	Ø51	25.0	3.8	–	–	

注：部分尺寸公差以敝司提供规格书为准。
Note: Partial dimensional tolerances are subject to specifications.

LEAD FREE TYPE REFLOW SOLDERING CONDITION
无铅焊料的回流焊条件

■ 回流焊温度与时间曲线图 Temperature / Time profile



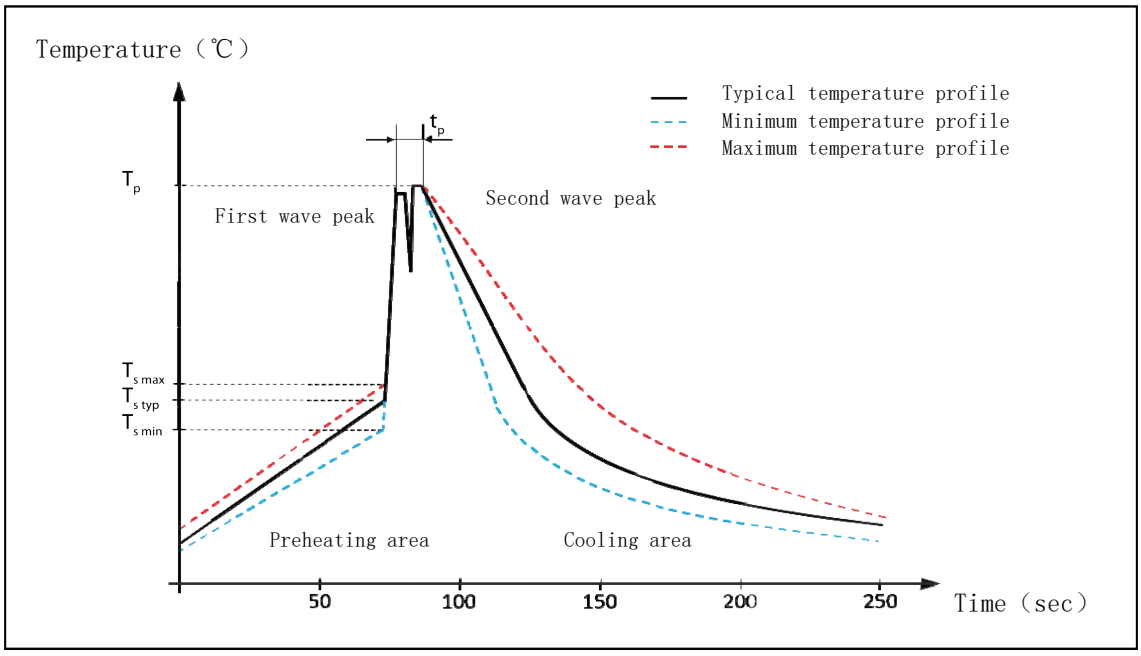
■ 铝电解电容器贴片型 Aluminum electrolytic capacitor SMD type

Type		Nonsolid capacitor	
W.V.(V)		4~100	120up
Case size(Φ)		4~18	8~18
Preheat	Temp.(T1~T2,℃)	160~190	150~180
	Time(t1)(Max,secs)	100s max	
Duration	Temp.(T3,℃)	220	217
	Time(t2)(Max,secs)	40~70	40s max
Peak	Temp.(T4,℃)	260	240
	Time(t3,secs)	5	
Reflow cycles		2 or less	1

■ 导电性高分子固体及混合型铝电解电容器贴片型
Conductive polymer solid and hybrid aluminum electrolytic capacitors SMD type

Preheat	Temp.(T1~T2,℃)	150~180		
	Time(t1).(Max sec)	120		
Duration	Temp. (T3,℃)	200	217	230
	Time(t2).(sec)	70	50	40
Peak	Temp.(T4,℃)	250		260
	Time. (t3,secs)	5		
Reflow cycles		2		1

■ 波峰焊温度与时间曲线图 Temperature / Time profile



Parameter	Numerical value
Minimum preheating temperature (Ts min)	100℃
Typical preheating temperature (Ts typ)	120℃
Maximum preheating temperature (Ts max)	130℃
Preheating duration	70 secs
Peak (Tp)	245~260℃ (Unleaded) 235~260℃ (Leaded)
Duration of peak temperature (tp)	≤10 secs
Minimum cooling rate	≥2℃/sec
Typical cooling rate	3.5℃/sec
Maximum cooling rate	≤5℃/sec
Duration of the entire process	4mins

导电性高分子混合型铝电解电容器使用注意事项

导电性高分子混合型铝电解电容器（后面略称为电容器）是采用了导电性高分子和电解液作为混合电解质的电容器。最大限度的发挥了电容器的特长，使用时请注意以下问题。

本目录中记述的电路和“规格书”内容是用于说明我公司产品的动作示例和使用示例，对客户实际使用时的设备系统操作，恕不给予任何保证。

如因使用上述信息导致故障、损害发生，我公司概不负责。

关于“规格书”中记述的我公司产品特性是否适用于贵公司设备系统规格，最终由贵公司判断并承担相应责任。

请贵公司自行采取冗余设计、误动作防止设计等安全设计，以免因我公司产品故障导致人身事故、火灾事故发生。

1.电路设计中的注意事项

使用电容器时，请在确认安装环境和使用环境后，在电容器产品目录或规格书中规定的电容器额定性能范围内使用。

1)寿命

电路设计时，请选择与机器寿命相符的电容器；

⑴电容器的电气特性会根据温度和频率的变动而变化，请在确认该变化量的基础上进行电路设计；

⑵导电高分子混合型铝电解电容器在如下电路中使用时，可能无法充分发挥功能或出现故障，因此请勿在以下电路中使用：

①耦合电路；

②时间常数电路；

③高阻抗电压保持电路；

④相对于额定电压，只施加了极低电压的电路；

⑤会受到漏电流极大影响的电路，其他串联多个电容器，并用于特殊用途时请另行咨询。

⑶请注意利用推定寿命公式计算的结果并非保证值；

⑷并联两个以上的电容器时，请充分考虑电流平衡（特别是导电高分子混合型铝电解电容器和普通铝电解电容器并联时，更需要考虑。）；

⑸串联两个以上的电容器时，请充分考虑电压平衡，并将分压电阻器插入，使其与电容器并联；

⑹在进行机器的寿命设计时，请选择相对于推断值具有充足的余裕的电容器；

⑺此外，利用推算寿命公计算的结果超过15年时，以15年为上限。

2)极性

电容器具有极性，请不要加载反向电压或交流电压。如反极安装，有可能导致电路、压力阀动作等损坏现象。

3)加载电压

电容器两端加载的总电压请不要超过电容器的额定电压。请将直流电压和叠加的纹波电压峰值的总电压设定在额定电压以下。串联2个以上电容器时，请确保各电容器上施加的电压在额定电压以下，并并联分压电阻器，以备发生漏电流。如果在工作温度范围内、额定电压以下使用，可不用降低电压。虽然规定了超过额定电压的浪涌电压，但有限制条件，不能保证长时间使用。

4)纹波电流

请不要加载超过额定纹波电流的电流。施加过大纹波电流时，电容器内部发热会变大，导致寿命变短、压力阀动作甚至引起短路等故障。

即使在低于额定纹波电流的条件下使用，当直流偏置电压低时，也有可能造成施加反向电压。请确保在不施加反向电压的条件下使用。

额定纹波电流的频率是有限制条件的。在规定外的频率下使用时，要控制在乘以各系列规定的频率修正系数的值以下。

Application Guidelines for Conductive Polymer Hybrid aluminum electrolytic capacitors

Conductive Polymer Hybrid Aluminum Electrolytic Capacitors (Hereinafter called capacitor) that uses highly conductive polymer electrolytic materials and electrolyte. Please read the following in order to get the most out of your capacitor.

The circuits described as examples in this catalog and the "delivery specifications" are featured in order to show the operations and usage of our products, however, this fact does not guarantee that the circuits are available to function in your equipment systems.

We are not in any case responsible for any failures or damage caused by the use of information contained herein.

You should examine our products, of which the characteristics are described in the "delivery specifications" and other documents, and determine whether or not our products suit your requirements according to the specifications of your equipment systems. Therefore, you bear final responsibility regarding the use of our products.

Please make sure that you take appropriate safety measures such as use of redundant design and malfunction prevention measures in order to prevent fatal accidents and/or fires in the event any of our products malfunction.

1.Device circuits design considerations

Confirm installation and operating requirements for the capacitors, then use them within the performance limits prescribed in this catalog or product specifications.

1) Lifetime

Select the capacitors to meet the service life requirements of device.

⑴Electrical characteristics of a capacitor will change according to the temperature and frequency. Please confirm this change when designing the circuit.

⑵Capacitors may not be fully functional or fail when used in the following circuits, so do not use them in the following circuits:

①Coupled circuits;

②Time constant circuit;

③High impedance voltage circuit;

④A circuit in which a very low voltage is applied relative to the rated voltage;

⑤For circuits which will be greatly affected by leakage current, series connected with several capacitors and used for special purpose, please consult separately.

⑶The results calculated by the constructive life formula are not guaranteed values;

⑷When connecting more than two capacitors in parallel, please fully consider the current balance (especially when connecting conductive polymer hybrid capacitors with normal capacitors);

⑸When connecting more than two capacitors in series, please fully consider the voltage balance. Connect the shunting resistors with the capacitors in parallel;

⑹When designing the life of the machine, please choose the capacitor with sufficient margin relative to the inferred value;

⑺The upper limit is 15 years if the calculated results exceed 15 years.

2)Polarity

Capacitors are polarized. Never apply a reverse voltage or AC voltage. Connecting with wrong polarity will short-circuit or damage the capacitor with the pressure relief vent opening early on.

3)Operating voltage

Do not apply an over-voltage that exceeds a rated voltage specified for the capacitors.

The total peak value of the ripple voltage plus the DC voltage must not exceed the rated voltage of the capacitors. Capacitors do not require voltage derating within the category temperature. Although capacitors specify a surge voltage that exceeds the full rated voltage, it does not assure long-term use but limited use under specific conditions.

4)Ripple current

Do not apply an over current that exceeds the rated ripple current specified for the capacitors. Excessive ripple current will increase heat production within the capacitors, causing the capacitors to be damaged as follows:

• Shorten lifetime
• Open pressure relief vent
• Short circuit

At the time of low DC bias voltage, reverse voltage may be applied if uses with less than rated ripple current. Please use it as far as the reverse voltage is not applied. The rated ripple current is specified along with a specific ripple frequency. Where using the capacitors at any ripple frequency other than the specified frequency, calculate the allowable ripple current by multiplying the rated ripple current by a frequency compensation factor (Frequency Multiplier) specified for each product series.

5)使用温度

电容的寿命受使用温度的影响，所以请不要在超过上限工作温度的条件下使用电容器。如果超过工作上限温度使用，电容器的寿命会缩短，并导致压力阀动作等破损。不仅限于环境温度及机器内的温度，请确认机器内的发热体（晶体管、电阻等）的辐射热、包括纹波电流自身发热等在内的温度。如果将温度设定得较低，寿命会延长。

6)漏电流

有时候漏电流会因回流焊等的热应力上升，但如果在工作温度内加载电压，则会通过利用自我修复作用逐渐减少。此外，此时的漏电流减少的速度，越接近工作上限温度及额定电压就越快。

漏电流上升的原因如下：

⑴焊接

⑵高温无负载、高温高湿、温度急剧变化等试验

7)充放电

在反复快速充放电的电路中，请不要使用通用电容器。如果使用于电压差大的充放电电路，或短周期且反复急速充放电的电路中，可能导致静电容量减少，内部发热等损坏。

关于在反复充放电的电路中使用电容器相关事宜敬请咨询我司。

导电高分子混合型铝电解电容器中流过因快速充放电所产生的过大冲击电流时,会导致漏电流大幅上升、开路或短路等不良。请确保冲击电流不要超过10A。

8)电容器故障模式

导电高分子混合型铝电容器是有使用寿命的部件，在一般情况下会发生开路型磨损故障。产品及使用条件的不同有时会同时引发压力阀动作等故障。

但是，在过电压及过电流等超过保证范围的负荷条件使用电容时，可能会发生短路模式故障。

9)电容器的绝缘

电容器的铝壳非绝缘保证型。电容器的外壳、阴极端子及阳极端子和电路板之间请进行电气绝缘。

10)电容器的使用环境

电容器请不要在以下环境下使用：

⑴直接溅水、盐水、油或处于结雾状态的环境

⑵阳光直接照射的环境

⑶臭氧、紫外线及放射线照射的环境

⑷充满有毒气体（硫化氢、亚硫酸、亚硝酸、氯及其化合物、溴及其化合物、氨等）的环境

⑸有酸性及碱性溶剂溅落的环境

振动或冲击条件超过产品目录或规格说明书规定范围的过激环境（标准振动条件以JIS C5101-4为准）。

11)电容器的配制

电容器使用了以可燃性有机溶剂为主要溶媒的导电性电解液和可燃性电解纸。当电解液万一漏出到印刷线路板上时，会腐蚀电路线路，造成电路线路间的短路，进一步导致冒烟、起火，因此，请在确认以下内容后进行设计。请事先确认以下内容后再进行设计：

⑴请将印刷电路板的孔间距与电容器的端子间距保持一致；

设计时请不要将配线及电路板靠近电容器的压力阀部分；

⑵横向放置时，请勿使压力阀以及阳极端子朝下；

请避免在电容器的周围以及印刷配线板的背面（电容器的下面）设置发热零部件；

⑶贴片型电容器用印刷配线板的线路，请参照产品目录规格书的推荐尺寸进行设计；

⑷将电容器安装于两面印刷配线板时，电容器的下方请不要设计多余的线路板孔及连接线路板正面的贯穿孔；

⑸将电容器安装于两面印刷配线板时，电容器主体的安装部位请注意不要设置配线线路。

5)Operating temperature (Category temperature)

Do not apply high temperatures that exceed the upper limit of the category temperature range specified for the capacitors. Using the capacitors at temperatures higher than the upper limit will considerably shorten the lifetime of the capacitors and make the pressure relief vent open. The temperature, please confirm the temperature of the capacitors which included the ambient temperature of the device, not only the temperature in the device but also radiant heat of the heating element (power transistor, resistance) in the apparatus, self heating caused by the ripple current. Additionally, please do not place heating element on the back side of the capacitors. In addition, please use the capacitors within category temperature range because the life of the capacitors are affected by the operating temperature. In other words, lowering ambient temperatures will extend the expected lifetime of the capacitors.

6)Leakage current

The leakage current may increase due to thermal stress such as reflow soldering. After that, however, the leakage current will gradually decrease by self-healing action of the dielectric oxide layer when the capacitors are applied with a voltage less than the rated voltage within the Category Temperature range. As the voltage is closer to the rated voltage and the temperature is closer to the upper limit of Category Temperature range, the leakage current decreases faster. The leakage current will increase by the following factors,

⑴Soldering

⑵Testing of high temperature exposure with no voltage applied, high temperature/humidity storage, temperature cycles, etc.

7)Charging and discharging

Do not use capacitors in circuits intended for rapid charge and discharge cycle operations. If capacitors are used in the circuits that repeat a charge and discharge with a large voltage drop or a rapid charge and discharge at short interval cycle, capacitance will decrease and/or the capacitors will be damaged by internal heat generation. Please consult us the capacitors to use for the circuit where rapid charge and discharge is repeated. Please be careful about rush currents. Recommend to install protective circuit.

Make sure that the Impulse current flowing through the capacitor does not exceed 10A.

8)Failure mode of capacitors

Non-solid aluminum electrolytic capacitors have a limited lifetime which ends in an open circuit failure mode, in general. Depending on the product type and operating conditions, the failure mode may involve in opening of the pressure relief vent. But it may lead to shot circuit mode failure when capacitor is used in the overload more than the guarantee ranges including over voltage and the over current.

9)Capacitor insulation

The can case of capacitor does not assure electrical insulation. The outer coating on can case is aimed for indication and does not assure function of the electrical insulation. Electrically isolate the outer can case of a capacitor from the negative terminal, the positive terminal and circuit patterns.

10)Operating conditions

Do not use/expose capacitors to the following conditions:

⑴Direct contact with water, salt water or oil, or high condensation environment.

⑵Direct sunlight

⑶Toxic gases such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine and its compounds, bromine and its compounds and ammonium.

⑷Ozone, ultraviolet rays or radiation.

⑸Extreme vibration or mechanical shock that exceeds limits in the catalogs or product specifications.

The standard vibration condition is applicable to JIS C 5101-4.

11)Mounting

Capacitors contain paper separators and electric-conductive electrolyte that contains organic solvent as main solvent material, both of which are flammable. If the electrolyte leaks onto a printed circuit board, it can erode the device circuit pattern, may short-circuit the copper traces, smoke and burn. Make sure of designing a PC board as follows:

⑴For radial capacitors, design the terminal holes on the PC board to fit the terminal dimension of the capacitor.

Do not locate any wire or circuit pattern over the pressure relief vent of a capacitor.

⑵Avoid locating any heat source components near capacitors or on the opposite side of the PC board under capacitors.

⑶Design the solder land on the PC board in accordance with the catalog or the product specification.

⑷In designing a double-sided PC board, do not locate any through-hole via or unnecessary hole underneath a capacitor.

⑸In designing a double-sided PC board, do not print any circuit pattern underneath a capacitor.

12)在强调安全的产品上的应用

在涉及人生安全的用途、因设备故障、误动作、缺陷可能对人生安全和财产造成损害的用途，或可能会对社会造成巨大影响的以下特定用途使用本产品时，请于使用前与我公司联系，在协商后进行使用：

(1)航空航天设备
(2)核能设备
(3)医疗设备
(4)运输设备（汽车、列车、船舶等）
(5)交通机构控制设备
(6)防灾防盗设备
(7)公共性较高的信息处理设备
(8)海底设备
(9)其他特定用途设备

2.安装注意事项

1)组装时

(1)对组装到设备上的已经通电的电容器，请勿再次使用。除了定期检修时为检测电气性能而拆卸的电容器外，均不能再次使用；

(2)即使将电容器放电后，端子间仍有可能产生电压。此时，请通过1KΩ的电阻器进行放电；

(3)在超过室温35℃、湿度75%RH的条件下，超过产品目录书或规格说明书的规定期限进行长期保存时，电容器的漏电流可能增大。此时，请通过1KΩ的电阻进行电压处理；

(4)安装前，请确认电容器的额定规格（静电容量及额定电压）；

(5)安装前请确认电容器的极性；

(6)请勿将电容器跌落到地面，请勿使用跌落后的电容器；

(7)安装时请勿使电容器变形；

(8)请确认电容器的端子和印刷线路板的孔间距尺寸一致后，再进行安装；

(9)不可对电容器施加产品目录或规格说明书规定的机械强度上的力。自动装配机在吸附、装配及位置对准时，或者切割端子时都有可能产生应力，请注意它的冲击力。

2)焊接时

(1)利用烙铁焊接时，请确认以下内容：

①焊接条件（温度、时间）不可超出目录书或规格书中规定范围；

②烙铁请不要触碰到电容器的主体；

③利用烙铁进行修整时，如需要先将已焊接的电容器卸下，请将焊锡充分熔化后再拆卸，避免电容器端子受力。

(2)进行波峰焊时，请确认以下内容：

①进行焊接时，请勿将电容器本体浸入到熔融的焊剂中。请插入印刷线路板作为阻隔，只对放电容器侧反面的基板表面进行焊接。

②焊接条件（预热、焊接温度、端子浸渍时间）不可超出目录书或规格书中规定的范围；

③端子部以外的部分，请不要有焊剂附着；

④进行焊接时，请注意避免其他部件翻倒接触到电容器。

(3)进行回流焊时，请确认以下内容：

①焊接条件（预热、焊接温度、时间、回流焊次数）请不要超出规格书中的规定范围；

②使用红外线加热器时，由于红外线吸收率根据电容器的颜色及材料的不同而不同，请注意加热的程度；另外，回流焊的加热器种类及位置的不同，电容器承受的温度会有差异，请注意加热程度。

(4)焊剂的选择

在无卤类焊剂中，有一些虽然不含离子型卤化物，但却含有大量非离子型卤化物，当这类化合物进入电容器时，将与电解液发生化学反应，可能产生与清洗后结果相同的不良影响。故请选用不含有非离子型卤化物的焊剂。

(5)焊接后的处理

①请不要使电容器的主体倾斜、倒地或扭曲；

②请不要抓住电容器的主体搬运电路板；

12）Using capacitors for significantly safety-oriented applications

Consult with us in advance of usage of our products in the following listed applications.

(1)Aerospace equipment
(2)Nuclear power equipment .
(3)Medical equipment
(4)Transport equipment (automobiles, trains, ships, etc.)
(5)Transportation control equipment
(6)Disaster prevention / crime prevention equipment
(7)Highly publicized information processing equipment
(8)Submarine equipment
(9)Other applications that are not considered general-purpose applications.

2.Installation

1)Assembling

(1)Do not try to reuse the capacitors once assembled and electrified

(2)Capacitors may have been spontaneously recharged with time by a recovery voltage phenomenon. Capacitors may produce recovery voltage higher than aluminum electrolytic capacitors and conductive polymer aluminum solid capacitors. In this case, discharge electricity through approximately 1kΩ before use.

(3)If capacitors have been stored at any conditions more than 35°C and 75%RH for long storage periods of time more than the limits specified in the catalogs or product specifications, they may have high leakage current. In this case, make pre-conditioning by applying the rated voltage through a resistor of approximately 1kΩ.

(4)Confirm the rated capacitance and voltage of capacitors before installation.

(5)Confirm the polarity of capacitors before installation.

(6)Do not try to use the capacitors that were dropped to the floor and so forth.

(7)Do not deform the can case of a capacitor.

(8)Verify that the lead spacing of the capacitor fits the hole spacing in the PC board before installing the capacitors.

(9)Do not apply excessive mechanical force to capacitors more than the limits prescribed in the catalogs or product specifications. Avoid excessive mechanical force while the capacitors are in the process of vacuum-picking, placing and positioning by automatic mounting machines or cutting the lead wires by automatic insertion machines.

2)Soldering and heat resistance

(1)For soldering using a soldering iron, consider the following conditions:

①Soldering conditions (temperature and time) should be within the limits prescribed in the catalogs or product specifications.

②Do not touch the body of a capacitor with the hot tip of the soldering iron.

③When trimming with soldering iron, if it is necessary to remove the welded capacitor first. Please melt the solder tin fully before removing, to avoid force on capacitor terminals.

(2)Verify the following when flow soldering:

①Do not dip the body of a capacitor into the solder bath only dip the terminals in. The soldering must be done on the reverse side of PC board.

②Soldering conditions （preheat, solder temperature and dipping time） should be within the limits prescribed in the catalog or the product specifications.

③Do not apply flux to any part of capacitors other than their terminals

④Make sure the capacitors do not come into contact with any other components while soldering.

(3)For reflow soldering, consider the following conditions:

①Soldering conditions (preheat, reflow temperature and time) should be within the limits prescribed in the catalogs or product specifications.

②When using the infrared heater and setting its temperatures, adjust the heating levels taking into consideration that the color and materials of a capacitor vary in their infrared absorbance.

(4)Flux selection

Some halogen-free fluxes contain large amounts of nonionic halides, although they do not contain ionic halides. When these compounds enter the capacitor, they react with the electrolyte and may have the same adverse effects as after cleaning. Therefore, please use the flux that does not contain nonionic halides.

(5)Handling after soldering

①Do not tilt, push down or twist the body of the capacitor.

②Do not grab the body of the capacitor to carry the assembly board.

③请不要让其他物体碰到电容器（当重叠放置线路板时，请不要使线路板或其他零部件碰到电容器）

④安装好电容器的线路板不可掉落。

⑹基板清洗

①电容器不可用以下清洗剂进行清洗：

卤素类溶剂：可能导致电容器故障

碱性类溶剂：可能导致电容器密封铝壳腐蚀

萜烯类、石油类溶剂：可能导致封口橡胶老化

二甲苯：可能导致封口橡胶老化

丙酮：印刷标示脱落

②需要进行清洗时，请不要超出产品目录和规格书规定的范围；请特别注意超声波清洗条件。

③清洗电容器时，请进行清洗剂的污染管理（电导率、PH、比重、含水量等）。清洗后，请不要保管在清洗液或密封的容器中。此外，请用热风（电容器工作上线温度以下）吹10分钟以上进行充分干燥，避免线路板及电容器上有残留清洗液。

④一般情况下，电容器很容易和卤素离子发生反应（特别是氯离子），因使用的电解质和封装材料等的不用，反应的程度有所差异，但当一定量的卤素离子侵入到电容器内部时，会导致电容器在使用过程中发生腐蚀反应，并引起漏电流大幅增加，发热，压力阀动作、开路等破坏性故障。

⑤由于环境问题（臭氧层破坏引起的气候变暖，环境破坏），使用新溶剂替代过去的氟利昂113（二氯二氟甲烷等）、氯甲烷、三氯乙烷进行清洗时，请勿超出容许条件的范围。

⑺固定剂、涂层剂

①请不要使用含卤素类溶剂的固定材料和涂层剂；

②电容器上使用固定剂和涂层剂时，请确认以下内容：

a.线路板和电容器封口之间不可残留有焊接残渣或污垢；

b.在涂固定剂或涂层剂之前，请先干燥清洗液。且封口处不能全部被堵住，电容器封口部完全被树脂堵住时，因电容器内部的压力无法有效释放，可能会引发险情；

c.当固定剂或涂层剂中的卤素离子过多时，可能会导致电容器异常；

d.固定剂、涂层剂中使用的个别种类溶剂，可能会导致电容器表面发生变化，请务必注意。

⑻关于熏蒸处理

在电子设备类进出口时，可能需要用溴化甲烷等卤化物进行熏蒸处理。此时，如果电容器接触到溴化甲烷等卤素化合物，电容器可能会发生和基板清洗类似的腐蚀现象。故在对电容器及装配了电容器的机器进行熏蒸处理时，亦或者将经过熏蒸处理的托盘等用作包装材料时，请充分注意避免电容器暴露在卤素环境中。

3.配套使用中的注意事项

1)请不要直接接触电容器的端子；

2)电容器的端子之间不可有导电体以免造成短路。此外，请不要把酸性及碱性溶液等导电性溶液溅到电容器上；

3)请确认装配了电容器的成套电路的安装环境，请不要在以下环境中使用：

①直接溅水或油到电容器上、结露的环境

②阳光直接照射的环境

③臭氧、紫外线及放射线照射的环境

④充满有毒气体（硫化氢、亚硫酸、亚硝酸、氯及其化合物、溴及其化合物、氨等）的环境

⑤振动或冲击条件超过产品目录或规格书规定范围的环境

4.保养检查注意事项

1)请定期检查使用于工业设备上的电容器。对电容器进行保养检查时，请务必先切断设备电源，并使电容器内储存的电充分放干净。当使用万用表检测时，请先确认万用表的极性后再使用。

2)请按以下内容进行定期检查：

③Do not hit anything against the capacitor. When stacking the assembled boards, do not put any of the PC boards or other components against the capacitor.

④Do not drop the assembled board.

⑹Cleaning assembly boards

①Do not clean capacitors with the following cleaning agents:

• Halogenated solvents: cause capacitor failures due to corrosion.

• Alkali system solvents: corrode (dissolve) the aluminum can case.

• Terpene and petroleum system solvents: deteriorate the rubber seal materials.

• Xylene: deteriorates the rubber seal materials as well.

• Acetone: erases the markings printed on a capacitor.

②Where cleaning is necessary, use only solvent resistant type capacitors that have been assured for the cleaning within the specific cleaning conditions prescriber in the catalogs or product specifications. In particular, carefully set up the conditions for ultrasonic cleaning system. Consult us regarding alternative CFCs or other cleaners before use.

③Where cleaning the capacitors, confirm the following conditions:

• Control the contamination (the conductivity, pH, specific gravity, water content, etc.) of the cleaning agents.

• After the cleaning, do not leave the capacitors (assembly boards) in an environment of cleaning agent-rich or in a closed container. Sufficiently evaporate the residual cleaning agent from the assembly boards and the capacitors by forced hot air at temperatures less than the upper limit of category temperature range for more than 10 minutes.

④In general, aluminum electrolytic capacitors are sensitive to contamination of halogen ions (particularly to chlorine ions). Depending on the properties of the electrolyte and rubber seal materials used in a capacitor, the halogen ions lead up to catastrophic failures on the capacitor. Where the inside of a capacitor has been contaminated with more than a certain amount of halogen ions and the capacitor is in use, the corrosion reaction of aluminum occurs. The corrosion causes the capacitor to have a significant increase in leakage current with heat produced, open the pressure relief vent and become open circuit mode failure.

⑤Due to global environmental issues (greenhouse effects and other environmental destruction by depletion of the ozone layer), the conventional cleaning solvents of CFC 113, Trichloroethylene and 1,1,1-trichloroethylene were replaced by substitutes.

⑺Adhesives and coating materials

①Do not use any adhesive or coating materials containing halogenated solvents.

②Make sure of the following conditions before applying adhesive or coating materials to a capacitor,

a.No flux residue nor stain is left between the rubber seal of a capacitor and PC board.

b.Dry the capacitor to remove residual cleaning agents before applying adhesive and coating materials. Do not cover up the entire surface of the rubber seal of the capacitor with adhesives or coating materials.

c.where the adhesive and coating materials contain a large amount of halogen ions, the halogen ions will contaminate the inside of the capacitor through the rubber seal materials, causing the capacitor to become a failure.

d.Depending on solvent materials that the adhesive or coating materials contains, note that the surface of a capacitor may change in appearance.

⑻Fumigation

In exporting or importing electronic devices, they may be exposed to fumigation with halide such as methyl bromide. Where the capacitors are exposed to halide such as methyl bromide, the capacitors will be damaged with the corrosion reaction with halogen ions in the same way as cleaning agents.

3.Precautions during operation of devices

1)Never touch the terminals of a capacitor directly with bare hands.

2)Do not short-circuit between the capacitor terminals with anything conductive. Also, do not spill any conductive liquid such as acid or alkaline solution over a capacitor.

3)Confirm environmental conditions where the device will be placed. Do not use the devise in the following environmental conditions:

①Water or oil spatters, or high condensation environment.

②Direct sunlight.

③Ozone, ultraviolet rays or radiation.

④Toxic gases such as hydrogen sulfide, sulfuric acid, nitrous acid, chlorine and its compounds, bromine and its compounds and ammonium.

⑤Severe vibration or mechanical shock conditions beyond the limits prescribed in the catalog or product specification.

4.Maintenance inspections

1)For industrial use capacitors, make periodic inspections of the capacitors. Before the inspections, turn off the power supply of the device and discharge the electricity of the capacitors. Where checking it by a volt-ohm meter, confirm the polarity beforehand. Do not apply mechanical stress to the terminals of the capacitors during inspection.

