

KM Series

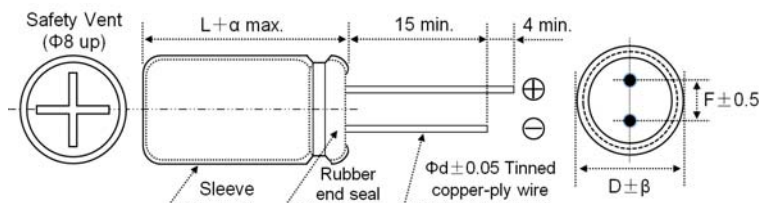
特性 FEATURES

- 105℃
- 寿命(Life Time): 1000~2000 Hours
- 标准品(standard)

主要技术性能 Specifications

项目 Item	特性 Performance Characteristics								
使用温度范围 Operating Temperature Range	-40 ~ +105℃					-25 ~ +105℃			
额定电压范围 Rated Working Voltage Range	6.3 ~250V					350~ 450V			
标称电容量范围 Nominal Capacitance Range	0.1 ~ 33000μF								
标称电容量允许偏差 Capacitance Tolerance	±20%(120Hz,+20℃)								
漏电流 Leakage Current	L≤0.01CV or 3(μA)					I≤0.03cv+40(μA)			
	Whichever is greater measured after 2 minutes application of rated working voltage at +20℃								
损失角正切值 tan δ(120Hz,+20℃)	工作电压(Voltage)	6.3	10	16	25	35	50	63	100
	tan δ(max)	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.08
	工作电压(Voltage)	160	200	250	250	350	400	420	450
	tan δ(max)	0.20	0.20	0.20	0.20	0.24	0.24	0.24	0.24
	容量每增加 1000μF, 损失角增加 0.02; For capacitance value>1000μF,add 0.02 per another 1000μF								
低温特性(120Hz) Low Temperature Characteristics	工作电压(Voltage)	6.3	10	16	25	35	50	63	100
	Z-25℃/Z+20℃	5	4	3	2	2	2	2	2
	Z-40℃/Z+20℃	10	8	6	4	3	3	3	3
	工作电压(Voltage)	160	200	220	250	350	400	420	450~500
	Z-25℃/Z+20℃	3	3	3	4	4	6	6	15
高温负荷 High Temperature Loading	负荷寿命(Load Life)	1000Hrs (D≤6.3)					2000Hrs (D≥8)		
	试验条件(Test conditions)	温度(Temp.) 105℃							
	容量变化率(Cap.)	容量变化为初始值的±20% (Within ±20% of Initial Value)							
	损失角(tan δ)	小于等于初始值 200% (200% or less of Initial Specified Value)							
	漏电流(LC)	小于规格值 (Initial Specified Value or less)							
高温无负荷 Shelf Life	无负荷寿命(Shelf life)	1000 Hrs							
	试验条件(Test conditions)	温度(Temp.) 105℃							
	容量变化率(Cap.)	容量变化为初始值的±20% (Within ±20% of Initial Value)							
	损失角(tan δ)	小于等于初始值 200% (200% or less of Initial Specified Value)							
	漏电流(LC)	小于规格值 (Initial Specified Value or less)							
纹波电流与频率修正系数 Ripple Current & Frequency Multipliers	Rate Voltage(V)	Freg(Hz) Cap.(μF)	50	120	500	1k	10k~		
	≤100	~100	0.75	1.00	1.30	1.40	1.50		
		100~470	0.75	1.00	1.10	1.20	1.30		
		470~	0.85	1.00	1.10	1.12	1.15		
	160~450	0.47~470	0.75	1.00	1.10	1.12	1.20		
参照标准 Standards	JIS- C-5101-4 (IEC 60384)								

尺寸图(Diagram of Dimensions):



尺寸(Diameter):

单位(Unit):mm

D	5	6.3	8	10	13	16	18	22	25
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10	10
d	0.5			0.6	0.6	0.8			
α	(L<20)1.5					(L≥20)2.0			
β	(D<20)0.5					(D≥20)1.0			

标准额定值(Standard Rating) :

