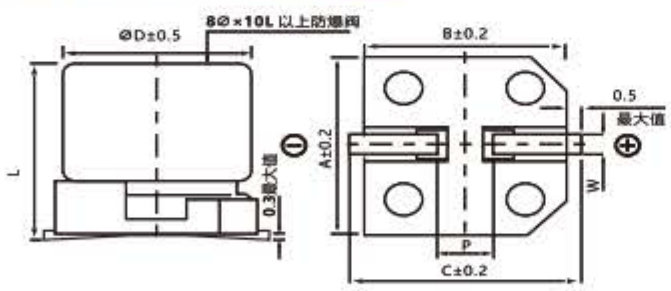
ULTRA LONG LIFE
超长寿命品

- Wide temperature range –55~+105°C
  适用于 –55~+105°C 的宽温范围
- Load life of 3000~5000 hours
  负荷寿命3000~5000 小时
- Comply with the RoHS directive
  符合 RoHS 指令

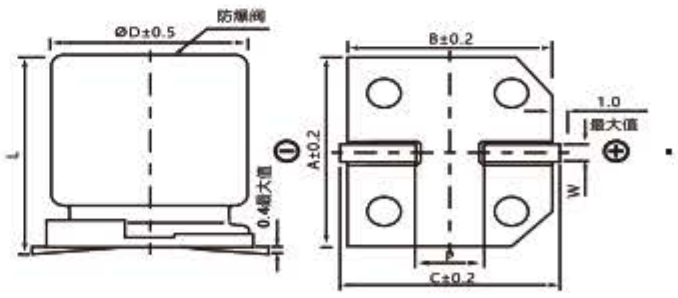
□SPECIFICATIONS 特性表

Items 项目	Characteristics 主要特性
Operation Temperature Range 使用温度范围	–55 ~ +105°C
Voltage Range 额定工作电压范围	6.3 ~ 100V
Capacitance Range 静电容量范围	0.1 ~ 3300 μ F
Capacitance Toleranœ 静电容量允许偏差	± 20% at 120Hz, 20°C
Leakage Current 漏电流	Leakage current (Ø4~Ø10) ≤0.01CV or 3 μ A, whichever isgreater (after 2 minutes application of rated voltage) Leakage current (Ø12.5~Ø16) ≤0.03CV or 4 μ A, whichever is greater (after2minute application of rated voltage) 漏电流 (Ø4~Ø10) ≤ 0.01CV 或 3μ A，取较大值（施加额定工作电压 2 分钟后） 漏电流 (Ø12.5~Ø16) ≤ 0.03CV 或 4 μ A，取较大值（施加额定工作电压 2 分钟后）
Dissipation Factor(tan δ) 损耗角正切	Measurement frequency 测试频率: 120Hz, Temperature 温度: 20°C Rated Voltage (V) 额定工作电压: 6.3 / 10 / 16 / 25 / 35 / 50~100 tan δ(max.) 最大损耗角正切 Ø4~Ø10: 0.30 / 0.24 / 0.20 / 0.18 / 0.16 / 0.14 Ø12.5~Ø16: 0.38 / 0.34 / 0.30 / 0.28 / 0.22 / 0.18
Stability at LowTemperature 低温特性	Measurement frequency 测试频率: 120Hz Rated Voltage (V 额定工作电压): 6.3 / 10 / 16 / 25 / 35 / 50~100 Impedance Ratio 阻抗比 ZT/Z20 (max.) Ø4~Ø10: Z(–25° C) /Z(20° C): 3 / 3 / 2 / 2 / 2 / 2 Z(–55° C) /Z(20° C): 8 / 5 / 4 / 3 / 3 / 3 Ø12.5~Ø16: Z(–25° C) / Z(20° C): 5 / 4 / 3 / 2 / 2 / 2 Z(–55° C) / Z(20° C): 12 / 10 / 8 / 5 / 4 / 3
Load Life 高温负荷特性	After 5000 hrs. (3000 hrs. for Ø 4~ Ø6.3 × 5.8) application of the rated voltage at 105°C, they meet the characteristics listed below. 在 105° C 环境中施加额定工作电压5000 小时 (Ø4~Ø6.3 × 5.8为3000 小时）后，电容器的特性符合下表的要求。 Capacitance Change 静电容量变化率: Within ±30% of initial value初始值的 ±30%以内 Dissipation Factor 损耗角正切: 300% or less of initial specified value 不大于规范值的300% Leakage Current漏电流: initial specified value or less 不大于规范值
Shelf Life 高温贮存特性	After leaving capacitors under no load at 105℃ for 1000 hours, they meet the specified value for load life characteristics listed above. 在105℃ 环境中无负荷放置1000小时后，电容器的特性符合高温负荷特性中所列的规定值。
Resistance to Soldering Heat 耐焊接热特性	After reflow soldering and restored at room temperature, they meet the characteristics listed below. 经过回流焊并冷却至室温后，电容器的特性符合下表的要求。 Capacitance Change 静电容量变化率: Within ± 10% of initial value 初始值的 ±10%以内 Dissipation Factor 损耗角正切: initial specified value or less 不大于规范值 Leakage Current漏电流: initial specified value or less 不大于规范值
Marking 标识	Black print on the case top. 铝壳顶部黑字印刷。

