

產品編碼 P/N	PCAQ1608~4532 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 / 0.1V

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 : PCAQ1608~4532 series

發版號  
Version : A3.0

承認日期  
Endorsement Date : 2022-9-16

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





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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声抑制  
30Ω~2200Ω 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

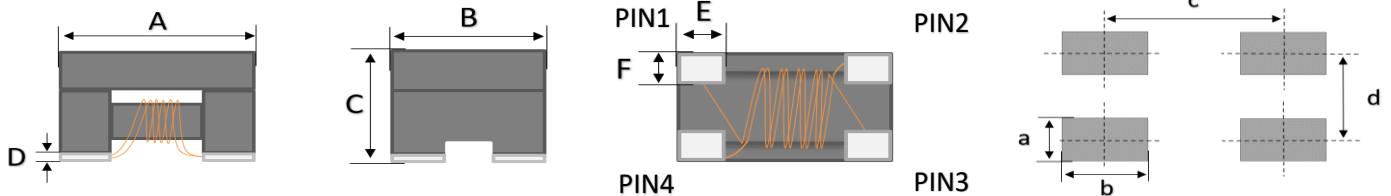
<b>PCAQ</b>	<b>1608B</b>	<b>121</b>	<b>T100</b>
類別碼	尺寸系列	阻抗值	额定电流
Category code	Dimension	Impedance	Rated Current

## 封裝尺寸

Dimension (mm)

## 推薦的焊盤尺寸

Recommaned Land Pattern



系列	封裝尺寸						焊盤尺寸			
	Dimension						Land Pattern			
Series	A	B	C	D	E	F	a	b	c	d
1608 (0603)	1.6±0.1	0.8±0.1	1.1±0.1	0.12 Typ	0.33 Typ	0.25 Typ	0.3	0.5	1.1	0.5
2012 (0805)	2.0±0.2	1.2±0.2	1.2±0.2	0.15 Typ	0.55 Typ	0.46 Typ	0.6	0.7	1.3	0.8
3216 (1206)	3.2±0.2	1.6±0.2	1.9±0.2	0.17 Typ	0.6 Typ	0.6 Typ	0.8	0.8	2.4	0.8
3225 (1210)	3.2±0.2	2.5±0.2	2.2±0.2	0.15 Typ	0.8 Typ	0.9 Typ	1.1	1.0	2.2	1.4
4532 (1812)	4.5±0.2	3.2±0.2	2.8±0.2	0.19 Typ	1.2 Typ	1.0 Typ	1.3	1.5	3.0	1.9

- ◎ 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  $\Delta T$  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℃  
The operating temperature of inductance do not exceed 125°C
- ◎ 使用電感時，請查閱第9頁注意事項  
The announcements is on page 10



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## 1608~3216 Series

產品編碼 P/N	@ 25 °C Ambient Temperture					
	阻抗 Impedance	精度 Tolerance	DCR	絕緣性 (IR)	額定電流 (Rated Current)	額定電壓 (Rated Voltage)
			mΩ	MΩ		
Ω	±	Max	Min	mA	V	
PCAQ1608B-670T030	67	25%	300	10	300	50
PCAQ1608B-900T030	90	25%	300	10	300	50
PCAQ1608B-121T025	120	25%	360	10	250	50
PCAQ1608B-161T025	160	25%	400	10	250	50
PCAQ1608B-221T025	220	25%	420	10	250	50
PCAQ2012B-300T045	30	25%	200	10	450	50
PCAQ2012B-670T040	67	25%	250	10	400	50
PCAQ2012B-750T040	75	25%	250	10	400	50
PCAQ2012B-900T040	90	25%	300	10	400	50
PCAQ2012B-121T040	120	25%	300	10	400	50
PCAQ2012B-161T035	160	25%	350	10	350	50
PCAQ2012B-181T035	180	25%	350	10	350	50
PCAQ2012B-201T030	200	25%	400	10	300	50
PCAQ2012B-221T030	220	25%	400	10	300	50
PCAQ2012B-261T030	260	25%	400	10	300	50
PCAQ2012B-361T030	360	25%	450	10	300	50
PCAQ2012B-371T030	370	25%	450	10	300	50
PCAQ2012B-601T025	600	25%	600	10	250	50
PCAQ2012B-801T025	800	25%	880	10	250	50
PCAQ2012B-102T015	1000	25%	1300	10	150	50
PCAQ3216B-900T045	90	25%	300	10	450	50
PCAQ3216B-121T040	120	25%	350	10	400	50
PCAQ3216B-161T035	160	25%	400	10	350	50
PCAQ3216B-201T035	200	25%	450	10	350	50
PCAQ3216B-221T030	220	25%	450	10	300	50
PCAQ3216B-261T030	260	25%	500	10	300	50
PCAQ3216B-331T030	330	25%	600	10	300	50
PCAQ3216B-361T030	360	25%	600	10	300	50
PCAQ3216B-601T025	600	25%	800	10	250	50
PCAQ3216B-801T025	800	25%	900	10	250	60
PCAQ3216B-102T025	1000	25%	1000	10	250	50
PCAQ3216B-142T025	1400	25%	1000	10	250	50
PCAQ3216B-202T025	2000	25%	1200	10	250	50
PCAQ3216B-222T025	2200	25%	1200	10	250	50