D x L(mm): Ripple Current: mA/rms at 120Hz,105℃

Voltage(Code)	6.3V		10V		16V		25V	
Cap.(μF)	DxL	R.C	DxL	R.C	DxL	R.C	DxL	R.C
4.7							5*11	26
10					5*11	35	5*11	38
22	5*11	44	5*11	59	5*11	54	5*11	57
33	5*11	54	5*11	77	5*11	65	5*11	75
47	5*11	65	5*11	87	5*11	80	5*11	84
68	5*11	70	5*11	119	5*11	90	5*11	92
100	5*11	95	5*11	139	5*11	125	6.3*12	159
220	5*11	153	5*11	212	6.3*12	213	8*12	285
330	6.3*12	216	6.3*12	272	8*12	315	8*12	340
470	6.3*12	258	6.3*12	299	8*12	366	10*13	471
680	8*12	278	8*12	319	10*13	480	10*17	620
1000	8*12	443	10*13	586	10*17	617	10*20	750
2200	10*17	740	10*20	918	10*20	641	13*20	787
3300	10*20	908	13*20	1090	13*20	1004	16*25	1428
4700	13*20	1162	13*25	1306	16*25	1464	16*30	1718
6800	13*25	1385	16*25	1770	16*30	2081	16*35	2008
10000	16*25	1730	16*30	2015	16*35	2379	18*35	2330
15000	16*30	2088	16*40	2600	18*35	2600		
22000	18*35	2400	18*40	2805				
33000	18*40	2555						

Voltage(Code)	35V		50V		63V		100V	
Cap.(μF)	DxL	R.C	DxL	R.C	DxL	R.C	DxL	R.C
0.1			5*11	1				
0.15			5*11	1.5				
0.22			5*11	3				
0.33			5*11	4				
0.47			5*11	7			5*11	10
1			5*11	13			5*11	16
2.2			5*11	20			5*11	23
3.3			5*11	30			5*11	34
4.7	5*11	28	5*11	37	5*11	49	5*11	40
10	5*11	41	5*11	54	5*11	59	6.3*12	61
22	5*11	67	5*11	79	5*11	79	6.3*12	92
33	5*11	80	5*11	101	6.3*12	104	8*12	133
47	5*11	101	6.3*12	133	6.3*12	146	10*13	170
68	6.3*12	159	6.3*12	196	8*12	155	10*17	240
100	6.3*12	168	8*12	229	10*13	251	10*20	315
220	8*12	294	10*17	363	10*20	436	13*25	581
330	10*13	419	10*17	510	13*20	666	13*25	700
470	10*17	547	10*20	707	13*20	786	16*25	918
680	10*20	682	13*20	774	13*25	1160	16*30	1089
1000	13*20	1023	13*25	1089	16*25	1448	18*35	1573
2200	16*25	1497	16*35	1600	18*35	1781		
3300	16*30	1808	18*35	1997				
4700	18*35	2335						
6800	18*40	2400						

* 13mm may be replaced by 12.5mm upon customer's request.

标准额定值(Standard Rating) :

D x L(mm); Ripple Current: mA/rms at 120Hz,105℃

Voltage(Code)	160V		200V		220V		250V	
Cap.(μF)	DxL	R.C	DxL	R.C	DxL	R.C	DxL	R.C
0.47							6.3*12	8
1							6.3*12	17
2.2							6.3*12	27
3.3			6.3*12	30	6.3*12	30	6.3*12	35
4.7	6.3*12	41	6.3*12	40	8*12	40	8*12	45
10	8*12	60	10*13	72	10*13	70	10*13	75
22	10*17	110	10*17	113	10*20	125	10*20	130
33	10*20	145	10*20	165	13*20	165	13*20	184
47	10*20	185	10*20	194	13*20	220	13*20	238
68	13*20	224	13*25	250	13*25	245	16*20	246
82	13*20	266	10*30	320	13*30	280	16*25	300
100	13*20	330	16*25	386	16*25	335	16*25	390
150	13*20	363	16*25	525	16*30	365	16*30	440
180	13*20	420	13*35	560	16*35	500	16*35	469
220	16*30	480	16*30	643	16*40	615	16*35	485
270	16*30	526	18*30	740				
330	18*35	830	18*30	808				
390	18*35	850	18*35	904				
470	18*40	880	18*40	1016				
560	18*45	925	18*45	1112				

