

產品編碼 P/N	PCAQ4520~1513 series	測試設備 TEST INSTRUMENT	Zentech-3305 / Zentech502BC
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

:

PCAQ4520~1513 series

發版號  
Version

:

A3.0

承認日期  
Endorsement Date

:

2021-5-5

備註  
Note

:

譜羅德電子科技（深圳）有限公司 PROD 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





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## 編碼解釋

Code interpretation

PCAQ

類別碼

Category code

4520M (FA)

尺寸系列

Dimension

701

阻抗值

Impedance

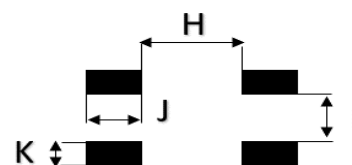
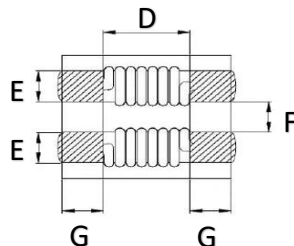
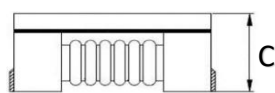
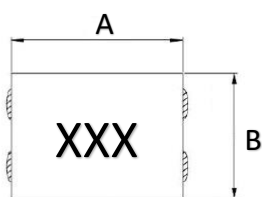
## 封裝尺寸

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	H	I	J	K	
4520	4.75±0.5	4.5±0.5	2.0MAX	2.5Typ	1.2±0.2	0.85Typ	1.2±0.2	2.0Typ	0.8Typ	1.3Typ	1.3Typ	
7060	7.0±0.5	6.0±0.5	3.8MAX	3.5Typ	1.5±0.2	1.5±0.2	1.7±0.2	3.0Typ	1.5Typ	3.0Typ	1.9Typ	
9070	9.0±0.5	7.0±0.5	4.8MAX	5.7Typ	1.5±0.2	2.0±0.2	1.7±0.2	5.0Typ	1.8Typ	3.0Typ	2.2Typ	
1211	12.0±0.5	10.8±0.5	6.4Max	7.0Typ	2.7±0.2	2.5±0.2	2.5±0.2	6.2Typ	2.4Typ	4.0Typ	3.0Typ	
1513	15.0±0.5	13.0±0.4	6.5MAX	9.0Typ	2.7Typ	3.3Typ	3.0Typ	8.5Typ	3.4Typ	4.0Typ	3.0Typ	

## 最小包裝

MPQ

系列 Series	最小包裝 MPQ
4520	1000pcs / 卷盤
7060	1500pcs / 卷盤
9070	700pcs / 卷盤
1211	500pcs / 卷盤
1513	400pcs / 卷盤



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## 4520 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)
	$\Omega$		m $\Omega$	M $\Omega$		
	Min	Typ	Max	Min	mA	V
PCAQ4520M(FA)-900	30	90	35	10	3200	50
PCAQ4520M(FA)-151	80	150	38	10	3100	50
PCAQ4520M(FA)-231	180	230	39	10	3000	50
PCAQ4520M(FA)-301	180	300	39	10	3000	50
PCAQ4520M(FA)-401	200	400	50	10	2500	50
PCAQ4520M(FA)-501	300	500	55	10	2400	50
PCAQ4520M(FA)-701	500	700	59	10	2200	50
PCAQ4520M(FA)-901	700	900	68	10	2100	50
PCAQ4520M(FA)-102	800	1000	68	10	2100	50
PCAQ4520M(FA)-122	1000	1200	74	10	2000	50
PCAQ4520M(FA)-142	1200	1400	81	10	1900	50