2)Characteristics to be inspected

①外观有无明显异常；

②电气性能（静电容量、损失角正切值、漏电流以及ESR等产品规格书中规定的项目）；当以上内容有异常时，请确认电容器的规格，并进行替换等恰当的处理。

5.紧急情况

1)一定尺寸以上的电容器，为了降低异常的压力装配有压力阀。发现配套设备中使用的电容器的压力阀动作过程中有气体溢出时，请切断设备的电源或拔下电源插头。

2)当电容器压力阀动作时，会喷出超过100℃的高温气体，请不要将脸部靠近。万一喷出的气体不慎进入眼睛或吸入时，请立刻用清水洗眼、漱口，严重时请及时就医。当电解液液附在皮肤上时，请用肥皂水冲洗。

6.保存条件

1)请将电容器置于温度在5~35℃、湿度在75%PH以下的环境中存放。

2)为保持良好的焊接性，保存期限原则上为出厂后2年以内；

3)请尽量以密封包装状态保存；

4)请避免在以下环境中保存：

①溅水、高温高湿及结露的环境；

②溅油、或充满气体油成分的环境

③溅盐水、或充满盐水的环境

④充满酸性有毒气体（硫化氢、亚硫酸、亚硝酸、氯、溴、溴化甲烷等）的环境

⑤充满氨气等碱性气体的环境

⑥酸性及碱性溶剂的环境

⑦阳光直射、或臭氧、紫外线及放射线照射的环境

⑧有振动或冲击的环境中

7.废弃处理

1)废弃电容器时，请交给专业的工业废弃物处理厂进行焚烧或填埋处理。焚烧处理时，请用800℃以上的高温，避免产生卤素气体等有害气体。此外，为了防止电容器爆炸，请在电容器上开孔或者充分碾压碎之后再焚烧；

2)废弃电容器时，请确认其是否已被完全放电。

8.关于AEC-Q200

AEC是Automotive Electronics Council(车载电子零部件评议会)的简称，是由美国的主要汽车制造商和电子零部件制造商设立，现在由电装、零部件各制造公司构成的行业团体。负责电子零部件的可靠性试验及认定标准试验的标准化工作。

AEC-Q200是被动元器件的认定用可靠性试验标准，规定了各类元器件的试验项目及试验数量等。其中也规定了我公司主要产品“铝电解电容器”的可靠性试验的标准。

应以车载客人为主的客人试验要求，我公司可以按照要求提供铝电解电容器基于AEC-Q200标准的试验结果。

电子零部件制造商单独无法单纯的判断［AEC-Q200认定］。我公司针对对象产品，会做出［基于］、［符合］、［可使用］等说法的判断。但个别客户，个别规格的产品，需要按照［可靠性试验计划］实施评价试验。详情请另寻咨询。

9.环境有害物质对应

本公司产品符合RoHS环保指令的有害物质相关法规（个别产品可能含有免除含有的限制物质。有关特殊法规的负荷情况，请另行咨询。）。

10.产品目录内容

产品目录中的内容可能未经提示而变更，请事先了解。此外，产品目录上的数据只是代表值，不保证性能。

有关详细内容，请参照《电子设备用固定铝电解电容器使用事项指南JEITA RCR-2367D（2019年3月）》。

①Significant damage in appearance: vent opening, electrolyte leakage, etc.

②Electrical characteristics: Leakage current, capacitance, tanδ,ESR and other characteristics prescribed in the catalogs or product specifications. If finding anything abnormal on the characteristics above, check the specifications of the capacitor and take appropriate actions such as replacement.

5.Contingencies

1)A capacitor with more than a certain case size has the pressure relief vent functioning to escape abnormal gas pressure increase. If gas expels from a venting capacitor, disconnect the power supply of the device or unplug the power supply cord.

2)The gas expelled from a venting capacitor is more than 100°C. Never expose your face to the capacitor. If your eyes are exposed to the gas or you inhale it, immediately flush your eyes and/or gargle with water. If the electrolyte comes in contact with the skin, wash with soap and water.

6.Storage

1)Do not store capacitors at high temperature or high humidity. Store the capacitors indoors at temperatures of 5 to 35°C and humidifies of less than 75%RH.

2)In principle, aluminum electrolytic capacitors should be used within 2 years after production.

3)Keep capacitors packed in the original packaging material wherever possible.

4)Avoid the following storage environmental conditions:

①Water spattering, high temperatures, high humidity or condensation environment.

②Oil spattering or oil mist filled.

③Salt water spattering or salt filled.

④Acidic toxic gases such as hydrogen sulfide, sulfuric acid, nitrous acid, chlorine, bromine and methyl bromide filled.

⑤Alkaline toxic gases such as ammonium filled.

⑥Acid or alkaline solutions spattering.

⑦Direct sunlight, ozone, ultraviolet rays or radiation.

⑧Extreme vibration or shock loading.

7.Capacitor disposal

1)Please consult with a local organization for the proper disposal of industrial waste. For incinerating capacitors, apply a high temperature incineration (over 800°C). Incinerating them at temperatures lower than that may produce toxic gases such as chlorine. To prevent capacitors from explosion, punch holes in or sufficiently crush the can cases of the capacitors, then incinerate.

2)When you discard a capacitor, make sure it is fully discharged.

8.About AEC-Q200

The Automotive Electronics Council （AEC） was originally established by major American automotive related manufactures. Today, the committees are composed of representatives from the sustaining Members of manufacturing companies in automotive electrical components. It has standardized the criteria for“ stress test qualification” and“ reliability tests” for electronic components.

AEC-Q200 is the reliability test standard for approval of passive components in Automotive applications. It specifies the test type, parameters and quantity, etc. for each component. The criteria of the reliability tests such as for our main products, “Aluminum Electrolytic Capacitors” are described in this standard.

Pursuant to the customer's specific testing requirements, CHANG submits the test results according to AEC-Q200 for Aluminum Electrolytic Capacitors used in automotive applications on request.

An electronic component manufacturer cannot simply claim that their product is “AEC-Q200 Qualified”. It can be claimed“Compliant”,“ Capable”,“ Available”, etc., however each component must be tested per each users “Qualification Test Plan”in order to claim AEC-Q200 status. Please contact us for more information.

9.Response to the Substances of Concern

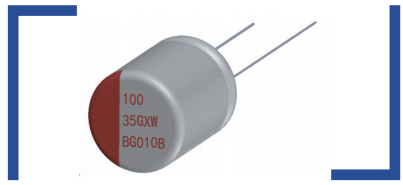
CHANG aims for developing products that meet laws and regulations concerning substances of concern.（Some products may contain regulated substances for exempted application）

10.Catalogs

Specifications in the catalogs are subject to change without notice. Test data shown in the catalogs are not assured as the whole performance values, but typical values. For more details, refer to JEITA RCR-2367D (March 2019) with the title of”Safety Application Guide for fixed aluminum electrolytic capacitors for use in electronic equipment”.

GXW

特点 Features



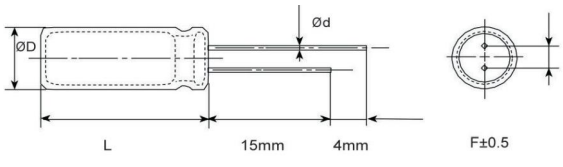
- 保证105℃ 3000小时。Endurance: 3000h at 105℃.
- 额定电压范围：16~100V。Rated Voltage Range:16~100V.
- 标准品。Standard Type.
- 满足RoHS要求。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics					
类别温度范围 Category Temperature Range	-55℃ ~+105℃					
额定电压范围 Rated Voltage (U_R)	16V ~100V					
标称电容量范围 Nominal Capacitance Range(C_R)	10 ~ 560μF					120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%					120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.05$U_R C_R$(μA)					+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V)	16~25	35	50	63~100	Max. 120Hz, +20℃
	Tanδ	0.14	0.12	0.10	0.08	
等效串联电阻 Equivalent Series Resistance(ESR)	参照规格表 Reference parameter table					Max. 100KHz, +20℃
低温特性 Characteristics at low Temperature	$Z_{-25℃}/Z_{+20℃} \leq 1.5$ $Z_{-55℃}/Z_{+20℃} \leq 2.0$					Max 100KHz
耐久性 Load Life	+105℃施加额定电压3000小时后，待温度恢复到20℃后进行测试，电容器应满足以下要求： The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 3000 hours at 105°C.					
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value				
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value				
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of tspecified value				
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value				
耐湿性负荷 Biased humidity	85℃，85%湿度环境中，连续加载额定电压2,000小时，电容器应满足以下要求： After applying rated voltage for 2000 hours at 85℃ and humidity of 85%, the capacitors shall meet the following criteria.					
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value				
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value				
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of specified value				
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value				

※ 当产生疑问的时候，用以下电压处理后测定。
电压处理: 125℃下，连续加载120 分钟的电压。加载电压为额定电压。
When in doubt, apply the following voltage treatment and measure.
Voltage processing: under the condition of 125 ℃ ambient temperature, continuous load voltage of 120 minutes. Load voltage is rated voltage.

尺寸图 Dimensional darwwings



尺寸表 Size table

单位 Unit: mm

ΦD(+0.5max)	8	10
F(±0.5)	3.5	5
Φd(±0.05)	0.6	0.6
L	+1.0max	

规格特性表
Table of specifications and characteristics

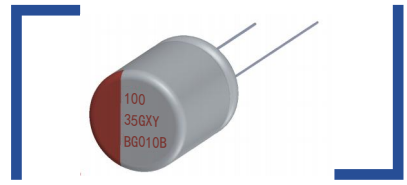
U_R(V)	C_R(μF)	ΦD×L (mm*mm)	Tanδ (120HZ,20℃)	I_L (μA)	ESR (mΩ/at 100k~300kHz,max,20℃)	$I_{AC.R}$ (mA/rms at 100kHz,105℃)
16	270	8×12	0.14	216	22	2500
	330	8×16	0.14	264	20	2700
	470	10×12.5	0.14	376	20	2900
	560	10×16	0.14	448	18	3100
20	220	8×12	0.14	220	24	2400
	270	8×16	0.14	270	22	2600
	330	10×12.5	0.14	330	22	2800
	390	10×16	0.14	390	20	3000
25	150	8×12	0.14	187.5	24	2400
	220	8×16	0.14	275	22	2600
	270	10×12.5	0.14	337.5	22	2800
	330	10×16	0.14	412.5	20	3000
35	82	8×12	0.12	143.5	26	2200
	100	8×16	0.12	175	25	2500
	150	10×12.5	0.12	262.5	25	2600
	220	10×16	0.12	385	24	2800
50	47	8×12	0.1	117.5	28	2100
	56	8×16	0.1	140	26	2400
	68	10×12.5	0.1	170	26	2500
	82	10×16	0.1	205	26	2600
63	27	8×12	0.08	85.05	35	1800
	33	8×16	0.08	103.95	32	2200
	47	10×12.5	0.08	148.05	32	2300
	56	10×16	0.08	176.4	30	2600
80	12	8×12	0.08	48	38	1600
	15	8×16	0.08	60	36	1900
	22	10×12.5	0.08	88	36	2000
	27	10×16	0.08	108	34	2200
100	10	8×12	0.08	50	45	1400
	12	8×16	0.08	60	40	1600
	15	10×12.5	0.08	75	40	1800
	22	10×16	0.08	110	38	2000

额定纹波电流频率修正系数
Frequency correction factor for ripple current

Frequency（KHz）	0.1≤Freq. ≤0.5	0.5 < Freq. ≤1	1 < Freq. ≤5	5 < Freq. ≤10	10 < Freq. ≤50	50 < Freq. < 100	100≤Freq.≤300
Coefficient（Kf）	0.05	0.10	0.3	0.4	0.7	0.9	1

GXY

特点 Features



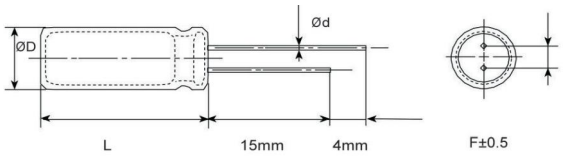
- 保证125℃ 3000小时。Endurance: 3000h at 125℃.
- 额定电压范围：16~50V。Rated Voltage Range:16~50V.
- 125度高温长寿命 125℃。High Temperature Type.
- 满足RoHS要求。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-55℃ ~+125℃	
额定电压范围 Rated Voltage (U_R)	16V ~50V	
标称电容量范围 Nominal Capacitance Range(C_R)	68~1000μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.05$U_R C_R$(μA)	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V) 16~25 35 50 Tanδ 0.14 0.12 0.10	Max. 120Hz, +20℃
等效串联电阻 Equivalent Series Resistance(ESR)	参照规格表 Reference parameter table	Max. 100KHz, +20℃
低温特性 Characteristics at low Temperature	$Z_{-25℃}/Z_{+20℃}$≤1.5 $Z_{-55℃}/Z_{+20℃}$≤2.0	Max 100KHz
耐久性 Load Life	+125℃施加额定电压3000小时后，待温度恢复到20℃后进行测试，电容器应满足以下要求： The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 3000 hours at 125°C.	
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of tspecified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
耐湿性负荷 Biased humidity	85℃，85%湿度环境中，连续加载额定电压2,000小时，电容器应满足以下要求： After applying rated voltage for 2000 hours at 85℃ and humidity of 85%, the capacitors shall meet the following criteria.	
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

※ 当产生疑问的时候，用以下电压处理后测定。
电压处理: 125℃下，连续加载120 分钟的电压。加载电压为额定电压。
When in doubt, apply the following voltage treatment and measure.
Voltage processing: under the condition of 125 ℃ ambient temperature, continuous load voltage of 120 minutes. Load voltage is rated voltage.

尺寸图 Dimensional darwwings



尺寸表 Size table

单位 Unit: mm

ΦD(+0.5max)	8	10
F(±0.5)	3.5	5
Φd(±0.05)	0.6	0.6
L	+1.0max	

规格特性表 Table of specifications and characteristics

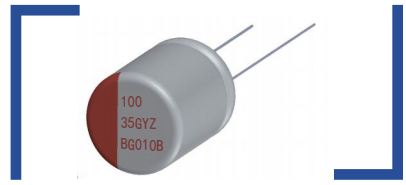
U_R(V)	C_R(μF)	ΦD×L (mm*mm)	Tanδ (120HZ,20℃)	I_L (μA)	ESR (mΩ/at 100k~300kHz,max,20℃)	$I_{AC.R}$ (mA/rms at 100kHz,125℃)
16	560	8×12	0.14	448	22	1800
	680	8×16	0.14	544	20	2050
	820	10×12.5	0.14	656	16	2200
	1000	10×16	0.14	800	16	2400
25	330	8×12	0.14	412.5	23	1600
	470	8×16	0.14	587.5	20	1800
	560	10×12.5	0.14	700	18	1900
	680	10×16	0.14	850	16	2150
35	100	8×12	0.12	175	24	1400
	220	8×16	0.12	385	22	1550
	270	10×12.5	0.12	472.5	20	1700
	330	10×16	0.12	577.5	18	1900
50	68	8×12	0.1	170	32	900
	100	8×12	0.1	250	30	1100
	150	10×12.5	0.1	375	26	1450
	150	8×16	0.1	375	28	1250
	220	10×16	0.1	550	24	1600

额定纹波电流频率修正系数 Frequency correction factor for ripple current

Frequency（KHz）	0.1≤Freq. ≤0.5	0.5 < Freq. ≤1	1 < Freq. ≤5	5 < Freq. ≤10	10 < Freq. ≤50	50 < Freq. < 100	100≤Freq.≤300
Coefficient（Kf）	0.05	0.10	0.3	0.4	0.7	0.9	1

GYZ

特点 Features



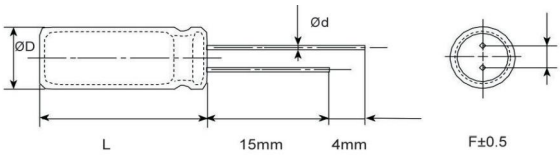
- 保证125℃ 5000小时。Endurance: 5000h at 125℃.
- 额定电压范围：16~50V。Rated Voltage Range:16~50V.
- 125度高温长寿命。125℃ High Temperature & Long Life Type.
- 满足RoHS要求。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics				
类别温度范围 Category Temperature Range	-55℃ ~+125℃				
额定电压范围 Rated Voltage (U_R)	16V ~50V				
标称电容量范围 Nominal Capacitance Range(C_R)	33~470μF				120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%				120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.05$U_R C_R$(μA)				+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V)	16~25	35	50	Max. 120Hz, +20℃
	Tanδ	0.14	0.12	0.10	
等效串联电阻 Equivalent Series Resistance(ESR)	参照规格表 Reference parameter table				Max. 100KHz, +20℃
低温特性 Characteristics at low Temperature	$Z_{-25℃}/Z_{+20℃}$≤1.5 $Z_{-55℃}/Z_{+20℃}$≤2.0				Max 100KHz
耐久性 Load Life	+125℃施加额定电压5000小时后，待温度恢复到20℃后进行测试，电容器应满足以下要求： The specifications listed at right shall be met when the capacitors are restored to 20℃ after the rated voltage is applied for 5000 hours at 125°C				
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value			
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value			
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of tspecified value			
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value			
耐湿性负荷 Biased humidity	85℃，85%湿度环境中，连续加载额定电压2,000小时，电容器应满足以下要求： After applying rated voltage for 2000 hours at 85℃ and humidity of 85%, the capacitors shall meet the following criteria.				
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value			
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value			
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of specified value			
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value			

※ 当产生疑问的时候，用以下电压处理后测定。
电压处理: 125℃下，连续加载120 分钟的电压。加载电压为额定电压。
When in doubt, apply the following voltage treatment and measure.
Voltage processing: under the condition of 125 ℃ ambient temperature, continuous load voltage of 120 minutes. Load voltage is rated voltage.

尺寸图 Dimensional darwwings



尺寸表 Size table

单位 Unit: mm

ΦD(+0.5max)	8	10
F(±0.5)	3.5	5
Φd(±0.05)	0.6	0.6
L	+1.0max	

规格特性表 Table of specifications and characteristics

U_R(V)	C_R(μF)	ΦD×L (mm*mm)	Tanδ (120HZ,20℃)	I_L (μA)	ESR (mΩ/at 100k~300kHz,max,20℃)	$I_{AC.R}$ (mA/rms at 100kHz)	
						105℃	125℃
16	220	8×12	0.14	176	24	2400	960
	270	8×16	0.14	216	22	2600	1040
	330	10×12.5	0.14	264	20	2900	1160
	470	10×16	0.14	376	20	3000	1200
20	150	8×12	0.14	150	25	2300	920
	220	8×16	0.14	220	23	2500	1000
	270	10×12.5	0.14	270	22	2800	1120
	330	10×16	0.14	330	21	2900	1160
25	100	8×12	0.14	125	25	2300	920
	150	8×16	0.14	187.5	23	2500	1000
	220	10×12.5	0.14	275	22	2800	1120
	270	10×16	0.14	337.5	21	2900	1160
35	68	8×12	0.12	119	30	2100	840
	82	8×16	0.12	143.5	28	2300	920
	100	10×12.5	0.12	175	28	2500	1000
	150	10×16	0.12	262.5	26	2700	1080
50	33	8×12	0.1	82.5	35	1900	760
	47	8×16	0.1	117.5	32	2100	840
	56	10×12.5	0.1	140	30	2300	920
	68	10×16	0.1	170	28	2600	1040

额定纹波电流频率修正系数 Frequency correction factor for ripple current

Frequency（KHz）	0.1≤Freq. ≤0.5	0.5 < Freq. ≤1	1 < Freq. ≤5	5 < Freq. ≤10	10 < Freq. ≤50	50 < Freq. < 100	100≤Freq.≤300
Coefficient（Kf）	0.05	0.10	0.3	0.4	0.7	0.9	1

GXL

特点 Features

- 保证105℃ 5000~10000小时。Endurance: 5000~10000h at 105℃.
- 额定电压范围：16V~80V。Rated Voltage Range: 16V~80V.
- 长寿命品。Long Life Type.
- 满足RoHS要求。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 compliant.

主要技术性能 Specifications

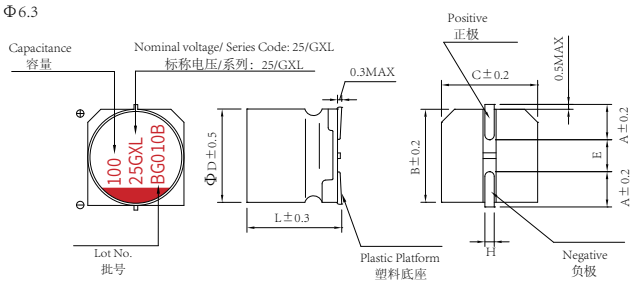
项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-55℃ ~+105℃	
额定电压范围 Rated Voltage (U_R)	16V ~80V	
标称电容量范围 Nominal Capacitance Range(C_R)	10~560μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.05$U_R C_R$(μA) or 3μA ,whichever is greater	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V) 16~25 35 50 63 80 Tanδ 0.14 0.12 0.10 0.08 0.08	Max. 120Hz, +20℃
等效串联电阻 Equivalent Series Resistance(ESR)	参照规格表 Reference parameter table	Max. 100KHz, +20℃
低温特性 Characteristics at low Temperature	$Z_{-25℃}/Z_{+20℃}$≤1.5 $Z_{-55℃}/Z_{+20℃}$≤2.0	Max 100KHz

耐久性 Load Life	+105℃施加额定电压10000小时（Φ6.3:5000小时）后，待温度恢复到20℃后进行测试，电容器应满足以下要求： The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 10000 hours（Φ6.3:5000hours） at 105°C.	
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of tspecified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
耐湿性负荷 Biased humidity	85℃，85%湿度环境中，连续加载额定电压2,000小时，电容器应满足以下要求： After applying rated voltage for 2000 hours at 85℃ and humidity of 85%, the capacitors shall meet the following criteria.	
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

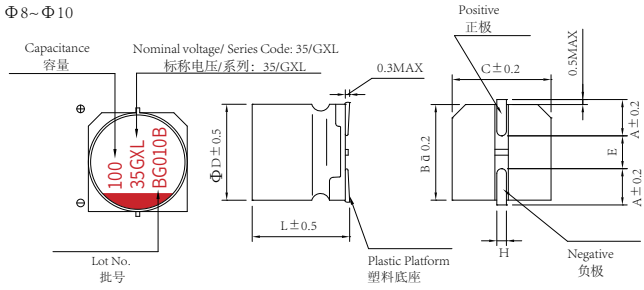
※ 当产生疑问的时候，用以下电压处理后测定。
电压处理: 125℃下，连续加载120 分钟的电压。加载电压为额定电压。
When in doubt, apply the following voltage treatment and measure.
Voltage processing: under the condition of 125 ℃ ambient temperature, continuous load voltage of 120 minutes. Load voltage is rated voltage.

尺寸图 Dimensional drawwings

Φ6.3



Φ8~Φ10



尺寸表 Size table

单位 Unit: mm

	Φ6.3×5.8	Φ6.3×7.7	Φ8×10.5	Φ10×10.5	Φ10×12.5
A	2.4	2.4	2.9	3.2	3.2
B	6.6	6.6	8.3	10.3	10.3
C	6.6	6.6	8.3	10.3	10.3
E	2.2	2.2	3.1	4.5	4.5
L	5.8	7.7	10.5	10.5	12.5
H	0.5~0.8		0.8~1.1		

规格特性表 Table of specifications and characteristics

U_R(V)	C_R(μF)	ΦD×L (mm*mm)	Tanδ (120HZ,20℃)	I_L (μA)	ESR (mΩ/at 100k~300kHz,max,20℃)	$I_{AC.R}$ (mA/rms at 100kHz,105℃)
16	82	6.3×5.8	0.14	65.6	45	1350
	150	6.3×7.7	0.14	120	27	2000
	270	8×10.5	0.14	216	22	2550
	470	10×10.5	0.14	376	18	3100
	560	10×12.5	0.14	448	18	3250
25	47	6.3×5.8	0.14	58.75	50	1250
	56	6.3×5.8	0.14	70	50	1250
	68	6.3×7.7	0.14	85	30	2000
	100	6.3×7.7	0.14	125	30	2000
	150	8×10.5	0.14	187.5	27	2400
	220	8×10.5	0.14	275	27	2400
	270	10×10.5	0.14	337.5	20	2850
	330	10×10.5	0.14	412.5	20	2850
	470	10×12.5	0.14	587.5	20	3100
35	47	6.3×5.8	0.12	82.25	60	1250
	47	6.3×7.7	0.12	82.25	35	2000
	68	6.3×7.7	0.12	119	35	2000
	100	8×10.5	0.12	175	27	2250
	150	8×10.5	0.12	262.5	27	2250
	150	10×10.5	0.12	262.5	20	2850

规格特性表
Table of specifications and characteristics

U_R(V)	C_R(μF)	ΦD×L (mm*mm)	Tanδ (120HZ,20℃)	I_L (μA)	ESR (mΩ/at 100k~300kHz,max,20℃)	$I_{AC.R}$ (mA/rms at 100kHz,105℃)
35	270	10×10.5	0.12	472.5	20	2850
	330	10×12.5	0.12	577.5	20	3100
50	10	6.3×5.8	0.10	25	80	1050
	22	6.3×5.8	0.10	55	80	1050
	33	6.3×7.7	0.10	82.5	40	1550
	33	8×10.5	0.10	82.5	30	1750
	47	8×10.5	0.10	117.5	30	1750
	56	10×10.5	0.10	140	25	2250
	68	8×10.5	0.10	170	30	1750
	100	10×10.5	0.10	250	25	2250
	120	10×12.5	0.10	300	25	2550
	150	10×12.5	0.10	375	25	2550
63	10	6.3×5.8	0.08	31.5	120	1000
	10	6.3×7.7	0.08	31.5	80	1250
	22	6.3×7.7	0.08	69.3	80	1250
	22	8×10.5	0.08	69.3	40	1550
	33	8×10.5	0.08	103.95	40	1550
	33	10×10.5	0.08	103.95	30	2000
	47	8×10.5	0.08	148.05	40	1550
	56	10×10.5	0.08	176.4	30	2000
	68	10×10.5	0.08	214.2	30	2000
	82	10×12.5	0.08	258.3	30	2200
80	22	8×10.5	0.08	88	45	1550
	33	10×10.5	0.08	132	35	1850
	47	10×12.5	0.08	188	35	2000

额定纹波电流频率修正系数
Frequency correction factor for ripple current

Frequency（KHz）	0.1≤Freq. ≤0.5	0.5 < Freq. ≤1	1 < Freq. ≤5	5 < Freq. ≤10	10 < Freq. ≤50	50 < Freq. < 100	100≤Freq.≤300
Coefficient（Kf）	0.05	0.10	0.3	0.4	0.7	0.9	1

GXV

特点 Features

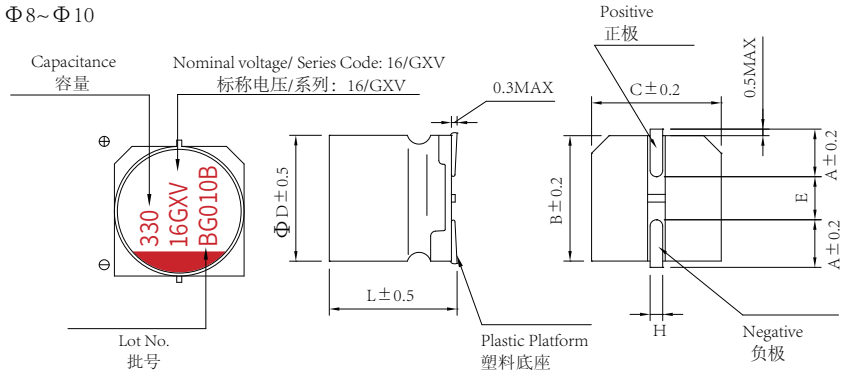
- 保证105℃ 3000小时。Endurance: 3000h at 105℃.
- 额定电压范围：16~100V。Rated Voltage Range:16~100V.
- 标准品。Standard Type.
- 满足RoHS要求。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics					
类别温度范围 Category Temperature Range	-55℃ ~+105℃					
额定电压范围 Rated Voltage (U_R)	16V ~100V					
标称电容量范围 Nominal Capacitance Range(C_R)	10~ 680μF					120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%					120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.05$U_R C_R$(μA)					+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V)	16~25	35	50	63~100	Max. 120Hz, +20℃
	Tanδ	0.14	0.12	0.10	0.08	
等效串联电阻 Equivalent Series Resistance(ESR)	参照规格表 Reference parameter table					Max. 100KHz, +20℃
低温特性 Characteristics at low Temperature	$Z_{-25℃}/Z_{+20℃}$≤1.5 $Z_{-55℃}/Z_{+20℃}$≤2.0					Max 100KHz
耐久性 Load Life	+105℃施加额定电压3000小时后，待温度恢复到20℃后进行测试，电容器应满足以下要求： The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 3000 hours at 105°C.					
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value				
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value				
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of tspecified value				
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value				
耐湿性负荷 Biased humidity	85℃，85%湿度环境中，连续加载额定电压2,000小时，电容器应满足以下要求： After applying rated voltage for 2000 hours at 85℃ and humidity of 85%, the capacitors shall meet the following criteria.					
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value				
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value				
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of specified value				
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value				

※ 当产生疑问的时候，用以下电压处理后测定。
电压处理: 125℃下，连续加载120 分钟的电压。加载电压为额定电压。
When in doubt, apply the following voltage treatment and measure.
Voltage processing: under the condition of 125 ℃ ambient temperature, continuous load voltage of 120 minutes. Load voltage is rated voltage.

尺寸图 Dimensional drawwings



尺寸表 Size table

单位 Unit: mm

	Φ8×10.5	Φ8×12.5	Φ10×10.5	Φ10×12.5
A	2.9	2.9	3.2	3.2
B	8.3	8.3	10.3	10.3
C	8.3	8.3	10.3	10.3
E	3.1	3.1	4.5	4.5
L	10.5	12.5	10.5	12.5
H	0.8~1.1			

规格特性表 Table of specifications and characteristics

U_R(V)	C_R(μF)	ΦD×L (mm*mm)	Tanδ (120HZ，20℃)	I_L (μA)	ESR (mΩ/at 100k~300kHz,max,20℃)	$I_{AC.R}$ (mA/rms at 100kHz，105℃)
16	330	8×10.5	0.14	264	22	2500
	390	8×12.5	0.14	312	20	2700
	470	10×10.5	0.14	376	19	3200
	680	10×12.5	0.14	544	18	3600
20	270	8×10.5	0.14	270	24	2300
	330	8×12.5	0.14	330	24	2500
	390	10×10.5	0.14	390	22	2800
	560	10×12.5	0.14	560	20	3200
25	220	8×10.5	0.14	275	26	2000
	270	8×12.5	0.14	337.5	26	2200
	270	10×10.5	0.14	337.5	25	2500
	330	10×12.5	0.14	412.5	24	2800
35	100	8×10.5	0.12	175	32	1800
	120	8×12.5	0.12	210	31	2000
	150	10×10.5	0.12	262.5	29	2300
	220	10×12.5	0.12	385	27	2600
50	56	8×10.5	0.10	140	35	1600
	68	8×12.5	0.10	170	32	1900
	82	10×10.5	0.10	205	30	2000
	100	10×12.5	0.10	250	29	2300

规格特性表
Table of specifications and characteristics

U_R(V)	C_R(μF)	ΦD×L (mm*mm)	Tanδ (120HZ，20℃)	I_L (μA)	ESR (mΩ/at 100k~300kHz,max,20℃)	$I_{AC.R}$ (mA/rms at 100kHz，105℃)
63	39	8×10.5	0.08	122.85	38	1300
	47	8×12.5	0.08	148.05	36	1500
	56	10×10.5	0.08	176.4	33	1800
	68	10×12.5	0.08	214.2	30	2100
80	15	8×10.5	0.08	60	41	1100
	22	8×12.5	0.08	88	39	1300
	22	10×10.5	0.08	88	35	1500
	27	10×12.5	0.08	108	33	1900
100	10	8×10.5	0.08	50	46	1000
	12	8×12.5	0.08	60	45	1200
	15	10×10.5	0.08	75	38	1400
	22	10×12.5	0.08	110	36	1700

额定纹波电流频率修正系数
Frequency correction factor for ripple current

Frequency（KHz）	0.1≤Freq. ≤0.5	0.5 < Freq. ≤1	1 < Freq. ≤5	5 < Freq. ≤10	10 < Freq. ≤50	50 < Freq. < 100	100≤Freq.≤300
Coefficient（Kf）	0.05	0.10	0.3	0.4	0.7	0.9	1

GXX

特点 Features

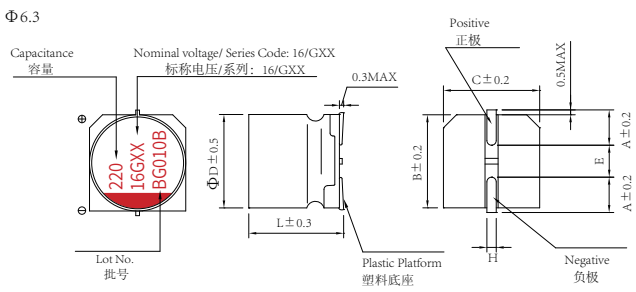
- 保证125℃ 2000~3000小时。Endurance: 2000~3000h at 125℃.
- 额定电压范围：16~50V。Rated Voltage Range:16~50V.
- 125℃高温品。125℃ High Temperature Type.
- 满足RoHS要求。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 compliant.