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## 3225~4532 Series

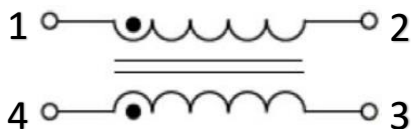
產品編碼 P/N	@ 25 °C Ambient Temperture					
	阻抗 Impedance	精度 Tolerance	DCR	絕緣性 (IR)	額定電流 (Rated Current)	額定電壓 (Rated Voltage)
			mΩ	MΩ		
Ω	±	Max	Min	mA	V	
PCAQ3225B-670T030	67	25%	400	10	300	50
PCAQ3225B-900T028	90	25%	500	10	280	50
PCAQ3225B-121T027	120	25%	550	10	270	50
PCAQ3225B-161T026	160	25%	580	10	260	50
PCAQ3225B-181T026	180	25%	600	10	260	50
PCAQ3225B-251T023	250	25%	700	10	230	50
PCAQ3225B-331T020	330	25%	800	10	200	50
PCAQ3225H-601T100	600	25%	200	10	1000	50
PCAQ3225H-102T150	1000	25%	100	10	1500	50
PCAQ3225H-142T150	1400	25%	200	10	1500	50
PCAQ4532B-800T300	80	25%	70	10	3000	50
PCAQ4532B-900T300	90	25%	70	10	3000	50
PCAQ4532B-121T300	120	25%	70	10	3000	50
PCAQ4532B-221T150	220	25%	100	10	1500	50
PCAQ4532H-221T350	220	25%	35	10	3500	50
PCAQ4532B-331T130	330	25%	110	10	1300	50
PCAQ4532H-331T320	330	25%	45	10	3200	50
PCAQ4532H-471T300	470	25%	60	10	3000	50
PCAQ4532B-601T150	600	25%	120	10	1500	50
PCAQ4532H-601T250	600	25%	70	10	2500	50
PCAQ4532B-801T100	800	25%	160	10	1000	50
PCAQ4532H-801T230	800	25%	100	10	2300	50
PCAQ4532B-102T080	1000	25%	180	10	800	50
PCAQ4532H-102T210	1000	25%	110	10	2100	50
PCAQ4532B-142T070	1400	25%	200	10	700	50
PCAQ4532H-142T200	1400	25%	120	10	2000	50





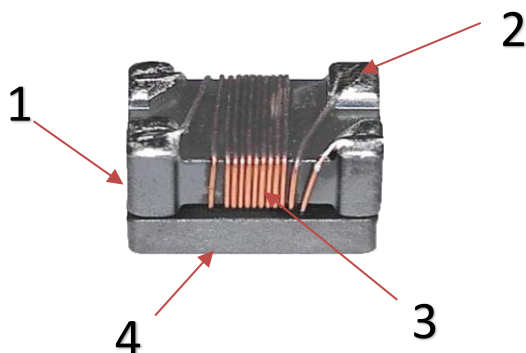
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電路結構  
Connections