## 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)
	$\Omega$		m $\Omega$	M $\Omega$		
	Min	Typ	Max	Min	mA	V
PCAQ7060M(FA)-400	40	70	5	10	15000	50
PCAQ7060M(FA)-101	100	140	10	10	9000	50
PCAQ7060M(FA)-301	225	300	10	10	5000	50
PCAQ7060M(FA)-501	275	350	10	10	5000	50
PCAQ7060M(FA)-601	500	700	15	10	4000	50
PCAQ7060M(FA)-701	500	700	15	10	4000	50
PCAQ7060M(FA)-102	800	1020	17	10	3000	50
PCAQ7060M(FA)-132	910	1300	21	10	2500	50
PCAQ7060M(FA)-272	2000	2700	63	10	1000	50
PCAQ7060M(FA)-302	2500	3000	75	10	900	50



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## 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)
	$\Omega$		m $\Omega$	M $\Omega$		
	Min	Typ	Max	Min	mA	V
PCAQ9070M(FA)-301	225	300	6	10	6000	50
PCAQ9070M(FA)-501	450	600	8	10	5500	50
PCAQ9070M(FA)-701	500	700	10	10	5000	50
PCAQ9070M(FA)-102	750	1000	13	10	4000	50
PCAQ9070M(FA)-222	1700	2200	60	10	2500	50
PCAQ9070M(FA)-272	2000	2700	86	10	2000	50
PCAQ9070M(FA)-302	2100	3000	70	10	3000	50

## 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)
	$\Omega$		m $\Omega$	M $\Omega$		
	Min	Typ	Max	Min	mA	V
PCAQ1211M(FA)-800	80	230	2	10	10000	125
PCAQ1211M(FA)-501	250	500	2	10	10000	125
PCAQ1211M(FA)-701	500	700	6	10	8000	125
PCAQ1211M(FA)-801	600	800	8	10	8000	125
PCAQ1211M(FA)-102	750	1000	14	10	6000	125
PCAQ1211M(FA)-152	1000	1500	16	10	5000	125
PCAQ1211M(FA)-202	1400	2200	24	10	4000	125
PCAQ1211M(FA)-222	2200	2500	35	10	1800	125
PCAQ1211M(FA)-272	2300	2700	50	10	1500	125
PCAQ1211M(FA)-302	2500	3000	90	10	1100	125
PCAQ1211M(FA)-402	3300	4000	100	10	2000	125



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## 1513 Series

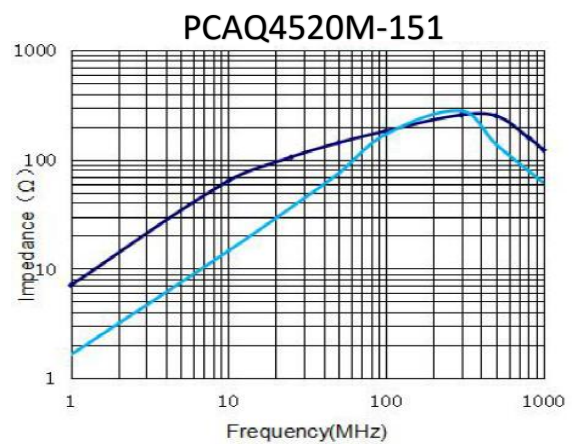
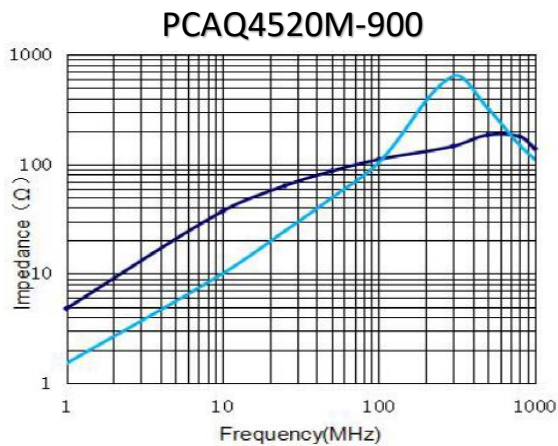
產品編碼 P/N	@ 25 °C Ambient Temperature					
	阻抗 Impedance		DCR	絕緣性 (IR)	額定電流 (Rated Current)	額定電壓 (Rated Voltage)
	Ω		mΩ	MΩ		
	Min	Typ	Max	Min	mA	V
PCAQ1513M(FA)-301	200	300	6	10	13000	125
PCAQ1513M(FA)-501	400	500	8	10	11000	125
PCAQ1513M(FA)-551	450	550	5.5	10	10000	125
PCAQ1513M(FA)-701	500	700	7	10	10000	125
PCAQ1513M(FA)-102	800	1000	12	10	9000	125