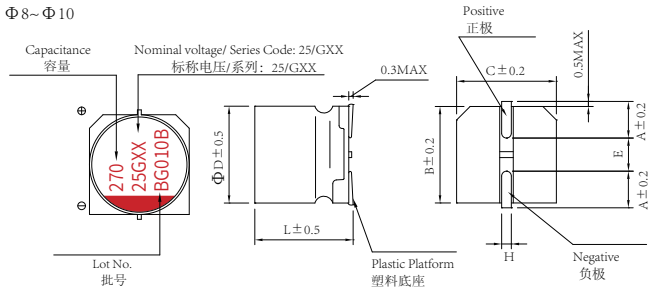
主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-55℃ ~+125℃	
额定电压范围 Rated Voltage (U_R)	16V ~50V	
标称电容量范围 Nominal Capacitance Range(C_R)	39~470μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.05$U_R C_R$(μA)	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V) 16~25 35 50 Tanδ 0.14 0.12 0.10	Max. 120Hz, +20℃
等效串联电阻 Equivalent Series Resistance(ESR)	参照规格表 Reference parameter table	Max. 100KHz, +20℃
低温特性 Characteristics at low Temperature	$Z_{-25℃}/Z_{+20℃}$≤1.5 $Z_{-55℃}/Z_{+20℃}$≤2.0	Max 100KHz
耐久性 Load Life	+125℃施加额定电压3000(≤Φ6.3 2000h)小时后，待温度恢复到20℃后进行测试，电容器应满足以下要求： The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 3000 hours at 125°C.	
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of tspecified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
耐湿性负荷 Biased humidity	85℃，85%湿度环境中，连续加载额定电压2,000小时，电容器应满足以下要求： After applying rated voltage for 2000 hours at 85°C and humidity of 85%, the capacitors shall meet the following criteria.	
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

※ 当产生疑问的时候，用以下电压处理后测定。
电压处理: 125℃下，连续加载120 分钟的电压。加载电压为额定电压。
When in doubt, apply the following voltage treatment and measure.
Voltage processing: under the condition of 125 ℃ ambient temperature, continuous load voltage of 120 minutes. Load voltage is rated voltage.

尺寸图 Dimensional drawwings





尺寸表 Size table

单位 Unit: mm

	Φ6.3×7.7	Φ8×10.5	Φ8×12.5	Φ10×10.5	Φ10×12.5
A	2.4	2.9	2.9	3.2	3.2
B	6.6	8.3	8.3	10.3	10.3
C	6.6	8.3	8.3	10.3	10.3
E	2.2	3.1	3.1	4.5	4.5
L	7.7	10.5	12.5	10.5	12.5
H	0.5~0.8	0.8~1.1			

规格特性表 Table of specifications and characteristics

U_R(V)	C_R(μF)	ΦD×L (mm*mm)	Tanδ (120HZ,20℃)	I_L (μA)	ESR (mΩ/at 100k~300kHz,max,20℃)	$I_{AC.R}$ (mA/rms at 100kHz)	
						105℃	125℃
16	220	6.3×7.7	0.14	176	35	1300	520
	270	8×10.5	0.14	216	28	2200	880
	330	8×12.5	0.14	264	26	2400	960
	390	10×10.5	0.14	312	26	2500	1000
	470	10×12.5	0.14	376	24	2800	1120
20	220	8×10.5	0.14	220	29	2100	840
	270	8×12.5	0.14	270	28	2200	880
	330	10×10.5	0.14	330	28	2300	920
	390	10×12.5	0.14	390	25	2500	1000
25	100	6.3×7.7	0.14	125	38	1100	440
	180	8×10.5	0.14	225	30	2000	800
	220	8×12.5	0.14	275	29	2100	840
	270	10×10.5	0.14	337.5	29	2200	880
	330	10×12.5	0.14	412.5	25	2400	960
35	47	6.3×7.7	0.12	82.25	40	1000	400
	100	8×10.5	0.12	175	32	1800	720
	120	8×12.5	0.12	210	33	1900	760
	120	10×10.5	0.12	210	33	2000	800
	180	10×12.5	0.12	315	30	2100	840

规格特性表
Table of specifications and characteristics

U_R(V)	C_R(μF)	ΦD×L (mm*mm)	Tanδ (120HZ,20℃)	I_L (μA)	ESR (mΩ/at 100k~300kHz,max,20℃)	$I_{AC.R}$ (mA/rms at 100kHz)	
						105℃	125℃
50	39	8×10.5	0.10	97.5	36	1600	640
	56	8×12.5	0.10	140	34	1700	680
	56	10×10.5	0.10	140	34	1800	720
	68	10×12.5	0.10	170	32	1900	760

额定纹波电流频率修正系数
Frequency correction factor for ripple current

Frequency（KHz）	0.1≤Freq. ≤0.5	0.5 < Freq. ≤1	1 < Freq. ≤5	5 < Freq. ≤10	10 < Freq. ≤50	50 < Freq. < 100	100≤Freq.≤300
Coefficient（Kf）	0.05	0.10	0.3	0.4	0.7	0.9	1

GXZ

特点 Features

- 保证125℃ 4000小时。Endurance: 4000h at 125℃.
- 额定电压范围：25V~80V。Rated Voltage Range: 25V~80V.
- 125℃高温长寿命品。125℃ High Temperature & Long Life Type.
- 满足RoHS要求。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 compliant.

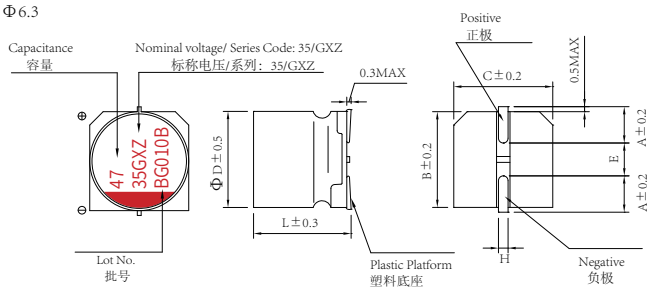
主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-55℃ ~+125℃	
额定电压范围 Rated Voltage (U_R)	25V ~80V	
标称电容量范围 Nominal Capacitance Range(C_R)	10~330μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.05$U_R$$C_R$(μA) or 3μA ,whichever is greater	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V) 25 35 50 63 80 Tanδ 0.14 0.12 0.10 0.08 0.08	Max. 120Hz, +20℃
等效串联电阻 Equivalent Series Resistance(ESR)	参照规格表 Reference parameter table	Max. 100KHz, +20℃
低温特性 Characteristics at low Temperature	$Z_{-25℃}/Z_{+20℃}$≤1.5 $Z_{-55℃}/Z_{+20℃}$≤2.0	Max 100KHz
耐久性 Load Life	+125℃施加额定电压4000小时后，待温度恢复到20℃后进行测试，电容器应满足以下要求： The specifications listed at right shall be met when the capacitors are restored to 20℃ after the rated voltage is applied for 4000 hours at 125.	
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of tspecified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
耐湿性负荷 Biased humidity	85℃，85%湿度环境中，连续加载额定电压2,000小时，电容器应满足以下要求： After applying rated voltage for 2000 hours at 85℃ and humidity of 85%, the capacitors shall meet the following criteria.	
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

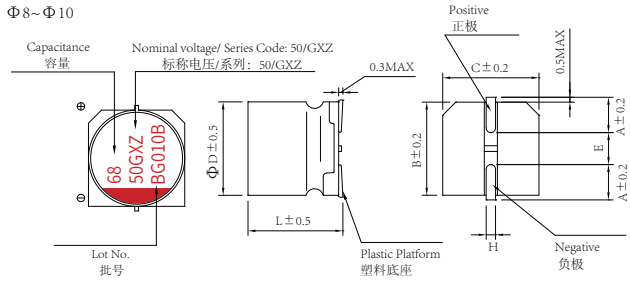
※ 当产生疑问的时候，用以下电压处理后测定。
电压处理: 125℃下，连续加载120 分钟的电压。加载电压为额定电压。
When in doubt, apply the following voltage treatment and measure.
Voltage processing: under the condition of 125 ℃ ambient temperature, continuous load voltage of 120 minutes. Load voltage is rated voltage.

尺寸图 Dimensional drawwings

Φ6.3



Φ8~Φ10



尺寸表 Size table

单位 Unit: mm

	Φ6.3×5.8	Φ6.3×7.7	Φ8×10.5	Φ10×10.5
A	2.4	2.4	2.9	3.2
B	6.6	6.6	8.3	10.3
C	6.6	6.6	8.3	10.3
E	2.2	2.2	3.1	4.5
L	5.8	7.7	10.5	10.5
H	0.5~0.8		0.8~1.1	

规格特性表 Table of specifications and characteristics

U_R(V)	C_R(μF)	ΦD×L (mm*mm)	Tanδ (120HZ,20℃)	I_L (μA)	ESR (mΩ/at 100k~300kHz)		$I_{AC.R}$ (mA/rms at 100kHz, 125℃)	Permissible ripple current (mA)	
					20℃	-55℃		125℃,100Khz	100℃,100Khz
25	56	6.3×5.8	0.14	70	50		900	1490	2110
	100	6.3×7.7	0.14	125	30		1400	2320	3290
	220	8×10.5	0.14	275	27		1600	2650	3760
	330	10×10.5	0.14	412.5	20		2000	3320	4700
35	47	6.3×5.8	0.12	82.25	60		900	1490	2110
	68	6.3×7.7	0.12	119	35		1400	2320	3290
	150	8×10.5	0.12	262.5	27		1600	2650	3760
	270	10×10.5	0.12	472.5	20		2000	3320	4700
50	22	6.3×5.8	0.1	55	80		750	1240	1760
	33	6.3×7.7	0.1	82.5	40		1100	1820	2580
	68	8×10.5	0.1	170	30		1250	2070	2930
	100	10×10.5	0.1	250	28		1600	2650	3760
63	10	6.3×5.8	0.08	31.5	120		700	1160	1640
	22	6.3×7.7	0.08	69.3	80		900	1490	2110
	33	8×10.5	0.08	103.95	40		1100	1820	2580
	56	10×10.5	0.08	176.4	30		1400	2320	3290
80	22	8×10.5	0.08	88	45		1100	1820	2580
	39	10×10.5	0.08	156	35		1200	1990	2820

额定纹波电流频率修正系数
Frequency correction factor for ripple current

Frequency（KHz）	0.1≤Freq. ≤0.5	0.5 < Freq. ≤1	1 < Freq. ≤5	5 < Freq. ≤10	10 < Freq. ≤50	50 < Freq. < 100	100≤Freq.≤300
Coefficient（Kf）	0.05	0.10	0.3	0.4	0.7	0.9	1

GXM

特点 Features

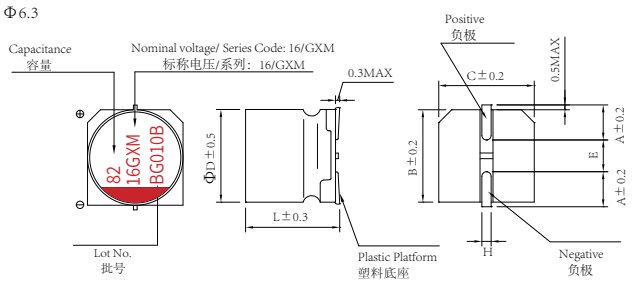
- 保证135℃ 2000~4000小时。Endurance: 2000~4000h at 135℃.
- 额定电压范围：16V~50V。Rated Voltage Range: 16V~50V.
- 135℃高温长寿命品。135℃ High Temperature & Long Life Type.
- 满足RoHS要求。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 compliant.

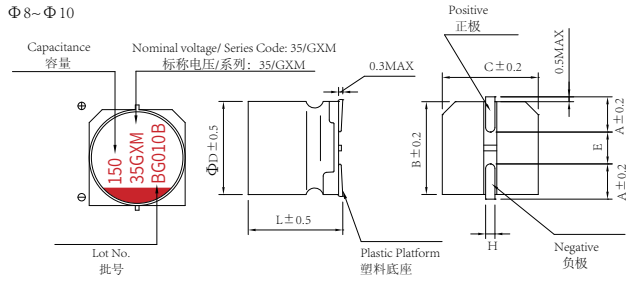
主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-55℃ ~+135℃	
额定电压范围 Rated Voltage (U_R)	16V ~50V	
标称电容量范围 Nominal Capacitance Range(C_R)	33~560μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.05$U_R C_R$(μA) or 3μA ,whichever is greater	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V) / 16~25 / 35 / 50 Tanδ / 0.14 / 0.12 / 0.10	Max. 120Hz, +20℃
等效串联电阻 Equivalent Series Resistance(ESR)	参照规格表 Reference parameter table	Max. 100KHz, +20℃
低温特性 Characteristics at low Temperature	$Z_{-25℃}/Z_{+20℃}$≤1.5 $Z_{-55℃}/Z_{+20℃}$≤2.0	Max 100KHz
耐久性 Load Life	+135℃施加额定电压4000小时（Φ6.3:2000小时）后，待温度恢复到20℃后进行测试，电容器应满足以下要求： The specifications listed at right shall be met when the capacitors are restored to 20℃ after the rated voltage is applied for 4000 hours at 135℃.（Φ6.3:2000hours）	
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of tspecified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
耐湿性负荷 Biased humidity	85℃，85%湿度环境中，连续加载额定电压2,000小时，电容器应满足以下要求： After applying rated voltage for 2000 hours at 85℃ and humidity of 85%, the capacitors shall meet the following criteria.	
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

※ 当产生疑问的时候，用以下电压处理后测定。
电压处理: 125℃下，连续加载120 分钟的电压。加载电压为额定电压。
When in doubt, apply the following voltage treatment and measure.
Voltage processing: under the condition of 125 ℃ ambient temperature, continuous load voltage of 120 minutes. Load voltage is rated voltage.

尺寸图 Dimensional drawwings





尺寸表 Size table

单位 Unit: mm

	Φ6.3×5.8	Φ6.3×7.7	Φ8×10.5	Φ10×10.5	Φ10×12.5
A	2.4	2.4	2.9	3.2	3.2
B	6.6	6.6	8.3	10.3	10.3
C	6.6	6.6	8.3	10.3	10.3
E	2.2	2.2	3.1	4.5	4.5
L	5.8	7.7	10.5	10.5	12.5
H	0.5~0.8		0.8~1.1		

规格特性表 Table of specifications and characteristics

U_R(V)	C_R(μF)	ΦD×L (mm*mm)	Tanδ (120HZ,20℃)	I_L (μA)	ESR (mΩ/at 100k~300kHz,max)		$I_{AC.R}$ (mA/rms at 100kHz)	
					20℃	-55℃	135℃	125℃
16	82	6.3×5.8	0.14	65.6	45		950	1700
	150	6.3×7.7	0.14	120	27		1450	2500
	270	8×10.5	0.14	216	20		1700	3050
	470	10×10.5	0.14	376	18		2100	3400
	560	10×12.5	0.14	448	15		2550	4200
25	56	6.3×5.8	0.14	70	50		900	1400
	100	6.3×7.7	0.14	125	30		1400	2100
	220	8×10.5	0.14	275	22		1600	2900
	330	10×10.5	0.14	412.5	20		2000	3300
	470	10×12.5	0.14	587.5	16		2500	4050
35	47	6.3×5.8	0.12	82.25	60		900	1400
	68	6.3×7.7	0.12	119	35		1400	2100
	150	8×10.5	0.12	262.5	22		1600	2900
	270	10×10.5	0.12	472.5	20		2000	3300
	330	10×12.5	0.12	577.5	17		2400	3950
50	33	8×10.5	0.1	82.5	30		1250	2400
	47	8×10.5	0.1	117.5	30		1250	2400
	56	10×10.5	0.1	140	25		1600	2900
	68	10×10.5	0.1	170	25		1600	2900
	100	10×10.5	0.1	250	25		1600	2900
	120	10×10.5	0.1	300	25		1600	2900
	150	10×12.5	0.1	375	19		2250	3700

额定纹波电流频率修正系数
Frequency correction factor for ripple current

Frequency（KHz）	0.1≤Freq. ≤0.5	0.5 < Freq. ≤1	1 < Freq. ≤5	5 < Freq. ≤10	10 < Freq. ≤50	50 < Freq. < 100	100≤Freq.≤300
Coefficient（Kf）	0.05	0.10	0.3	0.4	0.7	0.9	1

GXR

特点 Features

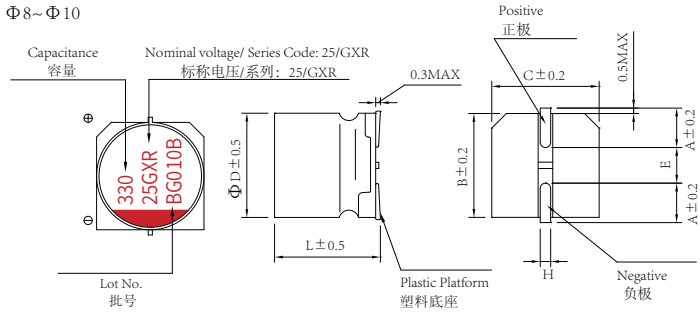
- 保证150℃ 1000小时。Endurance: 1000h at 150℃.
- 额定电压范围：16V~50V。Rated Voltage Range: 16V~50V.
- 150℃高温长寿命品。150℃ High Temperature & Long Life Type.
- 满足RoHS要求。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-55℃ ~+150℃	
额定电压范围 Rated Voltage (U_R)	16V ~50V	
标称电容量范围 Nominal Capacitance Range(C_R)	56~560μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.05$U_R$$C_R$(μA) or 3μA ,whichever is greater	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V) 16~25 35 50 Tanδ 0.14 0.12 0.10	Max. 120Hz, +20℃
等效串联电阻 Equivalent Series Resistance(ESR)	参照规格表 Reference parameter table	Max. 100KHz, +20℃
低温特性 Characteristics at low Temperature	$Z_{-25℃}/Z_{+20℃}$≤1.5 $Z_{-55℃}/Z_{+20℃}$≤2.0	Max 100KHz
耐久性 Load Life	+150℃施加额定电压1000小时后，待温度恢复到20℃后进行测试，电容器应满足以下要求： The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 150°C.	
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of tspecified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
耐湿性负荷 Biased humidity	85℃，85%湿度环境中，连续加载额定电压2,000小时，电容器应满足以下要求： After applying rated voltage for 2000 hours at 85℃ and humidity of 85%, the capacitors shall meet the following criteria.	
	电容量变化率 Capacitance Change	±30%初始测试值以内 Within ±30% of initial measured value
	损耗角正切 Tangent of loss angle	≤ 200%初始规定值 Not more than 200% of specified value
	阻抗 Equivalent Series Resistance	≤ 200%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

※ 当产生疑问的时候，用以下电压处理后测定。
电压处理: 125℃下，连续加载120 分钟的电压。加载电压为额定电压。
When in doubt, apply the following voltage treatment and measure.
Voltage processing: under the condition of 125 ℃ ambient temperature, continuous load voltage of 120 minutes. Load voltage is rated voltage.

尺寸图 Dimensional drawwings



尺寸表 Size table

单位 Unit: mm

	Φ8×10.5	Φ8×12.5	Φ10×10.5	Φ10×12.5
A	2.9	2.9	3.2	3.2
B	8.3	8.3	10.3	10.3
C	8.3	8.3	10.3	10.3
E	3.1	3.1	4.5	4.5
L	10.5	12.5	10.5	12.5
H	0.8~1.1			

规格特性表 Table of specifications and characteristics

U_R(V)	C_R(μF)	ΦD×L (mm*mm)	Tanδ (120HZ，20℃)	I_L (μA)	ESR (mΩ/at 100k~300kHz,max,20℃)	$I_{AC.R}$ (mA/rms at 100kHz，150℃)
16	270	8×10.5	0.14	216	27	800
	330	8×10.5	0.14	264	25	800
	470	10×10.5	0.14	376	20	1000
	560	10×12.5	0.14	448	16	1100
25	150	8×10.5	0.14	187.5	27	800
	220	8×10.5	0.14	275	27	800
	270	8×12.5	0.14	337.5	25	900
	330	10×10.5	0.14	412.5	20	1000
	470	10×12.5	0.14	587.5	17	1100
35	100	8×10.5	0.12	175	30	770
	120	8×12.5	0.12	210	25	820
	150	10×10.5	0.12	262.5	23	950
	220	10×12.5	0.12	385	20	1000
50	56	8×10.5	0.1	140	35	700
	68	8×12.5	0.1	170	30	750
	100	10×10.5	0.1	250	28	900
	120	10×12.5	0.1	300	25	950

额定纹波电流频率修正系数
Frequency correction factor for ripple current

Frequency（KHz）	0.1≤Freq. ≤0.5	0.5 < Freq. ≤1	1 < Freq. ≤5	5 < Freq. ≤10	10 < Freq. ≤50	50 < Freq. < 100	100≤Freq.≤300
Coefficient（Kf）	0.05	0.10	0.3	0.4	0.7	0.9	1

铝电解电容器的使用注意事项

1.电路设计中的注意事项

(1)要在确认使用及安装环境的基础上,在电容器的产品目录或承认书、图纸交货申请书（以下简称交货承认书）中规定的电容器额定性能的范围内进行设计。(如在超过额定性能下使用，有可能发生电容器破坏，冒烟，着火)

(2)使用温度及使用纹波电流不可超出产品目录或交货承认书中规定的范围。

①不可在超出分类上限温度(最高使用温度)的温度下使用。

②不可接通过电流(超过额定纹波电流的电流)。

(3)进行电路设计时，请选用与机器寿命相符的电容器。

(4)电容器为极性电容器。要确认有无连接反向电压或交流电压。在极性反转电路中请选用双极性电容器。但是,双极限电容器也不可以用于交流电路。

(5)在重复进行急速充放电的电路中请选用与使用条件相符的电容器。

作为重复进行急速充放电的电路，有电焊机、相机闪光灯等。此外，电路电压变动较大的伺服马达等旋转机器的控制电路也会重复进行急速的充放电。

关于重复进行急速充放电电路中使用的电容器，请咨询我们。

(6)请确认电容器上是否有过电压(超过额定电压的电压)。

①要注意纹波电压(交流部分)重叠到直流电压上时的峰值不可超过额定电压。

②将两个以上的电容器串联连接时，要将通过各个电容器的电压控制在额定电压以下。而且，此时要将考虑漏损电流的分压电阻器与各个电容器并联加入。

(7)电容器在以下之间要从电路中完全隔离开。

(电容器的铝壳和阴极端子之间由盒内侧的自然氧化皮膜和电解液的不稳定电阻部分连接在一起。)

①铝壳和阴极端子及阳极端子和电路型板之间。

②基板自立型空白端子和其他阳极端子及阴极端子和电路型板之间。

③双极性电容的两个端子与铝壳之间。

(8)电容器的封装套筒非绝缘保证型。请勿用于需要绝缘功能的地方。需要外套具有绝缘功能时，请咨询我们。

(9)电容器如果在以下环境中使用，有时可能会发生故障。

①周围环境(耐气候性)条件

(a)直接溅水的环境中、高温高湿的环境及结露的环境

(b)直接溅油的环境及充满油雾的环境

(c)直接溅盐水的环境及充满盐分的环境

(d)充满有毒气体(硫化氢、亚硫酸、氯气、溴气、溴甲烷、氨气等)的环境

(e)有直射日光、臭氧、紫外线及放射线照射的环境

(f)有酸性及碱性溶剂溅落的环境

②振动或冲击条件超过交货承认书规定范围的苛刻环境

(10)将电容器安装到印刷电路板上时，请事先确认以下内容后 再进行设计。

①将印刷电路板的孔间隔与电容器的端子间隔对合。

②设计时不可将配线及电路型板靠近到电容器的压力阀部分。

③只要交货承认书中没有规定，电容器的压力阀部分上面均应保留出如下所述的间隔。

产品直径	间隔
φ6.3~φ16mm	2mm以上
φ18~φ35mm	3mm以上
φ40mm以上	5mm以上

④印刷电路板一侧装有电容器的压力阀时，请对准压力阀的位置，将压力阀工作时的排气孔打开。

Application Guidelines for Aluminum Electrolytic Capacitors

1. Circuit Design

(1) Please make sure the application and mounting conditions to which the capacitor will be exposed to are within the conditions specified in catalog or alternate product specification (Referred to as specification here after).（If it is used under the rated performance, the capacitor may be damaged, smoke and fire may occur）

(2) Operating temperature and applied ripple current shall be within the specification.

①The capacitor shall not be used in an ambient temperature which exceeds the operating temperature specified in the specification.

②Do not apply excessive current which exceeds the allowable ripple current.

(3) Appropriate capacitors which comply with the life requirement of the products should be selected when designing the circuit.

(4) Aluminum electrolytic capacitors are polarized .Make sure that no reverse Voltage or AC voltage is applied to the capacitors. Please use bi-polar Capacitors for a circuit that can possibly see reversed polarity. Note: Even bi-polar capacitors can not be used for AC voltage application.

(5) For a circuit that repeats rapid charging / discharging of electricity, an appropriate capacitor that is capable If enduring such a condition must be used. Welding machines and photo flash are a few examples of products that contain such a circuit voltage fluctuates substantially.

For appropriate choice of capacitors for circuit that repeat rapid charging / discharging, please consult Chang.

(6) Make sure that no excess voltage (that is, higher than the rated voltage) is applied to the capacitor.

①Please pay attention so that the peak voltage, which is DC voltage overlapped by ripple current, will not exceed the rated voltage.

②In the case where more than 2 aluminum electrolytic capacitors are used in series, please make sure that applied voltage will be lower than rated voltage and the voltage be will applied to each capacitor equally using a balancing resistor in parallel with the capacitors.

(7) Aluminum electrolytic capacitors must be electrically isolated as follows: The aluminum case and the cathode foil are connected by the unstable resistance of a naturally formed oxide layer inside the aluminum case and the electrolyte.

①Case and negative terminal, Case and positive terminal, Case and circuit Pattern.

②Auxialiary terminal of can type and negative and positive terminal, including the circuit pattern.

③Case and both terminals of a bi-polarized capacitor.

(8) Outer sleeve of the capacitor is not guaranteed as an electrical insulator. Do not use a standard sleeve on a capacitor in applications that require the electrical insulation. When the application requires special insulation, please contact our sales office for details.

(9) Capacitors may fail if they are used under the following conditions:

①Environmental (climatic) conditions

(a) Being exposed to water, high temperature & high humidity atmosphere, or condensation of moisture.

(b) Being exposed to oil or an atmosphere that is filled with particles of oil.

(c) Being exposed to salty water or an atmosphere that is filled with particles of salt.

(d) In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methyl bromide, ammonia, etc.).

(e) Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation.

(f) Being exposed to acidic or alkaline solutions.

②Under severe conditions where vibration and/or mechanical shock exceed the applicable ranges of the specifications.

(10) When designing a P.C. board, please pay attention to the following:

①Have the hole spacing on the P.C. board match the lead spacing of the capacitor.

②There should not be any circuit pattern or circuit wire above the capacitor pressure relief vent.

③Unless otherwise specified, following clearance should be made above the pressure relief vent.

Case Diameter	Clearance Required
φ 6.3 to 16mm	2mm or more
φ 18 to 35mm	3mm or more
φ 40mm or more	5mm or more

④In case the vent side is placed toward P.C. board (such as end seal vented parts), make a corresponding hole on the P. C. board to release the gas when vent is operated. The hole should be made to match the capacitor vent position.

⑤安装时请勿将螺纹端子型的封口部朝下。横向放置时，请勿将压力阀以及阳极端子朝下。

(11)电容器封口部的下面如果有电路图案，一旦发生电解液泄露时，可能会造成电路图案短路，发生由漏电痕迹或电迁移引发的发烟、着火，因此，请勿在电容器封口部的下面配置电路图案。

(12)请勿在电容器的周围及印刷电路板的背面（电容器下面）配置发热部件。

(13)芯片电容器用印刷电路板的焊盘图形要参照产品目录或交货承认书的推荐图形进行电路设计。

(14)电容器的电气特性会根据温度及频率的变动而变化。请确认该变化量的基础上进行电路设计。

(15)在双面印刷电路板上安装电容器时，在进行电路设计时请将电路设计成电容器下面没有多余的印刷电路板孔及反面连接用贯通孔的样式。

(16)螺纹端子的紧固及电容器主题安装用螺丝的紧固扭矩不可超出交货承认书中规定的范围。

(17)并联两个以上的电容器时，需要充分考虑电流平衡。(特别是并联导电性高分子钽固体电解电容器和普通铝电解电容器时，更需要考虑。)

(18)串联两个以上的电容器时，要考虑电压平衡，并将分压电阻器插入，使其与电容器并联。

2.安装注意事项

(1)对组装到设备上已经通电的电容器，请勿再次使用。除了定期检修时为检测电气性能而拆卸的电容器外，均不能再次使用。

(2)即使将电容器放电后，端子间仍有可能产生电压（再闪击电压）。此时，请通过1kΩ的电阻器进行电压处理。

(3)保管达2年以上的电容器的漏损电流有可能会增大。此时，请通过1kΩ的电阻器进行放电处理。

(4)请确认电容器的额定值（静电容量及电压）后，进行安装。

(5)请确认电容器的极性后，进行安装。

(6)请勿将电容器跌落到地上，请勿使用跌落后的电容器。

(7)安装时请勿使电容器主体变形。

(8)请确认电容器的端子间隔和印刷电路板孔间隔一致后，再进行安装。

(9)基板自立形电容器在安装时要推入到和其基板密合的程度（非浮起状态）。

(10)利用自动插入机扭结固定电容器引线的强度不可过大。

(11)请注意由自动插入机及装配机的吸附器、产品检验器及对中操作所引起的冲击力。

(12)利用烙铁进行的焊接

①焊接条件（温度、时间）不可超出交货承认书中规定的范围。

②因端子间隔和印刷电路板孔间隔不一致而需要加工引线端子时，在进行焊接之前，加工时不可使电容器主体承受力。

③利用烙铁进行修整时，如果需要先将焊接的电容器卸下，请将焊锡充分融化后再拆卸，以免使电容器的端子承受压力。

④请勿让烙铁的烙铁头接触到电容器的主体。

(13)流动焊

①进行焊接时，请勿将电容器主体浸入焊料中。插入印刷电路板，只有对电容器一侧的相反侧背面进行焊接。

②焊接条件（预热、焊接温度、端子浸渍时间）不可超出交货承认书中规定的范围。

③除端子部以外，不可附着有焊剂。

④进行焊接时，要注意避免其他部件翻倒接触到电容器。

(14)回流焊

①焊接条件（预热、焊接温度、时间、回流次数）不可超出交货承认书中规定的范围。

⑤When installing, do not face down the sealing part of threaded terminal type. Do not place the pressure valve and anode terminal downward when it is placed horizontally.

(11) If there is a circuit pattern under the sealing part of the capacitor, once the electrolyte leaks, it may cause a short circuit of the circuit pattern, resulting in smoke and fire caused by leakage trace or electric migration. Therefore, do not configure the circuit pattern under the sealing part of the capacitor.

(12) Do not design a circuit board so that heat generating components are placed near an aluminum electrolytic capacitor or reverse side of P.C. board (under the capacitor).

(13) Please refer to the pad size layout recommendations in our catalog when designing in surface mount capacitors.

(14) Electrical characteristics may vary depending on changes in temperature and frequency. Please consider this variation when you design circuits.

(15) When you mount capacitors on the double-sided P.C. boards, do not place capacitors on circuit patterns or over on unused holes.

(16) The torque for terminal screw or brackets screws shall be within the specified value on Nichicon's drawings.

(17) When you install more than 2 capacitors in parallel, consider the balance of current flowing through the capacitors. Especially, when a solid conductive polymer aluminum electrolytic capacitor and a standard aluminum electrolytic capacitor are connected in parallel, special consideration must be given.

(18) If more than 2 aluminum electrolytic capacitors are used in series, make sure the applied voltage will be lower than the rated voltage and that voltage will be applied to each capacitor equally using a balancing resistor in parallel with each

2. Mounting

(1) Once a capacitor has been assembled in the set and power applied, Even if a capacitor is discharged, an electric potential (restriking voltage) may exist between the terminals.

