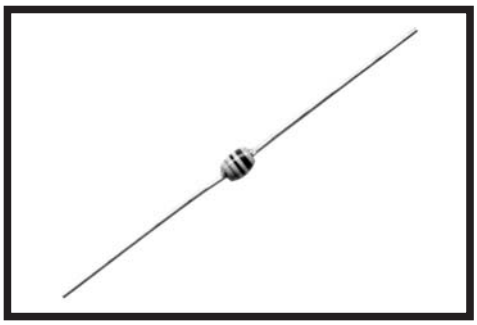
風華高科

■軸向色環電容器
AXIAL COLOR CODE CAPACITOR



• 訂貨方式 HOW TO ORDER

ACC	—	03	F	104	M	500	P	26
		↓	↓	↓	↓	↓	↓	↓
		A	B	C	D	E	F	G	H

A：

產品類別 Product Type	
代號 Code	類別 Type
ACC	軸向色環電容器 Axial Color Code Capacitors

B：

本体尺寸代码 Nominal Body Size Code	
03	Φ1.9×3.0
空白	Φ2.2×3.2

D：

標稱容量 Nominal Capacitance
前兩位數字爲有效數字，后一位數字表示零的個數。 First two digits are significant, and the third is numberof zeros. 例如： For example： 104=100000pF 5R6=5.6PF

E：

容量偏差 Tolerance	
B	±0.10pF
C	±0.25pF
D	±0.5pF
F	±1.0%
G	±2.0%
J	±5.0%
K	±10%
M	±20%
N	±30%
S	+50%—-20%
Z	+80%—-20%
P	+100%—0%
B.C.D 適用 C＜10PF B.C.D for C＜10PF	

C：

温度特性 Temperature Characteristics		
CG	0±30PPm/℃	(-55~+125℃)
CH	0±60ppm/℃	(-25~+85℃)
RH	-220±60PPm/℃	(-25~+85℃)
UJ	-750±120ppm/℃	(-25~+85℃)
SL	+140~-1000PPm/℃	(-25~+85℃)
B	±10%	(-25~+85℃)
	±15%	(-55~+125℃)
Y(F)	+30 -80 %	(-25~+85℃)

F：

額定電壓 Rated Voltage
前兩位爲有效數字，后一位表示零的個數。 First two digits are significant, and the third is numberof zeros. 例如： For example： 250=25V 500=50V 101=100V

G：

包裝方式 Packaging Style		
編帶 Tape &Reel	P	盒帶包裝 Ammo
	T	卷帶包裝 Reel
散包裝 Bulk	F	

H：

引脚形式 Lead Configuration	
26	編帶內距：26mm Tape width:
52	編帶內距：52mm Tape width:
2	彎脚脚距：5.08mm 5.08mm pitch formed lead
3	彎脚脚距：7.5mm 7.5mm pitch formed lead
4	彎脚脚距：10mm 10mm pitch formed lead

軸向色環電容器
AXIAL COLOR CODE CAPACITOR

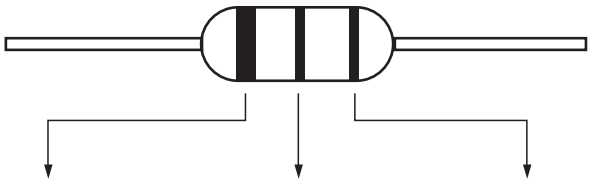
•工作電壓、容量關系表
Voltage VS Capacitance

温度特性 Temp. Char.	額定工作電壓 Rated Voltage		標稱容量範圍 Available Capacitance Range		容量偏差 Capacitance Tolerance
尺寸規格	常規型	03型	常規型	03型	
CG	25	25	0R5~272	0R5~102	C:±0.25pF D:±0.5pF J:±5% K:±10% M:±20%
	50	50	0R5~222	0R5~102	
	100	—	0R5~102	—	
CH	50	50	1R5~102	1R5~102	
RH	50	50	1R0~180	1R0~180	
UJ	50	50	2R2~300	2R2~300	
SL	50	50	1R0~680	1R0~680	
B	25	25	101~224	101~104	K±10% M±20% N±30%
	50	50	101~104	101~104	
	100	—	101~333	—	
F(Y)	25	25	103~125	103~224	M:±20% N:±30% Z:-20%~+80%
	50	50	103~105	103~224	
	100	—	103~104	—	

*其他規格可根據客户需求生産
Others can be manufactured by customers' requirement.