- ◎ 規格參數基於環境溫度25°C取得  
All test Data is referenced to 25°C ambient
- ◎ 電感工作環境溫度：-25°C ~ 125°C  
Operating temperature range -25 °C to +125 °C
- ◎ 加載額定電流會使電感溫度上升大約 40°C (電感初始溫度+上升溫度=電感最終溫度)  
Typical Rated Current would cause an approximately  $\Delta T$  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°C  
The operating temperature of inductance do not exceed 125°C
- ◎ 使用電感時，請查閱第15頁注意事項  
The announcements is on page 16

## 特性曲線

## Performance Curves

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



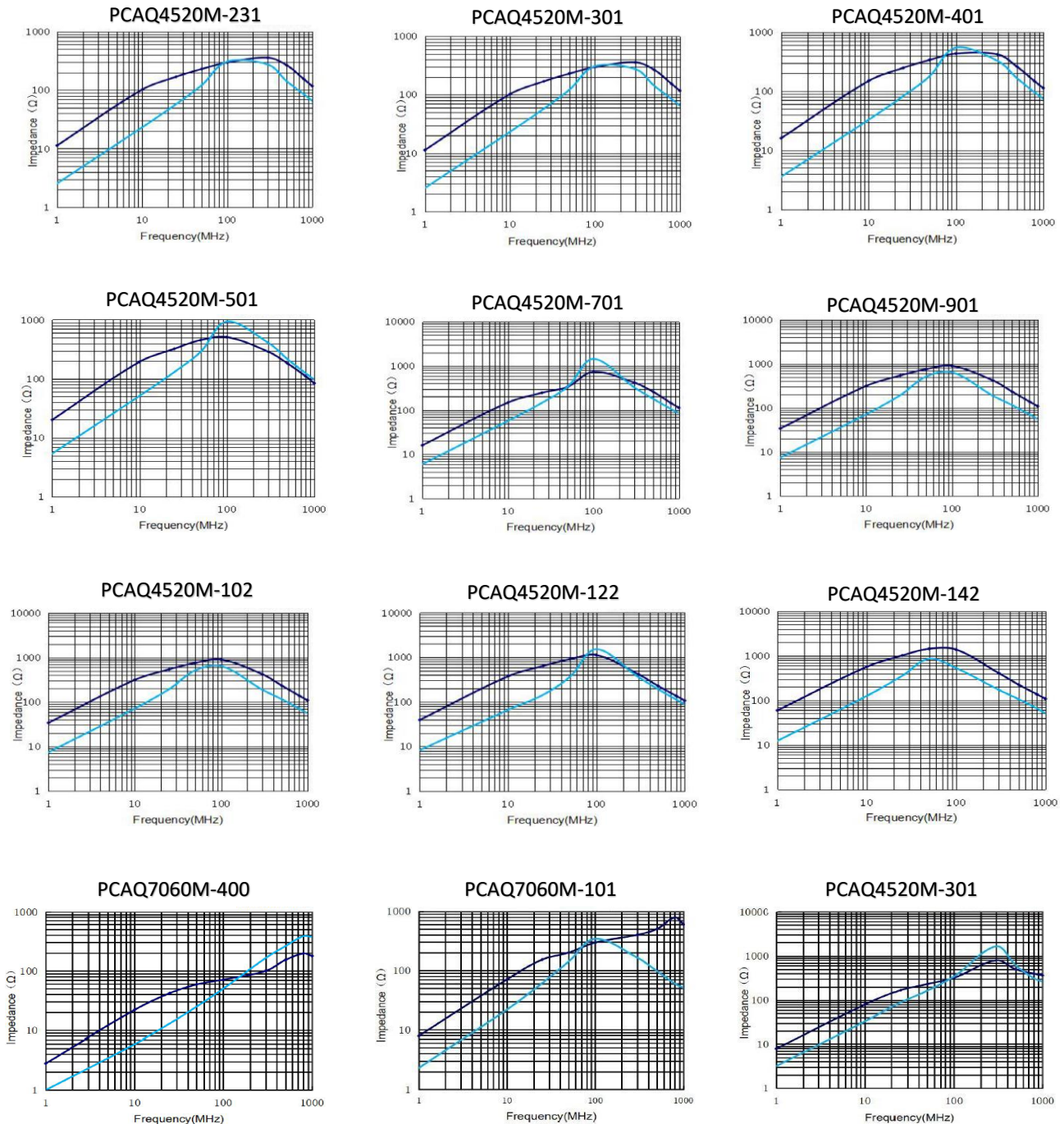


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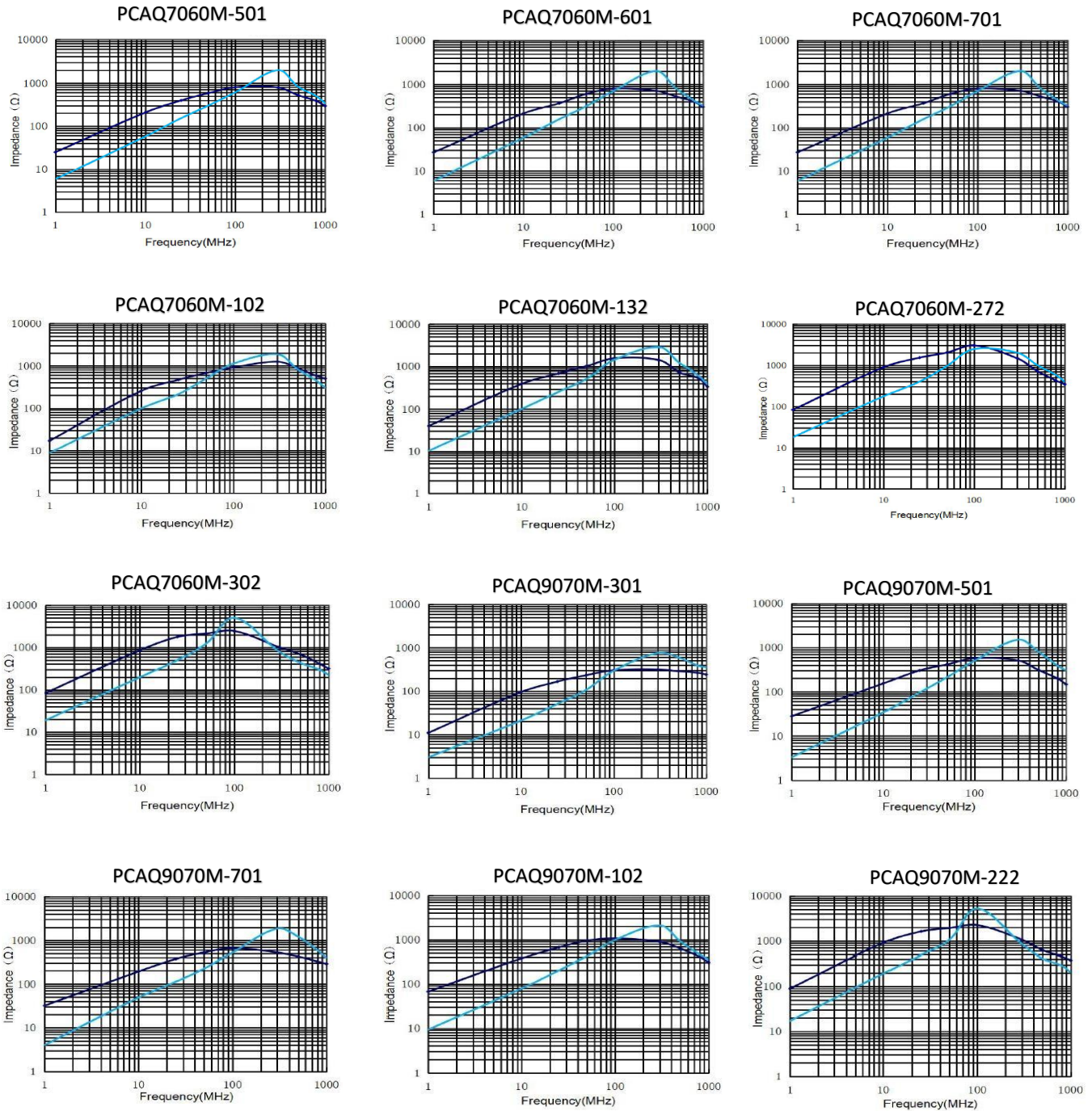