(2) Electric potential between positive and negative terminal may exist as a result of returned electromotive force, so please discharge the capacitor using a 1kΩ resistor.

(3) Leakage current of the parts that have been stored for more than 2 years may increase. If leakage current has increased, please perform a voltage treatment using 1kΩ resistor.

(4) Please confirm ratings before installing capacitors on the P.C. board.

(5) Please confirm polarity before installing capacitors on the P.C. board.

(6) Do not drop capacitors on the floor, nor use a capacitor that was dropped.

(7) Do not damage the capacitor while installing.

(8) Please confirm that the lead spacing of the capacitor matches the hole spacing of the P.C. board prior to installation.

(9) Snap-in can type capacitor such as JIS style symbol 692, 693, 694 and 695 type should be installed tightly to the P.C. board (allow no gap between the P.C. board an bottom of the capacitor).

(10) Please pay attention that the clinch force is not too strong when capacitors are placed and fixed by an automatic insertion machine.

(11) Please pay attention to that the mechanical shock to the capacitor by suction nozzle of the automatic insertion machine or automatic mounter, or by product checker, or by centering mechanism.

(12) Hand soldering.

①Soldering condition shall be confirmed to be within the specification.

②If it is necessary that the leads must be formed due to a mismatch of the lead space to hole space on the board, bend the lead prior to soldering without applying too much stress to the capacitor.

③If you need to remove parts which were soldered, please melt the solder enough so that stress is not applied to lead.

④Please pay attention so that solder iron does not touch any portion of capacitor body.

(13) Flow soldering (Wave solder)

①Aluminum capacitor body must not be submerged into the solder bath. Aluminum capacitors must be mounted on the "top side" of the P.C. board and only allow the bottom side of the P.C. board to come in contact with the solder.

②Soldering condition must be confirmed to be within Nichicon specification. Solder temperature: 260 5oC Immersing lead time:10 1 second, Thickness of P.C. board : 1.6mm.

③Please avoid having flux adhere to any portion except the terminal.

④Please avoid contact between other components and the aluminum capacitor.

(14) Reflow soldering(SMD only)

①Soldering condition must be confirmed to be within Huawei Specification.

②使用红外线加热器时，由于红外线吸收率根据电容器的颜色及材料的不同而不同，因此需要注意加热的程度。

(15)在无卤类焊剂中，有一些虽然不含离子性卤化合物，但却有大量的非离子性卤化物，当这类化合物进入电容器时，将与电解液发生化学反应，可能产生与清洗后结果相同的不良影响。请选用不含有非离子性卤化合物的焊剂。

(16)焊接时以及因固定电容器用的树脂的硬化等而使电容器在150℃以上的环境大气中放置2分钟以上，或者让高温气体、热射线直接接触电容器时，外装套筒有时会发生收缩、膨胀、龟裂。

(17)将电容器焊接到印刷电路板上之后，不可将电容器主体倾斜、放倒或扭曲。

(18)将电容器焊接到印刷电路板上之后，不可将电容器当作把手来移动印刷电路板。

(19)将电容器焊接到印刷电路板之后，不可让其他物体碰撞到电容器。此外，重叠放置印刷电路板时，不可使印刷电路板或其他部件等碰到电容器。

(20)清洗

①清洗方法

对象：所以品种，所以规格

乙醇类清洗剂

异丙醇

水性清洗剂

高级乙醇类

界面活性剂

②清洗条件：使用浸渍、超声波等方法、清洗时间总计不超过5分钟。（清洗液温度为60℃以下）清洗后，请将电容器和安装完毕的印刷电路板同时以热风干燥10分钟以上。另外，当洗涤液落入了外壳和封套之间时，如果热风的温度过高，封套就会变软、膨胀，所以请使热风的温度不要超过封套变软的温度（80℃）。

此外，水洗后如果干燥不充分，可能会引起封套二次收缩、底板膨胀等外观不良。需加以注意。请充分做好清洗剂的污染管理工作（电导率，PH值，比重，含水量等）。

清洗后，请勿将其保管在清洗液的环境中或密封容器中。另外，在进行喷射洗净的时候，由于喷射角度和强度的不同，可能会造成外壳膨胀，谨请注意。对于别的洗净方法，也有可能造成产品表示信息消失或者模糊褪色。

HCFC的换代产品氟利昂在将来将不能使用，而且，从地球环境角度而言，我们也不推荐将其作为清洗液来使用。

(21)固定剂、被膜剂

①请勿使用含卤素类溶剂等固定剂，被膜剂。

②在使用固定剂、被膜剂之前，请将基板和电容器的封口部之间清扫干净，不可留有焊剂残渣及污垢。

③在使用固定剂、被膜剂之前，请对清洗剂等进行干燥.

④在使用固定剂、被膜剂时，请勿将电容器封口部的整个面堵塞。

固定剂、被膜剂的种类很多，使用时详情请咨询我们。

(22)关于熏制处理

如果熏蒸剂中所含的卤素侵入电容器内部，可能与电解液、电极箔等发生化学反应。（主要是部分气体透过电容器的封口部，侵入电容器内部。）这一化学反应的进行会导致内部铝构件腐蚀，可能引起电容器漏电流不良、开路不良、压力阀动作等故障。在出口时或者机器使用的的防虫对策中，有时会利用甲基溴等卤素化合物进行熏制处理。对电容器及装配了电容器的机器进行熏蒸时，或者将经过熏蒸处理的托盘等用作包装材料时，请充分注意避免电容器暴露在卤素氛围中。

3.设备使用注意事项

(1)直接接触电容器的端子有导致触电的危险

②When an infrared heater is used, please pay attention to the extent of heating since the absorption rate of infrared, will vary due to difference in the color of the capacitor body, material of the sleeve and capacitor size.

(15) Soldering flux There are non-halogen types of flux that do not contain ionic halides, but contain many non-ionic halides. When there non-ionic halides infiltrate the capacitor, they cause a chemical reaction that is just as harmful as the use of cleaning agents. Use soldering flux that dose not contain non-ionic halides.

(16) Shrinkage, bulging and/or cracking could be seen on the outer sleeve of the capacitor when capacitors are kept in for more than 2 minutes at 150 ℃ ambient temperature during soldering at reflow process or resin curing process. Applying high temperature gas or heat ray to capacitor can cause the same phenomenon.

(17) Do not tilt lay down or twist the capacitor body after the capacitor are soldered to the P.C. board.

(18) Do not carry the P.C. board by grasping the soldered capacitor.

(19) Please do not allow anything to touch the capacitor after soldering. If P.C. board are stored in a stack, please make sure P.C. board or the other components do not touch the capacitor. The capacitors shall not be effected by any radiated heat from the soldered P.C. board or other components after soldering.

(20) Recommended Cleaning Condition

Applicable : Any type, any ratings.

Cleaning Agents

Based Alcohol solvent cleaning agent

Isopropyl Alcohol

Based water solvent cleaning agent

Premium alcohol solvent type

Cleaning Conditions :

Total cleaning time shall be no greater than 5 minutes by immersion, ultrasonic or other method.(Temperature of the cleaning agent shall be 60℃ maximum.) After the board cleaning has been completed, the capacitors should be dried using hot air for a minimum of 10 minutes. If the cleaning solution is infiltrated between the case and the sleeve, the sleeve might soften and swell when hot air temperature is too high. Therefore, hot air temperature should not exceed softening temperature (80℃) of the sleeve. Insufficient dries after water rinse may cause appearance problems, such as sleeve shrinking, bottom-plate bulging. In addition, a monitoring of the contamination of cleaning agents (electric conductivity, pH, specific gravity, water content, etc.) must be implemented.

After the cleaning, do not keep the capacitors in an atmosphere containing the cleaning agent or in an air tight container. In addition regarding jet washing, please use caution since the sleeve may expand cause of the angle and / or the strength of the water jet. Depending on the cleaning method, the marking on a capacitor may be erased or blurred.

Consult Nichicon before using a cleaning method or a cleaning agent other than those recommended.

(21) Fixing Material and Coating Material

①Do not use any affixing or coating materials, which contain halide substance.

②Remove flux and any contamination, which remains in the gap between the end seal and PC board.

③Please dry the cleaning agent on the PC board before using affixing or coating materials.

④Please do not apply any material all around the end seal when using affixing or coating materials.

There are variations of cleaning agents, fixing and coating materials, so please contact those manufacture or our sales office to make sure that the material would not cause any problems.

(22) Others

If the halogen contained in the fumigant invades the inside of the capacitor, it may react with the electrolyte, electrode foil, etc. (mainly part of the gas passes through the sealing part of the capacitor and invades the inside of the capacitor.) This chemical reaction will lead to the corrosion of the internal aluminum components, which may cause the bad leakage current, open circuit, pressure valve action and other faults of the capacitor. At the time of export or in the insect control strategy used by the machine, the halogen compounds such as methyl bromide are sometimes used for fumigation. When fumigating capacitors and machines equipped with capacitors, or using fumigated pallets as packaging materials, please take full care to avoid exposure of capacitors to halogen atmosphere.

3. In the equipment

(1) Do not directly touch terminal by hand.

(2)不可以导电体使电容器端子之间短路。此外，不可使电容器接触酸或碱的水溶液等导电性溶液。

(3)要确认装配了电容器的设备的安装环境不属于以下环境。

①直接溅水的场所、高温高湿的场所、易结露的场所。

②直接溅油的场所及充满油雾的场所。

③直接溅落盐水的场所、高温高湿的场所、易结露的场所。

④充满酸性有机气体（硫化氢及亚硫酸、亚硝酸、氯气、溴气、溴甲烷）的场所。

⑤充满碱性有毒其他（氨气等）的场所。

⑥有酸性及碱性溶剂溅落的场所。

⑦结露环境有可能导致外套发生收缩、膨胀、破裂，因此在使用时请进行充分确认。此外，因温度剧烈变化、高温高湿试验等而结露时，也可能导致同样的外套异常。

4.保养检修

1.对于工业机器中使用的电容器要进行定期检修。检修项目包括如下内容。

①外观：有无压力阀的动作、液体泄漏等明显异常。

②电气性能：漏损电流、静电容量、损失角的正切值及产品目录或交货承认书中规定的项目。

5.紧急情况

1.在使用装置的过程中，电容器的压力阀动作，出现蒸汽时，切断装置的主电源或者电源线的插头从插座中拔出。

2.电容器的压力阀工作时，将喷出超过+100℃的高温气体，此时不可将脸部靠近。一旦喷出的气体进入眼睛或吸入时，应立即用水清洗眼部或漱口。

不可舔食电容器电解液。如果电解液溅到皮肤上，应使用肥皂进行冲洗。

6.保管条件

1.关于电容器的保管，建议在室温-5～35℃、相对湿度≤75%的条件下进行保管。

2.请确认保管场所不属于『1项　装配使用中注意事项（9）中记载的环境』（为使导电性高分子铝电解电容器保持良好的焊接性，请遵守以下项目。）

1.在使用前，请在用塑料袋密封的状态下保管。

2.请在即将使用前将塑料袋开封，并将产品一次用完。如　果不能一次用完，请将剩余产品放回包装袋，并用胶带等密封。

3.为保持良好的焊接性，请将产品保管期限控制在一年以内。

7.废弃处理

1．在废弃电容器时，可采取以下任意一种方法。

①在电容器上开孔或充分破碎后焚烧。

②不焚烧电容器时，应交与专业的工业废弃物处理厂，由其进行填拓等处理。

2．废弃电容器（从与之相连的基板上卸下）时，请确认其是否已被放电。

(2) Do not short between terminals with conductor, nor spill conductible liquid such as alkaline or acidic solution on or near the capacitor.

(3) Please make sure that the ambient conditions where the set is installed not have any of the following conditions:

①Where capacitors are exposed to water, high temperature & high humidity atmosphere, or condensation of moisture.

②Where capacitors are exposed to oil or an atmosphere that is filled with particles of oil.

③Where capacitors are exposed to salty water, high temperature & high humidity atmosphere, or condensation of moisture.

④The atmosphere is filled with toxic acid gasses (e.g. hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methy bromide, etc.)

⑤The atmosphere is filled with toxic alkaline gasses (e.g. ammonia)

⑥Where capacitors are exposed to acidic or alkaline solutions.

⑦Since shrinkage, bulging and/or crack could be seen on outer sleeve of capacitor when capacitors are used in atmosphere where condensation of moisture occures, please confirm their adaptation before the use. The condensation of moisture could occure when temperature cycling test/ Rapid change of temperature test is performed, in this case, aforementioned sleeve problem could be seen.

4. Maintenance Inspection

(1) Please periodically inspect the aluminum capacitors that are installed in industrial equipment. The following items should be checked:

①Appearance : Remarkable abnormality such as vent operation, leaking electrolyte etc.

②Electrical characteristic: Capacitance, dielectric loss tangent, leakage current, and items specified in the specification.

5. In an Emergency

(1) If you see smoke due to operation of safety vent, turn off the main switch or pull out the plug from the outlet.

(2) Do not bring your face near the capacitor when the pressure relief vent operates. The gasses emitted from that are over 100℃. If the gas gets into your eyes, please flush your eyes immediately in pure water. If you breathe the gas, immediately wash out your mouth and throat with water.

Do not ingest electrolyte. If your skin is exposed to electrolyte, please wash it away using soap and water.

6. Storage

(1) It is recommended to keep capacitors between the ambient temperatures of -5℃ to 35℃ and a relative humidity of ≤75% or below.

(2) Please make sure the ambient storage conditions will be free from the conditions that are listed in clause 3. "In the equipment" at (3). In order to maintain the satisfactory soldering condition for conductive polymer aluminum solid electrolytic capacitors, the following items must be strictly adhered to.

1) Parts should be stored sealed in a bag until they are actually used.

2) Once the sealed bag is cut open, all the parts should be used at one time. If not, then the remaining parts should be places in a bag and sealed with tape.

3) In order to maintain a good solderability of the parts, shelf life of parts should not exceed 1 year.

7. Disposal

(1) Take either of the following methods in disposing of capacitors.

①Make a hole in the capacitor body or crush capacitors and incinerate them.

②If incineration is not applicable, hand them over to a waste disposal agent and have them buried in a landfill.

(2) When removing a capacitor from the circuit board or when disposing of capacitor please ensure that the capacitor is properly discharged.

关于商品目录中记载的ESR阻抗值

引线型：测定位置为引线端子底部。

芯片型：测定位置为距离树脂板的孔口最近的电极部。

ESR, Impedance Measuring Point

Radial lead type

ESR should be measured at both of the terminal ends closest to the capacitor body.

Chip type

ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform.

VXA

特点 Features

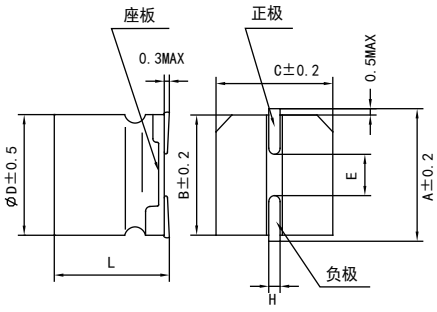
- 保证105℃ 2000小时。Endurance 2000h at 105℃.
- 额定电压范围：6.3~100V。Rated Voltage Range:6.3~100V.
- 标准品。Standard Type.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200认证。AEC-Q200 Compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-55~+105℃	
额定电压范围 Rated Voltage(U_R)	6.3 ~ 100V	
标称电容量范围 Nominal Capacitance Range(C_R)	1 ~ 8200μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	Φ4~10：≤0.01$C_R U_R$或者3μA取较大值（Whichever is greater） ≥Φ12.5：≤0.03$C_R U_R$或者4μA取较大值（Whichever is greater）	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V) 6.3 10 16 25 35 50 63 80 100 Tanδ 0.32 0.24 0.20 0.16 0.14 0.12 0.12 0.11 0.10	Max. 120Hz, +20℃
低温特性 Characteristics at Low Temperature	U_R (V) 6.3 10 16 25 35 50 63 80 100 $Z_{-25℃}$ / $Z_{+20℃}$ 4 4 3 2 2 2 2 3 3 $Z_{-55℃}$ / $Z_{+20℃}$ 12 8 6 4 3 3 3 3 3	Max. 120Hz
耐久性 Load Life	+105℃，连续施加额定电压2000小时，恢复16小时后： After applying rated voltage for 2000 hours at 105℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±20%初始值以内 Within ±20% of the initial value
	损耗角正切值 Tanδ	≤ 200%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
高温贮存 Shelf Life	+105℃，1000小时贮存后,恢复16小时后： After storage for 1000 hours at +105℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±20%初始值以内 Within ±20% of the initial value
	损耗角正切值 Tanδ	≤ 200%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
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
	损耗角正切值 Tanδ	≤初始规定值 Not more than specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

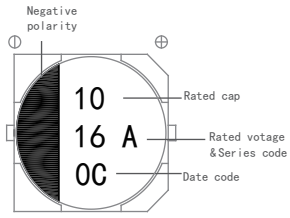
尺寸图 Dimensional drawings

Fig.1

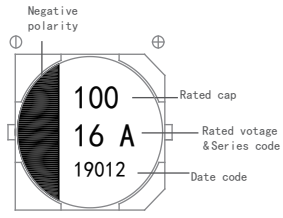


Marking

ΦD=4～5mm



ΦD=6.3mm



ΦD=8～10.2mm

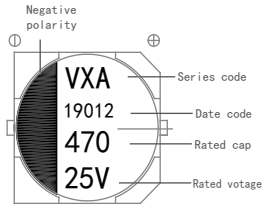
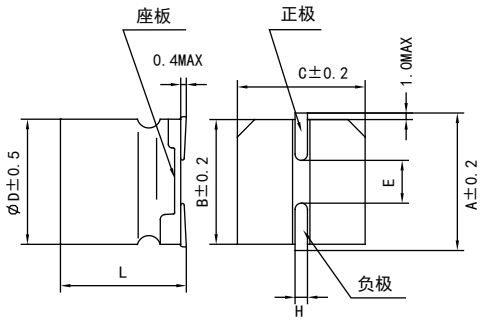
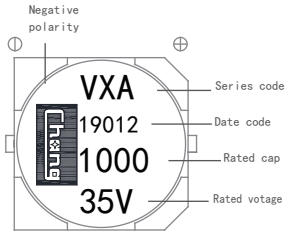


Fig.2



ΦD≥12.5mm



尺寸表 size table

单位 Unit: mm

ΦD	L	A	B	C	E±0.2	H	Fig.No.
4	5.8±0.3	5.0	4.3	4.3	1.0	0.5～0.8	1
5	5.8±0.3	6.0	5.3	5.3	1.3		
6.3	5.8±0.3	7.3	6.6	6.6	2.2		
6.3	7.7±0.3	7.3	6.3	6.3	2.2		
8	6.5±0.3	8.9	8.3	8.3	2.3		
8	10.5±0.5	9.0	8.3	8.3	3.1	0.8～1.1	
10	10.5±0.5	11.0	10.3	10.3	4.5		
12.5	13.5±0.5	13.6	13	13	4.5	1.1～1.4	2
12.5	16.0±0.5	13.6	13	13	4.5		
16	16.5±0.5	18.0	17	17	6.4		
16	21.5±0.5	18.0	17	17	6.4		
18	16.5±0.5	20.0	19	19	6.4		
18	21.5±0.5	20.0	19	19	6.4		

规格特性表
Table of specifications and characteristics

U_R(V) / C_R (μF)	6.3V		10V		16V		25V		35V	
	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA
4.7					4*5.8	18	4*5.8	18	4*5.8	17
10			4*5.8	23	4*5.8	21	4*5.8	23	5*5.8	27
22	4*5.8	22	4*5.8	27	5*5.8	30	5*5.8	32	6.3*5.8	45
33	4*5.8	26	5*5.8	35	5*5.8	35	6.3*5.8	49	6.3*5.8	48
47	5*5.8	38	5*5.8	40	6.3*5.8	50	6.3*5.8	50	6.3*7.7	80
100	6.3*5.8	75	6.3*5.8	73	6.3*5.8	70	6.3*7.7	100	6.3*7.7	82
220	6.3*7.7	130	6.3*7.7	125	6.3*7.7	120	8*10.5	278	8*10.5	277
330	8*10.5	320	8*10.5	300	8*10.5	290	8*10.5	298	10*10.5	380
470	8*10.5	340	8*10.5	320	10*10.5	410	10*10.5	398	12.5*13.5	540
680	10*10.5	420	10*10.5	410	10*10.5	380	12.5*13.5	640	12.5*13.5	610
1000	10*10.5	455	10*10.5	440	12.5*13.5	560	12.5*16	560	12.5*16	820
2200	12.5*13.5	690	12.5*13.5	690	16*16.5	910	16*16.5	910	18*21.5	1080
3300	12.5*16	860	16*16.5	960	16*16.5	960	18*16.5	1200		
4700	16*16.5	1050	16*16.5	1030	18*16.5	1250	18*21.5	1340		
6800	18*16.5	1300	18*16.5	1290						
8200	18*21.5	1500	18*21.5	1480						

U_R(V) / C_R (μF)	50V		63V		80V		100V	
	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA
1	4*5.8	8	4*5.8	8				
2.2	4*5.8	12	4*5.8	12				
3.3	4*5.8	15	5*5.8	17				
4.7	5*5.8	20	6.3*5.8	23	6.3*5.8	28	6.3*5.8	20
10	6.3*5.8	33	6.3*5.8	33	6.3*7.7	48	6.3*7.7	32
22	6.3*5.8	40	6.3*7.7	60	8*10.5	105	8*10.5	100
33	6.3*7.7	68	8*10.5	143	8*10.5	105	10*10.5	150
47	6.3*7.7	72	8*10.5	150	10*10.5	160	12.5*13.5	180
100	8*10.5	210	10*10.5	310	12.5*13.5	270	12.5*13.5	250
220	10*10.5	338	12.5*13.5	480	16*16.5	470	16*16.5	450
330	12.5*13.5	500	16*16.5	660	18*16.5	600	18*16.5	590
470	12.5*16	580	16*16.5	700	18*21.5	1000	18*21.5	980
1000	18*16.5	1000						

额定纹波电流的频率系数
Frequency coefficient of ripple current

Frequency (Hz)	50	120	300	1K	≥10K
Coefficient (kf)	0.70	1.00	1.17	1.36	1.50

VXE

特点 Features

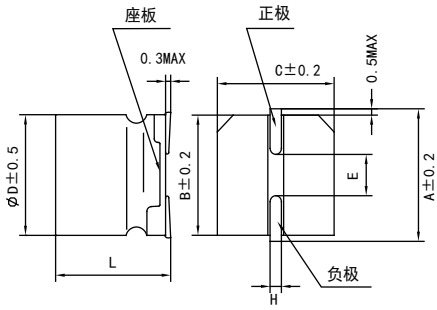
- 保证105℃ 3000~5000小时。Endurance 3000~5000h at 105℃.
- 额定电压范围：6.3~100V。Rated Voltage Range:6.3~100V.
- 宽温度、长寿命品。Wide temperature ,Long life Type.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200认证。AEC-Q200 Compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-55~+105℃	
额定电压范围 Rated Voltage(U_R)	6.3 ~ 100V	
标称电容量范围 Nominal Capacitance Range(C_R)	4.7~ 3300μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.01$C_R U_R$或者3μA取较大值（Whichever is greater）	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V) 6.3 10 16 25 35 50 63 80 100 Tanδ 0.30 0.24 0.20 0.16 0.14 0.12 0.09 0.08 0.07	Max. 120Hz, +20℃
低温特性 Characteristics at Low Temperature	U_R (V) 6.3 10 16 25 35 50 63 80 100 $Z_{-25℃}$ / $Z_{+20℃}$ 4 3 2 2 2 2 2 3 2 $Z_{-55℃}$ / $Z_{+20℃}$ 10 7 5 3 3 3 3 3 3	Max. 120Hz
耐久性 Load Life	+105℃，连续施加额定电压5000小时（ΦD=4，5和6.3为3000小时），恢复16小时后： After applying rated voltage for 5000 hours (3000 hours for ΦD = 4，5and 6.3) at 105℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 300% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
高温贮存 Shelf Life	+105℃，1000小时贮存后,恢复16小时后： After storage for 1000 hours at +105℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 300% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
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
	损耗角正切值 Tanδ	≤初始规定值 Not more than specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

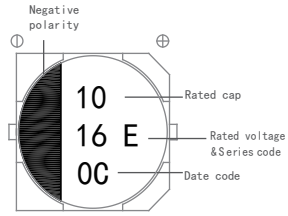
尺寸图 Dimensional drawings

Fig.1

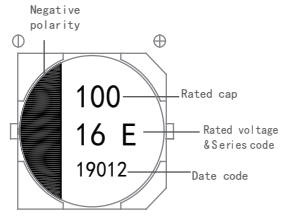


Marking

ΦD=4～5mm



ΦD=6.3mm



ΦD=8～10.2mm

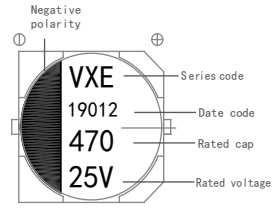
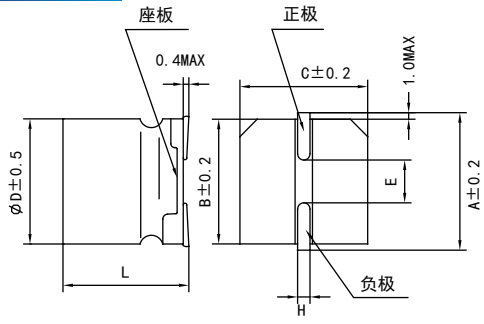
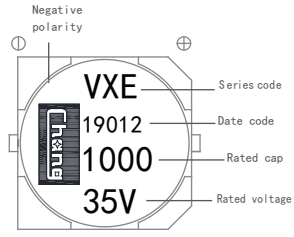


Fig.2



ΦD≥12.5mm



尺寸表 size table

单位 Unit: mm

ΦD	L	A	B	C	E±0.2	H	Fig.No.
4	5.8±0.3	5.0	4.3	4.3	1.0	0.5～0.8	1
5	5.8±0.3	6.0	5.3	5.3	1.3		
6.3	5.8±0.3	7.3	6.6	6.6	2.2		
6.3	7.7±0.3	7.3	6.3	6.3	2.2		
8	6.5±0.5	8.9	8.3	8.3	2.3		
8	10.5±0.5	9.0	8.3	8.3	3.1	0.8～1.1	
10	10.5±0.5	11.0	10.3	10.3	4.5		
12.5	13.5±0.5	13.6	13	13	4.5	1.1～1.4	2
12.5	16±0.5	13.6	13	13	4.5		
16	16.5±0.5	18.0	17	17	6.4		
16	21.5±0.5	18.0	17	17	6.4		
18	16.5±0.5	20.0	19	19	6.4		
18	21.5±0.5	20.0	19	19	6.4		

规格特性表
Table of specifications and characteristics

U_R(V) / C_R (μF)	6.3V		10V		16V		25V		35V		50V	
	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA
4.7							4*5.8	16	4*5.8	14	5*5.8	21
10					4*5.8	20	5*5.8	30	5*5.8	30	6.3*5.8	35
22	4*5.8	23	4*5.8	30	5*5.8	35	6.3*5.8	45	6.3*5.8	50	6.3*7.7	52
33	5*5.8	40	5*5.8	40	6.3*5.8	50	6.3*5.8	50	6.3*5.8	45	6.3*7.7	55
47	5*5.8	45	6.3*5.8	55	6.3*5.8	60	6.3*7.7	65	6.3*7.7	65	8*10.5	98
100	6.3*5.8	70	6.3*5.8	58	6.3*7.7	90	6.3*7.7	100	8*10.5	100	10*10.5	118
220	6.3*7.7	105	6.3*7.7	89	8*10.5	250	8*10.5	145	10*10.5	230	12.5*13.5	280
330	8*10.5	245	8*10.5	170	8*10.5	260	10*10.5	250	10*10.5	250	12.5*16	360
470	10*10.5	350	8*10.5	160	10*10.5	310	10*10.5	300	12.5*13.5	330	16*16.5	510
1000	10*10.5	350	10*10.5	310	12.5*13.5	450	12.5*13.5	330	16*16.5	700	18*16.5	780
2200					12.5*16	550	16*16.5	680	18*21.5	1080		
3300					16*21.5	880	18*21.5	1090				

U_R(V) / C_R (μF)	63V		80V		100V	
	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 105℃ mA
1	4*5.8	8				
2.2	4*5.8	12				
3.3	4*5.8	17				
4.7	5*5.8	22				
10	6.3*7.7	45				
22	8*10.5	103				
33	8*10.5	100	8*10.5	55	10*10.5	88
47	10*10.5	175	10*10.5	88	12.5*13.5	165
100	12.5*13.5	290	12.5*13.5	165	12.5*16	220
220	12.5*16	370	16*16.5	270	16*16.5	270
330	16*16.5	405	18*16.5	370	18*16.5	370
470	18*16.5	468				

额定纹波电流的频率系数
Frequency coefficient of ripple current

Frequency（Hz）	50	120	300	1K	≥10K
Coefficient（kf）	0.70	1.00	1.17	1.36	1.50

VXH

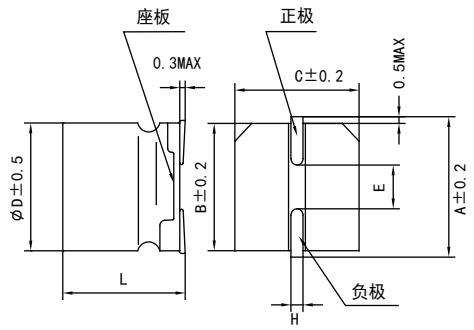
特点 Features

- 保证105℃ 5000~10000小时。Endurance 5000~10000h at 105℃.
- 额定电压范围：6.3~50V。Rated Voltage Range:6.3~50V.
- 低阻抗、超长寿命品。Low ESR , Super Long life Type.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200认证。AEC-Q200 Compliant.