•

色環標記代號
COLOR CODE MARKING CODE



第一色環 1st color zone　　第二色環 2nd color zone　　第三色環 3rd color zone

	標稱容量 Nominal capacitance(pF)		
	第一色環 1_{st} color zone	第二色環 2_{nd} color zone	第三色環 3_{rd} color zone
	第一數字 1_{st} digit	第二數字 2_{nd} digit	第三數字 3_{rd} digit
黑 Black	0	0	X 10^0(1)
棕 Brown	1	1	X 10^1(10)
紅 Red	2	2	X 10^2(100)
橙 Orange	3	3	X 10^3(1000)
黃 Yellow	4	4	X 10^4(10000)
綠 Green	5	5	X 10^5(100000)
藍 Blue	6	6	
紫 Purple	7	7	
灰 Gray	8	8	
白 White	9	9	
金 Gold	–	–	X 10^{-1}(0.1)
銀 Silver	–	–	X 10^{-2}(0.01)

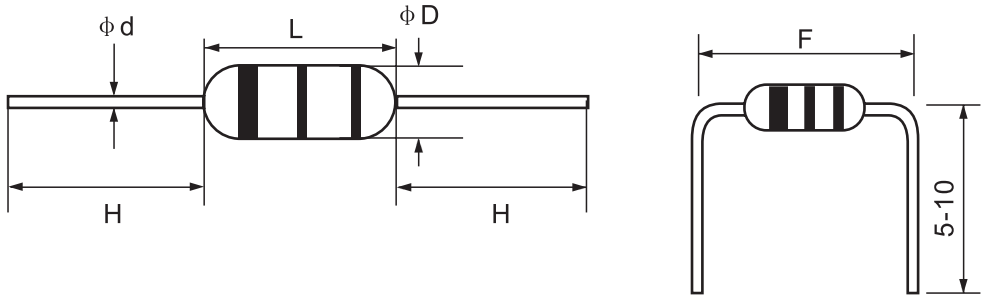
*

*例如：標稱容量爲150的電容器其色碼爲: 棕(1)+綠(5)+黑(0);
E.g. If nominal capacitance is 150, the color of brown+green+black should be marked.
第一條色碼綫應比其它兩條稍粗。
The width of the first line should be wider than others.

•外形尺寸
EXTERNAL DIMENSIONS

單品尺寸
DIMENSIONS OF BULK PRODUCTS

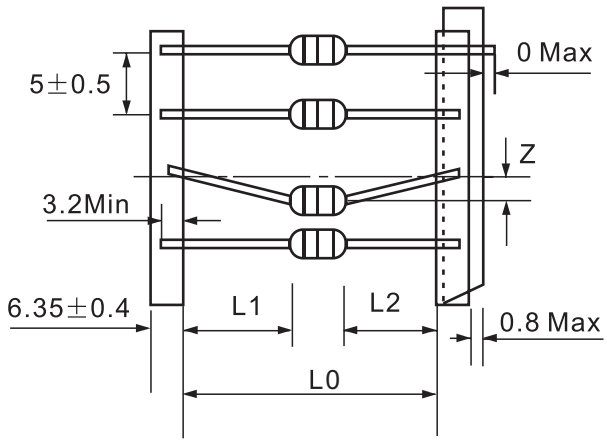
類型 Type	尺寸(mm) Dimensions (mm)						
	L	ϕD	F(±0.6)			ϕd	H
03型	3.0 Max	1.9 Max	5.08	7.5	10	0.42±0.05	20 Min
常规型	3.2 Max	2.2 Max	5.08	7.5	10	0.42±0.05	20 Min