□ Diagramof Dimensions 尺寸图



ΦD=4~10 适用



Φ12.5 以上适用

□ DIMENSIONS (Unit: mm) 尺寸表

DXL	4X5.8	5X5.8	6.3X5.8	6.3X7.7	8X10.5	10X10.5	10X13.5	12.5X13.5	12.5X16	16X16.5
A	4.3	5.3	6.6	6.6	8.3	10.3	10.3	13.0	13.0	17.0
B	4.3	5.3	6.6	6.6	8.3	10.3	10.3	13.0	13.0	17.0
C	5.1	5.9	7.2	7.2	9.2	11.2	11.2	13.7	13.7	18.0
P±0.2	1.0	1.5	2.0	2.0	3.1	4.4	4.4	4.4	4.4	6.4
L	5.8 ±0.3	5.8 ±0.3	5.8 ±0.3	7.7 ±0.3	10.5±0.5	10.5±0.5	13.5±0.5	13.5±0.5	16±0.5	16.5±0.5

□DRAWING (Unit: mm) 外形图

□ DIMENSIONS & MAXIMUM PER MISSIBLE RIPPLE CURRENT 规格尺寸及最大允许纹波电流

μF \ WV / Code 代码		6.3		10		16		25	
		0J		1A		1C		1E	
10	100					4 × 5.8	18	5 × 5.8	27
22	220	4 × 5.8	22	5 × 5.8	30	5 × 5.8	30	6.3 × 5.8	44
33	330	5 × 5.8	35	5 × 5.8	36	6.3 × 5.8	48	6.3 × 5.8	50
47	470	5 × 5.8	38	6.3 × 5.8	50	6.3 × 5.8	50	6.3 × 7.7	63
100	101	6.3 × 5.8	69	6.3 × 7.7	81	6.3 × 7.7	81	8 × 10.5	116
150	151	6.3 × 7.7	85	8 × 10.5	125	8 × 10.5	125	10 × 10.5	320
220	221	6.3 × 7.7	120	8 × 10.5	141	10 × 10.5	216	10 × 10.5	320
330	331	8 × 10.5	290	10 × 10.5	290	10 × 10.5	290	10 × 10.5	320
470	471	10 × 10.5	320	10 × 10.5	320	10 × 10.5	320	12.5 × 13.5 (10 × 13.5)	400 (350)
680	681	10 × 10.5	320	10 × 10.5	320	10 × 13.5	420	12.5 × 13.5	415
1000	102	10 × 10.5	410	10 × 13.5	390	12.5 × 13.5	550	12.5 × 13.5	460
1500	152	10 × 13.5	450	12.5 × 13.5	480	12.5 × 13.5	650	12.5 × 16	700
2200	222	12.5 × 13.5	680	12.5 × 16 (12.5 × 13.5)	750 (510)	16 × 16.5	800		
3300	332	12.5 × 16 (12.5 × 13.5)	850 (800)	16 × 16.5	800			Case size 尺寸	Ripple current 纹波电流