主要技术性能 Specifications

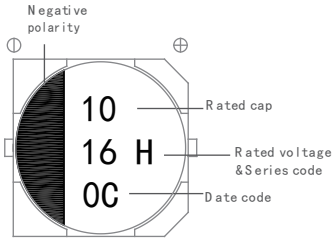
项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-40~+105℃	
额定电压范围 Rated Voltage(U_R)	6.3 ~ 50V	
标称电容量范围 Nominal Capacitance Range(C_R)	4.7 ~470μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.01$C_R U_R$或者3μA取较大值（Whichever is greater）	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V): 6.3 / 10 / 16 / 25 / 35 / 50 Tanδ: 0.32 / 0.28 / 0.26 / 0.16 / 0.14 / 0.14	Max. 120Hz, +20℃
低温特性 Characteristics at Low Temperature	U_R (V): 6.3 / 10 / 16 / 25 / 35 / 50 $Z_{-40℃}$ / $Z_{+20℃}$: 7 / 5 / 4 / 4 / 3 / 3	Max. 120Hz
耐久性 Load Life	+105℃施加额定电压后，电容器应满足以下要求： Application of rated voltage at 105℃, the capacitor shall meet the following requirement:	
	规定时间 Specified time	Φ5*5.8，Φ6.3*5.8，Φ6.3*7.7：5000小时 Φ5*7.0，Φ6.3*7.0，Φ6.3*8.7：7000小时 Φ8*10.5，Φ10*10.5：10000小时
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤300%初始规定值 Not more than 300% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
高温贮存 Shelf Life	+105℃，1000小时贮存后,恢复16小时后： After storage for 1000 hours at +105℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 300% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
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
	损耗角正切值 Tanδ	≤初始规定值 Not more than specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

尺寸图 Dimensional drawings

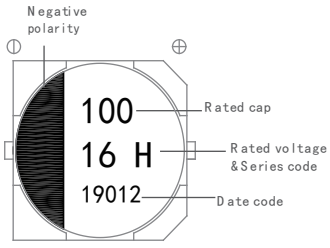


Marking

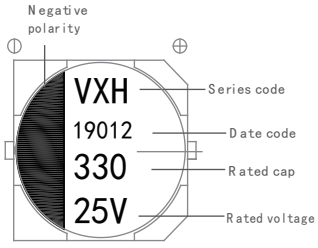
ΦD=5mm



ΦD=6.3mm



ΦD=8～10.2mm



尺寸表 size table

单位 Unit: mm

ΦD	L	A	B	C	E±0.2	H
5	5.8±0.3	6.0	5.3	5.3	1.3	0.5～0.8
5	7.0±0.3	6.0	5.3	5.3	1.3	
6.3	5.8±0.3	7.3	6.6	6.6	2.2	
6.3	7.0±0.3	7.3	6.6	6.6	2.2	
6.3	7.7±0.3	7.3	6.3	6.3	2.2	
6.3	8.7±0.3	7.3	6.3	6.3	2.2	
8	6.5±0.5	8.9	8.3	8.3	2.3	
8	10.5±0.5	9.0	8.3	8.3	3.1	0.8～1.1
10	10.5±0.5	11.0	10.3	10.3	4.5	

规格特性表
Table of specifications and characteristics

C_R (μF) \ U_R(V)	6.3V			10V			16V			25V			35V		
	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω
10							5*5.8	95	1.5	5*5.8	95	2.2	5*7.0	95	2.2
22				5*5.8	95	1.5	5*7.0	95	2.2	5*7.0	95	2.2	6.3*7.0	140	1.1
33	5*5.8	95	1.5	5*7.0	95	2.2	6.3*5.8	120	1.0	6.3*7.0	140	1.1	6.3*8.7	230	1.0
47	5*7.0	95	2.2	6.3*5.8	120	1.0	6.3*7.0	140	1.1	6.3*7.0	140	1.1	6.3*8.7	230	1.0
100	6.3*7.0	140	1.1	6.3*5.8	120	1.0	6.3*7.0	140	1.1	6.3*8.7	230	1.0	8*10.5	600	0.22
150	6.3*7.7	210	1.0	6.3*7.0	140	1.1	6.3*8.7	230	1.0	8*10.5	600	0.22	10*10.5	850	0.16
220	6.3*8.7	230	1.0	6.3*7.7	210	1.0	6.3*8.7	230	1.0	8*10.5	600	0.22	10*10.5	850	0.16
330	6.3*8.7	230	1.0	8*10.5	600	0.22	8*10.5	600	0.22	10*10.5	850	0.16			
470	8*10.5	600	0.22	10*10.5	850	0.16	10*10.5	850	0.16						

C_R (μF) \ U_R(V)	50V		
	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω
4.7	5*5.8	45	2.0
10	6.3*5.8	75	1.6
22	6.3*7.7	130	0.9
47	8*10.5	350	0.53
100	10*10.5	670	0.35

额定纹波电流的频率系数
Frequency coefficient of ripple current

C_R (μF) \ Frequency(Hz)	120	1K	10K	100K
4.7-150	0.40	0.75	0.90	1.0
220-470	0.50	0.85	0.94	1.0

VXB

特点 Features

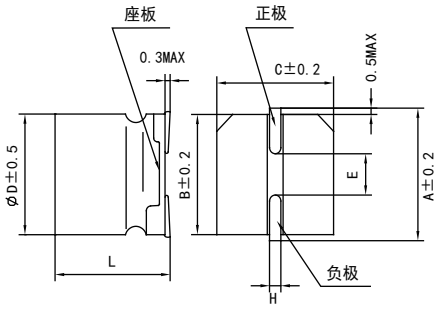
- 保证105℃ 2000~5000小时。Endurance 2000~5000h at 105℃.
- 额定电压范围：6.3~100V。Rated Voltage Range:6.3~100V.
- 低阻抗、长寿命品。Low ESR ,Long life Type.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200认证。AEC-Q200 Compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-55~+105℃	
额定电压范围 Rated Voltage(U_R)	6.3 ~ 100V	
标称电容量范围 Nominal Capacitance Range(C_R)	1 ~ 8200μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.01$C_R U_R$或者3μA取较大值（Whichever is greater）	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R 6.3 10 16 25 35 50 63 80 100 Tanδ 0.26 0.20 0.16 0.14 0.12 0.12 0.10 0.08 0.07	Max. 120Hz, +20℃
低温特性 Characteristics at Low Temperature	U_R (V) 6.3 10 16 25 35 50 63 80 100 $Z_{-25℃}$ / $Z_{+20℃}$ 4 3 2 2 2 2 2 3 2 $Z_{-55℃}$ / $Z_{+20℃}$ 8 5 4 3 3 3 3 3 3	Max. 120Hz
耐久性 Load Life	+105℃，连续施加额定电压5000小时（ΦD=4，5和6.3、8*6.5为2000小时），恢复16小时后： After applying rated voltage for 5000 hours (2000 hours for ΦD = 4, 5 , 6.3, 8*6.5) at 105℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 300% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
高温贮存 Shelf Life	+105℃，1000小时贮存后,恢复16小时后： After storage for 1000 hours at +105℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
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
	损耗角正切值 Tanδ	≤初始规定值 Not more than specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

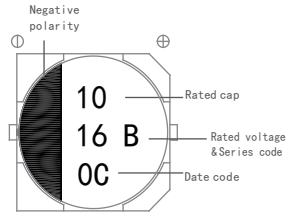
尺寸图 Dimensional drawings

Fig.1

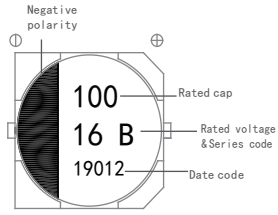


Marking

ΦD=4～5mm



ΦD=6.3mm



ΦD=8～10.2mm

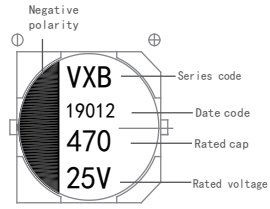
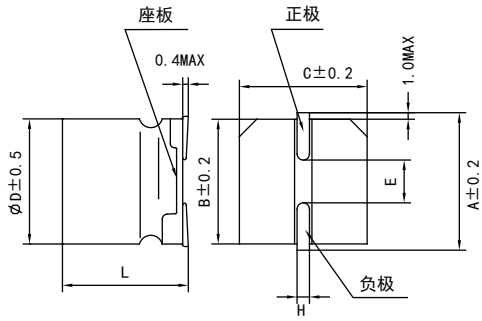
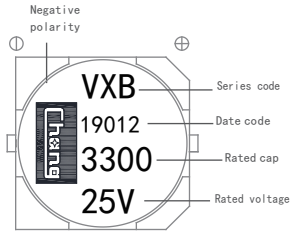


Fig.2



ΦD≥12.5mm



尺寸表 size table

单位 Unit: mm

ΦD	L	A	B	C	E±0.2	H	Fig.No.
4	5.8±0.3	5.0	4.3	4.3	1.0	0.5～0.8	1
5	5.8±0.3	6.0	5.3	5.3	1.3		
6.3	5.8±0.3	7.3	6.6	6.6	2.2		
6.3	7.7±0.3	7.3	6.3	6.3	2.2		
8	6.5±0.5	8.9	8.3	8.3	2.3		
8	10.5±0.5	9.0	8.3	8.3	3.1	0.8～1.1	
10	10.5±0.5	11.0	10.3	10.3	4.5		
12.5	13.5±0.5	13.6	13	13	4.5	1.1～1.4	2
12.5	16±0.5	13.6	13	13	4.5		
16	16.5±0.5	18.0	17	17	6.4		
16	21.5±0.5	18.0	17	17	6.4		
18	16.5±0.5	20.0	19	19	6.4		
18	21.5±0.5	20.0	19	19	6.4		

规格特性表
Table of specifications and characteristics

U_R(V) / C_R (μF)	6.3V			10V			16V			25V			35V		
	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω
4.7													4*5.8	90	1.35
10							4*5.8	90	1.35	4*5.8	90	1.35	5*5.8	160	0.70
22	4*5.8	90	1.35	4*5.8	90	1.35	5*5.8	160	0.70	5*5.8	160	0.70	6.3*5.8	240	0.36
47	5*5.8	160	0.70	5*5.8	160	0.70	5*5.8	160	0.70	6.3*5.8	240	0.36	6.3*7.7	300	0.30
100	5*5.8	160	0.70	6.3*5.8	240	0.36	6.3*5.8	240	0.36	6.3*7.7	300	0.30	8*10.5	650	0.16
220	6.3*5.8	240	0.36	6.3*7.7	300	0.30	6.3*5.8	300	0.30	8*10.5	650	0.16	10*10.5	850	0.09
330	6.3*7.7	300	0.30	8*10.5	650	0.16	6.3*7.7	650	0.16	8*10.5	650	0.16	10*10.5	850	0.09
470	8*10.5	650	0.16	8*10.5	650	0.16	8*10.5	850	0.09	10*10.5	850	0.09	12.5*13.5	1190	0.06
680	8*10.5	650	0.16	10*10.5	850	0.09	10*10.5	850	0.09	12.5*13.5	1190	0.06	12.5*16	1250	0.055
1000	10*10.5	850	0.09	10*10.5	850	0.09	10*10.5	1190	0.06	12.5*16	1250	0.055	16*16.5	1800	0.038
1500	10*10.5	850	0.09	12.5*13.5	1190	0.06	12.5*13.5	1250	0.055	16*16.5	1800	0.038	18*16.5	1980	0.035
2200	12.5*13.5	1190	0.06	12.5*16	1250	0.055	16*16.5	1800	0.038	16*16.5	1800	0.038	18*21.5	2100	0.033
3300	12.5*16	1250	0.055	16*16.5	1800	0.038	16*16.5	1800	0.038	18*16.5	1980	0.035			
4700	16*16.5	1800	0.038	16*16.5	1800	0.038	18*16.5	1980	0.035						
6800	18*16.5	1980	0.035	18*16.5	1980	0.035									
8200	18*21.5	2100	0.033	18*21.5	2100	0.033									

U_R(V) / C_R (μF)	50V			63V			80V			100V		
	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω
1	4*5.8	60	2.9									
2.2	4*5.8	60	2.9									
3.3	4*5.8	60	2.9									
4.7	5*5.8	85	1.50	5*5.8	70	1.90						
10	6.3*5.8	165	0.88	6.3*5.8	130	1.2	6.3*7.7	60	2.4	6.3*7.7	60	2.4
22	6.3*5.8	165	0.88	6.3*7.7	150	0.9	8*10.5	130	1.3	8*10.5	130	1.3
33	6.3*7.7	195	0.68	8*10.5	280	0.50	10*10.5	200	0.7	10*10.5	200	0.7
47	6.3*7.7	195	0.68	8*10.5	250	0.50	10*10.5	200	0.7	12.5*13.5	460	0.45
100	8*10.5	370	0.34	10*10.5	450	0.25	12.5*13.5	460	0.45	12.5*13.5	460	0.45
220	10*10.5	560	0.18	12.5*13.5	750	0.15	12.5*16	550	0.26	16*16.5	650	0.17
330	12.5*13.5	650	0.12	16*16.5	900	0.082	16*16.5	650	0.17	16*21.5	900	0.15
470	12.5*16	870	0.10	16*16.5	900	0.082	16*21.5	900	0.15	18*21.5	950	0.15
680	16*16.5	1000	0.073	16*21.5	1150	0.080	18*21.5	950	0.15			
1000	18*16.5	1500	0.066	18*21.5	1250	0.060						
1500	18*21.5	1620	0.050									

额定纹波电流的频率系数
Frequency coefficient of ripple current

Frequency（Hz）	50	120	300	1K	≥ 10K
Coefficient（kf）	0.35	0.50	0.64	0.83	1.00

VXK

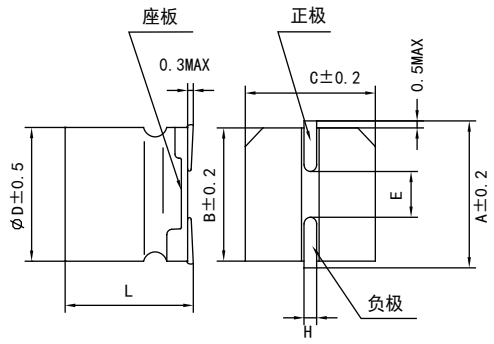
特点 Features

- 保证105℃ 2000~5000小时。Endurance 2000~5000h at 105℃.
- 额定电压范围：6.3~50V。Rated Voltage Range:6.3~50V.
- 小型化、长寿命品。Miniaturized ,Long life Type.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200认证。AEC-Q200 Compliant.

主要技术性能 Specifications

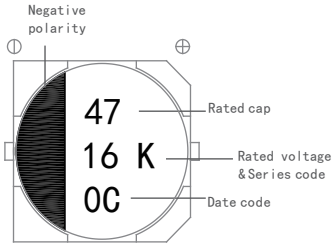
项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-55~+105℃	
额定电压范围 Rated Voltage(U_R)	6.3 ~ 50V	
标称电容量范围 Nominal Capacitance Range(C_R)	4.7 ~ 1500μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.01$C_R$$U_R$或者3μA取较大值（Whichever is greater）	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V): 6.3 / 10 / 16 / 25 / 35 / 50 Tanδ: 0.26 / 0.20 / 0.16 / 0.14 / 0.12 / 0.12	Max. 120Hz, +20℃
低温特性 Characteristics at Low Temperature	U_R(V): 6.3 / 10 / 16 / 25 / 35 / 50 $Z_{-25℃}$ / $Z_{+20℃}$: 4 / 3 / 2 / 2 / 2 / 2 $Z_{-55℃}$ / $Z_{+20℃}$: 8 / 5 / 4 / 3 / 3 / 3	Max. 120Hz
耐久性 Load Life	+105℃，连续施加额定电压5000小时（ΦD=4，5和6.3为2000小时），恢复16小时后： After applying rated voltage for 5000 hours (2000 hours for ΦD = 4, 5and6.3 at 105℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 300% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
高温贮存 Shelf Life	+105℃，1000小时贮存后,恢复16小时后： After storage for 1000 hours at +105℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
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
	损耗角正切值 Tanδ	≤初始规定值 Not more than specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

尺寸图 Dimensional drawings

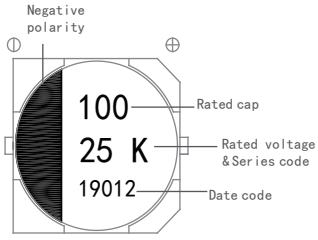


Marking

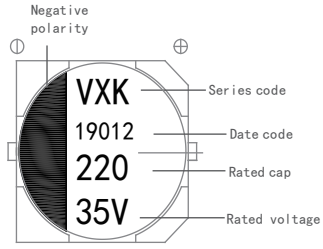
ΦD=4～5mm



ΦD=6.3mm



ΦD=8～10.2mm



尺寸表 size table

单位 Unit: mm

ΦD	L	A	B	C	E±0.2	H
4	5.8±0.3	5.0	4.3	4.3	1.0	0.5～0.8
5	5.8±0.3	6.0	5.3	5.3	1.3	
6.3	5.8±0.3	7.3	6.6	6.6	2.2	
6.3	7.7±0.3	7.3	6.3	6.3	2.2	
8	6.5±0.5	8.9	8.3	8.3	2.3	
8	10.5±0.5	9.0	8.3	8.3	3.1	
8	12.5±0.5	9.0	8.3	8.3	3.1	0.8～1.1
10	10.5±0.5	11.0	10.3	10.3	4.5	
10	12.5±0.5	11.0	10.3	10.3	4.5	

规格特性表
Table of specifications and characteristics

U_R(V) / C_R (μF)	6.3V			10V			16V			25V			35V		
	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω
4.7															
10										4*5.8	140	1.0	4*5.8	140	1.0
22							4*5.8	140	1.0	5*5.8	230	0.38	5*5.8	230	0.38
47	4*5.8	140	1.0	4*5.8	140	1.0	5*5.8	230	0.38	6.3*5.8	280	0.3	6.3*5.8	280	0.3
100	5*5.8	230	0.38	5*5.8	230	0.38	6.3*5.8	280	0.3	6.3*7.7	560	0.18	6.3*7.7	560	0.18
220	6.3*5.8	280	0.3	6.3*7.7	560	0.18	6.3*7.7	560	0.18	8*10.5	850	0.085	8*10.5	850	0.085
330	6.3*7.7	560	0.18										10*10.5	1190	0.065
470	8*10.5	850	0.085	8*10.5	850	0.085	8*10.5	850	0.085	8.2*10.5	850	0.085			
1000	10*10.5	1190	0.065	10*10.5	1190	0.065	10*10.5	1190	0.065						
1500	10.2*10.5	1190	0.065												

U_R(V) / C_R (μF)	50V		
	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω
4.7	4*5.8	85	2.3
10	5*5.8	165	0.88
22	6.3*5.8	195	0.68
47	6.3*7.7	350	0.34
100	8*10.5	670	0.18
220	10*10.5	900	0.12
330	10.2*10.5	900	0.12

额定纹波电流的频率系数
Frequency coefficient of ripple current

Frequency(Hz) / C_R (μF)	120	1K	10K	100K
4.7-150	0.40	0.75	0.90	1.0
220-560	0.50	0.85	0.94	1.0
680-1500	0.60	0.87	0.95	1.0

VXD

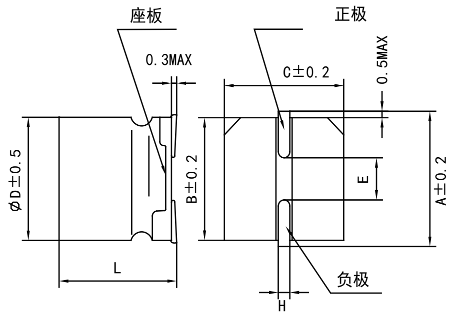
特点 Features

- 保证105℃ 2000小时。Endurance 2000h at 105℃.
- 额定电压范围：6.3~50V。Rated Voltage Range:6.3~50V.
- 小型化品。Miniaturized Type.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200认证。AEC-Q200 Compliant.

主要技术性能 Specifications

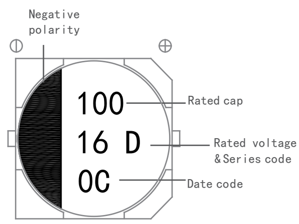
项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-55~+105℃	
额定电压范围 Rated Voltage(U_R)	6.3 ~ 50V	
标称电容量范围 Nominal Capacitance Range(C_R)	10 ~ 2200μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.01$C_R U_R$或者3μA取较大值（Whichever is greater）	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V): 6.3 / 10 / 16 / 25 / 35 / 50 Tanδ: 0.26 / 0.19 / 0.16 / 0.14 / 0.12 / 0.10	Max. 120Hz, +20℃
低温特性 Characteristics at Low Temperature	U_R(V): 6.3 / 10 / 16 / 25 / 35 / 50 $Z_{-25℃}$ / $Z_{+20℃}$: 2 / 2 / 2 / 2 / 2 / 2 $Z_{-40℃}$ / $Z_{+20℃}$: 3 / 3 / 3 / 3 / 3 / 3 $Z_{-55℃}$ / $Z_{+20℃}$: 4 / 4 / 4 / 3 / 3 / 3	Max. 120Hz
耐久性 Load Life	+105℃，连续施加额定电压2000小时，恢复16小时后： After applying rated voltage for 2000 hours at 105℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤200%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
高温贮存 Shelf Life	+105℃,1000小时贮存后,恢复16小时后： After storage for 1000 hours at +105℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 200%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
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
	损耗角正切值 Tanδ	≤初始规定值 Not more than specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

尺寸图 Dimensional drawings

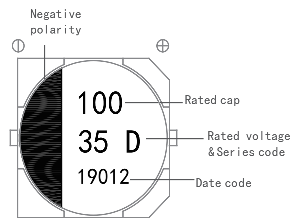


Marking

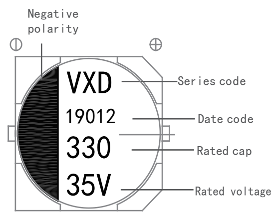
ΦD=4～5mm



ΦD=6.3mm



ΦD=8～10mm



尺寸表 size table

单位 Unit: mm

ΦD	L	A	B	C	E±0.2	H
4	5.8±0.3	5.0	4.3	4.3	1.0	0.5～0.8
5	5.8±0.3	6.0	5.3	5.3	1.3	
6.3	5.8±0.3	7.3	6.6	6.6	2.2	
6.3/6.5	7.7±0.3	7.3	6.3	6.3	2.2	
8/8.2	10.5±0.5	9.0	8.3	8.3	3.1	0.8～1.1
10/10.2	10.5±0.5	11.0	10.3	10.3	4.5	

规格特性表 Table of specifications and characteristics

U_R(V) / C_R (μF)	6.3V			10V			16V			25V			35V		
	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω
10															
22													4*5.8	160	0.85
33										4*5.8	160	0.85			
47							4*5.8	160	0.85	5*5.8	240	0.36	5*5.8	240	0.36
100	4*5.8	160	0.85	4*5.8	160	0.85	5*5.8	240	0.36	6.3*5.8	300	0.26	6.3*5.8	300	0.26
150				5*5.8	240	0.36							6.5*7.7	600	0.16
220	5*5.8	240	0.36	6.3*5.8	300	0.26	6.3*5.8	300	0.26	6.5*7.7	600	0.16			
330	6.3*5.8	300	0.26				6.5*7.7	600	0.16				8*10.5	850	0.08
470				6.3*7.7	600	0.16				8.2*10.5	850	0.08			
560													10*10.5	1190	0.06
680	6.3*7.7	600	0.16				8*10.5	850	0.08				10.2*10.5	1190	0.06
820										10*10.5	1190	0.06			
1000				8*10.5	850	0.08	10*10.5	1190	0.06						
1500	8*10.5	850	0.08	10*10.5	1190	0.06									
2200	10.2*10.5	1190	0.06												

规格特性表
Table of specifications and characteristics

U_R(V) / C_R (μF)	50V		
	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 105℃ mA	ESR_{max} 100KHz 25℃ Ω
10	4*5.8	85	2.3
22	5*5.8	165	0.88
33			
47	6.3*5.8	195	0.68
100	6.5*7.7	350	0.34
150			
220	8.2*10.5	670	0.18
330	10.2*10.5	900	0.12

额定纹波电流的频率系数
Frequency coefficient of ripple current

Frequency(Hz) / C_R(μF)	120	1K	10K	100K
10-150	0.40	0.75	0.90	1.0
220-560	0.50	0.85	0.94	1.0
680-2200	0.60	0.87	0.95	1.0

VXF

特点 Features

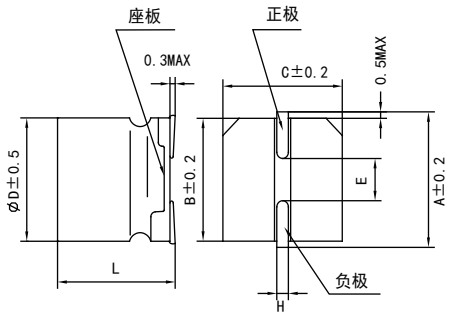
- 保证125℃ 1000~2000小时。Endurance 1000~2000h at 125℃.
- 额定电压范围：10~63V。Rated Voltage Range:10~63V.
- 高温长寿命品。High temperature, Long life Type.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200认证。AEC-Q200 Compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-40℃ ~+125℃	
额定电压范围 Rated Voltage(U_R)	10 ~ 63V	
标称电容量范围 Nominal Capacitance Range(C_R)	10 ~ 4700μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	Φ6.3~10：≤0.01$C_R U_R$或者3μA取较大值（Whichever is greater） ≥Φ12.5：≤0.03$C_R U_R$或者4μA取较大值（Whichever is greater）	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V) 10 16 25 35 50 63 Tanδ 0.30 0.24 0.20 0.17 0.14 0.14	Max. 120Hz, +20℃
低温特性 Characteristics at Low Temperature	U_R(V) 10 16 25 35 50 63 $Z_{-25℃}$ / $Z_{+20℃}$ 6 5 4 3 3 3 $Z_{-40℃}$ / $Z_{+20℃}$ 12 8 6 4 4 4	Max. 120Hz
耐久性 Load Life	+125℃，连续施加额定电压1000~2000小时，恢复16小时后： After applying rated voltage for 1000~2000 hours at 125℃ and then recovery 16 hours:	
	规定时间 Specified time	Φ6.3：1000小时 ≥Φ8：2000小时
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 300% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
高温贮存 Shelf Life	+125℃,1000小时贮存后,恢复16小时后： After storage for 1000 hours at +125℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
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
	损耗角正切值 Tanδ	≤初始规定值 Not more than specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

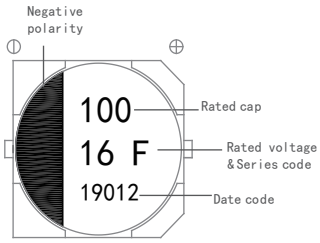
尺寸图 Dimensional drawings

Fig.1



Marking

ΦD=6.3mm



ΦD=8～10mm

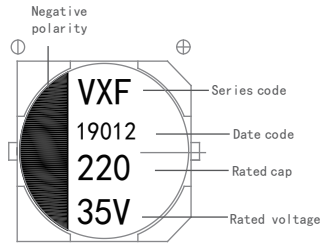
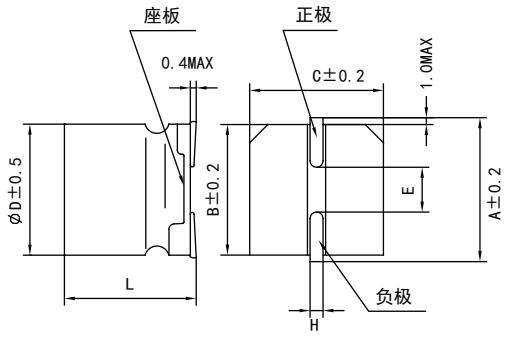
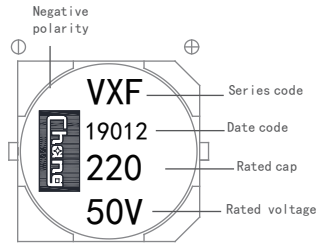


Fig.2



ΦD≥12.5mm



尺寸表 size table

单位 Unit: mm

ΦD	L	A	B	C	E±0.2	H	Fig.No.
6.3	5.8±0.3	7.3	6.6	6.6	2.2	0.5～0.8	1
6.3	7.7±0.3	7.3	6.3	6.3	2.2		
8	10.5±0.5	9.0	8.3	8.3	3.1	0.8～1.1	
10	10.5±0.5	11.0	10.3	10.3	4.5		
12.5	13.5±0.5	13.6	13	13	4.5	1.1～1.4	2
12.5	16±0.5	13.6	13	13	4.5		
16	16.5±0.5	18.0	17	17	6.4		
16	21.5±0.5	18.0	17	17	6.4		
18	16.5±0.5	20.0	19	19	6.4		
18	21.5±0.5	20.0	19	19	6.4		

规格特性表
Table of specifications and characteristics

U_R(V) / C_R (μF)	10V		16V		25V		35V		50V	
	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 125℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 125℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 125℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 125℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 125℃ mA
10							6.3*5.8	50	6.3*5.8	35
22					6.3*5.8	50	6.3*5.8	50	6.3*7.7	40
33			6.3*5.8	50	6.3*5.8	50	6.3*7.7	75	8*10.5	70
47			6.3*5.8	50	6.3*7.7	75	6.3*7.7	75	8*10.5	70
68	6.3*5.8	50	6.3*7.7	75	6.3*7.7	75	8*10.5	130	10*10.5	100
100	6.3*7.7	75	6.3*7.7	75	8*10.5	130	10*10.5	180	12.5*13.5	180
220	8*10.5	130	8*10.5	130	10*10.5	180	12.5*13.5	480	12.5*16	210
330	8*10.5	130	10*10.5	180	12.5*13.5	480	16*16.5	650	16*16.5	330
470	10*10.5	180	12.5*13.5	480	12.5*13.5	480	16*16.5	650	16*16.5	330
680	12.5*13.5	480	12.5*13.5	480			16*16.5	650	18*16.5	440
1000	12.5*16	585	12.5*16	585			18*16.5	855		
1500	12.5*16	585	16*16.5	650						
2200	16*16.5	650	18*16.5	855						
3300	18*16.5	855								
4700	18*16.5	855								

U_R(V) / C_R (μF)	63V	
	ΦDxL mm*mm	$I_{AC,R}$ 120Hz 125℃ mA
10	6.3*7.7	33
22	8*10.5	60
33	10*10.5	80
47	10*10.5	80
68	10*10.5	80
100	12.5*13.5	165
220	16*16.5	310
330	16*16.5	310
470	18*16.5	405

额定纹波电流的频率系数
Frequency coefficient of ripple current

Frequency (Hz)	50	120	300	1K	10K~100
Coefficient (kf)	0.70	1.00	1.17	1.36	1.50

VXC

特点 Features

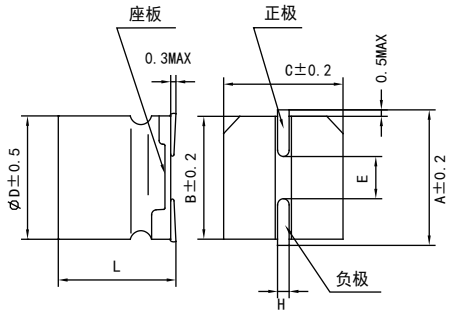
- 保证125℃ 2000~5000小时。Endurance 2000~5000h at 125℃.
- 额定电压范围：10~50V。Rated Voltage Range:10~50V.
- 低阻抗，高温长寿命。Low ESR , High temperature, Long life Type.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200认证。AEC-Q200 Compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-40℃ ~+125℃	
额定电压范围 Rated Voltage(U_R)	10 ~ 50V	
标称电容量范围 Nominal Capacitance Range(C_R)	10 ~ 3300μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	Φ6.3~10：≤0.01$C_R U_R$或者3μA取较大值（Whichever is greater） ≥Φ12.5：≤0.03$C_R U_R$或者4μA取较大值（Whichever is greater）	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V) 10 16 25 35 50 Tanδ 0.30 0.23 0.18 0.16 0.16	Max. 120Hz, +20℃
低温特性 Characteristics at Low Temperature	U_R(V) 10 16 25 35 50 $Z_{-25℃}$ / $Z_{+20℃}$ 6 5 4 3 3 $Z_{-40℃}$ / $Z_{+20℃}$ 12 8 6 4 4	Max. 120Hz
耐久性 Load Life	+125℃施加额定电压后，电容器应满足以下要求： Application of rated voltage at 125℃, the capacitor shall meet the following requirement:	
	规定时间 Specified time	Φ6.3：2000小时 Φ8~Φ10：3000小时 Φ12.5~Φ18：4000小时
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 300% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
高温贮存 Shelf Life	+125℃,1000小时贮存后,恢复16小时后： After storage for 1000 hours at +125℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
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
	损耗角正切值 Tanδ	≤初始规定值 Not more than specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

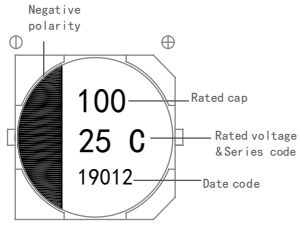
尺寸图 Dimensional drawings

Fig.1



Marking

ΦD=6.3mm



ΦD=8～10mm

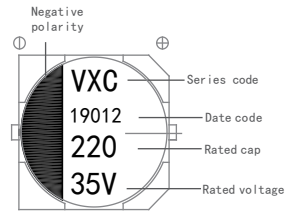
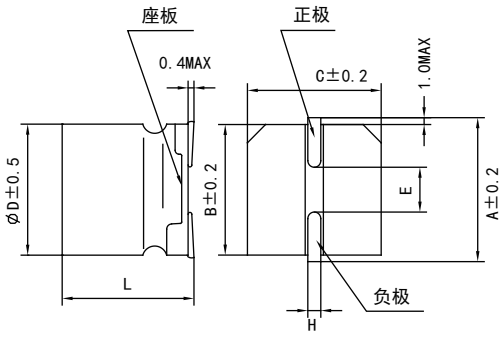
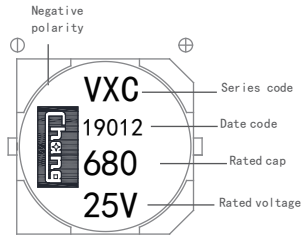


