

FEATURES 特征

- Winding type realizes small size and low profile.
绕线式设计实现小型化与低外形尺寸
- Prevention of common mode noise at high frequency.
优异高频共模噪声抑制能力
- Excellent solderability.
优异的焊接性能
- RoHS, Halogen Free and REACH Compliance.
符合RoHS标准、无卤素且达到合规要求



APPLICATIONS 用途

- Multimedia system.
多媒体系统
- Facsimiles, Modems, Household Appliances, etc.
传真机、调制解调器、家用电器等

PART NUMBERING 产品型号

APWB
4532
-
510
T
2

①
②
③
④
⑤

① Series Name	
APWB	Wire Wound Chip Common Mode Choke

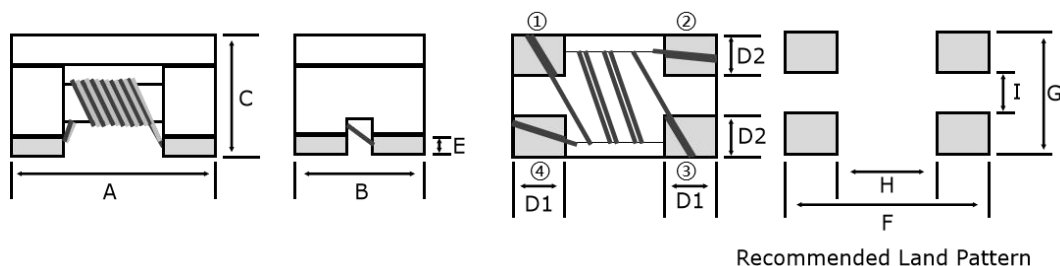
② External Dimensions[mm]	
	3225[3.2x2.5]
	3416[3.4x1.6]
	4532[4.5x3.2]

③ Nominal Inductance	
Code (example)	Nominal Inductance [μH]
110	11
510	51
101	100

④ Packaging	
T	Tape & Reel

⑤ Number of Lines	
	2

DIMENSIONS & RECOMMENDED LAND PATTERN 尺寸及推荐焊盘

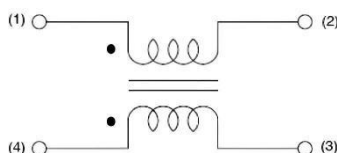


Recommended Land Pattern

Unit: mm

Series	Dimensions						Recommended Land Pattern			
	A	B	C	E	D1	D2	F	G	I	H
				Typ.				Typ.		
APWB3225	3.2±0.2	2.5±0.2	2.5 Max	0.20	0.80	0.90	4.00	2.80	0.60	1.60
APWB3416	3.4±0.2	1.6±0.2	2.0±0.2	0.20	0.64	0.66	3.70	1.90	0.50	1.80
APWB4532	4.5±0.2	3.2±0.2	2.8±0.2	0.20	1.00	1.20	4.80	3.80	0.70	2.40

EQUIVALENT CIRCUIT 等效电路



ELECTRICAL CHARACTERISTICS 特性规格表

APWB3225 Series

Part Number	Inductance @100KHz,0.1V	Rated Voltage	Heat Rating Current	DC Resistance	Insulation Resistance
			Max.	Max.	Min.
Unit	μH	Volts	mA	Ω	MΩ
Symbol	L (+50%/-30%)	VDC	Irms	DCR	IR
APWB3225-110T2	11	50	300	0.4	10
APWB3225-220T2	22	50	250	0.5	10
APWB3225-510T2	51	50	200	0.7	10
APWB3225-101T2	100	50	150	1.5	10
APWB3225-201T2	200	50	70	4.8	10