編帶尺寸
TAPING DIMENSIONS

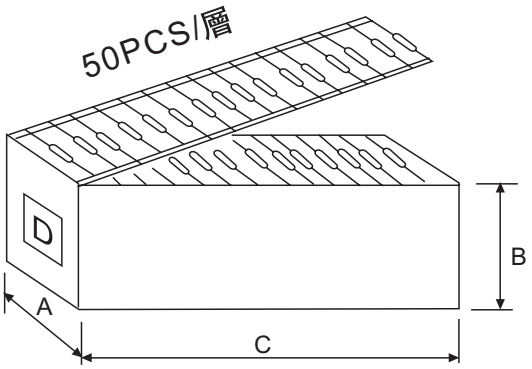
單位(UNIT):mm

編帶方式 Tape Style	L0	Z	$\lvert L_1-L_2 \rvert$
編帶內距：26 Tape width:	26±1.5	0.8Max	1.0Max
編帶內距：52 Tape width:	52 +2.0 -1.0	1.2Max	1.0Max



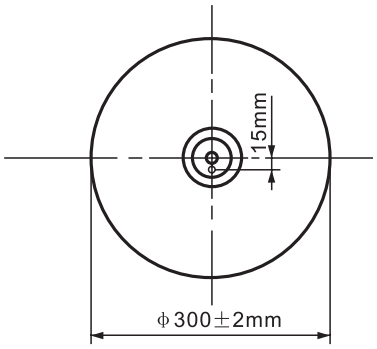
• 包裝方式
PACKAGING STYLE

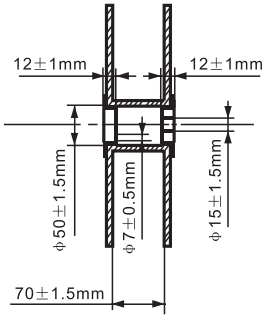
盒帶包裝
AMMO PACKAGING



編帶類型 Tape Type	尺寸 Dimension (±5mm)			
	A	B	C	D
52	76	72	263	貼標簽 Label
26	55	72	263	

卷帶包裝
TAPE AND REEL





散包裝
BULK PACKAGING

• 包裝數量
PACKAGING QUANTITY

卷帶包裝 Tape & Reel	盒帶包裝 Ammo	散包裝 Bulk
5000Pcs	5000Pcs	1000Pcs

＊ 可根據用户需求包裝
Packaging according to customer' s requirement

■ 特点
Feature

*体积小，容量大，适合自动安装的卷(编)包装.
Miniature size,large capacitance,tape and reel packaging suitable for auto-placement

*环氧树脂封装,从而具有优良的防潮性能、机械强度及耐热性。
Epoxy resin coating creates excellent performance in humidity resistance,mechanical strength and heat resistance