μF \ WV / Code 代码		35		50		63		100	
		1V		1H		1J		2A	
0.1	0R1			4 × 5.8	1.0				
0.22	R22			4 × 5.8	2.6				
0.33	R33			4 × 5.8	3.2				
0.47	R47			4 × 5.8	5				
1	010			4 × 5.8	8				
2.2	2R2			4 × 5.8	12				
3.3	3R3			4 × 5.8	17			6.3 × 7.7	30
4.7	4R7	4 × 5.8	16	5 × 5.8	22			8 × 10.5	50
10	100	5 × 5.8	27	6.3 × 5.8	32	6.3 × 7.7	45	8 × 10.5	55
22	220	6.3 × 5.8	44	6.3 × 7.7	58	8 × 10.5	65	10 × 10.5	70
33	330	6.3 × 7.7	57	8 × 10.5	140	10 × 10.5	80	10 × 10.5	80
47	470	8 × 10.5	92	10 × 10.5	310	10 × 10.5	90	12.5 × 13.5 (10 × 13.5)	250 (150)
100	101	10 × 10.5	151	10 × 10.5	310	10 × 13.5	150	12.5 × 13.5	300
150	151	10 × 10.5	290	10 × 10.5	310			16 × 16.5 (12.5 × 16) (12.5 × 13.5)	600 (420) (380)
220	221	10 × 10.5	375	12.5 × 13.5 （10 × 13.5）	340 (320)	12.5 × 13.5	470		
330	331	12.5 × 13.5 (10 × 13.5)	380 (375)	12.5 × 16 (12.5 × 13.5)	600 (500)	16 × 16.5 (12.5 × 16)	650 (550)		
470	471	12.5 × 13.5	520	16 × 16.5	700				
680	681	12.5 × 13.5	550						
1000	102	16 × 16.5 (12.5 × 16)	750 (600)					Case size 尺寸	Ripple current 纹波电流

•Case size ⌀D×L(mm), ripple current (mA rms) at 105°C, 120Hz •尺寸⌀D×L(mm), 纹波电流(mA rms)于105°C, 120Hz

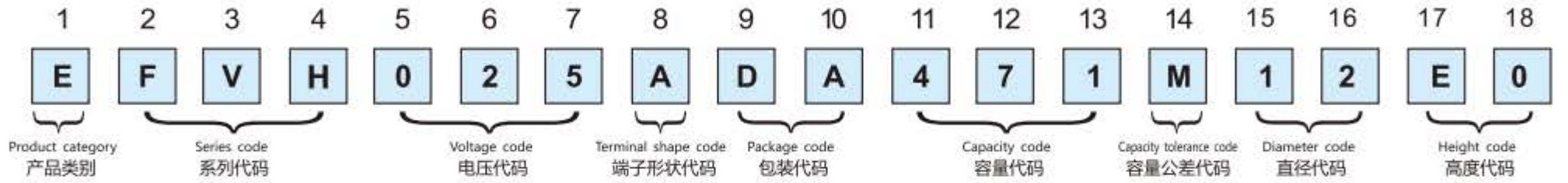
☐ FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT 纹波电流频率补偿系数

Frequency 频率			50Hz	120Hz	300Hz	1KHz	10KHz~
Coefficient 系数	⌀4 ~ ⌀10		0.70	1.00	1.17	1.36	1.50
	⌀12.5 ~ ⌀16	~ 68μF	0.75	1.00	1.35	1.57	2.00
		100~ 470μF	0.80	1.00	1.23	1.34	1.50
		680 ~ 3300μF	0.85	1.00	1.10	1.13	1.15

- The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime wiht every 10 °C rise.When long life performance is required in actual use,the rms ripple current has to be reduced.
- 铝电解电容器由于在纹波电流叠加时自我发热，温度上升而老化，每升温10 °C 寿命减少一半；要想保持长寿命请在使用过程中降低纹波电流。