ELECTRICAL CHARACTERISTICS 特性规格表

● APWB3416 Series

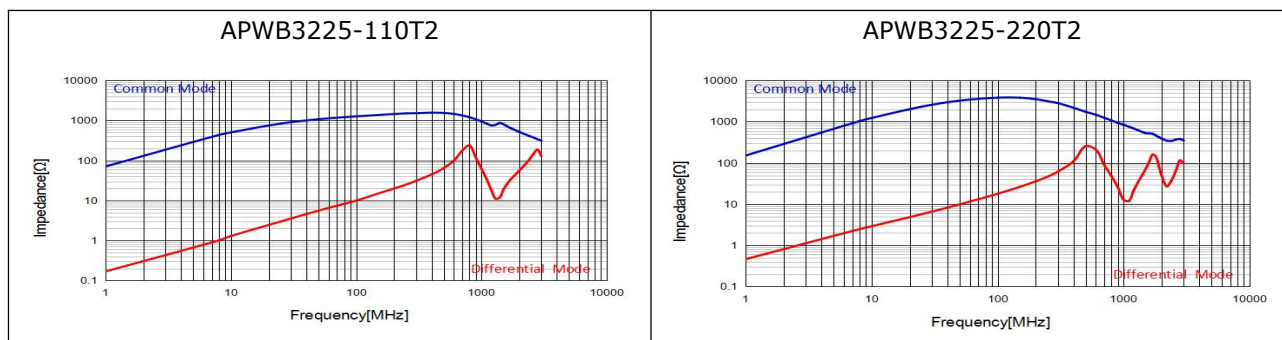
Part Number	Inductance @100KHz,0.1V	Rated Voltage	Heat Rating Current	DC Resistance	Insulation Resistance
			Max.	Max.	Min.
Unit	μH	Volts	mA	Ω	MΩ
Symbol	L (+50%/-30%)	VDC	Irms	DCR	IR
APWB3416-400T2	40	50	100	2	10
APWB3416-600T2	60	50	200	1.7	10
APWB3416-900T2	90	50	100	2	10