*工业生产标准尺寸及多种脚型产品。
Standard size,various lead configuration

■ 通用型引线MLCC可靠性及测试方法
Reliability and Test Methods for General Leaded MLCC

<table>
<tr><th>项目
Item</th><th colspan="3">技术要求
Technical Specification</th><th colspan="4">测试试方法和备注
Test Method and Remarks</th></tr>
<tr><td rowspan="5">容量
Capacitance
(C)</td><td rowspan="3">Ⅰ类
Class Ⅰ</td><td colspan="2" rowspan="3">应符合指定的误差级别
within the specified tolerance.</td><td>标称容量
Capacitance</td><td>测试频率
Measuring Frequency</td><td colspan="2">测试电压
Measuring Voltage</td></tr>
<tr><td>≤1000pF</td><td>1MHZ±10%</td><td colspan="2" rowspan="2">1.0±0.2V</td></tr>
<tr><td>＞1000PF</td><td>1KHZ±10%</td></tr>
<tr><td rowspan="3">Ⅱ类
Class Ⅱ</td><td colspan="2" rowspan="3">应符合指定的误差级别
within the specified tolerance.</td><td colspan="4">对于Ⅱ类电容器，测试前应先预处理
The capacitor should be pretreated before measured.
(only for class Ⅱ).</td></tr>
<tr><td rowspan="2">测试频率
Measuring Frequency</td><td colspan="2">测试电压
MeasuringVoltage</td></tr>
<tr><td>B</td><td>F(Y)</td></tr>
<tr><td>1KHZ±10%</td><td>1.0±0.2V</td><td>0.3±0.2V</td></tr>
<tr><td rowspan="4">损耗角正切
Dissipation Factor
(DF)</td><td rowspan="2">Ⅰ类
Class Ⅰ</td><td colspan="2" rowspan="2">C_R≥50pF
DF≤0.15%
C_R≥50pF
DF≤1.5［(150/C_R)＋7］X10^{-4}</td><td>标称容量
Capacitance</td><td>测试频率
Measuring Frequency</td><td colspan="2">测试电压
Measuring Voltage</td></tr>
<tr><td>≤1000pF</td><td>1MHZ±10%</td><td colspan="2" rowspan="2">1.0±0.2V</td></tr>
<tr><td rowspan="2">Ⅱ类
Class Ⅱ</td><td>B</td><td>DF≤3.5%</td><td>＞1000pF</td><td>1KHZ±10%</td></tr>
<tr><td>Y(F)</td><td>≤7.5%（C_R≤0.1uF）
≤10.0%
（1uF＞C_R＞ 0.1uF）
≤15%（C_R≥1uF）</td><td colspan="4">测试频率:1KHZ±10%
Measuring Frequency:1kHz±10%
测试电压:0.3±0.2V
Measuring Voltage:0.3±0.2V</td></tr>
<tr><td rowspan="2">绝缘电阻
Insulation Resistance</td><td>Ⅰ类
Class Ⅰ</td><td colspan="2">C≤10nF
IR≥10000MΩ
C＞10nF
R.C≥100 ΩF</td><td colspan="4" rowspan="2">测试电压:额定电压
Measuring Voltage:Rated Voltage
测试时间:60±5秒
Duration:60±5s</td></tr>
<tr><td>Ⅱ类
Class Ⅱ</td><td colspan="2">C≤25nF
IR≥4000 MΩ
C＞25 nF
R.C≥100 ΩF</td></tr>
</table>

<table>
<tr><th>项目
Item</th><th>技术要求
Technical Specification</th><th>测试方法和备注
Test Method and Remarks</th></tr>
<tr><td rowspan="2">耐电压
Withstanding
Voltage</td><td rowspan="2">不应有介质被击穿或损伤

No breakdown or damage.</td><td>端子间Between terminals:
测试电压 持续时间:5±1秒
Measuring Voltage: Duration:5 ±1s
Ⅰ类:300%额定电压
Class Ⅰ:300% Rated voltage
Ⅱ类:250%额定电压
Class Ⅱ:250% Rated voltage
充/放电电流不应超过50mA
The charge/discharge current is less than 50mA.</td></tr>
<tr><td>端子与外装间Between terminals and body:
施加电压:2.5UR 持续时间:1~5s
Voltage:2.5times rated voltage Duration:1~5s
金属制小球法Small metallic ball method
将电容器本体插入盛满直径为1mm的金属小球的容器中,但保留距端头处2mm的本体不插入.试验电压施加在短路回路端子和金属小球之间.
Smsll metallic balls with 1mm diameters shall be put in a vessel and the be submerged except 2mm from the top of its component body and the terminals.The test voltage shall be applied between the short-circuited terminals and the metallic balls.</td></tr>
<tr><td>可焊性
Solder
ability</td><td>上锡率应大于95%
Lead wire shall be at least95% covered with a new solder coating.</td><td>将电容器引线浸入含有25%松香的酒精溶液中,然后浸入温度为: 230 ± 5℃的金属焊锡中 2 ± 0.5秒, 注意: 电容器本体底面距离 锡面约1.5~2mm,
The lead wire of capacitor is dipping into a25% rosin solution of ethanol and then into molten solder of 230±5℃for 2 ± 0.5s. In both cases the depth of dipping is up to about 1.5 ~2mm from the terminal body.</td></tr>
<tr><td>耐焊接热
Resistance
to
Soldering
Heat</td><td><table><tr><td>项目
Item</td><td>△C/C≤</td></tr><tr><td>Class Ⅰ</td><td>±2.5%or
±0.25pF
取较大值
Whichever
is larger.</td></tr><tr><td>B</td><td>±10%</td></tr><tr><td>Y(F)</td><td>±20%</td></tr></table>外观无可见损伤
Appearance: No significant abnormality</td><td>锡温：265 ±3℃ 时间： 6(+1,0) s
Solder temperature: 265 ±3℃ Duration: 6(+1,0) s
浸入条件:将电容器插入厚度为1.6mm,孔径为1.0 mm的PC板.
Immersed conditions : Inserted into the PC board(with=1.6mm,hole=1.0mm diameter)
对于I类介质，试验后，应在标准条件下恢复24 ±2小时后才测试。
Recovery: For class I, 4 to 24 hours of recovery under the standard condition after test.
对于Ⅱ类介质,在试验前应先进行如下预处理:150$^{+0}_{-10}$ ℃,1小时,接着在标准条件下恢复48±4小时.
Preconditioning(ClassⅡ):1 hour of preconditioning at 150$^{+0}_{-10}$ ℃,followed by 48±4 hours of recovery under the standard condition.
恢复:对于Ⅱ类介质试验后,应在标准条件下恢复48±4小时后才测试.
Recovery (ClassⅡ): 48±4 hours of recovery under the standard condition after test.</td></tr>
</table>