Fig.2



ΦD≥12.5mm



尺寸表 size table

单位 Unit: mm

ΦD	L	A	B	C	E±0.2	H	Fig.No.
6.3	5.8±0.3	7.3	6.6	6.6	2.2	0.5～0.8	1
6.3	7.7±0.3	7.3	6.3	6.3	2.2		
8	10.5±0.5	9.0	8.3	8.3	3.1	0.8～1.1	
10	10.5±0.5	11.0	10.3	10.3	4.5		
12.5	13.5±0.5	13.6	13	13	4.5	1.1～1.4	2
12.5	16±0.5	13.6	13	13	4.5		
16	16.5±0.5	18.0	17	17	6.4		
16	21.5±0.5	18.0	17	17	6.4		
18	16.5±0.5	20.0	19	19	6.4		
18	21.5±0.5	20.0	19	19	6.4		

规格特性表
Table of specifications and characteristics

U_R(V) / C_R (μF)	10V			16V			25V			35V			50V		
	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 125℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 125℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 125℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 125℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 125℃ mA	ESR_{max} 100KHz 25℃ Ω
10										6.3*5.8	110	0.7	6.3*5.8	51	0.8
22							6.3*5.8	110	0.7	6.3*5.8	110	0.7	6.3*7.7	83	0.7
33				6.3*5.8	110	0.7	6.3*5.8	110	0.7	6.3*7.7	220	0.45	8*10.5	160	0.36
47				6.3*5.8	110	0.7	6.3*7.7	220	0.45	6.3*7.7	220	0.45	8*10.5	160	0.36
100				6.3*7.7	220	0.45	8*10.5	296	0.20	8*10.5	296	0.20	10*10.5	247	0.23
220	8*10.5	296	0.20	8*10.5	296	0.20	10*10.5	440	0.16	10*10.5	440	0.16	12.5*13.5	600	0.23
330	8*10.5	296	0.20	10*10.5	440	0.16	10*10.5	440	0.16	12.5*13.5	850	0.092	12.5*16	700	0.15
470	10*10.5	440	0.16	10*10.5	440	0.16	12.5*13.5	850	0.092	16*16.5	820	0.10	16*16.5	730	0.15
680	12.5*13.5	750	0.12	12.5*13.5	750	0.12	16*16.5	820	0.10	18*21.5	1500	0.065	18*16.5	800	0.13
1000	12.5*16	820	0.10	12.5*16	820	0.10	18*21.5	1500	0.065	16*21.5	1200	0.068	18*21.5	980	0.11
1500	16*16.5	1000	0.08	16*16.5	1000	0.08									
2200	18*16.5	1300	0.075	18*21.5	1500	0.065									
3300	18*21.5	1500	0.065												

额定纹波电流的频率系数
Frequency coefficient of ripple current

Frequency (Hz)	50	120	300	1K	≥ 10K
Coefficient (kf)	0.35	0.50	0.64	0.83	1.00

VTD

特点 Features

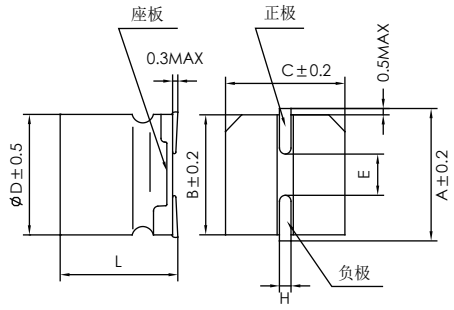
- 保证135℃ 2000小时。Endurance 2000h at 135℃.
- 额定电压范围：10~50V。Rated Voltage Range:10~50V.
- 超高温、低阻抗品。Ultrahigh temp, LOW ESR Type.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200认证。AEC-Q200 Compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-40℃ ~ +135℃	
额定电压范围 Rated Voltage(U_R)	10 ~ 50V	
标称电容量范围 Nominal Capacitance Range(C_R)	47 ~ 3300μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.03$C_R$$U_R$或者4μA 取较大值（Whichever is greater）	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V): 10 / 16 / 25 / 35 / 50 Tanδ: 0.30 / 0.23 / 0.18 / 0.16 / 0.16	Max. 120Hz, +20℃
低温特性 Characteristics at Low Temperature	U_R(V): 10 / 16 / 25 / 35 / 50 $Z_{-40℃}$ / $Z_{+20℃}$: 12 / 8 / 6 / 4 / 4	Max. 120Hz
耐久性 Load Life	+135℃，连续施加额定电压2000小时，恢复16小时后： After applying rated voltage for 2000 hours at 135℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 300% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
高温贮存 Shelf Life	+135℃,1000小时贮存后,恢复16小时后： After storage for 1000 hours at +135℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 200% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
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
	损耗角正切值 Tanδ	≤初始规定值 Not more than specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

尺寸图 Dimensional drawings

Fig.1



Marking
ΦD=8～10.2mm

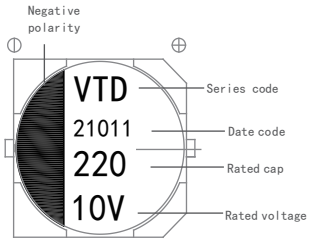
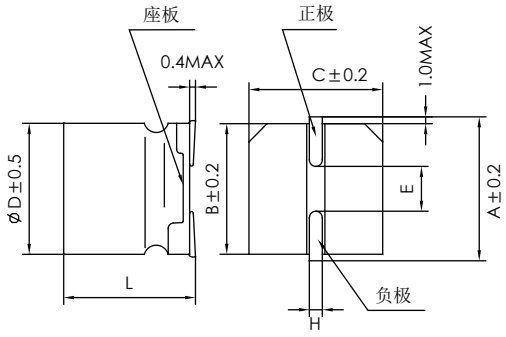
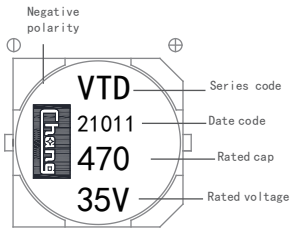


Fig.2



ΦD≥12.5mm



尺寸表 size table

单位 Unit: mm

ΦD	L	A	B	C	E±0.2	H	Fig.No.
8/8.2	10.5±0.5	9.0	8.3	8.3	3.1	0.8～1.1	1
10	10.5±0.5	11.0	10.3	10.3	4.5		
12.5	13.5±0.5	13.6	13	13	4.5	1.1～1.4	2
12.5	16±0.5	13.6	13	13	4.5		
16	16.5±0.5	18.0	17	17	6.4		
16	21.5±0.5	18.0	17	17	6.4		
18	16.5±0.5	20.0	19	19	6.4		
18	21.5±0.5	20.0	19	19	6.4		

规格特性表
Table of specifications and characteristics

U_R(V) / C_R (μF)	10V			16V			25V			35V			50V		
	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 135℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 135℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 135℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 135℃ mA	ESR_{max} 100KHz 25℃ Ω	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 135℃ mA	ESR_{max} 100KHz 25℃ Ω
47										8.2*10.5	270	0.20	8.2*10.5	270	0.30
68										8.2*10.5	270	0.20			
100				8.2*10.5	270	0.20	8.2*10.5	270	0.20	8.2*10.5	270	0.20	10*10.5	500	0.25
220	8.2*10.5	270	0.20	8.2*10.5	270	0.20	10*10.5	500	0.15	10*10.5	500	0.15			
330	8.2*10.5	270	0.20	10*10.5	500	0.15	10*10.5	500	0.15						
	10*10.5	500	0.15												
470	10*10.5	500	0.15	10*10.5	500	0.15				12.5*13.5	750	0.08	16*16.5	1000	0.075
560										12.5*13.5	750	0.08	16*16.5	1000	0.075
680										16*16.5	1200	0.06	18*16.5	1200	0.075
820							12.5*13.5	750	0.08	16*16.5	1200	0.06	18*16.5	1200	0.075
1000							12.5*13.5	750	0.08	16*16.5	1200	0.06	16*21.5	1600	0.06
1200							16*16.5	1200	0.06	18*16.5	1400	0.05	18*21.5	1900	0.04
1500							16*16.5	1200	0.06	16*21.5	1900	0.04			
										18*16.5	1400	0.05			
1800							16*16.5	1200	0.06	18*21.5	2200	0.035			
2200							18*16.5	1400	0.05	18*21.5	2200	0.035			
2700							16*21.5	1900	0.04						
3300							18*21.5	2200	0.035						

额定纹波电流的频率系数
Frequency coefficient of ripple current

Frequency（Hz)	50	120	1K	≥ 10K
Coefficient（kf)	0.35	0.50	0.83	1.00

VTK

特点 Features

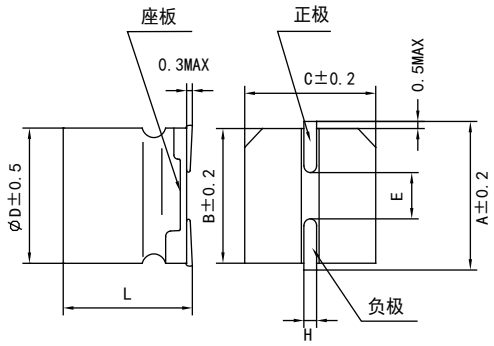
- 保证150℃ 1000小时。Endurance 1000h at 150℃.
- 额定电压范围：10~50V。Rated Voltage Range:10~50V.
- 超高温品。 Ultra-high temp Type.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200认证。AEC-Q200 Compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-40℃ ~+150℃(Φ8~10)，-55℃ ~+150℃(Φ12.5~18)	
额定电压范围 Rated Voltage(U_R)	10 ~ 50V	
标称电容量范围 Nominal Capacitance Range(C_R)	33 ~ 3300μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.03$C_R$$U_R$或者4μA 取较大值（Whichever is greater）	+20℃ After 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V): 10 / 16 / 25 / 35 / 50 Tanδ Φ8~10: 0.26 / 0.20 / 0.16 / 0.14 / 0.14 Tanδ Φ12.5~18: 0.22 / 0.18 / 0.16 / 0.14 / 0.12	Max. 120Hz, +20℃
低温特性 Characteristics at Low Temperature	U_R(V): 10 / 16 / 25 / 35 / 50 $Z_{-40℃}$ / $Z_{+20℃}$ Φ8~10: 10 / 8 / 6 / 4 / 4 Φ12.5~18: 8 / 6 / 4 / 4 / 4	Max. 120Hz
耐久性 Load Life	+150℃，连续施加额定电压1000小时，恢复16小时后： After applying rated voltage for 1000 hours at 150℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤300%初始规定值 Not more than 300% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
高温贮存 Shelf Life	+150℃,1000小时贮存后,恢复16小时后： After storage for 1000 hours at +150℃ and then recovery 16 hours:	
	电容量变化率 Capacitance Change	±30%初始值以内 Within ±30% of the initial value
	损耗角正切值 Tanδ	≤ 300%初始规定值 Not more than 300% of specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value
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
	损耗角正切值 Tanδ	≤初始规定值 Not more than specified value
	漏电流 Leakage Current	≤ 初始规定值 Not more than specified value

尺寸图 Dimensional drawings

Fig.1



Marking
ΦD=8～10.2mm

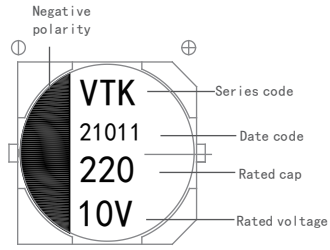
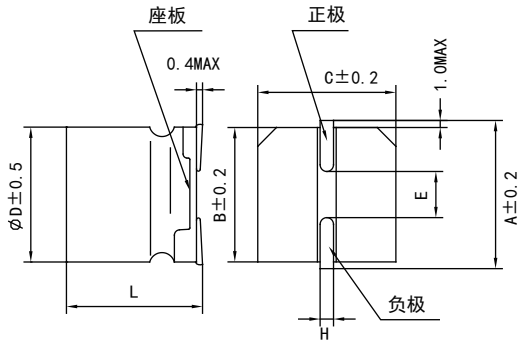
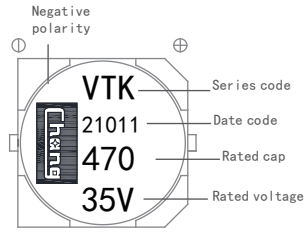


Fig.2



ΦD≥12.5mm



尺寸表 size table

单位 Unit: mm

ΦD	L	A	B	C	E±0.2	H	Fig.No.
8.2	10.5±0.5	9.0	8.3	8.3	3.1	0.8～1.1	1
10	10.5±0.5	11.0	10.3	10.3	4.5		
12.5	13.5±0.5	13.6	13	13	4.5	1.1～1.4	2
12.5	16±0.5	13.6	13	13	4.5		
16	16.5±0.5	18	17	17	6.4		
16	21.5±0.5	18	17	17	6.4		
18	16.5±0.5	20	19	19	6.4		
18	21.5±0.5	20	19	19	6.4		

规格特性表
Table of specifications and characteristics

U_R(V) / C_R (μF)	10V		16V		25V		35V		50V	
	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 150℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 150℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 150℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 150℃ mA	ΦDxL mm*mm	$I_{AC,R}$ 100KHz 150℃ mA
33									8.2*10.5	70
47							8.2*10.5	80	10*10.5	100
100			8.2*10.5	110	8.2*10.5	110	10*10.5	120	12.5*13.5	420
220	8.2*10.5	110	10*10.5	150	10*10.5	150	12.5*13.5	550	16*16.5	550
330	10*10.5	150			12.5*13.5	650	12.5*13.5	650	16*21.5	650
470			12.5*13.5	750	12.5*13.5	700	16*16.5	750	16*21.5	850
680	12.5*13.5	800	12.5*13.5	800	16*16.5	800	16*21.5	950	18*21.5	1100
1000	12.5*13.5	900	16*16.5	850	16*21.5	1000	18*21.5	1150		
2200	18*21.5	1350	18*21.5	1350						
3300	18*21.5	1400								

额定纹波电流的频率系数
Frequency coefficient of ripple current

Frequency (Hz)	120	300	1K	≥ 10K
Coefficient (kf)	0.67	0.79	0.91	1.00

RXN

特点 Features

- 保证105℃ 2000~4000小时。Endurance :2000~4000h at 105℃.
- 额定电压范围：6.3~450V。Rated Voltage Range: 6.3~450V.
- 高频率，低阻抗。Low ESR at high frequency.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 Compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-40~+105℃	-25~+105℃
额定电压范围 Rated Voltage(U_R)	6.3~100V	160~450V
标称电容量范围 Nominal Capacitance Range(C_R)	1~18000μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.01$C_R U_R$或者3μA取较大值 (Whichever is greater)	≤0.02$C_R U_R$+10(μA)
		+20℃ after 2 minutes

损耗角正切值 Tangent of loss angle(Tanδ)

U_R (V)	6.3	10	16	25	35	50	63	100	160	200	250	400	420	450
Tanδ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.20	0.20	0.20	0.24	0.24	0.24

当容量大于1000μF时，每增加1000μF，其损耗角正切值增加0.02
When nominal capacitance exceeds 1000μF, add 0.02 to the value above for each 1000μF increase.

Max. 120Hz,+20℃

低温特性 Characteristics at low temperature

U_R (V)	6.3	10	16	25	35	50	63	100	160	200	250	400	420	450
$Z_{-25℃}$ / $Z_{+20℃}$	4	3	2	2	2	2	2	2	3	3	3	5	5	6
$Z_{-40℃}$ / $Z_{+20℃}$	8	6	6	4	3	3	3	3	-	-	-	-	-	-

Max. 120Hz

耐久性 Load life

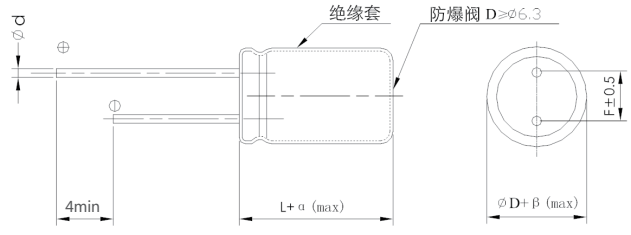
+105℃，不超过额定电压的范围下叠加额定纹波电流，连续施加表中规定额定电压时间，恢复16小时后：
Overlay the rated ripple current within the range of rated voltage, continuously apply the rated voltage specified in the table for a time +105 ℃, and recover for 16 hours:
电容量变化率Capacitance change：±20%初始测量值以内 within ±20% of initial value
损耗角正切值 Tanδ ：≤2倍初始规定值 Not more than 200% of specified value
漏 电 流 Leakage current ：≤初始规定值 Not more than specified value

ΦD	6.3	8~10	12.5~
Load life	2000h	3000h	4000h

高温贮存 Shelf life

+105℃,1000小时贮存后,恢复16小时后：
After storage for 1000 hours at +105℃ and then recovery 16 hours:
电容量变化率Capacitance change：±20%初始测量值以内 within ±20% of initial value
损耗角正切值 Tanδ ：≤2倍初始规定值 Not more than 200% of specified value
漏 电 流 Leakage current ：≤2倍初始规定值 Not more than 200% of specified value

尺寸图 Dimension drawings



单位 Unit: mm

D	6.3	8	10	12.5	16~18
F	2.5	3.5	5.0	5.0	7.5
d	0.5	0.5、0.6	0.6	0.6	0.8

频率修正系数 Frequency Coefficient

Frequency (Hz) / C_R(μF) / Kf	120	1K	10K	100K
~180	0.40	0.75	0.90	1.00
220~560	0.50	0.85	0.94	1.00
680~1800	0.60	0.87	0.95	1.00
2200~3900	0.75	0.90	0.95	1.00
4700~18000	0.85	0.95	0.98	1.00

αMAX	‹ L < 20 › 1.5
	‹ L≥20 › 2.0

βMAX	‹ D < 20 › 0.5
	‹ D≥20 › 1.0

规格特性表
Table of specifications and characteristics

U_R(V) / C_R(μF)	6.3			10			16			25		
	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA
330							8×11.5	0.117	685	8×11.5	0.078	715
	8×11.5	0.117	645	8×11.5	0.117	645				10×12.5	0.072	885
390	8×11.5	0.110	655	8×11.5	0.117	655	8×11.5	0.117	695	8×16	0.068	980
							10×12.5	0.072	870	10×12.5	0.070	895
470	6.3×11	0.170	380	6.3×11	0.105	385	8×11.5	0.093	720	8×16	0.068	840
	8×11.5	0.110	675	8×11.5	0.090	665	10×12.5	0.072	895	10×12.5	0.068	990
560	8×11.5	0.100	685	8×11.5	0.090	685	8×14	0.080	800	8×20	0.065	1160
				10×12.5	0.072	870	10×12.5	0.072	915	10×16	0.060	1210
680	8×11.5	0.100	695	8×11.5	0.085	695	8×16	0.078	845	10×16	0.060	1250
				10×12.5	0.072	870	10×12.5	0.080	1050	10×20	0.041	1405
820	8×11.5	0.100	720	8×16	0.078	845	8×16	0.060	880	10×20	0.041	1450
	10×12.5	0.072	870				10×16	0.060	1210			
1000	8×11.5	0.072	780	8×16	0.075	865	8×16	0.065	955	10×20	0.032	1820
	10×12.5	0.072	885	10×12.5	0.070	895	10×12.5	0.065	1100	12.5×20	0.032	1905
				10×16	0.054	1215	8×20	0.062	1155	12.5×12.5	0.045	1450
1200	8×14	0.078	845	10×16	0.030	1300	10×20	0.046	1400	10×20	0.046	1870
	10×12.5	0.072	895	10×20	0.041	1405	10×25	0.038	1820	12.5×20	0.032	1920
1500	8×16	0.069	865	10×16	0.054	1350	10×20	0.046	1450	10×25	0.042	1905
	10×16	0.054	1225	10×20	0.041	1450	12.5×20	0.032	1905	12.5×20	0.032	2010
1800	10×20	0.046	1400	10×20	0.041	1500	10×25	0.038	1655	12.5×25	0.030	2225
				12.5×20	0.032	1905	12.5×20	0.035	1980	16×20	0.032	2220
2200	10×20	0.046	1450	10×20	0.046	1650	10×25	0.034	1850	12.5×20	0.030	2225
	10×25	0.043	1600	12.5×20	0.032	1905	12.5×25	0.027	2130	18×20	0.027	2503
2700	10×25	0.042	1650	10×25	0.042	1750	12.5×25	0.030	2190	16×25	0.025	2410
	12.5×20	0.032	1906	12.5×20	0.035	1955	16×20	0.027	2480	16×30	0.021	2630
3300	10×20	0.048	1650	10×25	0.035	2125	12.5×30	0.023	2430	16×30	0.020	3035
	12.5×20	0.032	1905	16×20	0.032	2320	18×20	0.024	2505	18×25	0.022	3050
3900	12.5×20	0.032	1950	12.5×35	0.020	2750	16×25	0.025	2560	16×35	0.018	3130
				16×20	0.032	2370	18×20	0.025	2555	18×30	0.018	3610
4700	12.5×25	0.027	2130	12.5×25	0.027	2175	16×30	0.020	3035	18×35	0.017	3690
	16×20	0.032	2215				18×25	0.022	2780			
5600	12.5×30	0.023	2530	16×25	0.025	2560	16×35	0.018	3230	18×40	0.014	3790
	16×20	0.032	2260	18×20	0.031	2505	18×30	0.018	3610			
6800	12.5×40	0.017	2650	16×30	0.020	3035	16×40	0.018	3620			
	16×25	0.025	2560	18×25	0.022	2780						
	18×20	0.031	2505									
8200	16×30	0.020	3035	16×35	0.018	3130	18×35	0.017	3645			
				18×30	0.018	3610						
10000	16×35	0.018	3130	18×35	0.017	3685	18×40	0.014	3790			
	18×25	0.022	2780									
12000	16×40	0.015	3895	18×40	0.014	3790						
	18×30	0.018	3610									
15000	18×35	0.017	3710									
18000	18×40	0.014	3790									

规格特性表
Table of specifications and characteristics

U_R(V) / C_R(μF)	35			50			63			100		
	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA
33										8×11.5	0.454	385
39							8×11.5	0.450	460	8×16	0.324	460
				8×11.5	0.260	510						
47							8×11.5	0.435	480	10×12.5	0.344	500
56				8×11.5	0.160	560	8×11.5	0.430	520	8×20	0.238	610
68				8×11.5	0.153	575	8×11.5	0.420	550	10×16	0.223	700
82	8×11.5	0.250	645	8×11.5	0.153	585	10×12.5	0.344	680	10×20	0.151	765
100	8×11.5	0.220	655	8×11.5	0.153	720	8×16	0.300	780	10×20	0.135	970
				10×12.5	0.112	753	10×12.5	0.330	790	12.5×12.5	0.135	970
120	8×11.5	0.200	665	8×16	0.108	735	10×16	0.248	850	12.5×20	0.115	1050
				10×12.5	0.108	765						
150	8×11.5	0.180	675	10×16	0.076	1055	8×20	0.238	1050	12.5×25	0.090	1180
180	8×11.5	0.160	685	8×20	0.082	915	10×20	0.151	1190	12.5×25	0.098	1210
	10×12.5	0.150	865	10×16	0.076	1100	12.5×15	0.166	1180	18×16	0.086	1200
220	8×11.5	0.102	695	10×16	0.072	1150	10×20	0.151	1400	12.5×25	0.096	1700
	10×12.5	0.072	885	10×12.5	0.085	950	12.5×20	0.135	1550	16×20	0.066	1750
270	10×16	0.060	1210	10×25	0.055	1440	12.5×20	0.128	1590	12.5×35	0.059	1960
										16×25	0.052	1940
330	8×20	0.069	1050	10×20	0.043	1270	10×25	0.108	1570	12.5×30	0.051	2050
	10×12.5	0.065	905	12.5×20	0.041	1665	12.5×20	0.115	1650	16×25	0.058	2150
390	10×16	0.060	1255	12.5×20	0.041	1695	12.5×25	0.090	1780	16×30	0.039	2310
	10×20	0.050	1405							18×25	0.041	2280
470	10×16	0.048	1400	10×20	0.055	1350	12.5×20	0.075	1720	16×35	0.032	2900
	12.5×12.5	0.048	1450	12.5×25	0.031	1955	12.5×25	0.072	2000	18×30	0.034	2900
560	10×20	0.045	1565	12.5×25	0.031	2015	16×25	0.052	2350	18×40	0.029	3300
680	10×20	0.046	1685	12.5×30	0.027	2320	12.5×35	0.059	2720	18×35	0.029	3150
	12.5×20	0.043	1905	16×20	0.031	2220	16×25	0.052	2700			
820	10×25	0.042	1650	12.5×35	0.023	2520	12.5×40	0.051	2760	18×40	0.026	3460
	12.5×20	0.042	1965	18×20	0.032	2500	16×30	0.039	2760			
1000	12.5×20	0.041	2015	12.5×35	0.019	2555	16×30	0.039	2785	18×40	0.026	3490
	12.5×25	0.035	2230	12.5×25	0.032	2250	16×35	0.032	2950			
1200	12.5×30	0.023	2530	16×30	0.020	3020	16×40	0.029	3450			
	16×20	0.032	2220	18×25	0.023	2750	18×30	0.034	3480			
1500	12.5×35	0.020	2750	16×35	0.017	3160	18×35	0.029	3750			
	16×25	0.025	2560									
1800	12.5×40	0.017	3200	16×40	0.017	3600	18×40	0.026	3880			
	16×25	0.025	2590	18×30	0.019	3500						
2200	16×25	0.028	2630	18×30	0.019	3550						
	18×25	0.022	2780	18×35	0.016	3690						
2700	16×35	0.018	3130	18×40	0.014	3810						
	18×30	0.018	3610									
3300	18×35	0.017	3695									
3900	18×40	0.014	3790									

规格特性表
Table of specifications and characteristics

U_R(V) / C_R(μF)	160			200			250			400		
	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA
1	6.3×11	18.8	50	6.3×11	18.2	50	6.3×11	18.7	50	6.3×11	19.8	50
2.2	6.3×11	12.5	74	6.3×11	12.4	74	6.3×11	12.6	74	6.3×11	17.6	74
3.3	6.3×11	10.3	91	6.3×11	10.2	91	6.3×11	10.2	91	8×11.5	13.2	106
4.7	6.3×11	8.84	109	8×11.5	8.28	127	8×11.5	8.28	127	8×11.5	8.80	127
5.6	8×11.5	6.96	138	8×11.5	7.80	138	8×11.5	7.80	138	8×16	8.25	160
6.8	8×11.5	7.50	153	8×16	7.20	176	8×16	7.20	176	10×16	7.70	189
10	8×11.5	8.04	185	8×16	5.10	214	8×16	5.16	214	10×16	5.50	229
22	10×16	2.28	339	10×16	2.34	339	10×20	2.40	374	12.5×20	2.59	407
33	10×16	1.68	416	10×20	1.80	458	12.5×20	1.80	498	12.5×25	1.87	549
47	10×20	1.18	547	12.5×20	1.20	595	12.5×25	1.20	656	16×25	1.38	753
56	12.5×20	1.02	649	12.5×20	1.08	649	12.5×25	1.08	716	16×30	1.10	890
68	12.5×25	0.84	789	12.5×25	0.90	789	16×25	0.86	906	16×30	0.94	981
100	16×25	0.66	1099	16×25	0.72	1099	16×30	0.72	1190	18×35	0.74	1330
120	16×20	0.60	1095	16×25	0.65	1204	16×30	0.65	1303	18×40	0.61	1547
150	16×25	0.48	1346	16×30	0.54	1457	16×35	0.58	1561	18×45	0.55	1824
180	16×30	0.39	1451	16×35	0.42	1554	18×35	0.42	1623			

U_R(V) / C_R(μF)	420			450		
	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA
1	6.3×11	19.00	47	6.3×11	19.00	45
2.2	8×11.5	16.50	82	8×11.5	16.50	78
3.3	8×11.5	12.50	100	8×16	12.50	110
4.7	8×16	8.50	138	10×16	8.50	140
5.6	10×16	7.50	161	10×16	7.50	153
6.8	10×16	6.50	178	10×20	6.50	186
10	10×20	5.30	238	10×20	5.30	226
22	12.5×25	2.50	423	12.5×25	2.80	401
33	16×25	1.80	595	16×25	1.80	565
47	16×30	1.25	769	16×30	1.25	730
56	16×35	1.05	899	16×35	1.05	853
68	18×30	0.90	967	18×35	0.90	981
100	18×40	0.70	1331	18×40	0.74	1263
120	18×45	0.60	1538	18×45	0.60	1459

RXO

特点 Features

- 保证105℃ 5000小时。 Endurance :5000h at 105℃.
- 额定电压范围：6.3~450V。Rated Voltage Range: 6.3~450V.
- 高频率，低阻抗。Low ESR at high frequency.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 Compliant.

主要技术性能 Specifications

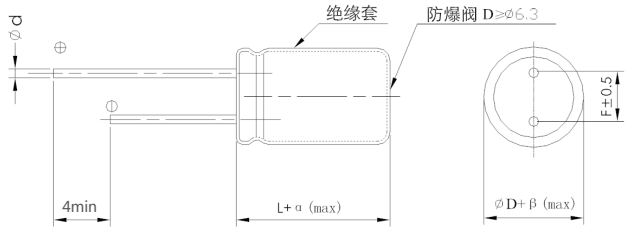
项目 Items	特性 Performance Characteristics		
类别温度范围 Category Temperature Range	-40~+105℃	-25~+105℃	
额定电压范围 Rated Voltage(U_R)	6.3~100V	160~450V	
标称电容量范围 Nominal Capacitance Range(C_R)	2.2~15000μF		120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)		120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.01$C_R U_R$或者3μA取较大值 (Whichever is greater)	≤0.02$C_R U_R$+10 (μA)	+20℃ after 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	见下表		Max. 120Hz,+20℃
低温特性 Characteristics at low temperature	见下表		Max. 120Hz
耐久性 Load life	+105℃，不超过额定电压的范围下叠加额定纹波电流，连续加载额定电压5000小时，恢复16小时后： Overlay the rated ripple current within the range of rated voltage and continuously load the rated voltage for 5000 hours +105℃ , Rrecover for 16 hours ; 电容量变化率 Capacitance change ：±20%初始测量值以内 within ±20% of initial value 损耗角正切值 Tanδ ：≤2倍初始规定值 Not more than 200% of specified value 漏 电 流 Leakage current ：≤初始规定值 Not more than specified value		
高温贮存 Shelf life	+105℃,1000小时贮存后,恢复16小时后： After storage for 1000 hours at +105℃ and then recovery 16 hours: 电容量变化率 Capacitance change ：±20%初始测量值以内 within ±20% of initial value 损耗角正切值 Tanδ ：≤2倍初始规定值 Not more than 200% of specified value 漏 电 流 Leakage current ：≤2倍初始规定值 Not more than 200% of specified value		

U_R (V)	6.3	10	16	25	35	50	63	100	160~250	350	400	450
Tanδ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.15	0.2	0.2	0.2

当容量大于1000μF时，每增加1000μF，其损耗角正切值增加0.02
When nominal capacitance exceeds 1000μF, add 0.02 to the value above for each 1000μF increase.