● APWB4532 Series

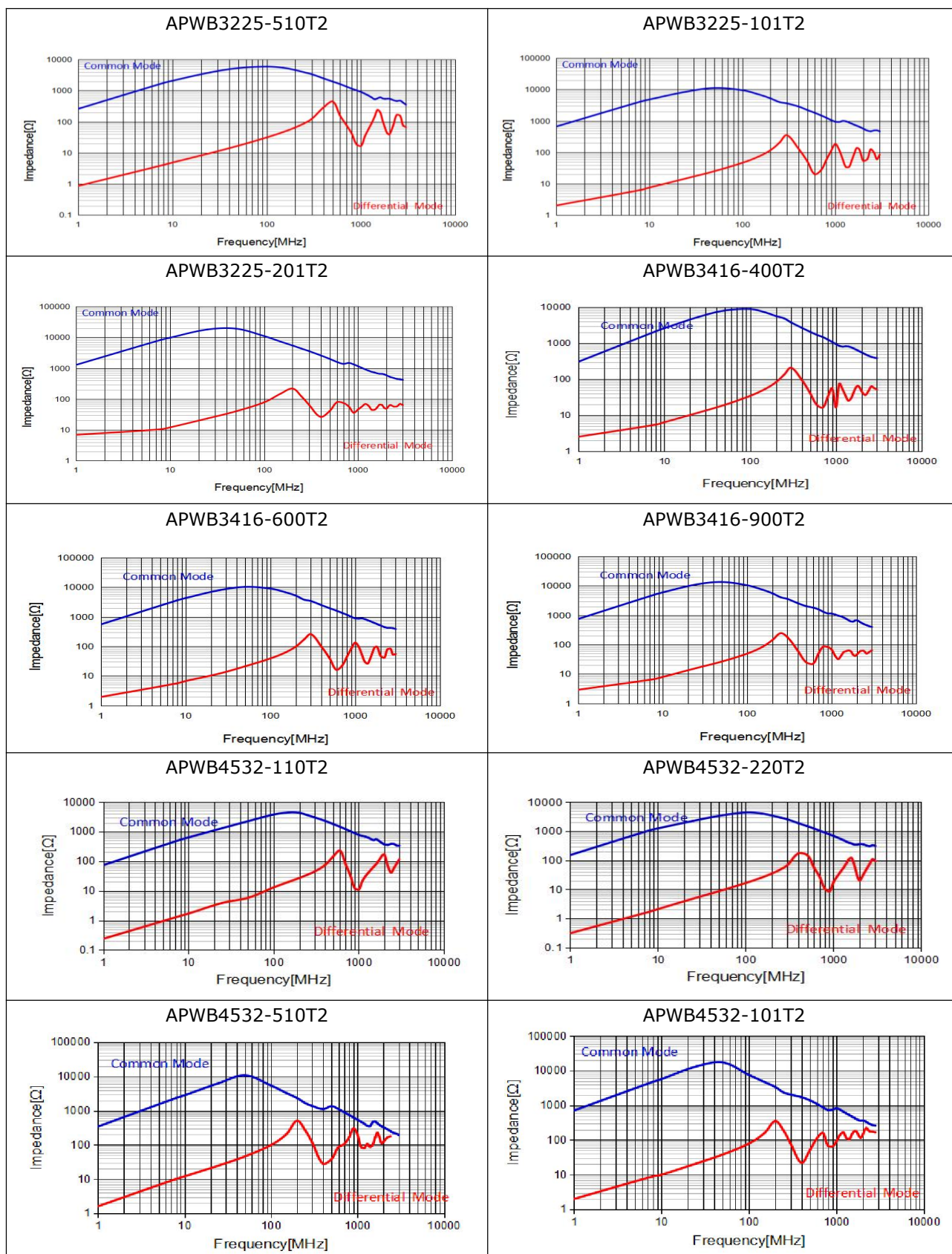
Part Number	Inductance @100KHz,0.1V	Rated Voltage	Heat Rating Current	DC Resistance	Insulation Resistance
			Max.	Max.	Min.
Unit	μH	Volts	mA	Ω	MΩ
Symbol	L (+50%/-30%)	VDC	Irms	DCR	IR
APWB4532-110T2	11	50	360	0.6	10
APWB4532-220T2	22	50	310	1	10
APWB4532-510T2	51	50	230	1	10
APWB4532-101T2	100	50	200	2	10
APWB4532-201T2	200	50	100	4.5	10

- All test data is referenced to 25°C ambient.
- Rating DC current: Temperature rise(ΔT) is 40°C approximately at Irms.
- Storage temp.: -10°C ~ +40°C R.H.: 60% Max.
- Moisture sensitivity level (MSL): 1
- Operating Temp.:
APWB3225&APWB3416: -45°C ~ +85°C (Including self heating).
APWB4532: -45°C ~ +125°C (Including self heating).