<table>
<tr><th>项目
Item</th><th colspan="2">技术要求
Technical Specification</th><th>测试方法和备注
Test Method and Remarks</th></tr>
<tr><td rowspan="2">端头强度
Terminal
Strength</td><td>抗拉强度
Tensile
Strength</td><td rowspan="2">无引线断裂、松动等可见不良
No abnormality such as cut lead,or looseness.</td><td>对于轴向产品,沿端子引出方向徐徐施加一2Kg的力,持续5s
For axial leaded type,apply a 2.0kg tensile force progressivelyin the direction to draw terminal,this operation is done over aperiod of 5 sec.
对于径向产品,固定电容器本体,沿引线方向步施加力直至10N,然后保持10±1秒.
For radial leaded type, fix the capacitor body,apply the forcegradually to each lead in the radial direction of the capacitoruntil reaching 10N and then applied the force for 10±1 seconds.</td></tr>
<tr><td>弯折强度
Bending
Strength</td><td>对电容器引出端施加一0.25Kg的力, 使引线弯曲90度,持续5s,然后回到原始位置,接着反方向操作一次为一个循环.共重复2次.
Each lead wire shall be subjected to a force of 0.25Kg and then be bent a angle of 90 degree then returned to initial position. This operation is done over a period of 5 seconds. Then second bend in the opposite dire ction shall be made, repeat 2 times.</td></tr>
<tr><td rowspan="4">温度循环
Temperature
cycle</td><td>外观无可见损伤
No significant abnormality in appearance</td><td rowspan="4">无引线断裂、松动等可见不良
No abnormality such as cut lead,or looseness.</td><td rowspan="4">对于Ⅱ类介质,在试验前应先进行如下预处理: 150 $^{+0}_{-10}$℃,1 小时,接着在标准条件下恢复48±4小时.
Preconditioning:As for Class Ⅱ dielectric,1hour ofpreconditioning at 150 $^{+0}_{-10}$℃ , followed by 48±4 hours of recovery under the standard condition.
恢复:对于Ⅱ类介质试验后,应在标准条件下恢复48±4小时后才测试.对于Ⅰ类介质应恢复1小时.
Recovery: As for Class Ⅱ, 48±4 hours of recovery under the standard condition after test. And for Class Ⅰ,1 hour of recovery under the standard condition after test.
循环次数:5
Number of cycle:
以下为一次循环的条件
Conditions for 1 cycle:</td></tr>
<tr><td>容量变化Capacitance change:
Ⅰ类介质
Class Ⅰ:
≤5% or ±0.5pF
Ⅱ类介质
Class Ⅱ:
B:≤±12.5%
F(Y):≤±30%</td></tr>
<tr><td>损耗角正切Dissipation Factor:
Ⅰ类介质：小于原始值的2倍。
Class Ⅰ: Not more than twice of initial value.
Ⅱ类介质
Class Ⅱ:
B:≤±5.0%
Y（F）：
≤12.5%（C_R≤0.1uF）
≤15.0%(1uF>C_R>0.1uF)
≤17.5%(C_R≥1uF)</td></tr>
<tr><td>绝缘电阻≥1000MΩor 50MΩ・μF
Insulation Resistance:
取较小值
Whichever is smaller.</td></tr>
</table>

