

產品編碼 P/N	PCAQ7060~1513 series	測試設備 TEST INSTRUMENT	Keysight:E4991B Chroma:16502 3302
產品系列 Series	贴片共模电感	測試頻率 TEST FREQUENCY	100MHZ / 0.3V

客戶名稱  
Customer

客戶編碼  
Customer P/N

產品系列  
Series

贴片共模电感  
SMD Common Mode Choke

產品編碼  
Supply P/N

PCAQ7060~1513 series

發版號  
Version

A3.0

承認日期  
Endorsement Date

2022-9-23

備註  
Note

譜羅德電子科技（深圳）有限公司 PuLuoDe Electronic Technology (Shenzhen) Co. LTD	
製作 APPROVED	Ben
審查 CHECKED	Yuki
確認 PREPARED	Peter

客戶承認

Customer Approval

客戶簽章



# 修訂記錄

## REVISION RECORD



<b>產品編碼</b> P/N	<b>PCAQ7060~1513 series</b>	<b>測試設備</b> TEST INSTRUMENT	<b>Keysight:E4991B</b> <b>Chroma:16502 3302</b>
<b>產品系列</b> Series	<b>贴片共模电感</b>	<b>測試頻率</b> TEST FREQUENCY	<b>100MHZ / 0.3V</b>

Version	REVISION ITEM	BEFORE REVISION	AFTER REVISION	DATE
A3.0	First Version			2022-9-23

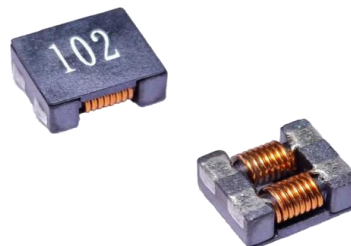
 <p><b>谱罗德</b> <b>PROD</b></p>	<p><b>谱罗德电子科技（深圳）有限公司</b></p> <p>PuLuoDe Electronic Technology (Shenzhen) Co., LTD</p> <p>深圳市寶安區石岩三聯工業區B棟311</p>	<p>更多规格请访问谱罗德官方网站 下载或者扫描二维码通过微信小程序 获取</p> <p><a href="https://www.prodtech.cn/">https://www.prodtech.cn/</a></p>	
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## 产品特点

## Features

- ❑ 阻抗范围广，适用于不同频率的信号噪音抑制  
30Ω~4000Ω are optional for different noise level and signal frequency
- ❑ 产品薄，尺寸小，高频共模噪声抑制效果好  
Low profile, Small size, Prevention of common mode noise at high frequency
- ❑ SMD结构便于SMT生产自动化贴片  
SMD structure is convenient for SMT production automation patch
- ❑ 超小超薄的结构减少PCB的占用面积  
Takes up less PCB real estate and save more power



## 編碼解釋

## Code interpretation

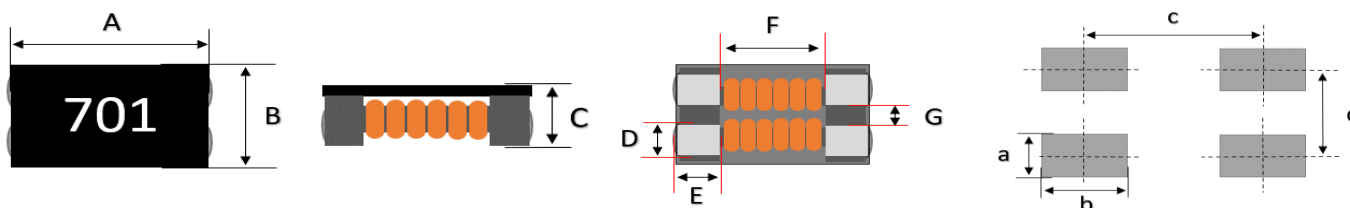
**PCAQ**  
類別碼  
Category code

**7060MW**  
尺寸系列  
Dimension

**701**  
阻抗值  
Impedance

封裝尺寸  
Dimension (mm)