- Taping specifications are given in page 17 "Taping Specifications". 编带标准请参阅第 17 页 "编带标准" 。
- Please refer to page 18 "Package Quantity" for the minimum package quantity. 最小包装数量请参阅第 18 页 "包装数量" 。

SMD EXPLANATION OF PART NUMBERS
贴片产品编码规则



(2、3、4)

Series 系列
FVE
FVH
FVA
FVZ
FVR
FVL
FVM
FVU
FVG
FVB
FVN
FVD
FVC

(5、6、7)

Voltage (w.v) 电压	Code 代码
4	4R0
6.3	6R3
10	010
16	016
25	025
35	035
50	050
63	063
100	100
160	160
250	250
350	350
400	400

(11、12、13)

Capacitance (uF) 静电容量	Code 代码
0.1	0R1
0.22	R22
1	010
4.7	4R7
10	100
47	470
100	101
470	471
1000	102
4700	472
10000	103

(14)

Cap.Tolerance (%) 容量允许	Code 代码
± 10	K
± 20	M

(8)

Tape 端子类型	Code 代码
No dummy terminal 无辅助端子	A
With dummy terminal 有辅助端子	G

(9、10)

Packaging 包装要求		External diameter 纸盘外径 □(mm)	Fit size 适合尺寸 □D(mm)	Code 代码
Braiding 编带	Paper tray 纸盘	380	ØD4~18	DA
		330	ØD4~18	DB
	Glue tray 胶盘	380	ØD4~10	RA
	Blister box 吸塑盒	-	ØD12.5~18	TR

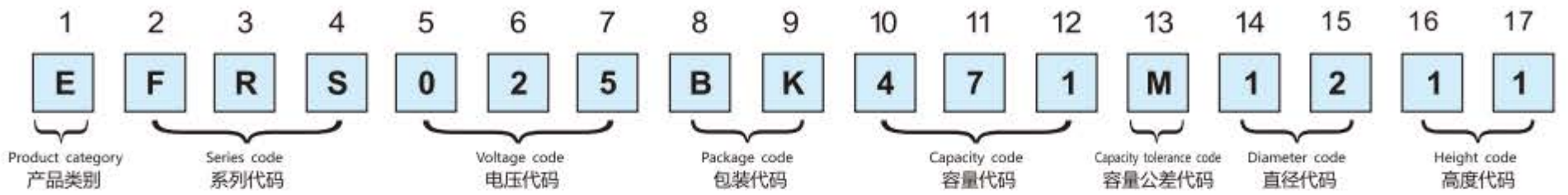
(15、16)

Diameter (□) 直径	Code 代码
4	04
5	05
6.3	06
8	08
10	10
12.5	12
16	16
18	18

(17、18)

Length (mm) 高度	Code 代码
4.5	45
5.4	54
5.8	58
6.5	65
7.7	77
10.2	A0
10.5	B0
13.5	E0
16	G5
16.5	H0
21.5	N0

Radial EXPLANATION OF PART NUMBERS
插件产品编码规则



(2、3、4)

Series 系列
FRA
FRS
FRU
FRK
FBR
FBU

(5、6、7)

Voltage (w.v) 电压	Code 代码
4	4R0
6.3	6R3
10	010
16	016
25	025
35	035
50	050
63	063
100	100
160	160
250	250
350	350
400	400

(10、11、12)

Capacitance (uF) 静电容量	Code 代码
0.1	0R1
0.22	R22
1	010
4.7	4R7
10	100
47	470
100	101
470	471
1000	102
4700	472
10000	103

(13)

Cap.Tolerance (%) 容量允许	Code 代码
± 10	K
± 20	M

(8、9)

Packaging 包装形式	Code 代码
Long-legged bulk长脚散装	BK
Long-legged taping长脚编带	BA

(14、15)

Diameter (∅) 直径	Code 代码
4	04
5	05
6.3	06
8	08
10	10
12.5	12
16	16
18	18

(16、17)

Length (mm) 高度	Code 代码
4.5	04
5.5	05
6.0	06
6.5	06
7.0	07
8.0	08
10	10
11	11
11.5	11
12	12
16	16

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