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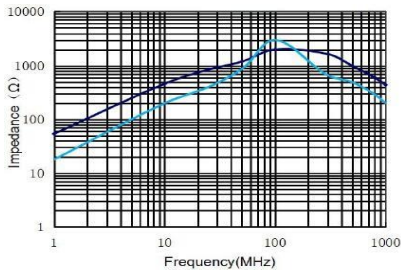
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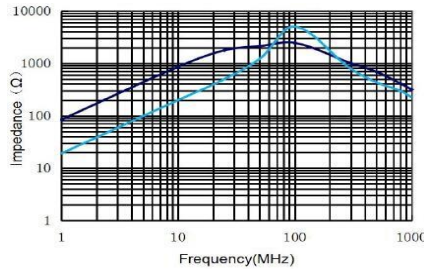
Performance Curves

—— 共模特性 (Common Mode)     
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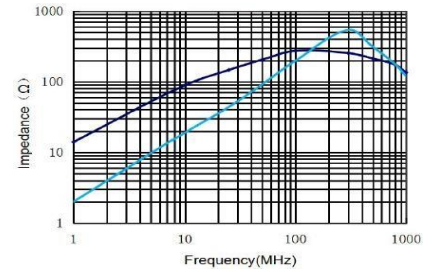
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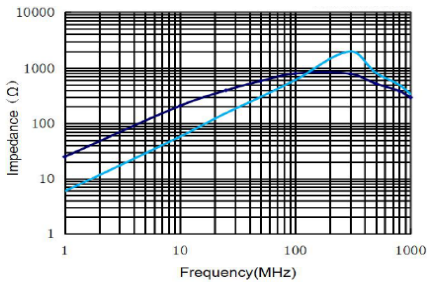
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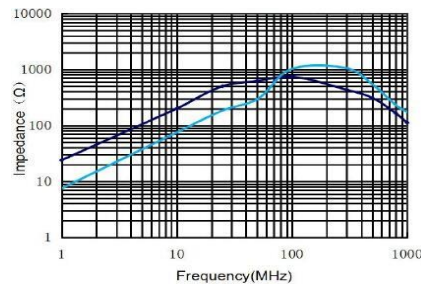
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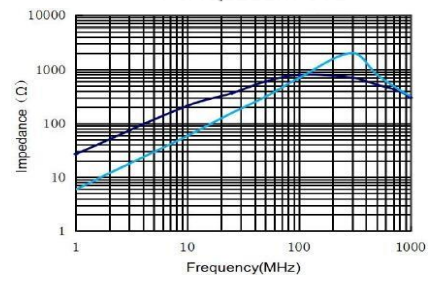
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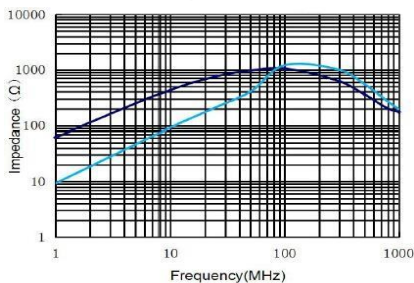
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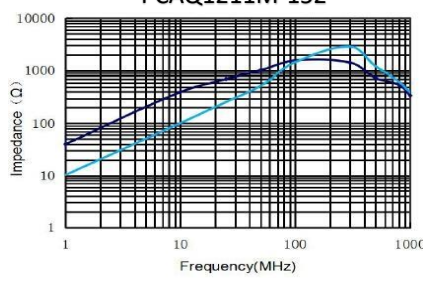
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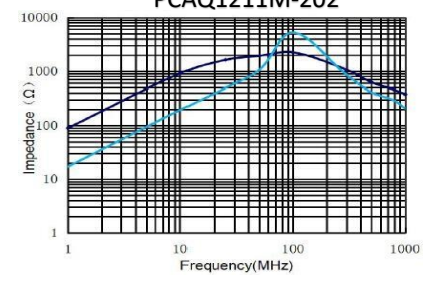
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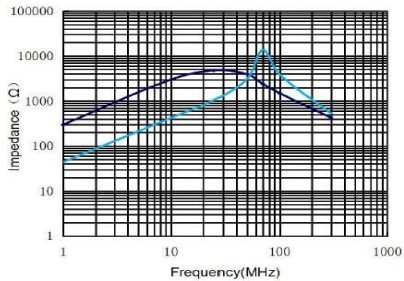
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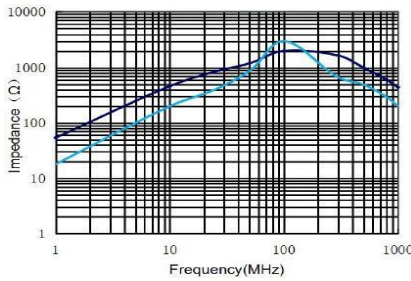
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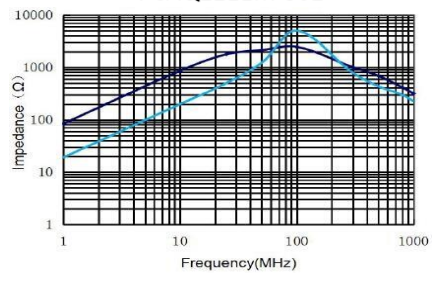
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PCAQ1211M-272