推薦的焊盤尺寸  
Recommaned Land Pattern



系列 Series	封裝尺寸 Dimension							焊盤尺寸 Land Pattern			
	A	B	C	D	E	F	G	a	b	c	d
7060	7.0±0.5	6.0±0.5	3.8MAX	1.5±0.3	1.7±0.3	3.5Typ	1.5 Typ	2	2.2	5.3	3.2
9070	9.0±0.5	7.0±0.5	4.8MAX	1.5±0.3	1.7±0.3	5.7Typ	2.0 Typ	2	2.2	7.3	3.7
1211	12.0±0.5	10.8±0.5	6.4Max	2.7±0.5	2.5±0.5	7.0Typ	2.5 Typ	3.5	3.2	9.5	5.2
1513	15.0±0.5	13.0±0.5	6.5MAX	2.7±0.5	3.0±0.5	9.0Typ	3.3 Typ	3.5	3.7	12	6

- ◎ 規格參數基於環境溫度25℃取得  
All test Data is referenced to 25℃ ambient
- ◎ 電感工作環境溫度：-40℃ ~ 125℃  
Operating temperature range -40 °C to +125 °C
- ◎ 加載額定電流會使電感溫度上升大約 40℃ (電感初始溫度+上升溫度=電感最終溫度)  
Typical Rated Current would cause an approximately ΔT of 40 °C
- ◎ 務必考慮最終的產品設計，元器件佈局，線路板走線，以及使用環境過程中，電感最終溫度不得超過125℃  
The operating temperature of inductance do not exceed 125℃
- ◎ 使用電感時，請查閱第13頁注意事項  
The announcements is on page 14



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## 7060 Series

產品編碼 P/N	@ 25 °C Ambient Temperture					
	阻抗 Impedance		DCR	絕緣性 (IR)	額定電流 (Rated Current)	額定電壓 (Rated Voltage)
	Ω		mΩ	MΩ		
	Min	Typ	Max	Min	mA	V
PCAQ7060MW-400	40	70	5	10	15000	80
PCAQ7060MW-101	100	140	10	10	9000	80
PCAQ7060MW-301	225	300	10	10	5000	80
PCAQ7060MW-501	275	350	10	10	5000	80
PCAQ7060MW-601	500	700	15	10	4000	80
PCAQ7060MW-701	500	700	15	10	4000	80
PCAQ7060MW-102	800	1020	17	10	3000	80
PCAQ7060MW-132	910	1300	21	10	2500	80
PCAQ7060MW-152P	1300	1500	21	10	2500	80
PCAQ7060MW-272	2000	2700	63	10	1000	80
PCAQ7060MW-302	2500	3000	75	10	900	80

## 9070 Series

產品編碼 P/N	@ 25 °C Ambient Temperture					
	阻抗 Impedance		DCR	絕緣性 (IR)	額定電流 (Rated Current)	額定電壓 (Rated Voltage)
	Ω		mΩ	MΩ		
	Min	Typ	Max	Min	mA	V
PCAQ9070MW-301	225	300	6	10	6000	80
PCAQ9070MW-501	450	600	8	10	5500	80
PCAQ9070MW-701	500	700	10	10	5000	80
PCAQ9070MW-102	750	1000	13	10	4000	80
PCAQ9070MW-152	1300	1500	20	10	3500	80
PCAQ9070MW-222	1700	2200	60	10	2500	80
PCAQ9070MW-272	2000	2700	86	10	2000	80
PCAQ9070MW-302	2500	3000	80	10	2000	80



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## 1211 Series

產品編碼 P/N	@ 25 °C Ambient Temperture					
	阻抗 Impedance		DCR	絕緣性 (IR)	額定電流 (Rated Current)	額定電壓 (Rated Voltage)
	Ω		mΩ	MΩ		
	Min	Typ	Max	Min	mA	V
PCAQ1211MW-800	80	230	2	10	10000	125
PCAQ1211MW-501	250	500	2	10	10000	125
PCAQ1211MW-701	500	700	6	10	8000	125
PCAQ1211MW-801	600	800	8	10	8000	125
PCAQ1211MW-102	750	1000	14	10	6000	125
PCAQ1211MW-152	1000	1500	16	10	5000	125
PCAQ1211MW-202	1400	2200	24	10	4000	125
PCAQ1211MW-222	2200	2500	35	10	1800	125
PCAQ1211MW-272	2300	2700	50	10	1500	125
PCAQ1211MW-302	2500	3000	90	10	1100	125
PCAQ1211MW-402	3300	4000	100	10	2000	125