Voltage(Code)	350V		400V		420V		450V	
Cap.(μF)	DxL	R.C	DxL	R.C	DxL	R.C	DxL	R.C
0.47	6.3*12	8						
1	6.3*12	18	6.3*12	19	6.3*12	15	6.3*12	
2.2	6.3*12	25	8*12	30	8*12	29	8*12	24
3.3	8*12	40	8*12	35	8*12	35	8*12	29
4.7	8*12	43	8*12	40	10*17	52	10*17	42
10	10*17	73	10*17	78	10*20	85	13*25	84
18	13*20	100	13*20	105	13*25	124	10*30	108
22	13*20	150	13*20	148	13*25	140	13*25	131
27	13*25	160	10*30	192	13*25	170	13*30	164
33	13*25	176	13*25	193	16*25	200	16*25	237
39	13*25	200	16*25	251	13*30	248	13*35	256
47	13*25	215	13*30	266	13*35	288	16*30	305
56	16*30	233	13*35	336	13*40	344	16*30	352
68	16*30	268	16*30	396	16*30	408	18*30	366
82	18*30	338	18*30	443	16*35	456	18*30	440
100	18*35	372	18*30	489	18*35	488	18*35	490
120			18*35	570	18*40	528	18*40	592
150			18*40	616	18*45	568	18*45	640
180			18*50	704				

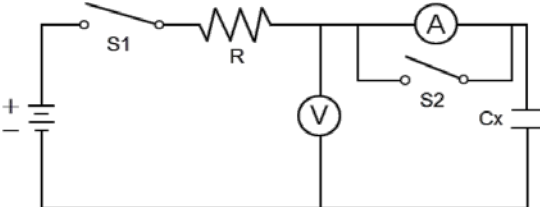
* 13mm may be replaced by 12.5mm upon customer's request.

1. Scope 适用范围:

This specification applies to aluminum electrolytic capacitor , used in electronic equipment .

本说明适用于用电子仪器设备进行检测之铝电解电容器.

2. Electrical characteristics 电气特性:

NO.	ITEM 项目	TEST METHOD 测试方法	SPECIFICATION 规格		
2.1	Rated voltage 额定电压				
2.2	Capacitance 静电容量	1.Measuring frequency :120 ±12Hz 测试频率	Voltage range 、Capacitance range, see specification of this series. 电压、容量范围请看该系列之规格说明.		
2.3	Dissipation factor 散逸因素 (损失角)	2.Measuring voltage : ≤0.5Vrms + 0.5~2.0VDC 测试电压			
		3.Measurement circuit : 			
2.4	Leakage current 泄漏电流	DC Leakage current shall be measured after 1~2 minutes application of the DC rated working voltage through the 1000 Ω resistor at 20℃ . 在20 ℃通过1000Ω的电阻施加直流工作电压1~2分钟后测定直流泄漏电流.  R :1000 ±100Ω S1 :Swich 开关 A :DC Current meter S2 :Swich for protect of 直流电流计 Current meter V :DC Voltage meter 直流电流计的保护开关 直流电压计 CX :Testing Capacitor 测试电容	Dissipation factor 、Leakage current, see specification of this series. 损失角、泄漏电流请看该系列之规格说明.		
2.5	Temperature characteristics 高低温特性	STEP 步骤	TEMPERATURE 温度(℃)	STORAGE TIME 放置时间(min)	Step 2.
		1	20 ±2	30	Impedance ratio (Zr/Z _{20℃}) less than specified value. 阻抗比 :低于规定值 .
		2	下限温度(0/-3)	120	
		3	20 ±2	15	Step 4
		4	上限温度 ±2	120	
		Step 1. Measure the capacitance and impedance. 测试静电容量及阻抗(Z _{20℃}) . (Z ,120Hz ±10%)	Capacitance change : within ± 20% of the initial measured value. 容量变化 : 初测值的±20%以内.		
		Step 2. Measure the impedance at thermal balance after 2 hours. 达到热平衡2小时后测试阻抗(Zr) . (Z ,120Hz ±10%)		Leakage current : Under 125 °C for 10 times specification values,105 °C for 8 times the specification values, 85 °C for 5 times the specification values 泄漏电漏: 125℃為規格值10倍以下, 105℃為為規格值8倍以下, 85℃為規格值5倍以下	
Step 4. Measure the capacitance and leakage current at thermal balance after 2 hours. 达到热平衡2小时后测试静电容量及漏电流 .					