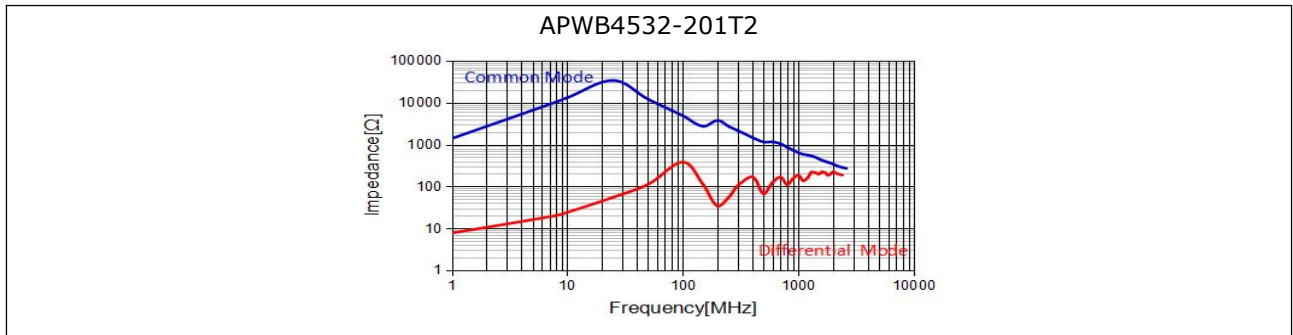
CHARACTERISTICS(REFERENCE) 特征曲线



CHARACTERISTICS(REFERENCE) 特征曲线

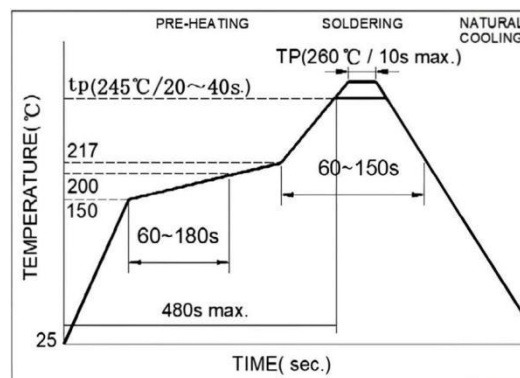


CHARACTERISTICS(REFERENCE) 特征曲线



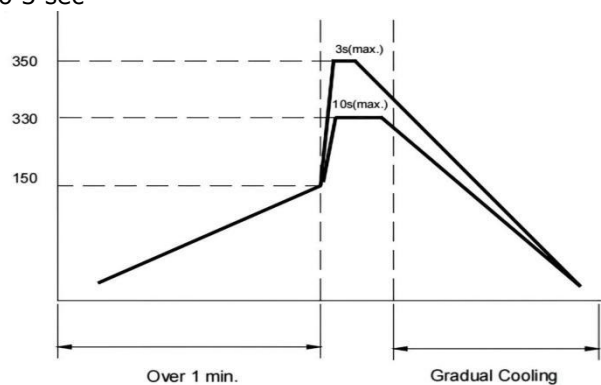
RECOMMENDED SOLDERING TECHNOLOGIES 回流焊建议

- Re-flow Soldering (Lead Free)
- ☆ Preheat circuit and products to 150°C
- ☆ 260°C tip temperature (max)
- ☆ Reflow times: no more than 2 times
- ☆ Solder paste thickness: the best 0.08mm is ,but max is 0.1mm



- Note: The reflow profile in the above table is only for qualification and is not meant to specify board assembly profiles. Actual board assembly profiles must be based on the customer's specific board design, solder paste and process, and should not exceed the parameters as the Reflow profile shows.

- Hand Soldering
- ☆ Use a 20 watt soldering iron with tip diameter of 1.0mm
- ☆ Limit soldering time to 3 sec



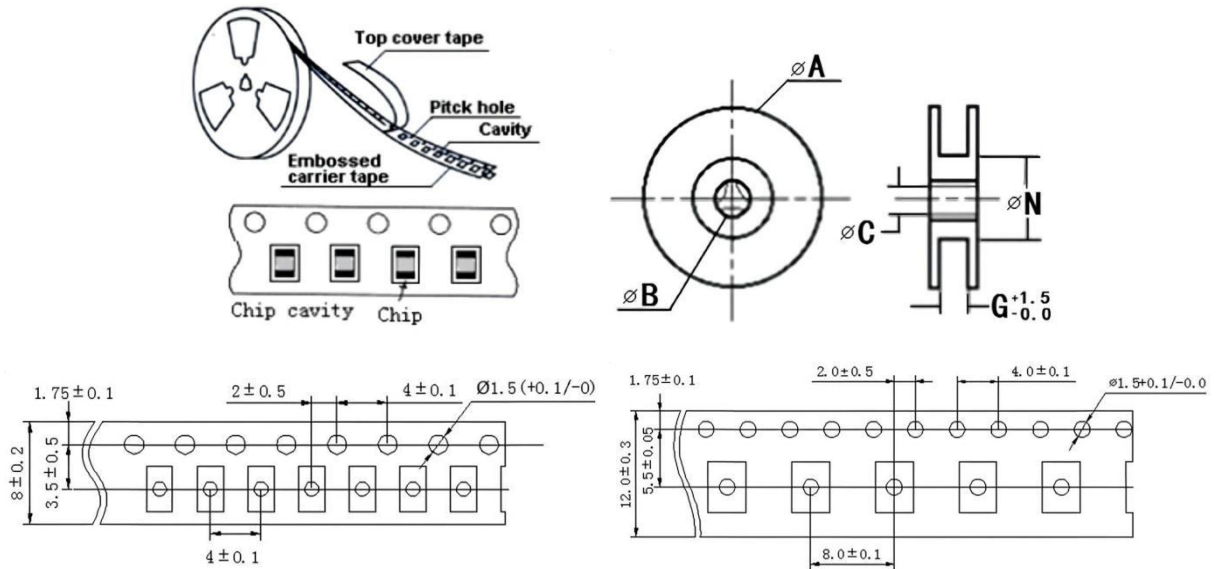
- Note: Take care not to apply the tip of the soldering iron to the terminal electrodes.