## 1513 Series

產品編碼 P/N	@ 25 °C Ambient Temperture					
	阻抗 Impedance		DCR	絕緣性 (IR)	額定電流 (Rated Current)	額定電壓 (Rated Voltage)
	Ω		mΩ	MΩ		
	Min	Typ	Max	Min	mA	V
PCAQ1513MW-301	200	300	6	10	13000	125
PCAQ1513MW-501	400	500	8	10	11000	125
PCAQ1513MW-551	450	550	5.5	10	10000	125
PCAQ1513MW-701	500	700	7	10	10000	125
PCAQ1513MW-102	800	1000	12	10	9000	125
PCAQ1513MW-152	1300	1500	35	10	8000	125
PCAQ1513MW-222	1800	2200	50	10	6000	125
PCAQ1513MW-302	2500	3000	75	10	4000	125

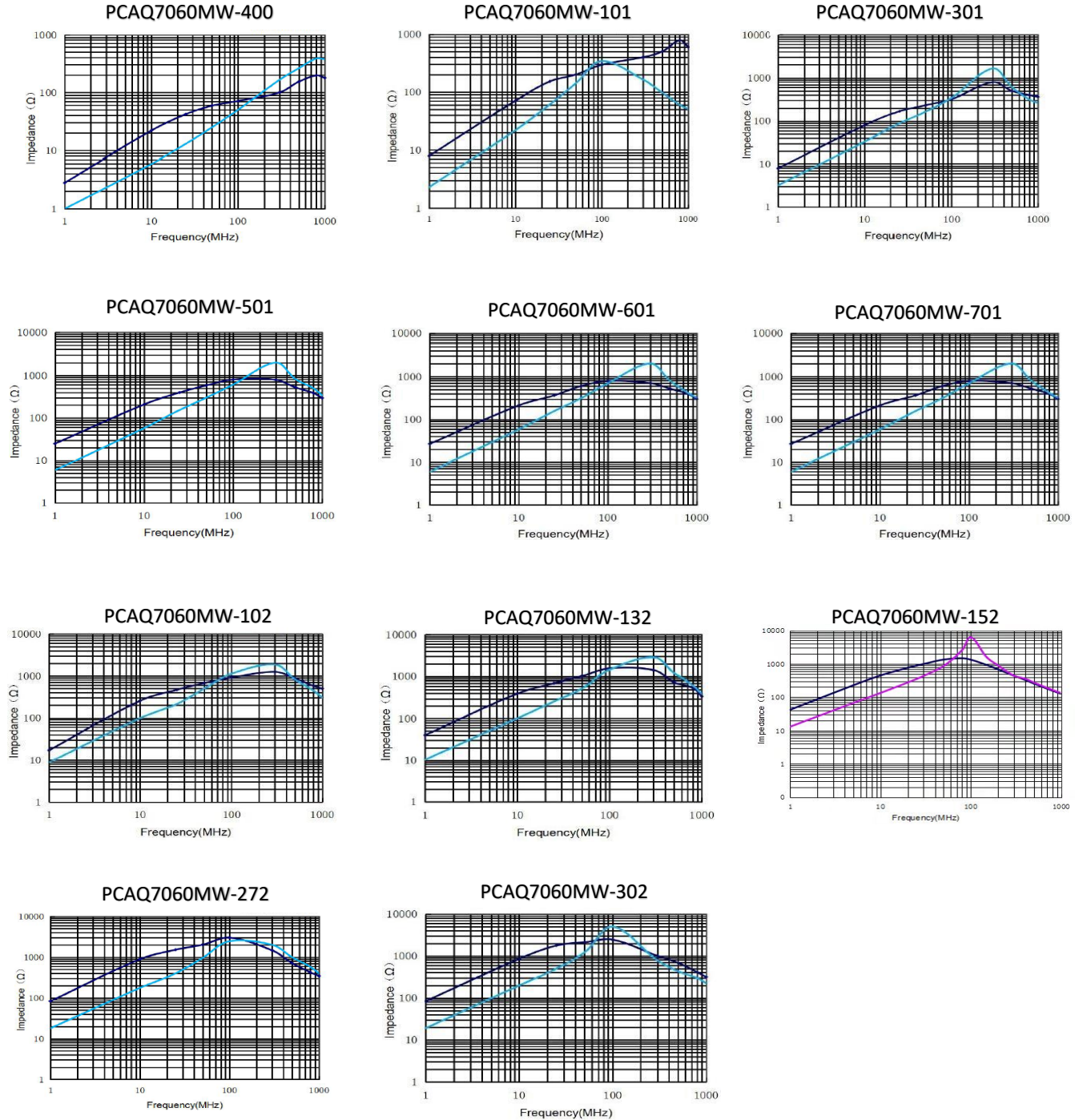


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特性曲線

Performance Curves

差模特性 (Differential Mode)      共模特性 (Common Mode)