No.	ITEM 项目	TEST METHOD 测试方法	SPECIFICATION 规格
2.6	Surge test 浪涌(突波)试验	Rated surge voltage shall be applied (switch on) for 30±5 seconds and then shall be applied (switch off) with discharge for 5±0.5 min at room temperature .This cycle shall be repeated for 1000 cycles .Duration of one cycle is 6±0.5 minutes . 在常温下施加(合上开关)额定涌浪电压30±5秒,然后停止施加(断开开关)涌浪电压并且放电5±0.5分钟.这个循环要重复1000次.以 6±0.5分钟为一个循环周期.	Capacitance change : Within ± 15% of the initial measured value. 容量变化: 初测值的 ±15%以内. Dissipation factor: Within initial specified value. 损失角:规定值以内. Leakage current: Within initial specified value. 泄漏电流:规定值以内.
2.7	MAXIMUM APPLICABLE RIPPLE CURRENT 高温纹波负荷试验	The maximum A.C.current having frequency of 120Hz (or 100KHz) The capacitors shall applide with rated DC voltage and maximum ripple current at Max. temperature ±2℃ for X load life time.(The sum of the DC voltage plus the AC ripple voltage must not exceed the rated DC voltage) 在120Hz(or 100KHz)频率条件下,在额定最高温度壽命X小時下.電容器施加額定DC電壓與最大紋波電流.(DC電壓疊加AC紋波電壓,不得超過DC額定電壓) (X : see specification of this series. 見該系列規格說明 .)	Standard of judgement is according to requirement of this series. 判定标准依该系列要求 .

3.Mechanical characteristics 机械特性:

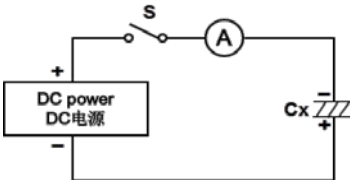
No.	ITEM 项目	TEST METHOD 测试方法	SPECIFICATION 规格																				
3.1	Lead strength 端子强度	(A).Tensile strength 拉伸强度: 1).wire lead terminal 导针型 : <table><tr><td>d(mm)</td><td>0.35<d≦0.5</td><td>0.5<d≦0.8</td><td>0.8<d≦1.25</td></tr><tr><td>Load (Kgf)</td><td>0.51</td><td>1.0</td><td>2.0</td></tr></table> 2).snap-in terminal 尖脚型 : <table><tr><td>d (mm)</td><td>snap-in terminal 尖脚端子</td></tr><tr><td>load (Kg)</td><td>2.0</td></tr></table> The capacitor terminals to bear the load 10 seconds of the above-mentioned provisions, there can be no electrical or mechanical properties on the damage. 电容器各端子要承受上表规定的荷重10秒,不能有电气或机械特性上的损伤. (B).Bending strength 弯曲强度: wire lead terminal 导针型 : <table><tr><td>d(mm)</td><td>0.35<d≦0.5</td><td>0.5<d≦0.8</td><td>0.8<d≦1.25</td></tr><tr><td>Load (Kgf)</td><td>0.25</td><td>0.51</td><td>1.0</td></tr></table> Will test capacitance vertical fixed, applying the above-mentioned provisions to each terminal axial load, slowly turn capacitor by the vertical position to horizontal position, then rotate 180 ° in the opposite direction, back to the initial vertical position (about 5 s) the whole process.The capacitor performance cannot change and loss of the terminal can't have. 将测试电容垂直固定,给每一端子轴向施加上表规定荷重后,慢慢将电容器由竖直位置转至水平位置,然后反方向旋转180°后,再回到初始的垂直位置(整个过程约5S). 电容器性能不能有变化及端子不能有损伤.	d(mm)	0.35<d≦0.5	0.5<d≦0.8	0.8<d≦1.25	Load (Kgf)	0.51	1.0	2.0	d (mm)	snap-in terminal 尖脚端子	load (Kg)	2.0	d(mm)	0.35<d≦0.5	0.5<d≦0.8	0.8<d≦1.25	Load (Kgf)	0.25	0.51	1.0	When the capacitance is measured, there shall be no intermittent contacts,or open or short circuiting. 测试静电容量时,不能有接触不良,开路或短路。 There shall be no such mechanical damage as terminal damage etc. 不能有如端子受损之类的机械特性上的损伤。
d(mm)	0.35<d≦0.5	0.5<d≦0.8	0.8<d≦1.25																				
Load (Kgf)	0.51	1.0	2.0																				
d (mm)	snap-in terminal 尖脚端子																						
load (Kg)	2.0																						
d(mm)	0.35<d≦0.5	0.5<d≦0.8	0.8<d≦1.25																				
Load (Kgf)	0.25	0.51	1.0																				