PCAQ1211M-302

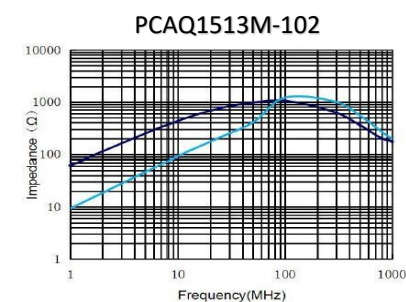
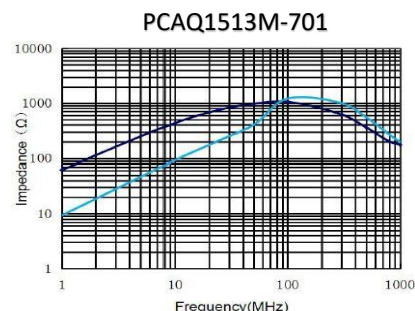
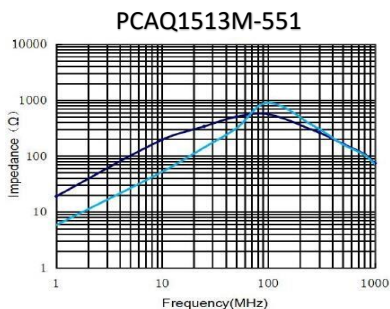
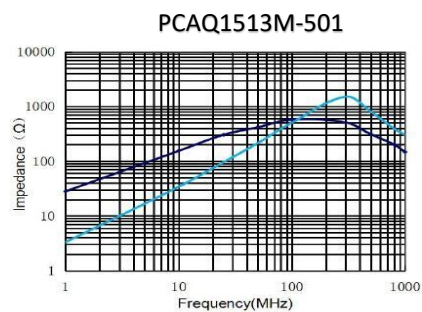
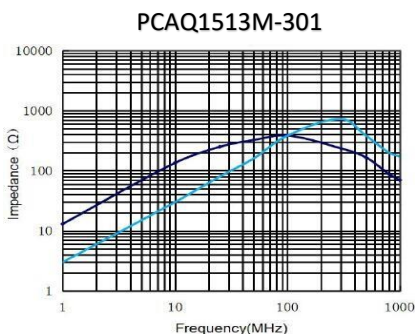
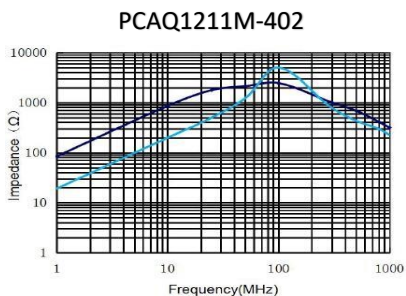