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

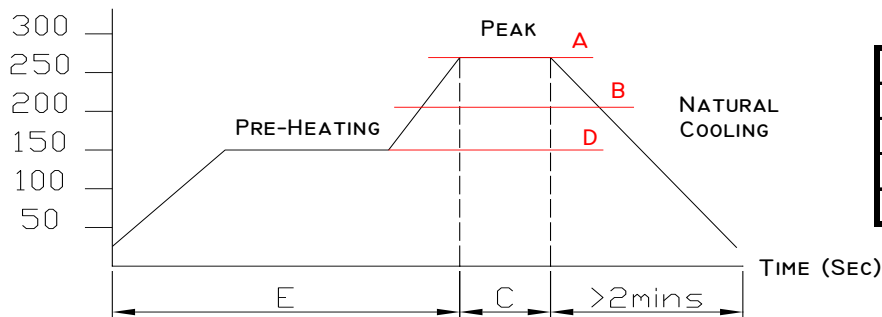
內部構造  
Internal Structure



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

焊接溫度（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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### 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

# 包裝方式

## PACKING FOR SMD

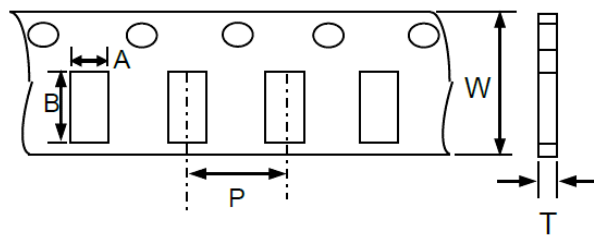
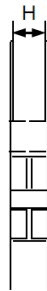
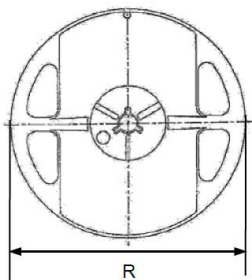


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載帶卷盤尺寸 : (mm)

**Packing Dimension**

系列 Series	R	H	A	B	P	W	T
1608(0603)	178	8.4	0.9	1.75	4	8	0.2
2012(0805)	178	8.4	1.55	2.25	4	8	0.27
3216(1206)	178	8.4	1.88	3.53	4	8	0.27
3225(1210)	178	8.4	2.7	3.5	4	8	0.25
4532(1812)	178	12.4	3.3	4.7	8	12	1.1

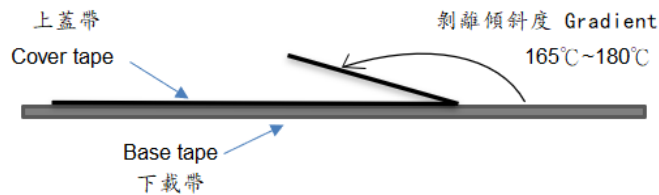


**載帶剝離力:**

Typical Pulling Force

對上蓋帶施加力: 20g~120g內即可與下載帶剝離

Tape Peeling off force: 20g~120g



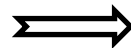
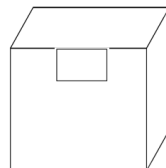
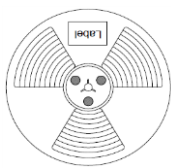
**裝箱數量:**

Package Quantity

最小包裝  
MPQ

內盒  
Middle box

外箱  
Outer box



系列 series	最小包裝 MPQ	內盒 Middle Box	外箱 Outer box
1608(0603)	3000	30000	150000
2012(0805)	2000	20000	100000
3216(1206)	2000	20000	100000
3225(1210)	2000	20000	100000
4532(1812)	500	5000	25000







## 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，設計使用者如在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：
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  - 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.  
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 PROD. Otherwise, PROD will not bear the serious consequences caused by product quality problems

- |  |   |
|--|---|
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| 2 Transportation equipment (cars, trains, ships, etc.) | 9 Other applications that are not considered general-purpose applications |
| 3 Aerospace/aviation equipment                         |   |
| 4 Power-generation control equipment                   |   |
| 5 Atomic energy-related equipment                      |   |
| 6 Explosive ignition control equipment                 |   |
| 7 Transportation control equipment                     |   |



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