No.	ITEM 项目	TEST METHOD 测试方法	SPECIFICATION 规格
3.2	Vibration resistance 振动	Vibration frequency to evenly, cover a wide range of 10 Hz ~ 55 Hz, amplitude is 1.5 mm, in 1 minute to complete the cycle. The capacitor by terminal firmly fixed. The capacitors should be in three mutually perpendicular direction vibration, vibration for 2 hours in each direction. 振动频率要均匀,范围为10Hz~55 Hz,振幅为1.5mm,在1分钟内完成该循环. 电容器由端子牢固地固定. 电容器应在三个互相垂直的方向振动,每个方向振动 2 小时 .	Capacitance :no unsteady. 静电容量:稳定. Appearance: no abnormal. 外观:无异常 . Capacitance change : Within $\pm 5\%$ of the initial measured value. 容量变化:初测值的 $\pm 5\%$以内. Dissipation factor: Within initial specified value. 损失角:规定值以内. Leakage current: Within initial specified value. 泄漏电流:规定值以内.
3.3	Solderability 可焊性	The leads are dipped in the solder bath of Sn at 235 ± 5 °C for 2 ± 0.5 seconds . The dipping depth should be set at 1.5 ~ 2.0 mm. 端子浸没在245 ± 5 °C 的锡焊液中2 ± 0.5秒,浸没深度设定为 1.5~2.0mm .	The solder alloy shall cover the 90% or more of the dipped lead's area . 锡液要覆盖导针浸入表面积的 90% 以上 .

4.Reliability 信赖性:

No.	ITEM 项目	TEST METHOD 测试方法	SPECIFICATION 规格
4.1	Soldering heat resistance 耐焊接热	The leads immerse in the solder bath of Sn at 260 ± 5 °C for 10 ± 1 seconds until a distance of 1.5 ~ 2mm from the case . 导针在 260 ± 5 °C 的锡 焊液中浸没至离本体 1.5 ~ 2 mm 的地方 10 ± 1 秒锺 .	No damage or leakage of electrolyte. 无损伤或电解液漏出. Capacitance change : Within $\pm 5\%$ of the initial measured value. 容量变化:初测值的 $\pm 5\%$以内. Dissipation factor: Within initial specified value. 损失角:规定值以内. Leakage current: Within initial specified value. 泄漏电流:规定值以内.
4.2	Damp heat (steady state) 稳态湿热	Subject the capacitors to 40 ± 2 °C and 90% to 95% relative humidity for 500+24/0 hours 电容器在40 ± 2 °C及相对湿度90%到95%的条件下贮存 500(-0~+24)小时.	Capacitance change : Within $\pm 10\%$ of the initial measured value. 容量变化:初测值的 $\pm 10\%$以内. Dissipation factor: less than 120% of the initial specified 损失角:低于规定值的120% . Leakage current: Within initial specified value. 泄漏电流:规定值以内.

NO.	ITEM 项目	TEST METHOD 测试方法	SPECIFICATION 规格
4.3	Load life 高温负荷	After X hours continuous application of DC rated working voltage at Max. temperature $\pm 5^{\circ}\text{C}$. Measurements shall be performed after 8 hours exposed at room temperature . 在最高使用温度$\pm 5^{\circ}\text{C}$环境下,连续施加额定的DC工作电压 X 小时. 室温暴露8小时以上进行测试. (X:see specification of this series.见该系列规格说明.)	Standard of judgement is according to requirement of this series. 判定标准依该系列要求 .
4.4	Shelf life 高温储存	After storage for Y hours at temperature $\pm 5^{\circ}\text{C}$ (See specification of this series) without voltage application, the measurements shall meet the following limits . Measurements shall be performed after exposed for 8 hrs at room temperature after application of DC rated voltage to the capacitor for Z minutes . 在目录书规定的温度环境中,不施加电压放置 Y 小时后按以下条件测试. 室温暴露8 小时以上,施加DC额定电压 Z 分钟后进行。 (Y,Z :See specification of this series.见该系列规格说明)	
4.5	Storage at low temperature 低温储存	The capacitor shall be stored at $-40\pm 3^{\circ}\text{C}$ temperature for 16 hours ,during which time no voltage shall be applied.And then the capacitor shall be subjected to standard atmospheric conditions for 16 hours or more ,after which measurements shall be made . 电容器在$-40\pm 3^{\circ}\text{C}$ 环境当中贮存16小时,其间不施加电压;之后,在标准大气压中露置16小时以上,然后进行测试.	Capacitance change : Within $\pm 10\%$ of the initial measured value. 容量变化:初测值$\pm 10\%$以内. Dissipation factor: Within initial specified value. 损失角:规定值以内. Leakage current: Within initial specified value. 泄漏电流:规定值以内. Appearance :no abnormal. 外观: 无异常.