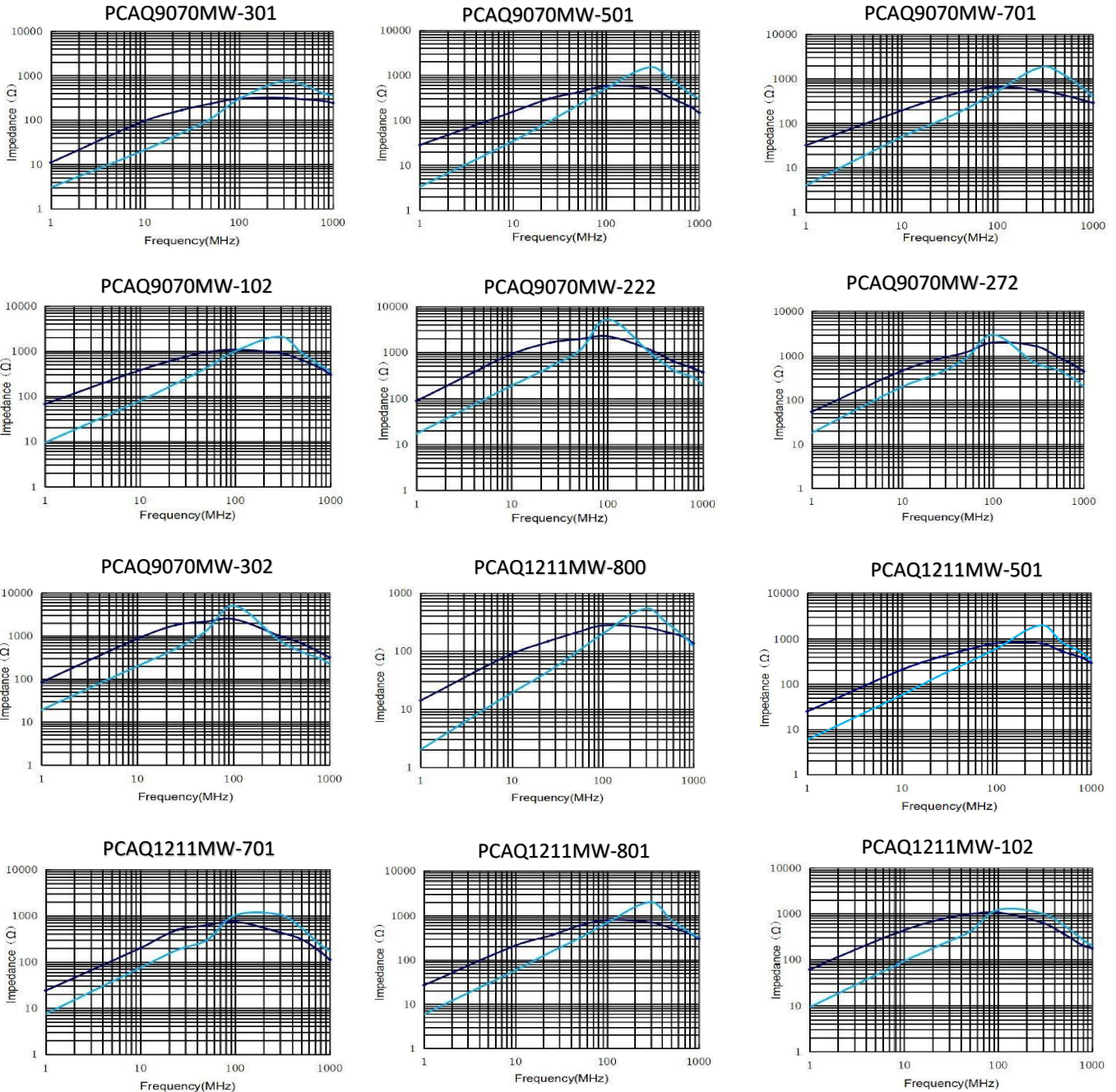


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特性曲線

Performance Curves

差模特性 (Differential Mode) 共模特性 (Common Mode)