U_R (V)	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
$Z_{-25℃}$ / $Z_{+20℃}$	4	3	3	3	3	3	2	2	3	3	4	6	6	7
$Z_{-40℃}$ / $Z_{+20℃}$	8	6	4	4	3	3	3	3	-	-	-	-	-	-

尺寸图 Dimension drawings



单位 Unit: mm

D	5	6.3	8	10	12.5	16~18
F	2.0	2.5	3.5	5.0	5.0	7.5
d	0.5	0.5	0.5、0.6	0.6	0.6	0.8

αMAX	﹛L＜20﹜1.5
	﹛L≥20﹜2.0

βMAX	﹛D＜20﹜0.5
	﹛D≥20﹜1.0

频率修正系数 Frequency Coefficient

U_R(V)	Frequency (Hz) / C_R(μF) / Kf	120	1K	10K	100K
6.3~100	~180	0.40	0.75	0.90	1.00
	220~560	0.50	0.85	0.94	1.00
	680~1800	0.60	0.87	0.95	1.00
	2200~3900	0.75	0.90	0.95	1.00
	4700~15000	0.85	0.95	0.98	1.00
160~450	≤100	1.0	1.75	2.25	2.5
	> 100	1.0	1.67	2.05	2.25

规格特性表 Table of specifications and characteristics

U_R(V) / C_R(μF)	6.3			10			16			25		
	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA
330							8×11.5	0.17	580	8×11.5	0.15	645
	8×11.5	0.17	560							10×12.5	0.10	760
390	8×11.5	0.16	575	8×11.5	0.17	560	8×11.5	0.15	600	10×12.5	0.10	775
470	8×11.5	0.16	585	8×11.5	0.16	575	8×11.5	0.14	740	8×16	0.097	850
										10×12.5	0.090	1020
560	8×11.5	0.16	595	8×11.5	0.15	590	8×11.5	0.14	750	8×20	0.080	1050
										10×16	0.078	1100
680	8×11.5	0.13	605	8×11.5	0.14	600	8×16	0.11	785	10×16	0.075	1150
							10×12.5	0.10	795			
820	8×11.5	0.12	670	8×16	0.12	730	8×20	0.08	1050	10×20	0.060	1350
	10×12.5	0.10	780	10×12.5	0.11	750	10×16	0.078	1100			
1000	8×11.5	0.10	690	8×16	0.10	1020	10×16	0.065	1150	10×20	0.050	1580
	10×12.5	0.100	780	10×12.5	0.09	1050						
1200	8×16	0.095	850	8×20	0.085	1140	10×20	0.060	1500	12.5×20	0.040	1750
	10×12.5	0.090	860	10×16	0.080	1200						
1500	8×20	0.080	1050	10×16	0.070	1250	10×20	0.060	1565	12.5×20	0.038	1785
	10×16	0.078	1130									
1800	10×16	0.070	1150	10×20	0.060	1300	10×25	0.055	1700	12.5×25	0.035	1905
							12.5×20	0.046	1850			
2200	10×16	0.065	1200	10×20	0.058	1355	12.5×20	0.046	1900	12.5×25	0.034	1950
2700	10×20	0.060	1350	10×25	0.050	1650	12.5×25	0.040	2180	12.5×35	0.032	2500
				12.5×20	0.046	1670				16×25	0.030	2600
3300	10×25	0.055	1450	12.5×20	0.040	1700	12.5×25	0.035	2300	16×30	0.027	3200
	12.5×20	0.046	1670							18×25	0.025	3150
3900	12.5×20	0.046	1750	12.5×25	0.035	1900	12.5×35	0.030	2500	16×30	0.025	3300
							16×25	0.028	2600			
4700	12.5×25	0.034	1865	12.5×25	0.032	1980	16×25	0.027	2680	18×35	0.020	3550
5600	12.5×25	0.034	1900	16×25	0.030	2320	16×30	0.025	2850			
6800	12.5×30	0.030	2520	16×25	0.030	2385	16×30	0.024	2900			
	16×25	0.028	2720									
8200	16×25	0.028	2790	16×30	0.028	2500	16×35	0.023	3000			
10000	16×30	0.026	2900	16×30	0.025	2700						
15000	18×35	0.025	3320									

规格特性表
Table of specifications and characteristics

U_R(V) / C_R(μF)	35			50			63			100		
	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA
33										8×11.5	0.75	335
39							8×11.5	0.80	405	8×16	0.60	405
47							8×11.5	0.60	425	10×12.5	0.55	480
56				8×11.5	0.22	450	8×11.5	0.60	460	8×20	0.42	540
68				8×11.5	0.22	460	8×11.5	0.50	485	10×16	0.40	620
82	8×11.5	0.17	560	8×11.5	0.20	490	10×12.5	0.45	690	10×20	0.18	655
100	8×11.5	0.17	570	8×11.5	0.16	540	8×16	0.42	690	10×20	0.13	860
							10×12.5	0.42	700			
120	8×11.5	0.17	585	8×16	0.15	640	10×16	0.40	755	12.5×20	0.10	930
				10×12.5	0.14	660						
150	8×11.5	0.17	595	8×16	0.15	660	8×20	0.20	930			
				10×12.5	0.14	685						
180	8×16	0.12	730	8×20	0.11	800	10×20	0.10	1055	12.5×20	0.09	950
	10×12.5	0.10	760	10×16	0.10	920						
220	8×16	0.12	745	10×12.5	0.10	840	10×20	0.08	1240	12.5×20	0.08	1000
	10×12.5	0.10	775							12.5×25	0.07	1510
270	8×16	0.11	755	10×20	0.085	1155	12.5×20	0.07	1385			
	10×12.5	0.10	795									
330	8×20	0.09	1140	10×20	0.085	1210	12.5×20	0.06	1465	16×25	0.068	1910
	10×12.5	0.080	815	12.5×20	0.060	1460						
390	10×16	0.078	1180				12.5×20	0.06	1490	16×25	0.068	1955
470	10×16	0.065	1230	12.5×20	0.058	1520	12.5×25	0.05	1775	16×30	0.040	2400
	10×20	0.060	1300									
560	10×20	0.060	1350	12.5×20	0.058	1590	12.5×25	0.05	1900	16×35	0.035	2580
				12.5×25	0.050	1650						
680	10×25	0.058	1650	12.5×25	0.045	1780	12.5×30	0.040	2350	18×35	0.030	2800
	12.5×20	0.055	1680	10×30	0.043	1710	16×25	0.038	2400			
820	12.5×20	0.055	1710	12.5×30	0.042	1850	16×25	0.038	2455	18×40	0.028	3075
1000	12.5×20	0.050	1750	12.5×30	0.042	1900	16×30	0.035	2750			
	12.5×25	0.040	1870	16×25	0.040	2050						
1200	12.5×25	0.040	1920	16×30	0.030	2350						
				18×25	0.028	2260						
1500	12.5×35	0.030	2500	16×30	0.030	2420						
1800	12.5×35	0.030	2565	16×35	0.025	2680						
	16×25	0.028	2480	18×30	0.025	2680						
2200	16×30	0.027	2790	18×35	0.022	2900						
	18×25	0.026	2850									
2700	16×35	0.025	2900									
	18×30	0.023	3150									
3300	18×35	0.020	3400									

规格特性表
Table of specifications and characteristics

U_R(V) / C_R(μF)	160		200		250	
	ΦD×L mm*mm	$I_{AC,max}$ 120Hz 105℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 120Hz 105℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 120Hz 105℃ mA
4.7					8×11.5	75
6.8					8×14	95
8.2					8×16	113
10	10×12.5	122	10×16	135	10×16	135
22	10×16	202	10×20	223	10×16	201
33	10×20	275	12.5×20	315	12.5×20	315
47	12.5×20	350	12.5×20	350	12.5×20	345
68	12.5×25	475	16×20	490	16×25	540
100	16×25	645	16×25	650	16×30	710
150	16×30	850	16×30	850	16×35	910
220	16×35	1100	18×35	1150	18×40	1220
330	18×25	1215				

U_R(V) / C_R(μF)	350		400		450	
	ΦD×L mm*mm	$I_{AC,max}$ 120Hz 105℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 120Hz 105℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 120Hz 105℃ mA
2.2			8×11.5	50	8×11.5	50
3.3	8×11.5	63	8×11.5	62	8×14	65
4.7	8×11.5	75	8×16	86	8×16	85
6.8	8×16	105	8×16	105	10×16	110
10	10×16	135	10×16	135	10×16	135
15	10×20	182	12.5×20	200	12.5×20	195
22	12.5×20	240	12.5×20	240	12.5×25	260
33	16×20	340	16×17	321	16×20	335
47	16×25	440	16×20	402	16×25	440
68	16×30	580	16×30	578	16×30	570
82	16×35	680	16×30	625	16×30	625
100	18×35	780	18×30	729	16×35	740
120	18×35	850	18×30	795	18×35	850
150	18×40	1005	18×40	1005	18×45	1060
180			18×40	1105	18×40	1105
220			22×40	1338	18×51	1360

RXS

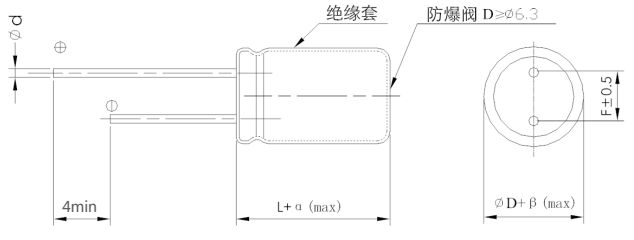
特点 Features

- 保证105℃10000小时。 Endurance : 10000h at 105℃.
- 额定电压范围：6.3~450V。Rated Voltage Range: 6.3~450V.
- 高频率，低阻抗。Low ESR at high frequency.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 Compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics		
类别温度范围 Category Temperature Range	-40~+105℃	-25~+105℃	
额定电压范围 Rated Voltage(U_R)	6.3~100V	160~450V	
标称电容量范围 Nominal Capacitance Range(C_R)	2.2~15000μF		120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)		120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.01$C_R U_R$或者3μA取较大值 (Whichever is greater)	≤0.02$C_R U_R$ +10(μA)	+20℃ after 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R (V) 6.3 10 16 25 35 50 63 100 160~250 350 400 450 Tanδ 0.22 0.19 0.16 0.14 0.12 0.10 0.09 0.08 0.2 0.24 0.24 0.24 当容量大于1000μF时，每增加1000μF，其损耗角正切值增加0.02 When nominal capacitance exceeds 1000μF, add 0.02 to the value above for each 1000μF increase.		Max. 120Hz,+20℃
低温特性 Characteristics at low temperature	U_R (V) 6.3 10 16 25 35 50 63 100 160 200 250 400 420 450 $Z_{-25℃}/Z_{+20℃}$ 4 3 2 2 2 2 2 2 3 3 4 6 7 7 $Z_{-40℃}/Z_{+20℃}$ 8 6 4 3 3 3 3 3 - - - - - -		Max. 120Hz
耐久性 Load life	+105℃，不超过额定电压的范围下叠加额定纹波电流，连续加载额定电压10000小时，恢复16小时后： Overlay the rated ripple current within the range of rated voltage and continuously load the rated voltage for 10000 hours +105℃，Rrecover for 16 hours； 电容量变化率 Capacitance change ：±25%初始测量值以内 within ±25% of initial value 损耗角正切值 Tanδ ：≤3倍初始规定值 Not more than 300% of specified value 漏 电 流 Leakage current ：≤初始规定值 Not more than specified value		
高温贮存 Shelf life	+105℃,1000小时贮存后,恢复16小时后： After storage for 1000 hours at +105℃ and then recovery 16 hours: 电容量变化率 Capacitance change ：±20%初始测量值以内 within ±20% of initial value 损耗角正切值 Tanδ ：≤2倍初始规定值 Not more than 200% of specified value 漏 电 流 Leakage current ：≤2倍初始规定值 Not more than 200% of specified value		

尺寸图 Dimension drawings



单位 Unit: mm

D	5	6.3	8	10	12.5	16	16
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5	0.5、0.6	0.6	0.6	0.8	0.8

αMAX	‹ L < 20 › 1.5
	‹ L≥20 › 2.0

βMAX	‹ D < 20 › 0.5
	‹ D≥20 › 1.0

频率修正系数 Frequency Coefficient

U_R(V)	Frequency (Hz) / C_R(μF) / Kf	120	1K	10K	100K
6.3V~100	~180	0.40	0.75	0.90	1.00
	220~560	0.50	0.85	0.94	1.00
	680~1800	0.60	0.87	0.95	1.00
	2200~3900	0.75	0.90	0.95	1.00
	4700~15000	0.85	0.95	0.98	1.00
160V~450	≤100	1.0	1.75	2.25	2.5
	> 100	1.0	1.67	2.05	2.25

规格特性表
Table of specifications and characteristics

U_R(V) / C_R(μF)	6.3			10			16			25		
	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA
330							8×11.5	0.10	640	8×16	0.087	840
470	8×11.5	0.14	400	8×11.5	0.20	640	8×16	0.087	840	8×20	0.069	1050
							10×12.5	0.080	865	10×16	0.060	1210
680	8×11.5	0.13	640	8×16	0.085	840	8×20	0.060	1050	10×20	0.046	1400
							10×16	0.046	1150			
820	8×11.5	0.10	720									
1000	8×16	0.08	850	8×20	0.069	1050	10×20	0.046	1400	12.5×20	0.035	1900
	10×12.5	0.08	870	10×16	0.060	1210						
1200	8×20	0.069	1050									
	10×16	0.064	1200									
1500	10×20	0.050	1380	10×25	0.042	1650	12.5×20	0.035	1900	12.5×25	0.027	2230
2200	10×25	0.042	1650	12.5×20	0.035	1900	12.5×25	0.027	2230	16×25	0.025	2780
3300	12.5×20	0.035	1900	12.5×25	0.030	2125	16×25	0.025	2420	16×30	0.020	2920
4700	12.5×25	0.030	2200	16×25	0.025	2400	16×30	0.020	2920	18×35	0.018	3520
6800	16×25	0.025	2400	16×30	0.020	2920	18×35	0.018	3520			
10000	16×30	0.020	2920	18×35	0.018	3520						
15000	16×30	0.020	2920									

U_R(V) / C_R(μF)	35			50			63			100		
	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA	ΦD×L mm*mm	ESR_{max} 100KHz 25℃ Ω	$I_{AC,max}$ 100KHz 105℃ mA
33										10×12.5	0.50	240
47							8×11.5	0.40	360	10×12.5	0.34	400
68							8×11.5	0.30	420	10×16	0.30	460
100	8×11.5	0.16	460	8×11.5	0.16	600	10×12.5	0.10	685	10×25	0.16	800
										12.5×20	0.18	820
220	8×16	0.087	900	10×16	0.084	1050	10×25	0.08	1100	16×20	0.073	1100
	10×12.5	0.080	910									
270	8×20	0.069	1000									
330	10×16	0.060	1210	10×25	0.055	1480	12.5×20	0.075	1100	16×25	0.070	1300
470	10×20	0.046	1400	12.5×20	0.045	1670	12.5×30	0.060	1800			
560	10×25	0.042	1650									
680	12.5×20	0.035	1900				16×25	0.050	2000			
820							18×25	0.048	2200			
1000	12.5×25	0.027	2130	16×25	0.025	2410	16×35	0.040	2500			
1200							18×30	0.030	2600			
2200	16×30	0.025	2610	18×35	0.022	3180						
3300	18×35	0.020	3200									

规格特性表
Table of specifications and characteristics

U_R(V) / C_R(μF)	160		200		250	
	ΦD×L mm*mm	$I_{AC,max}$ 120Hz 105℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 120Hz 105℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 120Hz 105℃ mA
4.7					8×11.5	78
6.8			8×11.5	89	10×12.5	100
10	10×12.5	120	10×12.5	120	10×16	135
22	10×16	198	10×20	220	10×20	220
33	10×20	270	12.5×20	290	12.5×20	295
47	12.5×20	350	12.5×25	380	16×20	405
68	12.5×25	460	16×20	480	16×25	535
100	16×20	585	16×25	640	16×25	640
150	16×25	785	16×35	910	18×25	820
220	16×35	1100	18×35	1150	18×30	1075
330	18×35	1405				

U_R(V) / C_R(μF)	350		400		450	
	ΦD×L mm*mm	$I_{AC,max}$ 120Hz 105℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 120Hz 105℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 120Hz 105℃ mA
2.2	8×11.5	52	8×11.5	53	8×11.5	50
3.3	8×11.5	63	8×16	72	8×16	70
4.7	8×16	88	10×12.5	90	10×16	90
6.8	10×12.5	102	10×16	113	10×20	120
10	10×20	150	10×16	134	12.5×20	160
22	12.5×20	240	12.5×25	265	12.5×20	235
33	12.5×25	325	16×25	370	16×30	400
47	16×25	445	16×30	480	16×35	510
68	16×30	575	16×25	530	18×30	595
82	16×35	670	18×30	655	18×30	655
100	18×35	775	18×30	725	18×40	820

RXT

特点 Features

- 保证125℃ 2000小时。Endurance :2000h at 125℃.
- 额定电压范围：16~400V。Rated Voltage Range: 16~400V.
- 超高温。Extremely high temperature.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 Compliant.

主要技术性能 Specifications

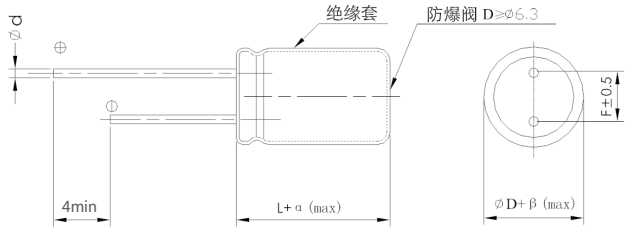
项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-40~+125℃	
额定电压范围 Rated Voltage(U_R)	16~100V / 200~400V	
标称电容量范围 Nominal Capacitance Range(C_R)	1~4700μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.01$C_R U_R$或者3μA取较大值（Whichever is greater） / ≤0.02$C_R U_R$+10(μA)	+20℃ after 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	见下表	Max. 120Hz,+20℃
低温特性 Characteristics at low temperature	见下表	Max. 120Hz
耐久性 Load life	+125℃，不超过额定电压的范围下叠加额定纹波电流，连续加载额定电压2000小时，恢复16小时后： Overlay the rated ripple current within the range of rated voltage and continuously load the rated voltage for 2000 hours +125℃，Rrecover for 16 hours；； 电容量变化率 Capacitance change ：±30%初始测量值以内 within ±30% of initial value 损耗角正切值 Tanδ ：≤3倍初始规定值 Not more than 300% of specified value 漏 电 流 Leakage current ：≤初始规定值 Not more than specified value	
高温贮存 Shelf life	+125℃,1000小时贮存后,恢复16小时后： After storage for 1000 hours at +125℃ and then recovery 16 hours: 电容量变化率Capacitance change ：±30%初始测量值以内 within ±30% of initial value 损耗角正切值 Tanδ ：≤3倍初始规定值 Not more than 300% of specified value 漏 电 流 Leakage current ：≤3倍初始规定值 Not more than 300% of specified value	

U_R (V)	16	25	35	50	63	100	200	250	400
Tanδ	0.16	0.14	0.12	0.12	0.12	0.12	0.15	0.15	0.20

当容量大于1000μF时，每增加1000μF，其损耗角正切值增加0.02
When nominal capacitance exceeds 1000μF, add 0.02 to the value above for each 1000μF increase.

U_R (V)	16	25	35	50	63	50	63	100	200	250	400
$Z_{-40℃}$ / $Z_{+20℃}$	4	3	3	3	3	3	2	3	6	6	7

尺寸图 Dimension drawings



单位 Unit: mm

D	6.3	8	10	12.5	16	18
F	2.5	3.5	5.0	5.0	7.5	7.5
d	0.5	0.5、0.6	0.6	0.6	0.8	0.8

αMAX	‹ L < 20 › 1.5
	‹ L≥20 › 2.0

βMAX	0.5

频率修正系数 Frequency Coefficient

Frequency (Hz)	50	120	1K	10K	100K
Kf	0.40	0.50	0.80	0.90	1.00

规格特性表
Table of specifications and characteristics

U_R(V) / C_R(μF)	16		25		35		50	
	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 125℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 125℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 125℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 125℃ mA
1.0							8×11.5	36
1.5							8×11.5	42
1.8							8×11.5	48
2.2							8×11.5	52
3.3							8×11.5	68
4.7							8×11.5	105
5.6							8×11.5	125
6.8							8×11.5	155
10					6.3×11	95	8×11.5	195
22					6.3×11	130	8×11.5	250
33					6.3×11	155	8×11.5	300
47					8×11.5	345	8×16	385
100	8×11.5	240	8×11.5	320	8×11.5	360	10×12.5	390
220	8×11.5	320	8×11.5	360	10×12.5	625	10×20	525
			8×16	415				
330	8×11.5	365	10×12.5	625	10×16	805	10×20	1005
			10×16	785			12.5×20	1100
470	10×12.5	630	10×16	795	10×20	965	12.5×25	1180
1000	10×20	965	12.5×20	1110	12.5×25	1440	16×30	2200
2200	12.5×25	1440	16×30	2310	16×35	2540	18×40	2810
3300	16×30	2330	16×35	2540	18×35	2810		
4700	16×35	2540						

规格特性表
Table of specifications and characteristics

U_R(V) / C_R(μF)	63		100		200		250		400	
	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 125℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 125℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 125℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 125℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 125℃ mA
1.0	8×11.5	30	8×11.5	30	6.3×11	55	6.3×11	60	6.3×11	60
									8×11.5	60
1.5	8×11.5	30	8×11.5	35	6.3×11	70	6.3×11	70	8×11.5	70
									8×16	70
1.8	8×11.5	35	8×11.5	40	6.3×11	75	6.3×11	75	8×11.5	77
									8×16	77
2.2	8×11.5	45	8×11.5	45	6.3×11	80	6.3×11	80	8×11.5	80
									8×16	80
2.7	8×11.5	45	8×11.5	45	6.3×11	85	6.3×11	85	8×16	90
									8×20	90
3.3	8×11.5	65	8×11.5	65	6.3×11	90	6.3×11	95	8×16	115
									8×20	115
4.7	8×11.5	100	8×11.5	100	6.3×11	100	8×11.5	115	8×20	120
					8×11.5	100			10×16	120
5.6	8×11.5	110	8×11.5	120	8×11.5	125	8×11.5	125	10×16	140
					8×16	125	8×16	125	10×20	140
6.8	8×11.5	135	8×11.5	140	8×11.5	155	8×11.5	165	10×20	150
					8×16	175	8×16	175		
10	8×11.5	155	8×11.5	170	8×16	190	8×16	195		
					8×20	190	8×20	245		
15	8×11.5	175	8×11.5	195	8×16	225	10×16	245		
					8×20	225				
22	8×11.5	195	8×11.5	225	10×16	245	10×20	285		
33	8×11.5	200	10×12.5	265	10×25	325	12.5×20	365		
47	10×12.5	310	10×16	325						
100	10×20	655	12.5×20	675						
220	12.5×20	825	16×25	1110						
330	12.5×25	1005	16×30	1310						
470	16×25	1495	18×30	1600						
1000	16×30	1860								
1500	18×40	2360								

RXU

特点 Features

- 保证135℃ 2000小时。Endurance :2000h at 135℃.
- 额定电压范围：10~450V。Rated Voltage Range: 10~450V.
- 超高温。Extremely high temperature.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 Compliant.

主要技术性能 Specifications

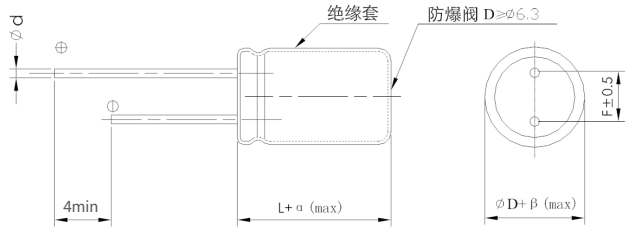
项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-40~+135℃	
额定电压范围 Rated Voltage(U_R)	10~100V / 160~450V	
标称电容量范围 Nominal Capacitance Range(C_R)	1~3300μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.01$C_R U_R$或者3μA取较大值 (Whichever is greater) / ≤0.02$C_R U_R$+10(μA)	+20℃ after 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	见下表	Max. 120Hz,+20℃
低温特性 Characteristics at low temperature	见下表	Max. 120Hz
耐久性 Load life	+135℃，不超过额定电压的范围下叠加额定纹波电流，连续加载额定电压2000小时，恢复16小时后： Overlay the rated ripple current within the range of rated voltage and continuously load the rated voltage for 2000 hours +135℃ , Rrecover for 16 hours ; ; 电容量变化率 Capacitance change ：±30%初始测量值以内 within ±30% of initial value 损耗角正切值 Tanδ ：≤3倍初始规定值 Not more than 300% of specified value 漏 电 流 Leakage current ：≤初始规定值 Not more than specified value	
高温贮存 Shelf life	+135℃,1000小时贮存后,恢复16小时后： After storage for 1000 hours at +135℃ and then recovery 16 hours: 电容量变化率 Capacitance change ：±30%初始测量值以内 within ±30% of initial value 损耗角正切值 Tanδ ：≤3倍初始规定值 Not more than 300% of specified value 漏 电 流 Leakage current ：≤5倍初始规定值 Not more than 500% of specified value	

U_R (V)	10	16	25	35	50	63	100	160	200	250	350	400	450
Tanδ	0.20	0.16	0.14	0.12	0.12	0.12	0.12	0.15	0.15	0.15	0.20	0.20	0.20

当容量大于1000μF时，每增加1000μF，其损耗角正切值增加0.02
When nominal capacitance exceeds 1000μF, add 0.02 to the value above for each 1000μF increase.

U_R (V)	10~16	25~100	160~250	350~400	450
$Z_{-40℃}$ / $Z_{+20℃}$	4	3	6	7	9

尺寸图 Dimension drawings



单位 Unit: mm

D	6.3	8	10~12.5	16~18
F	2.5	3.5	5.0	7.5
d	0.5	0.5、0.6	0.6	0.8
α (max)	‹ L < 20 › 1.5	‹ L≥20 › 2.0		
β (max)	0.5			

频率修正系数 Frequency Coefficient

Frequency (Hz)	50	120	1K	10K	100K
Kf	0.40	0.50	0.80	0.90	1.00

规格特性表
Table of specifications and characteristics

U_R(V) / C_R(μF)	10		16		25	
	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA
150					8×11.5	330
220					8×11.5	360
330			8×11.5	360	10×12.5	625
470	8×11.5	475	10×12.5	630	10×16	800
1000	10×16	850	10×16	860	12.5×20	1100
2200	12.5×20	1300	12.5×20	1400	16×25	2200
3300	12.5×25	1600	16×25	2200	16×30	2350

U_R(V) / C_R(μF)	35		50		63		100	
	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA
22							8×11.5	220
33							8×11.5	220
47			8×11.5	330	8×11.5	260	10×12.5	270
100	8×11.5	360	10×12.5	520	10×12.5	480	10×20	590
220	10×12.5	625	10×20	890	10×20	720	12.5×25	950
330	10×16	805	10×25	1100	12.5×20	900	16×25	1200
470	10×20	960	12.5×20	1100	16×25	1500	16×30	1500
1000	12.5×20	1340	16×25	2050	16×30	1850		
2200	16×30	2350	18×35	2700				

U_R(V) / C_R(μF)	160		200		250	
	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA
2.7			6.3×11	50	6.3×11	60
3.3			8×9	65	8×9	70
4.7	6.3×11	60	8×9	90	8×9	105
5.6	6.3×11	65	8×9	115	8×11.5	115
					10×9	115
6.8	8×9	70	8×9	125	8×11.5	130
					10×9	130
8.2	8×9	85	8×11.5	155	8×16	180
			10×9	155	10×12.5	180
10	8×11.5	180	8×16	190	8×16	200
			10×9	170	10×12.5	200
15	8×16	260	10×12.5	265	10×16	300
22	8×16	320	10×16	390	10×20	460
33	10×16	380	12.5×20	500	12.5×20	550
					8×40	595
47	12.5×20	540	16×20	680	18×20	700
			8×50	700	10×55	740
68	8×50	710	10×50	790	10×50	820
	12.5×25	650	16×25	750	16×30	820
82	16×20	750	10×50	880	12.5×40	930
			16×30	900	18×25	930
100	10×40	920	16×30	1000	16×35	1070
	16×25	960	18×25	1000	12.5×50	1100
150	12.5×40	990	18×30	1260		
	16×30	990	12.5×60	1420		
220	18×30	1400				
	12.5×55	1500				

规格特性表
Table of specifications and characteristics

U_R(V) / C_R(μF)	350		400		450	
	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 135℃ mA
1					6.3×11	40
1.5	6.3×11	50	6.3×11	50	6.3×11	48
1.8	6.3×11	55	6.3×11	55	8×9	52
2.2	8×9	60	8×9	65	8×9	60
2.7	8×9	65	8×9	70	8×9	65
3.3	8×11.5	75	8×11.5	80	8×11.5	70
			10×9	80	10×9	70
4.7	10×9	100	8×16	115	8×16	85
	8×16	115	10×12.5	115	10×12.5	85
5.6	8×16	120	8×16	120	10×12.5	105
	10×12.5	120	10×12.5	120		
6.8	8×16	150	10×16	175	10×16	140
	10×12.5	150				
8.2	10×16	160	10×16	185	10×16	150
10	10×16	200	10×20	220	10×20	200
15	12.5×20	330	12.5×20	350	8×40	290
					12.5×25	290
22	12.5×20	350	8×50	440	16×25	400
	8×50	420	16×20	440		
33	10×45	500	12.5×40	590	10×50	460
	16×25	500	16×30	590	18×25	460
47	10×55	660	18×25	670	12.5×55	620
	16×30	660	12.5×45	690	16×40	620
68	12.5×50	820	18×30	830	18×35	670
	16×40	840	12.5×60	890		
82	18×35	920	18×35	930	18×40	780
100	18×40	1030	18×40	990		

RXG

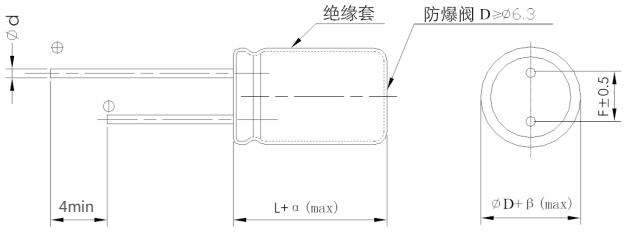
特点 Features

- 保证150℃1500小时。Endurance :1500h at 150℃.
- 额定电压范围：25~80V。Rated Voltage Range: 25~80V.
- 超高温。Extremely high temperature.
- 满足RoHS。RoHS Compliant.
- 满足AEC-Q200。AEC-Q200 Compliant.