NO.	ITEM 项目	TEST METHOD 测试方法	SPECIFICATION 规格
4.6	Pressure relief 防爆	Reverse the following rules are applied electric current of DC working voltage 反向施加以下电流的DC工作电压. Where case size 外壳尺寸 (D 直径) : $D \leq 22.4\text{mm}$: 1 A max. $D > 22.4\text{mm}$: 10 A max. Note 注意: 1.This requirement applies to capacitors with a diameter of 8 mm or more . 此要求适用于直径8mm或以上之电容器. 2. When the pressure relief divice does not open even 30 minutes after commencement of test ,the test may be ended . 测试30分钟后防爆装置仍不动作的,试验终止. 3.The pressure relief divice shall open in such a way as to avoid any dange of fire or explosion of capacitor elements (terminal and metal foil etc) or cover . 防爆装置必须动作,以防止发生火灾、爆炸或金属片飞溅.	DC test circuit 直流测试电路  S :Switch 开关 A :DC current meter DC电流表 Cx :Testing capacitor 测试电容

5. 外观Marking：

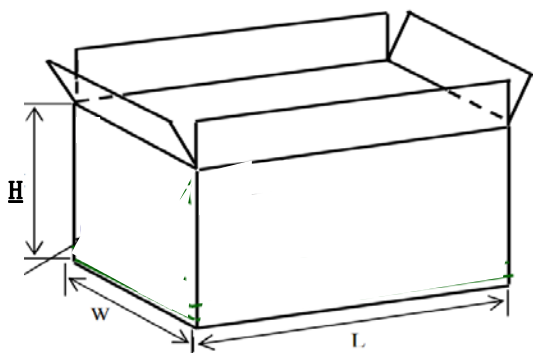
产品外套管印刷内容如下

序号	项目内容说明	图示
(1)	商标	(1) → ChengX® (2) → 10uF50V (4) → (5) → KM 105℃ (6) → 2050 ← (3) 10uF50V
(2)	标称静电容量	
(3)	额定工作电压	
(4)	负极线标示	
(5)	系列和温度	
(6)	年份+周期(套管材质)	

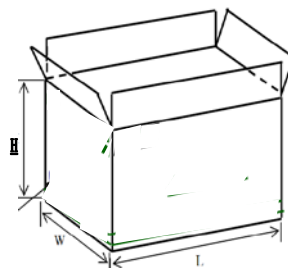
6.包装数量标准:

产品外形尺寸 D×L (mm)	小袋数量 (只/袋)	散装/切脚 (袋/内箱)	散装/切脚内箱 (KPCS)	散装/切脚大箱 (KPCS) (KPCS)	备 注
φ3*5	2000+3	25	50	100	
φ4*5-7、φ5*5	1000+2	50	50	100	
φ6.3*5、φ5*7	1000+2	30	30	60	
φ6.3*7、φ5*11/12	1000+2	25	25	50	
φ6.3*11、φ8*5	1000+1	20	20	40	
φ6.3*12	1000+1	16	16	32	
φ8*7	1000+1	18	18	36	
φ8*9	500+1	30	15	30	
φ8*11/12	500+1	25/25	12.5/12.5	25/25	
φ8*14	500+1	20	10	20	
φ8*16-20	500+1	16	8	16	
φ10*13	500+1	15	7.5	15	
φ10*15	400	15	6	12	
φ10*17-20	200	25	5	10	
φ10*25	200	20	4	8	
φ10*30	100	30	3	6	
φ13*17-21	200	15	3	6	
φ13*25	200	12	2.4	4.8	
φ13*30	100	20	2	4	
φ16*18-22	100	20	2	4	
φ16*25	100	15	1.5	3	
φ16*30	100	12	1.2	2.4	
φ16*35	50	20	1	2	
φ18*27	100	10	1	2	
φ18*30	50	15	0.75	1.5	
φ18*36	50	15	0.75	1.5	
φ18*40	50	10	0.5	1.5	
φ18*50	25	15	0.375	0.75	
φ22*30	50	10	0.5	1	
φ22*35	50	10	0.5	1	
φ22*40	50	10	0.5	1	
φ25*25	50	10	0.5	1	
φ25*30	50	10	0.5	1	

备注：包装外箱L480mm*W320mm*H320mm
内箱L300mm*W230mm*H300mm



外箱



内箱