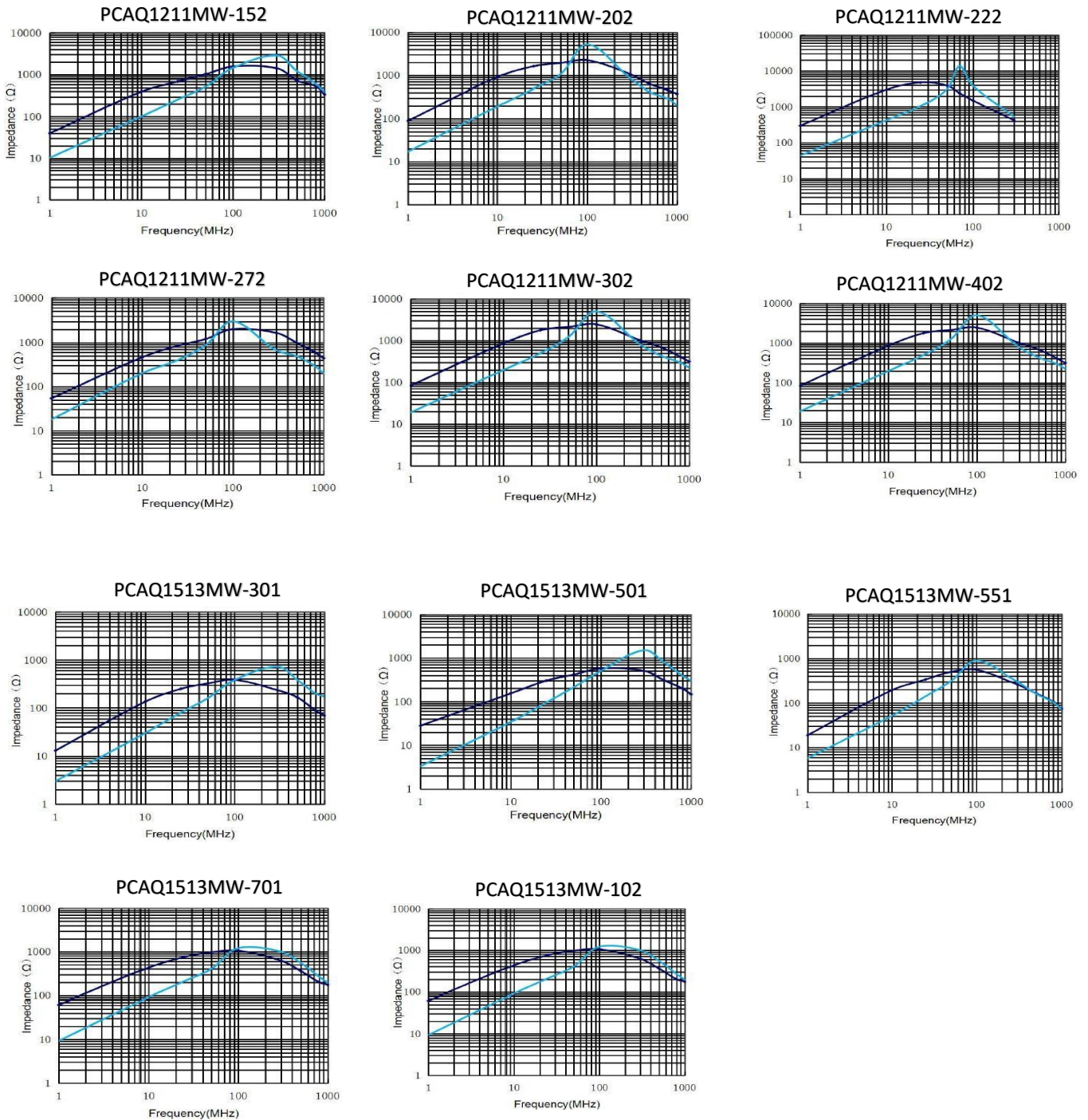


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特性曲線

Performance Curves

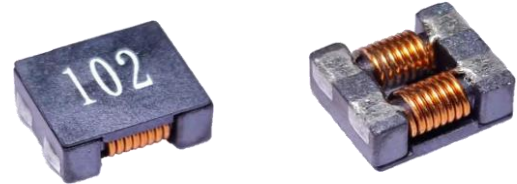
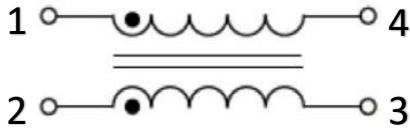
差模特性 (Differential Mode)      共模特性 (Common Mode)





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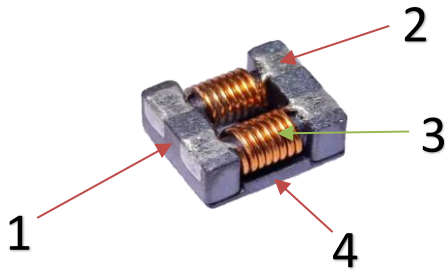
電路結構  
Connections



◎ 電感內置兩組線圈  
Inductor Contents two (2) Set(s) of Coil

◎ 電感頂部使用白色噴碼印字標識  
Mark color: white

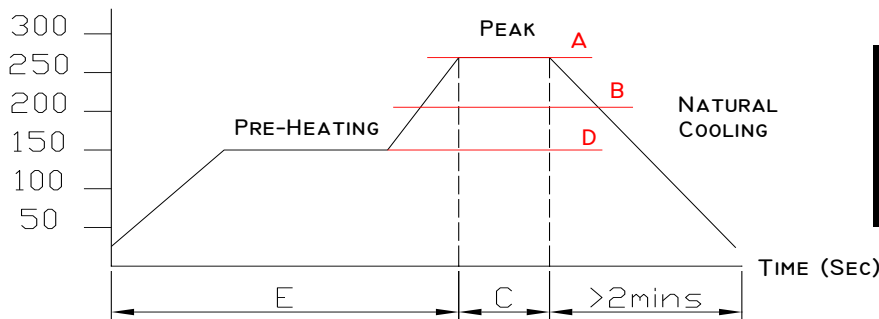
內部構造  
Internal Structure



- 1: 磁芯 / Core
- 2: 電極 / Electrode
- 3: 線圈 / Coil
- 4: 頂蓋 / Base

焊接溫度（推荐）  
Recommended Soldering Temperature Graph

TEMPERATURE (°C)



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### 机械可靠性测试

#### Mechanical Reliability

實驗名稱 ITEM	試驗要求 Specification & Requirement	試驗方法 Method Used
可焊性實驗 Solderability	The surface of terminal/pin tested shall be covered with new solder by 95%	Solder heat proof: Preheating: 180 ±10°C 90 seconds Soldering: 255 ±5°C for 3 ±1 sec
機械衝擊 Shock	Inductance change within ± 5% Without mechanical damage	Drop down with 981m/s <sup>2</sup> (100G) shock Attitude upon a rubber block method shock testing machinem, 3 tests.
振動實驗 Vibration	Inductance change within ± 5% Without mechanical damage	Vibration frequency: 10Hz to 55Hz to 10Hz 60 seconds cycle Vibration time: 2 hours