RELIABILITY TEST 可靠性试验

Test Item	Test Requirements	Test Conditions
Terminal Strength	No defects	Specified static load applied vertically to the terminal for 30±1 seconds. Verify no detachment of the component.
Board Flexure	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Preconditioning: 2 reflow soldering cycles. Terminations soldered onto PCB. Static load applied gradually, T: 60±5 s, board deflection ≤ 2.0 mm.
High Temperature	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Test temperature: 5±3°C (APWB4532 125±3°C) test duration: 1000+24 hrs. Specimens shall be stabilized under standard atmospheric conditions for 24±4 hours prior to measurement.
Damp Heat (Steady State)	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Test temperature: 85±3°C, test humidity: 85±3% RH, test duration: 1000+24 hrs. Specimens shall be stabilized under standard atmospheric conditions for 24±4 hours prior to measurement.
Thermal Shock	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Test temperature: -40±3°C / 30 min ↔ 125±3°C / 30 min, 1000 cycles. Specimens shall be stabilized under standard atmospheric conditions for 24±4 hours prior to measurement.
Load Life	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Test temperature: 125±3°C, test duration: 1000 hrs, with rated current applied. Specimens shall be stabilized under standard atmospheric conditions for 24±4 hours prior to measurement.
Vibration	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Frequency range: (10→2000→10) Hz, acceleration: 5G for 20 min, total amplitude: 1.5 mm, 12 cycles in each of 3 directions. Specimens shall be stabilized under standard atmospheric conditions for 1-2 hours prior to measurement.
Resistance to Soldering Heat	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Test temperature: 260°C, duration: T: 7.0 min. Preconditioning: 1 reflow soldering cycle, solder paste: Sn/3.0Ag/0.5Cu (SAC305). Specimens shall be stabilized under standard atmospheric conditions for 1-2 hours prior to measurement.
Mechanical Shock	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	1. Normal duration: 6 ms; waveform: half-sine; peak: 100G; velocity change (Vi): 12.3 ft/s. 2. Direction: ±X, ±Y, ±Z axes; 3 shocks per direction (18 shocks total). Specimens shall be stabilized under standard atmospheric conditions for 1-2 hours prior to measurement.
ESD	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Discharge method: Air discharge, voltage level: ±25 kV.

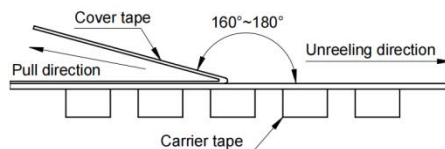
PACKAGING 包装

- Packaging type: Strapping packaging.
- 3225~4532 Series



Type	A	B	C	N	G
APWB3225	178±2.0	22±2.0	13±1.0	60±1.0	12
APWB3416	178±2.0	22±2.0	13±1.0	60±1.0	8
APWB4532	178±2.0	22±2.0	13±1.0	60±1.0	12

- Peeling off force: 0.05 to 0.7N in the direction show below.



- Packing Quantity.