主要技术性能 Specifications

项目 Items	特性 Performance Characteristics	
类别温度范围 Category Temperature Range	-40~+150℃	
额定电压范围 Rated Voltage(U_R)	25~80V	
标称电容量范围 Nominal Capacitance Range(C_R)	56~3900μF	120Hz,+20℃
标称电容量允许偏差 Allowed Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤0.03$C_R U_R$	+20℃ after 2 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R (V): 25 / 35 / 50 / 63 / 80 Tanδ: 0.14 / 0.12 / 0.1 / 0.1 / 0.08 当容量大于1000μF时，每增加1000μF，其损耗角正切值增加0.02 When nominal capacitance exceeds 1000μF, add 0.02 to the value above for each 1000μF increase.	Max. 120Hz,+20℃
低温特性 Characteristics at low temperature	U_R (V): 25 / 35 / 50 / 63 / 80 $Z_{-25℃}$ / $Z_{+20℃}$: 2 / 2 / 2 / 2 / 2 $Z_{-40℃}$ / $Z_{+20℃}$: 4 / 4 / 4 / 4 / 4	Max. 120Hz
耐久性 Load life	+150℃，不超过额定电压的范围下叠加额定纹波电流，连续施加表中规定额定电压时间，恢复16小时后： Overlay the rated ripple current within the range of rated voltage, continuously apply the rated voltage specified in the table for a time +150 ℃, and recover for 16 hours ; ΦD: 10 / 12.5~18 Load life: 1000h / 1500h 电容量变化率 Capacitance change ：±30%初始测量值以内 within ±30% of initial value 损耗角正切值 Tanδ ：≤3倍初始规定值 Not more than 300% of specified value 漏 电 流 Leakage current ：≤初始规定值 Not more than specified value	
高温贮存 Shelf life	+150℃,1000小时贮存后,恢复16小时后： After storage for 1000 hours at +150℃ and then recovery 16 hours: 电容量变化率 Capacitance change ：±30%初始测量值以内 within ±30% of initial value 损耗角正切值 Tanδ ：≤3倍初始规定值 Not more than 300% of specified value 漏 电 流 Leakage current ：≤5倍初始规定值 Not more than 500% of specified value	

尺寸图 Dimension drawings



单位 Unit: mm

D	10	12.5	16	18
F	5.0	5.0	7.5	7.5
d	0.6	0.6	0.8	0.8

αMAX	‹ L < 20 › 1.5
	‹ L≥20 › 2.0

βMAX	0.5

频率修正系数 Frequency Coefficient

Frequency (Hz)	50	120	1K	10K	100K
Kf	0.40	0.50	0.80	0.90	1.00

规格特性表 Table of specifications and characteristics

U_R(V) / C_R(μF)	25		35		50		63		80	
	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 150℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 150℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 150℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 150℃ mA	ΦD×L mm*mm	$I_{AC,max}$ 100KHz 150℃ mA
56									10×12.5	300
82							10×12.5	320	10×20	480
100							10×16	400	12.5×20	640
150							10×20	540	12.5×25	860
220					10×20	640	12.5×20	700	16×20	940
330					12.5×20	720	12.5×25	800	16×25	1120
470	10×12.5	440	10×16	580	12.5×25	860	16×20	900	18×20	1160
560	10×16	560	10×20	640	12.5×25	940	16×25	1080	18×25	1200
680	10×20	680	10×25	790	16×20	1000	18×20	1140	18×30	1420
820	10×25	810	12.5×20	820	16×25	1120	18×25	1180		
1000	12.5×20	840	12.5×20	900	18×20	1180	18×25	1300		
1200	12.5×20	920	12.5×25	1120	18×25	1440				
1500	12.5×25	1120	16×20	1260						
1800	16×20	1260	16×20	1380						
2200	16×20	1320	16×25	1560						
2700	18×20	1560	18×25	1800						
3300	18×25	1770								
3900	18×25	1925								

JQ

特点 Features

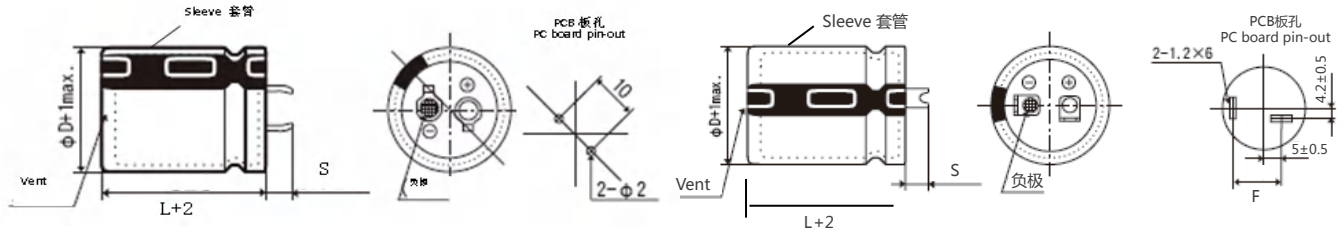
- 105℃ 2000H。105℃ 2000 hours.
- 耐高纹波,小尺寸。High ripple current ,compact.
- 满足RoHS要求。RoHS compliant.
- 满足AEC-Q200标准。According to AEC-Q200 standard.

主要技术性能 Specifications

项目 Items	特性 Characteristics	
使用温度范围 Operating Temperature Range	-40~+105℃	
额定电压范围 Rated Voltage Range(U_R)	160～450 V	
标称电容量范围 Nominal Capacitance Range(C_R)	47~2200μF	120Hz,+20℃
标称电容量允许偏差 Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤3$\sqrt{C_R U_R}$(μA)	+20℃ after 5 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R (V): 160~250 / 350~450 Tanδ: 0.15 / 0.20	Max. 120Hz,+20℃
低温特性 Characteristics at low temperature	U_R (V): 160~250 / 350~450 $Z_{-25℃}/Z_{+20℃}$: 4 / 8 $Z_{-40℃}/Z_{+20℃}$: 6 / 10	Max. 120Hz
耐久性 Load life	+105℃施加带额定纹波电流的额定电压2000小时，恢复16小时后： After applying rated voltage with specified ripple current for 2000 hour at +105 and then resumed for 16 hour 电容量变化率 Capacitance change：±20%初始测量值以内 ±20%Initial measured value 损耗角正切值 Dissipation factor ：≤2倍初始规定值 2times Initial specified value 漏 电 流 Leakage current ：≤初始规定值 Initial specified value	
高温贮存 Shelf Life	+105℃,1000小时贮存后,加额定工作电压处理30分钟,恢复16小时后： After storage for 1000 hours at +105℃,UR to be applied for 30 minutes and then resumed 16 hours. 电容量变化率 Capacitance change：±20%初始测量值以内 ±20%Initial measured value 损耗角正切值 Dissipation factor ：≤2倍初始规定值 2times Initial specified value 漏 电 流 Leakage current ：≤初始规定值 Initial specified value	

尺寸图 Dimension drawings

单位 Unit: mm



频率修正系数 Frequency Coefficient

Frequency (Hz) / U_R(V)	50	120	1K	10K	≥50K
160~450	0.80	1.00	1.30	1.41	1.43

规格特性表
Table of Specifications and Characteristics

U_R(V) / C_R(μF)	160V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
270	22×25	922	0.85									
330	22×30	754	1.10									
390	22×30	638	1.22									
470	22×30	529	1.35	25×25	529	1.35						
560	22×35	444	1.67	25×30	444	1.67						
680	22×40	366	1.82	25×35	366	1.85	30×25	366	1.82			
820	22×45	303	2.04	25×35	303	2.04	30×30	303	2.04			
1000				25×45	249	2.40	30×35	249	2.25			
1200				25×50	207	2.62	30×40	207	2.49	35×30	207	2.49
1500							30×40	166	2.84	35×40	166	2.84
1800							30×50	138	3.32	35×40	138	3.30
2200										35×45	113	3.45

U_R(V) / C_R(μF)	200V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
220	22×25	1131	0.75									
270	22×30	922	0.85									
330	22×30	754	1.10									
390	22×35	638	1.35	25×25	638	1.35						
470	22×40	529	1.50	25×30	529	1.50	30×25	529	1.50			
560	22×40	444	1.67	25×30	444	1.59	30×25	444	1.67			
680	22×45	366	1.78	25×35	366	1.72	30×30	366	1.78			
820				25×40	303	1.99	30×35	303	2.04	35×30	303	2.04
1000				25×50	249	2.42	30×40	249	2.30	35×35	249	2.30
1200							30×45	207	2.65	35×40	207	2.65
1500										35×45	166	3.08
1800										35×45	138	3.48

U_R(V) / C_R(μF)	250V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
150	22×25	1659	0.79									
180	22×30	1382	0.88									
220	22×35	1131	1.00									
270	22×40	922	1.18	25×30	922	1.27						
330	22×40	754	1.30	25×30	754	1.30	30×25	754	1.35			
390	22×45	638	1.49	25×35	638	1.49	30×30	638	1.49			
470	22×50	529	1.65	25×40	529	1.65	30×35	529	1.65			
560				25×45	444	1.80	30×40	444	1.80			
680				25×50	366	2.03	30×45	366	2.00	35×30	366	2.00
820							30×50	303	2.30	35×35	303	2.30
1000										35×40	249	2.69
1200										35×45	207	3.09

规格特性表
Table of Specifications and Characteristics

U_R(V) / C_R(μF)	350V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
68	22×25	4879	0.47									
82	22×30	4046	0.54									
100	22×30	3317	0.69									
120	22×35	2765	0.70									
150	22×35	2212	0.77									
180	22×40	1843	0.87	25×30	1843	0.92	30×25	1843	0.90			
220	22×45	1508	1.00	25×35	1508	1.04	30×30	1508	1.02			
270	22×50	1229	1.11	25×40	1229	1.18	30×30	1229	1.17			
330				25×45	1005	1.29	30×35	1005	1.34	35×30	1005	1.22
390				25×50	851	1.51	30×35	851	1.43	35×30	851	1.45
470							30×40	706	1.57	35×35	706	1.65
560							30×50	592	1.85	35×40	592	1.90

U_R(V) / C_R(μF)	400V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
56	22×25	5924	0.51									
68	22×30	4879	0.55									
82	22×30	4046	0.64									
100	22×35	3317	0.70	25×25	3317	0.70						
120	22×40	2765	0.73	25×30	2765	0.73						
150	22×40	2212	0.88	25×30	2212	0.83	30×25	2212	0.88			
180	22×40	1843	0.93	25×35	1843	0.98	30×30	1843	0.98			
220	22×45	1508	1.05	25×35	1508	1.04	30×30	1508	1.10			
270				25×40	1229	1.29	30×35	1229	1.22	35×30	1229	1.22
330							30×45	1005	1.55	35×30	1005	1.44
390							30×45	851	1.60	35×35	851	1.60
470							30×50	706	1.90	35×40	706	1.90
560							30×60	592	2.11	35×45	592	2.12
680							30×70	488	2.4	35×50	488	2.40
820										35×60	405	2.83

规格特性表
Table of Specifications and Characteristics

U_R(V) / C_R(μF)	420V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
56	22×25	5924	0.51									
68	22×30	4879	0.55									
82	22×35	4046	0.64									
100	22×35	3317	0.70	25×25	3317	0.70						
120	22×40	2765	0.70	25×30	2765	0.70	30×25	2765	0.78			
150	22×40	2212	0.88	25×35	2212	0.88	30×25	2212	0.88			
180	22×40	1843	0.90	25×35	1843	0.92	30×30	1843	0.96	35×25	1843	0.94
220	22×45	1508	1.05	25×40	1508	1.05	30×30	1508	1.03	35×25	1508	1.10
270				25×45	1229	1.37	30×35	1229	1.18	35×30	1229	1.22
330							30×45	1005	1.49	35×35	1005	1.36
390							30×45	851	1.60	35×40	851	1.66
470										35×40	706	1.81

U_R(V) / C_R(μF)	450V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
47	22×25	7058	0.39									
56	22×25	5924	0.50									
68	22×30	4879	0.53	25×25	4879	0.53						
82	22×35	4046	0.64	25×25	4046	0.64						
100	22×35	3317	0.65	25×25	3317	0.64	30×25	3317	0.72			
120	22×40	2765	0.80	25×30	2765	0.80	30×25	2765	0.80			
150	22×40	2212	0.84	25×35	2212	0.88	30×30	2212	0.88			
180				25×40	1843	1.00	30×30	1843	1.00			
220				25×45	1508	1.12	30×35	1508	1.12	35×30	1508	1.12
270							30×40	1229	1.28	35×35	1229	1.28
330							30×45	1005	1.39	35×40	1005	1.45
390										35×40	851	1.55
470										35×50	706	1.85
560							30×70	592	2.18	35×50	592	2.18
680										35×60	488	2.45
820										35×70	405	2.90

LQ

特点 Features

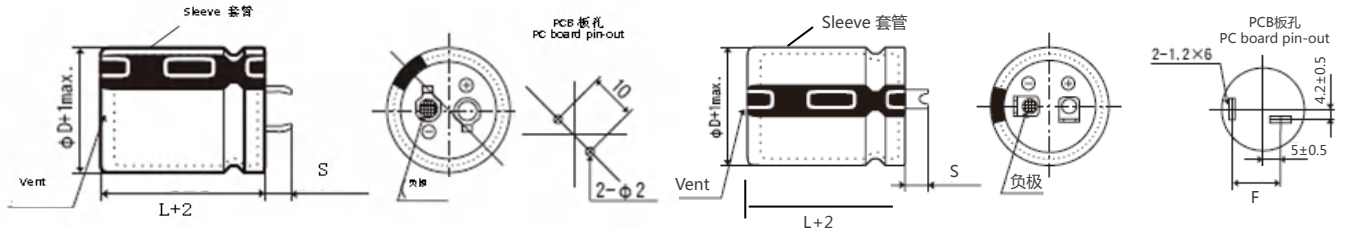
- 105℃ 3000H。105℃ 3000 hours.
- 耐高纹波,小尺寸。High ripple current ,compact.
- 满足RoHS要求。RoHS compliant.
- 满足AEC-Q200标准。According to AEC-Q200 standard.

主要技术性能 Specifications

项目 Items	特性 Characteristics	
使用温度范围 Operating Temperature Range	-40℃~+105℃	
额定电压范围 Rated Voltage Range(U_R)	160~450V	
标称电容量范围 Nominal Capacitance Range(C_R)	68~2200μF	120Hz,+20℃
标称电容量允许偏差 Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤3$\sqrt{C_R U_R}$(μA)	+20℃ after 5 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R(V) 160~250 350~450 Tanδ 0.15 0.20	Max. 120Hz,+20℃
低温特性 Characteristics at low temperature	U_R (V) 160~250 350~450 $Z_{-25℃}/Z_{+20℃}$ 4 8 $Z_{-40℃}/Z_{+20℃}$ 6 10	Max. 120Hz
耐久性 Load life	+105℃施加带额定纹波电流的额定电压3000小时，恢复16小时后： After applying rated voltage with specified ripple current for 3000 hour at +105 and then resumed for 16 hour 电容量变化率Capacitance change：±20%初始测量值以内 ±20%Initial measured value 漏 电 流 Leakage current ：≤初始规定值 Initial specified value 损耗角正切值 Dissipation factor ：≤2倍初始规定值 2times Initial specified value	
高温贮存 Shelf Life	+105℃,1000小时贮存后,加额定工作电压处理30分钟,恢复16小时后： After storage for 1000 hours at +105℃,UR to be applied for 30 minutes and then resumed 16 hours. 电容量变化率Capacitance change：±20%初始测量值以内 ±20%Initial measured value 漏 电 流 Leakage current ：≤初始规定值 Initial specified value 损耗角正切值 Dissipation factor ：≤2倍初始规定值 2times Initial specified value	

尺寸图 Dimension drawings

单位 Unit: mm



频率修正系数 Frequency Coefficient

Frequency (Hz) / U_R(V)	50	120	1K	10K	≥50K
160~450	0.80	1.00	1.30	1.41	1.43

规格特性表
Table of Specifications and Characteristics

U_R(V) / C_R(μF)	160V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
330	22×25	754	1.20									
390	22×30	638	1.30									
470	22×30	529	1.55	25×25	529	1.55						
560	22×35	444	1.67	25×30	444	1.67						
680	22×40	366	1.82	25×35	366	1.85	30×25	366	1.82			
820	22×45	303	2.04	25×40	303	2.04	30×30	303	2.04	35×25	303	2.04
1000				25×45	249	2.40	30×35	249	2.39	35×30	249	2.45
1200				25×50	207	2.62	30×40	207	2.49	35×30	207	2.49
1500							30×45	166	2.84	35×35	166	2.84
1800							30×45	138	3.32	35×40	138	3.00
2200										35×45	113	3.50

U_R(V) / C_R(μF)	220V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
220	22×25	1131	1.00									
270	22×30	922	1.13									
330	22×30	754	1.25	25×25	754	1.25						
390	22×35	638	1.31	25×30	638	1.35						
470	22×40	529	1.50	25×30	529	1.50	30×25	529	1.50			
560	22×45	444	1.67	25×35	444	1.67	30×30	444	1.67			
680	22×50	366	1.78	25×40	366	1.82	30×30	366	1.78			
820				25×45	303	2.10	30×35	303	2.04	35×30	303	2.04
1000				25×50	249	2.42	30×40	249	2.30	35×35	249	2.30
1200							30×45	207	2.65	35×40	207	2.84
1500										35×45	166	3.08
1800										35×50	138	3.48

U_R(V) / C_R(μF)	250V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
180	22×25	1382	0.88									
220	22×30	1131	1.00	25×25	1131	1.08						
270	22×35	922	1.18	25×30	922	1.18						
330	22×40	754	1.30	25×30	754	1.30	30×25	754	1.30			
390	22×45	638	1.45	25×35	638	1.45	30×30	638	1.45			
470	22×50	529	1.60	25×40	529	1.65	30×30	529	1.65	35×25	529	1.65
560				25×45	444	1.80	30×35	444	1.80	35×30	444	1.80
680				25×50	366	2.00	30×40	366	2.00	35×30	366	2.00
820							30×45	303	2.30	35×35	303	2.30
1000							30×50	249	2.60	35×40	249	2.60
1200										35×45	207	3.00

规格特性表
Table of Specifications and Characteristics

U_R(V) / C_R(μF)	350V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
68	22×25	4879	0.47									
100	22×25	3317	0.69									
120	22×30	2765	0.75									
150	22×35	2212	0.80	25×30	2212	0.80	30×25	2212	0.83			
180	22×40	1843	0.92	25×30	1843	0.92	30×25	1843	0.90			
220	22×45	1508	1.05	25×35	1508	1.04	30×30	1508	1.02	35×25	1508	1.05
270				25×40	1229	1.18	30×30	1229	1.17	35×25	1229	1.17
330							30×35	1005	1.34	35×30	1005	1.22
390							30×40	851	1.50	35×35	851	1.47
470										35×35	706	1.69
560										35×40	592	1.90
680										35×45	488	2.20

U_R(V) / C_R(μF)	400V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
68	22×25	4879	0.50									
82	22×25	4046	0.64									
100	22×30	3317	0.70									
120	22×35	2765	0.75	25×25	2765	0.75						
150	22×40	2212	0.88	25×30	2212	0.83	30×25	2212	0.88			
180	22×45	1843	0.98	25×35	1843	0.98	30×30	1843	0.98			
220	22×50	1508	1.10	25×40	1508	1.10	30×30	1508	1.10			
270				25×50	1229	1.22	30×35	1229	1.22	35×30	1229	1.22
330							30×45	1005	1.44	35×30	1005	1.44
390							30×45	851	1.60	35×35	851	1.60
470										35×40	706	1.90
560										35×45	592	2.12
680										35×50	488	2.55
820										35×60	405	2.91

规格特性表
Table of Specifications and Characteristics

U_R(V) / C_R(μF)	420V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
82	22×25	4046	0.64									
100	22×30	3317	0.70	25×25	3317	0.70						
120	22×35	2765	0.75	25×30	2765	0.75						
150	22×40	2212	0.88	25×35	2212	0.88	30×25	2212	0.88			
180	22×45	1843	0.95	25×35	1843	0.95	30×30	1843	0.95			
220	22×50	1508	1.08	25×45	1508	1.11	30×35	1508	1.10	35×25	1508	1.10
270				25×50	1229	1.29	30×40	1229	1.29	35×30	1229	1.26
330							30×45	1005	1.49	35×35	1005	1.52
390							30×50	851	1.67	35×40	851	1.66
470										35×45	706	1.90
560										35×50	592	2.13
680										35×60	488	2.54

U_R(V) / C_R(μF)	450V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
68	22×25	4879	0.55									
82	22×30	4046	0.64									
100	22×35	3317	0.70	25×25	3317	0.70						
120	22×40	2765	0.80	25×30	2765	0.80	30×25	2765	0.80			
150	22×45	2212	0.88	25×35	2212	0.88	30×30	2212	0.88			
180				25×40	1843	1.00	30×30	1843	1.00			
220				25×45	1508	1.10	30×35	1508	1.10	35×30	1508	1.12
270							30×40	1229	1.28	35×35	1229	1.28
330							30×50	1005	1.45	35×40	1005	1.45
390										35×40	851	1.66
470										35×50	706	1.85
560										35×50	592	2.15
680										35×60	488	2.30

MQ

特点 Features

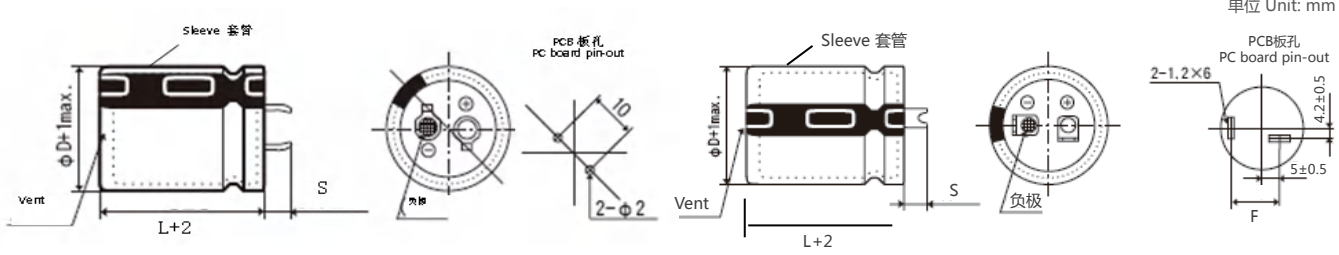
- 105℃ 5000H。105℃ 5000 hours.
- 高纹波电流。High ripple current.
- 满足RoHS要求。RoHS compliant.
- 满足AEC-Q200标准。According to AEC-Q200 standard.

主要技术性能 Specifications

项目 Items	特性 Characteristics	
使用温度范围 Operating Temperature Range	-40℃~+105℃	
额定电压范围 Rated Voltage Range(U_R)	160~450V	
标称电容量范围 Nominal Capacitance Range(C_R)	82~2700μF	120Hz,+20℃
标称电容量允许偏差 Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤3$\sqrt{C_R U_R}$(μA)	+20℃ after 5 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R (V): 160~250 / 350~450 Tanδ: 0.15 / 0.20	Max. 120Hz,+20℃
低温特性 Characteristics at low temperature	U_R (V): 160 / 250 / 350 / 400~450 $Z_{-25℃}/Z_{+20℃}$: 4 / 4 / 8 / 8 $Z_{-40℃}/Z_{+20℃}$: 6 / 6 / 10 / 10	Max. 120Hz
耐久性 Load life	+105℃施加带额定纹波电流的额定电压5000小时，恢复16小时后： After applying rated voltage with specified ripple current for 5000 hour at +105 and then resumed for 16 hour 电容量变化率Capacitance change：±20%初始测量值以内 ±20%Initial measured value 漏 电 流 Leakage current ：≤初始规定值 Initial specified value 损耗角正切值 Dissipation factor ：≤2倍初始规定值 2times Initial specified value	
高温贮存 Shelf Life	+105℃,1000小时贮存后,加额定工作电压处理30分钟,恢复16小时后： After storage for 1000 hours at +105℃,UR to be applied for 30 minutes and then resumed 16 hours 电容量变化率Capacitance change：±20%初始测量值以内 ±20%Initial measured value 漏 电 流 Leakage current ：≤初始规定值 Initial specified value 损耗角正切值 Dissipation factor ：≤2倍初始规定值 2times Initial specified value	

尺寸图 Dimension drawings

单位 Unit: mm



频率修正系数 Frequency Coefficient

Frequency (Hz) / U_R(V)	50	120	1K	10K	≥50K
160~450	0.80	1.00	1.30	1.41	1.43

规格特性表
Table of Specifications and Characteristics

U_R(V) / C_R(μF)	160V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
390	22×30	638	1.42									
470	22×35	529	1.62									
560	22×40	444	1.77	25×30	444	1.81	30×25	444	1.81			
680	22×45	366	1.98	25×35	366	2.01	30×30	366	1.96			
820	22×50	303	2.20	25×40	303	2.24	30×35	303	2.20			
1000				25×45	249	2.55	30×40	249	2.55			
1200				25×50	207	2.93	30×45	207	2.84	35×30	207	2.86
1500							30×50	166	3.22	35×35	166	3.22
1800							30×50	138	3.53	35×40	138	3.66
2200										35×45	113	4.14
2700										35×50	92	4.68

U_R(V) / C_R(μF)	200V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
270	22×30	922	1.10									
330	22×35	754	1.25									
390	22×40	638	1.38	25×30	638	1.39						
470	22×45	529	1.55	25×35	529	1.55						
560	22×50	444	1.73	25×40	444	1.73						
680				25×45	366	1.89	30×35	366	1.89	35×30	366	1.89
820				25×50	303	2.22	30×40	303	2.22	35×35	303	2.20
1000							30×45	249	2.53	35×40	249	2.69
1200							30×50	207	2.84	35×45	207	2.86
1500										35×50	166	3.34

U_R(V) / C_R(μF)	250V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
220	22×30	1131	1.09									
270	22×35	922	1.28									
330	22×40	754	1.40	25×30	754	1.42						
390	22×45	638	1.58	25×35	638	1.53	30×30	638	1.52			
470	22×55	529	1.79	25×40	529	1.67	30×35	529	1.75			
560				25×45	444	1.98	30×35	444	1.95			
680				25×50	366	2.21	30×40	366	2.18	35×30	366	2.15
820							30×45	303	2.45	35×35	303	2.38
1000							30×50	249	2.68	35×40	249	2.72
1200										35×45	207	3.05
1500										35×50	166	3.49

规格特性表
Table of Specifications and Characteristics

U_R(V) / C_R(μF)	350V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
120	22×30	2765	0.78									
150	22×35	2212	0.90									
180	22×40	1843	1.01	25×30	1843	1.01						
220	22×45	1508	1.15	25×35	1508	1.15	30×30	1508	1.15			
270	22×50	1229	1.25	25×40	1229	1.25	30×30	1229	1.25	35×25	1229	1.25
330				25×45	1005	1.43	30×35	1005	1.43	35×30	1005	1.43
390				25×50	851	1.61	30×40	851	1.60	35×30	851	1.61
470							30×45	706	1.81	35×35	706	1.83
560							30×50	592	2.00	35×40	592	2.07
680										35×45	488	2.34
820										35×50	405	2.62

U_R(V) / C_R(μF)	400V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
100	22×30	3317	0.71									
120	22×35	2765	0.80									
150	22×40	2212	0.91	25×35	2212	0.91	30×25	2212	0.91			
180	22×45	1843	1.00	25×40	1843	1.00	30×30	1843	1.00			
220	22×50	1508	1.15	25×45	1508	1.15	30×35	1508	1.15			
270				25×50	1229	1.35	30×35	1229	1.35			
330							30×45	1005	1.55	35×30	1005	1.55
390							30×45	851	1.68	35×35	851	1.68
470							30×50	706	1.90	35×40	706	1.90
560										35×45	592	2.12
680										35×50	488	2.39

规格特性表
Table of Specifications and Characteristics

U_R(V) / C_R(μF)	420V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
100	22×30	3317	0.71									
120	22×35	2765	0.80	25×30	2765	0.80						
150	22×40	2212	0.91	25×35	2212	0.91						
180	22×45	1843	1.00	25×40	1843	1.00	30×30	1843	1.00			
220				25×45	1508	1.20	30×35	1508	1.20			
270				25×50	1229	1.35	30×35	1229	1.35	35×30	1229	1.35
330							30×45	1005	1.50	35×35	1005	1.54
390							30×50	851	1.72	35×40	851	1.73
470										35×45	706	1.94
560										35×50	592	2.17

U_R(V) / C_R(μF)	450V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 105℃ A
82	22×30	4046	0.65									
100	22×35	3317	0.75	25×30	3317	0.75						
120	22×40	2765	0.78	25×35	2765	0.78						
150	22×45	2212	0.95	25×35	2212	0.95	30×30	2212	0.95			
180	22×50	1843	0.97	25×40	1843	0.95	30×30	1843	0.93	35×25	1843	0.96
220				25×45	1508	1.16	30×35	1508	1.17	35×30	1508	1.24
270				25×50	1229	1.31	30×40	1229	1.33	35×30	1229	1.39
330							30×45	1005	1.58	35×35	1005	1.58
390							30×50	851	1.73	35×40	851	1.73
470										35×50	706	1.98
560										35×50	592	2.16
680										35×60	488	2.57
820										35×70	405	3.0

TQ

特点 Features

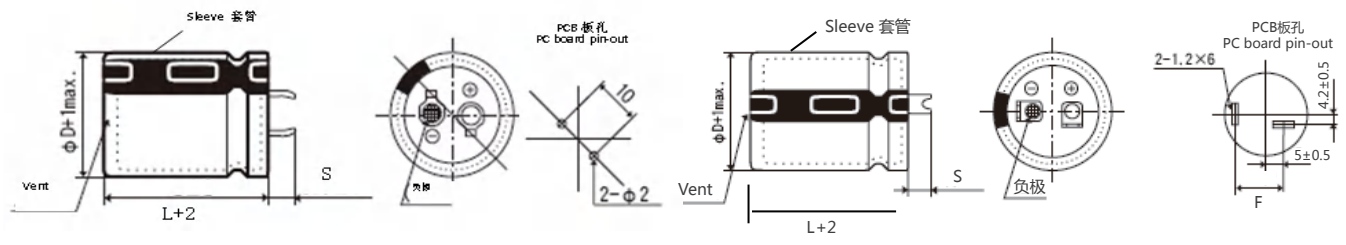
- 125℃ 3000H。125℃ 3000 hours.
- 高纹波电流。High ripple current.
- 满足RoHS要求。RoHS compliant.
- 满足AEC-Q200标准。According to AEC-Q200 standard.

主要技术性能 Specifications

项目 Items	特性 Characteristics	
使用温度范围 Operating Temperature Range	-40℃~+125℃	
额定电压范围 Rated Voltage Range(U_R)	400~450V	
标称电容量范围 Nominal Capacitance Range(C_R)	47~560μF	120Hz,+20℃
标称电容量允许偏差 Capacitance Tolerance(C_T)	±20%(M)	120Hz,+20℃
漏电流 Leakage Current(I_L)	≤3$\sqrt{C_R U_R}$(μA)	+20℃ after 5 minutes
损耗角正切值 Tangent of loss angle(Tanδ)	U_R (V) 400~450 Tanδ 0.20	Max. 120Hz,+20℃
低温特性 Characteristics at low temperature	U_R (V) 400~450 $Z_{-25℃}/Z_{+20℃}$ 8 $Z_{-40℃}/Z_{+20℃}$ 10	Max. 120Hz
耐久性 Load life	+125℃施加带额定纹波电流的额定电压3000小时，恢复16小时后： After applying rated voltage with specified ripple current for 3000 hour at +125 and then resumed for 16 hour 电容量变化率Capacitance change：±30%初始测量值以内 ±30%Initial measured value 漏 电 流 Leakage current ：≤初始规定值 Initial specified value 损耗角正切值 Dissipation factor ：≤3倍初始规定值 3times Initial specified value	
高温贮存 Shelf Life	+125℃,1000小时贮存后,加额定工作电压处理30分钟,恢复16小时后： After storage for 1000 hours at +125℃,UR to be applied for 30 minutes and then resumed 16 hours. 电容量变化率Capacitance change：±20%初始测量值以内 ±20%Initial measured value 漏 电 流 Leakage current ：≤初始规定值 Initial specified value 损耗角正切值 Dissipation factor ：≤2倍初始规定值 2times Initial specified value	

尺寸图 Dimension drawings

单位 Unit: mm



频率修正系数 Frequency Coefficient

Frequency (Hz) / U_R(V)	50	120	1K	10K	≥50K
400~450	0.77	1.00	1.30	1.41	1.43

规格特性表
Table of Specifications and Characteristics

U_R(V) / C_R(μF)	400V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 125℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 125℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 125℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 125℃ A
47	22*25	7058	0.26									
68	22*30	4879	0.34									
82	22*30	4046	0.38									
100	22*35	3317	0.43	25*25	3317	0.40						
120	22*35	2765	0.50	25*30	2765	0.47						
150	22*40	2212	0.55	25*35	2212	0.57	30*25	2212	0.55			
180	22*45	1843	0.64	25*40	1843	0.65	30*30	1843	0.65			
220	22*45	1508	0.78	25*45	1508	0.76	30*35	1508	0.75	35*25	1508	0.67
270				25*50	1229	0.92	30*40	1229	0.89	35*30	1229	0.81
330							30*45	1005	1.02	35*35	1005	0.94
390							30*50	851	1.16	35*40	851	1.09
470										35*45	706	1.34
560										35*50	592	1.56

U_R(V) / C_R(μF)	450V											
	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 125℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 125℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 125℃ A	ΦD×L mm×mm	ESR_{max} 120Hz 25℃ mΩ	$I_{AC,max}$ 120Hz 125℃ A
68	22*30	4879	0.38									
82	22*35	4046	0.44	25*25	4046	0.39						
100	22*40	3317	0.46	25*30	3317	0.46						
120	22*45	2765	0.54	25*35	2765	0.54	30*25	2765	0.52			
150	22*50	2212	0.62	25*40	2212	0.64	30*30	2212	0.63			
180				25*45	1843	0.73	30*35	1843	0.72	35*25	1843	0.75
220				25*50	1508	0.87	30*40	1508	0.85	35*30	1508	0.90
270							30*45	1229	1.12	35*35	1229	1.05
330							30*50	1005	1.30	35*40	1005	1.22
390										35*45	851	1.48
470										35*50	706	1.67

Memo

Memo

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