### 老化测试

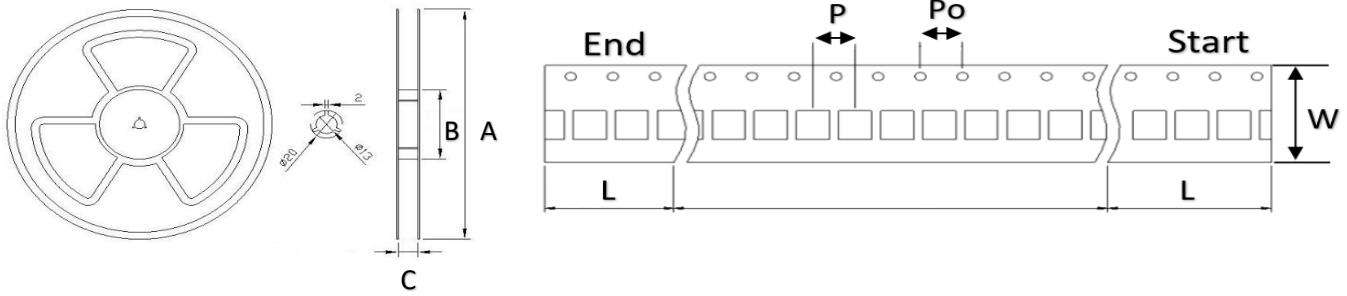
#### Aging Reliability

實驗名稱 ITEM	試驗要求 Specification & Requirement	試驗方法 Method Used
冷熱衝擊 Thermal Shock	Inductance change within ± 5% Without mechanical damage	-40°C, (30 mins) -> room temp. (5 mins) -> 125°C, (30 mins) -> room temp. (5 mins) 100 cycles
耐熱性 Heat Resistance	Inductance change within ± 5% Without mechanical damage	Apply IDC current @ 85°C ambient Duration: 500 hrs
耐濕性 Humidity Resistance	Inductance change within ± 5% Without mechanical damage	Apply IDC current @ 60°C ambient Humidity: 90~95% Duration: 500 hrs
低溫存儲實驗 Low Temp. Storing	Inductance change within ± 5% Without mechanical damage	Storing Temp. -40 ±2 °C for total 500 +4/-0 hours
高溫存儲實驗 High Temp. Storing	Inductance change within ± 5% Without mechanical damage	Storing Temp. 125 ±2 °C for total 500 +4/-0 hours

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載帶卷盤尺寸 : (mm)

Packing Dimension



系列 Series	A	B	C	W	P	Po	L
7060	330	100	16.5	16	12	4.0	前後預留大約30空格
9070	330	100	16.5	16	12	4.0	前後預留大約30空格
1211	330	100	24.5	24	16	4.0	前後預留大約30空格
1513	330	100	24.5	24	20	4.0	前後預留大約30空格



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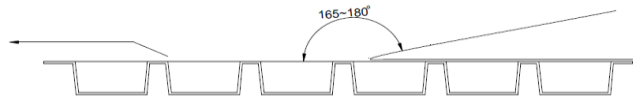
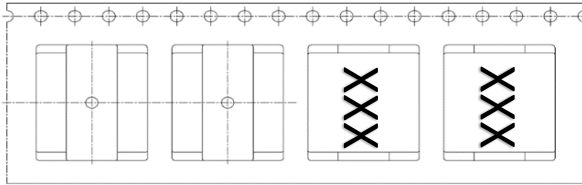
載帶內產品排列方式:  
Inductance Packing Method

載帶剝離力:  
Typical Pulling Force

首字對孔

The First mark is on the side of the gear hole

20~120 gf

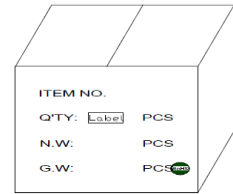
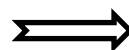
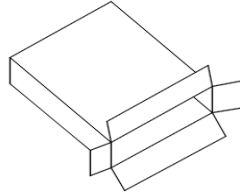
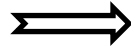
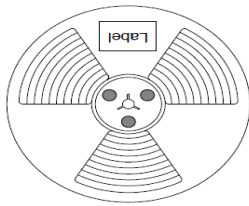