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### 机械可靠性测试

#### 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

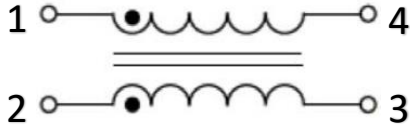
#### Aging Reliability

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	-25°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. -25 ±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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### 電路結構

#### Connections

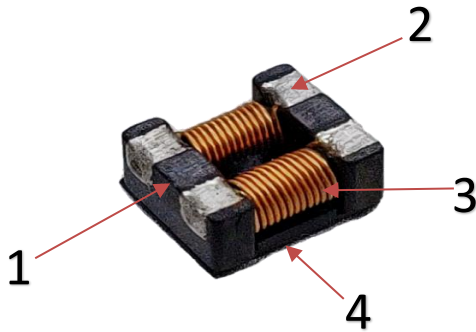


- ◎ 电感内置两组线圈  
Inductor Contents two (2) Set(s) of Coil
- ◎ 电感使用不需要区分正负方向  
DC/AC Current Shall Be Introduced By Any One of Two Pads

- ◎ 阻抗值测试PIN脚位: PIN (1-4) 或 (2-3)  
Impedance test point :PIN(1-4) or (2-3)
- ◎ DCR测试PIN脚位: PIN (1-4) 或 (2-3)  
DCR test point :PIN(1-4) or (2-3)
- ◎ 绝缘性测试PIN脚位: PIN (1-3) 或 (2-4)  
IR test point :PIN(1-3) or (2-4)

### 内部构造

#### Internal Structure

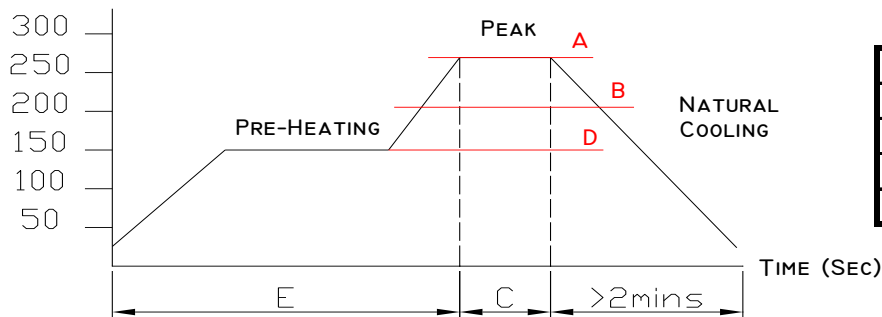


- 1: 磁芯 / Core
- 2: 电极 / Electrode
- 3: 线圈 / Coil
- 4: 顶盖 / Base

### 焊接温度 (推荐)

#### Recommended Soldering Temperature Graph

TEMPERATURE (°C)