阶段 Step	温度（℃） Temperature（℃）			时间（分钟） Time (min.)
	CG/N	X7R	Y5V	
1	常温 Room Temp.			2~3
2	−55		-25^{0}_{-3}	30
3	常 温 Room Temp.			2~3
4	+125		$+85^{+3}_{0}$	30
5	常温 Room Temp.			2~3

<table>
<tr><th>项目
Itim</th><th>技术要求
Tichnical Specification</th><th>测试方法和备注
Test Method and Remarks</th></tr>
<tr><td rowspan="4">高温负荷
High Temperature Loading Test</td><td>外观无可见损伤
No significant abnormality in appearance.</td><td>温度：
Temperature：</td></tr>
<tr><td>容量变化Capacitance Change:
Ⅰ类介质Class Ⅰ:
≤±3% or ±0.3pF
取较大值Whichever is larger.
Ⅱ类介质ClassⅡ:
B:≤±12.5%
F(Y):≤ ±30%</td><td>CG(N)/ | X7R | Y5V
125 $^{+3}_{0}$ ℃ | 85 $^{+3}_{0}$ ℃
电压：1.5倍额定电压
Applied voltage：1.5 times rated voltage
充放电流不超过50mA
The charge/discharge current is less than 50mA.
时间：1000 $^{+48}_{0}$ 小时
Duration：1000 $^{+48}_{0}$ hours
恢复时间：
Recovery Time:
Ⅰ类介质:24±2小时,
Class Ⅰ Dielectric:24±2hours
Ⅱ类介质:48±4小时
ClassⅡDielectric:48±4hours</td></tr>
<tr><td>损耗角正切 Dissipation Factor:
Ⅰ类介质：小于原始值的两倍
Class Ⅰ:Not more than twice of initial value.
Ⅱ类介质ClassⅡ:
B: ≤5.0%
F(Y):
≤12.5%（C_R≤0.1uF）
≤15.0%(1uF>C_R>0.1uF)
≤17.5%(C_R≥1uF)</td></tr>
<tr><td>绝缘电阻Insulation Resistance:
≥ 500MΩ or 25 Ω.F
取较小值 Whichever is smaller.</td></tr>
<tr><td>耐溶剂性
Solvent Resistance</td><td>外观无可见损伤或异常,标记清晰.
No defects or abnormalities in appearance, and legible marking.</td><td>溶剂温度:23±5℃
Solvent temperature:
将样品浸在溶剂中1分钟,用脱脂棉在样品有标志部位刷10次,重复3次.
Put the sample intosolvent 1 Min,and then take it out and brush sample's notation area10 times with pledgt, repeat 3times.</td></tr>
</table>

*以上所示标准条件解释如下:

温度:5~35℃, 湿度:45~85%, 气压:86~106kPa

*Note on standard condition: “standard condition” referred to herein should be defined as follows:5 to35℃ of temperature,45 to 75% of relative humidity,and 86 to 106kPa of atmospheric pressure.

若测试结果有争议时,仲裁试验用标准大气条件为:

温度:25±1℃ ,相对湿度:48%~52%,气压:86~106kPa

*When there are questions concerning measurement results: In order to provide correlation data,the test should be conducted under a condition of 25 degrees plus/minus1 centigrade of temperature, 48% through52% of relative humidity and 86 through 106kPa of atmospheric pressuure.