裝箱數量:  
Package Quantity

卷盘  
MPQ

内盒  
Middle box

外箱  
Outer box



系列 Series	卷盘 MPQ	内盒 Middle box	外箱 Outer box
7060	1500pcs	4500pcs	13500pcs
9070	700pcs	1400pcs	4800pcs
1211	500pcs	1000pcs	4000pcs
1513	400pcs	800pcs	3200pcs





## 注意事項

使用本產品時，請注意以下事項

- ◎ 產品保存期限為12個月，保存條件：溫度5~40℃，濕度10~75%RH以內，超過保存期限可能會使產品端子電極發生氧化。
- ◎ 請勿在極端環境下使用和保存（高鹽，強酸，強鹼，強輻射等）。
- ◎ 產品焊接前，請進行預熱；預熱溫度與焊接溫度之間溫差建議控制在150℃以內。
- ◎ 產品焊接後需重新拆卸焊接修正時，請遵循規格書規定的條件範圍；過高的加熱溫度以及反復的拆卸可能會導致產品失效。
- ◎ 產品請勿接觸清洗劑，酒精等液體，這會侵蝕產品本體，從而導致產品失效。
- ◎ 產品焊接到線路板後，請注意不可因線路板整體變形或局部變形而施加給電感剩餘應力，這可能會導致電感發生破裂，脫落，以致失效。
- ◎ 產品通電後溫度會隨電流的增大而上升，設計時請務必考慮留有餘量。
- ◎ 過高的靜電會對產品產生永久性損害，請注意靜電防護。
- ◎ 產品通電過程請勿觸摸產品任何部位，防止觸電。
- ◎ 本產品作為磁性產品，設計時請務必考慮周邊元器件與本產品可能產生的相互影響。
- ◎ 本產品適用於一般電子設備，如：AV設備，通信設備，家電產品，娛樂設備，電腦設備，個人設備，辦公設備，計測設備，工業機器人等。且該一般電子設備需在常規的操作和使用方法環境下使用。對於需要高度安全性和可靠性的，或者因本產品失效造成設備故障，誤操作，運轉不良等危及到人的生命身體及財產安全，以及對社會產生較大不良影響的特殊用途，設計使用前務必同本公司溝通，設計使用者如未取得我司書面同意狀況下使用造成任何後果，我司不予承擔。特殊用途包含但不限定如下清單：
  - 1 軍用設備
  - 2 運輸設備（汽車，軌道交通產品，船舶等）
  - 3 航空，航太設備
  - 4 發電控制設備
  - 5 核動力相關設備
  - 6 爆炸引燃控制設備
  - 7 交通控制設備
  - 8 關係到國防安全的設備
  - 9 其他被認定為特殊用途的設備





## ANNOUNCEMENTS

Please read this before using the product.

- © The product storage life is 12 months, Storage Temperature: TEMP.5~40°C; RH10%~75%. Please use the product within the warranty period
- © Do not use or store in locations where there are conditions such as gas corrosion (salt, acid, alkali, radiation etc.) .
- © Before soldering, be sure to preheat components:The preheating temperature should be set so that The temperature difference between the solder temperature and chip temperature does not exceed 150° C.
- © Soldering corrections after mounting should be within the range of the conditions determined in the specifications. If overheated, a short circuit, performance deterioration, or lifespan shortening may occur. Repeated disassembly may invalidate the inductance
- © The cleaning agent can not be used for these products. This may corrode the inductor
- © When embedding a printed circuit board where a chip is mounted to a set, be sure that residual stress is not given to the chip due to the overall distortion of the printed circuit board and partial distortion such as at screw tightening portions.
- © Self heating (Rated Current or Irms) occurs when the power is turned ON, so the tolerance should be sufficient for the set thermal design.
- © Too high static electricity will cause permanent damage to the product, please pay attention to electrostatic protection.
- © As a magnetic product, the design must consider the possible interaction between peripheral components and the product.
- © The products listed on this catalog are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.  
The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property.  
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