Series	Quantity/Reel
APWB3225	1000Pcs
APWB3416	2000Pcs
APWB4532	500Pcs

■ PRECAUTIONS ON USE 使用注意事项

● Precautions on Use.

- 1.Always wear static control bands to protect against ESD.
- 2.Any devices used with the products (soldering irons, measuring instruments) should be properly grounded.
- 3.Keep bare hands and metal conductors (i.e., metal desk) away from electrodes or conductive areas that lead to electrodes.
- 4.Preheat when soldering.
- 5.Don't apply current in excess of the rated current value. It may reduce the impedance or inductance, or cause damage to components due to over-current.
- 6.For magnetic products, keep clear of anything that may generate magnetic fields such as speakers and coils. Use non-magnetic tweezers when handling the chips.
- 7.When soldering, the electrical characteristics may be varied due to hot energy and mechanical stress.
- 8.When coating products with resin, the relatively high resin curing stress may change the electrical characteristics. For exterior coating, select resin carefully so that electrical and mechanical performance of the product is not affected. Before using, please evaluate reliability with the product mounted in your application set.
- 9.When mount chips with adhesive in preliminary assembly, do appropriate check before the soldering stage, i.e., the size of land pattern, type of adhesive, amount applied, hardening of the adhesive on proper usage and amounts of adhesive to use.
- 10.Mounting density: Add special attention to radiating heat of products when mounting other components nearby. The excessive heat by other products may cause deterioration at joint of this product with substrate.
- 11.Since some products are constructed like an open magnetic circuit, narrow spacing between components may cause magnetic coupling.
- 12.Please do not give the product any excessive mechanical shocks in transportation.
- 13.Please do not touch wires by sharp terminals such as tweezers to avoid causing any damage to wires.
- 14.Please do not add any shock and power to the soldered product to avoid causing any damage to chip body.
- 15.Please do not touch the electrodes by naked hand as the solderability of the external electrodes may deteriorate by grease or oil on the skin.
- 16.Magnetic materials shall be far away from parts to avoid impacts on their electrical characteristics;
- 17.Parts could be damaged by external mechanical pressure or stacked heavy objects, as well as strong shaking & dropping;
- 18.Please do not store parts in bulk to prevent coils and parts being damaged;
- 19.Oversized external force to parts on PCB may lead to parts being damaged or slipped off;
- 20.Please do not use parts on edge or top of PCB board in your design to avoid parts being damaged during PCB is moved.
- 21.Please use flux contained with resin since the highly acidic (Chlorine content more than 0.2 wt%) or water-soluble one could damage the insulation film of wires, then causing short circuit of parts.
- 22.Please do not use the brush to clean product or its surroundings. If you use the brush to clean product or its surroundings on PCB,copper wire may be broke, causing the product open.
- 23.Avoid ultrasonic processing, which may cause component falling off and poor pad contact.
- 24.When using APV products, customers should record the production batch number for traceability.



■ SAFETY REMINDERS 注意事项

SAFETY REMINDERS

● All products listed in this specification are developed, designed and intended for use in general electronics equipment. The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require especially high reliability, or whose failure, malfunction or trouble might directly cause damage to society, person, or property. Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below. Please contact us for more details if you intend to use our products in the following applications.

- ☆ 1. Aerospace/aviation equipment
- ☆ 2. Transportation equipment (cars, electric trains, ships, etc.)
- ☆ 3. Medical equipment
- ☆ 4. Power-generation control equipment
- ☆ 5. Atomic energy-related equipment
- ☆ 6. Seabed equipment
- ☆ 7. Transportation control equipment
- ☆ 8. Public information-processing equipment
- ☆ 9. Military equipment
- ☆ 10. Electric heating apparatus, burning equipment
- ☆ 11. Disaster prevention/crime prevention equipment
- ☆ 12. Safety equipment
- ☆ 13. Other applications that are not considered general-purpose applications

● When designing your equipment even for general-purpose applications, you are kindly requested to take into consideration securing protection circuit/device or providing backup circuits in your equipment.