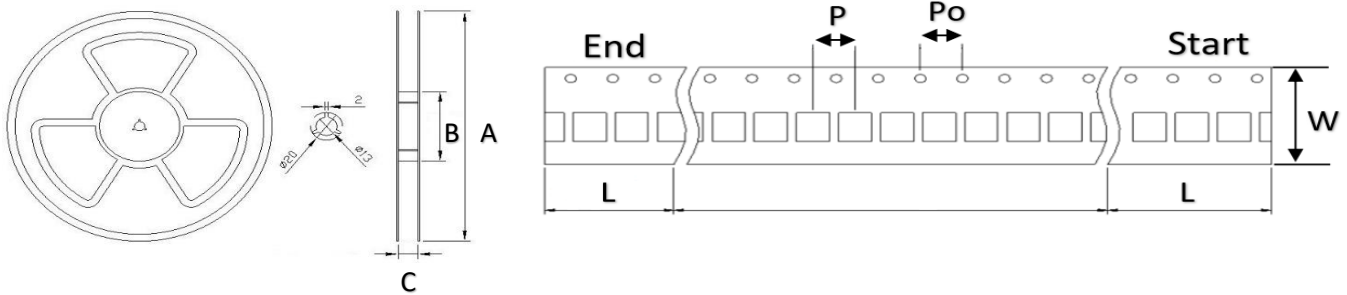
A	260°C
B	230°C
C	10 Sec
D	150°C
E	60~240 Sec



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載帶卷盤尺寸 : (mm)

Packing Dimension



系列 Series	A	B	C	W	P	Po	L
4520	180	60	18	16	12	4.0	前後預留大約30空格
7060	330	100	24.5	16	12	4.0	前後預留大約31空格
9070	330	100	24.5	16	12	4.0	前後預留大約32空格
1211	330	100	24.5	24	16	4.0	前後預留大約33空格
1513	330	100	24.5	24	20	4.0	前後預留大約34空格





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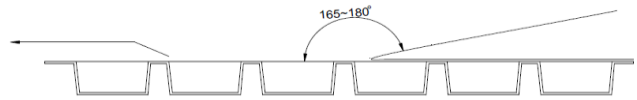
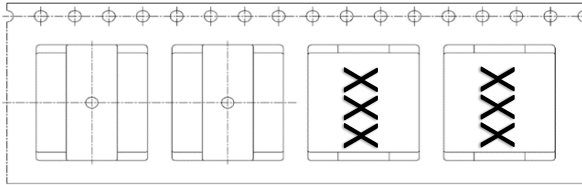
載帶內產品排列方式:  
Inductance Packing Method

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

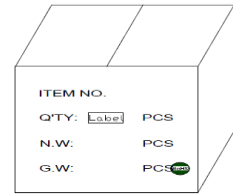
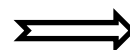
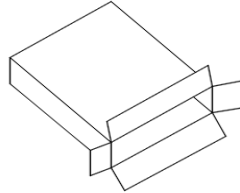
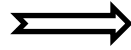
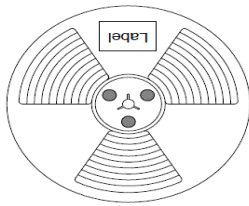


裝箱數量:  
Package Quantity

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
4520	1000pcs	3000pcs	12000pcs
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                | 8 關係到國防安全的設備     |
| 2 運輸設備（汽車，軌道交通產品，船舶等） | 9 防災賑災設備         |
| 3 航空，航太設備             | 10 各種安規設備        |
| 4 發電控制設備              | 11 其他被認定為特殊用途的設備 |
| 5 核動力相關設備             |                  |
| 6 爆炸引燃控制設備            |                  |
| 7 交通控制設備              |                  |





## 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.

If you intend to use the products in the applications listed below or if you have special requirements exceeding the range or conditions set forth in the each catalog, please contact us. Otherwise, our

- |  |  |
|--|--|
| 1 Military equipment                                   | 8 Medical equipment  |
| 2 Transportation equipment (cars, trains, ships, etc.) | 9 Disaster prevention/crime prevention equipment                           |
| 3 Aerospace/aviation equipment                         | 10 Safety equipment  |
| 4 Power-generation control equipment                   | 11 Other applications that are not considered general-purpose applications |
| 5 Atomic energy-related equipment                      |  |
| 6 Explosive ignition control equipment                 |  |
| 7 Transportation control equipment                     |  |

