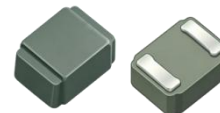


FEATURES 特征

- Small chip suitable for surface mounting.
小尺寸，可表面贴装
- Large inductance with ferrite material.
铁氧体材料具有大电感量
- Magnetic shielded.
全磁屏蔽
- Operating Temp : -45℃~+85℃(Including self heating).
工作温度范围:-45℃~+85℃(包括自身温度上升)



APPLICATIONS 用途

- Mobile phones, TWS headsets, smart watches and other portable devices.
手机、TWS耳机、智能手表等便携式设备

PART NUMBERING 产品型号

AHW	2012	FQ	100	M	T	F
①	②	③	④	⑤	⑥	⑦

① Series Name	
AHW	Shielded Wire Wound Chip Inductor

② External Dimensions	
	1608[0603]
	2012[0805]

③ Feature Type	
FQ	Ferrite core

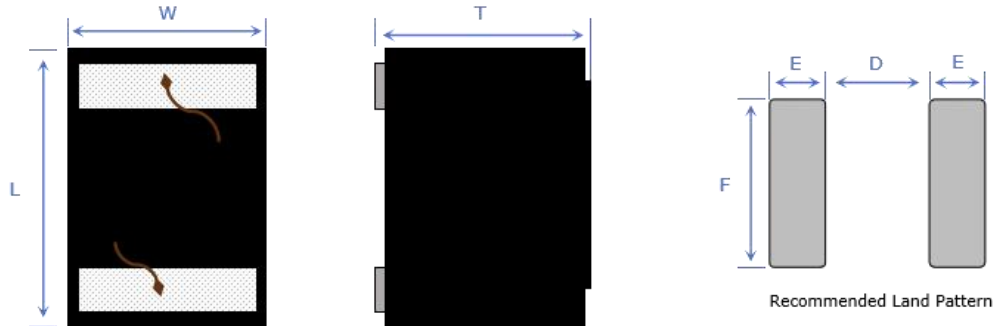
④ Nominal Inductance	
Code (example)	Nominal Inductance [μH]
1R0	1.0
4R7	4.7
100	100

⑤ Inductance Tolerance	
M	±20%

⑥ Packaging	
T	Tape & Reel

⑦ HSF Products	
F	Hazardous Substance Free Products

DIMENSIONS & RECOMMENDED LAND PATTERN 尺寸及推荐焊盘



Unit: mm

Series	Dimensions			Recommended Land Pattern		
	L	W	T	E	F	D
	Max.			Typ.		
AHW1608FQ	1.80	1.25	1.20	0.64	1.02	0.64
AHW2012FQ	2.40	1.73	1.52	1.02	1.78	0.76

ELECTRICAL CHARACTERISTICS 特性规格表

● AHW1608FQ Series

Part Number	Inductance	Inductance Tolerance	L Test Freq.	Quality Factor	Self-resonant Frequency	DC Resistance	Heat Rating Current	Saturation Current
				Typ.	Typ.	±30%	Typ.	Typ.
Unit	μH	-	MHz	-	MHz	Ω	mA	mA
Symbol	L	-	Freq.	Q	S.R.F	DCR	Irms	Isat
AHW1608FQ1R0MTF	1	±20%	1	10	350	0.21	720	1100
AHW1608FQ1R5MTF	1.5	±20%	1	10	300	0.39	520	650
AHW1608FQ2R2MTF	2.2	±20%	1	10	250	0.46	480	680
AHW1608FQ4R7MTF	4.7	±20%	1	10	100	0.70	400	450
AHW1608FQ6R8MTF	6.8	±20%	1	9	50	1.25	300	360
AHW1608FQ100MTF	10	±20%	1	9	25	1.50	380	270
AHW1608FQ150MTF	15	±20%	1	9	25	2.00	230	270
AHW1608FQ220MTF	22	±20%	1	9	10	3.90	160	220

ELECTRICAL CHARACTERISTICS 特性规格表

● AHW2012FQ Series

Part Number	Inductance	Inductance Tolerance	L Test Freq.	Quality Factor	Self-resonant Frequency	DC Resistance	Heat Rating Current	Saturation Current
				Typ.	Typ.	±30%	Typ.	Typ.
Unit	μH	-	MHz	-	MHz	Ω	mA	mA
Symbol	L	-	Freq.	Q	S.R.F	DCR	Irms	Isat
AHW2012FQ1R0MTF	1	±20%	1	10	550	0.12	1000	1200
AHW2012FQ1R5MTF	1.5	±20%	1	10	450	0.13	900	900
AHW2012FQ2R2MTF	2.2	±20%	1	10	400	0.18	750	780
AHW2012FQ4R7MTF	4.7	±20%	1	10	150	0.33	470	510
AHW2012FQ6R8MTF	6.8	±20%	1	10	50	0.35	450	470
AHW2012FQ100MTF	10	±20%	1	10	35	0.53	450	410
AHW2012FQ150MTF	15	±20%	1	10	25	0.65	350	270
AHW2012FQ220MTF	22	±20%	1	9	10	0.95	300	270

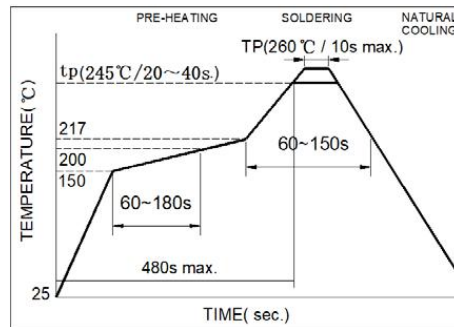
- Rating DC current: Temperature rise(ΔT) is 40°C approximately at Irms.
- Storage temp.: -10°C ~ +40°C R.H.: 60% Max.
- Moisture sensitivity level (MSL) 1.

APPEARANCE STANDARD 外观标准

Appearance Defect	Graphic	Judging Standard
Copper wire exposed		Area of copper wire exposed in magnetic shield area less than 0.06 square millimeter is OK.

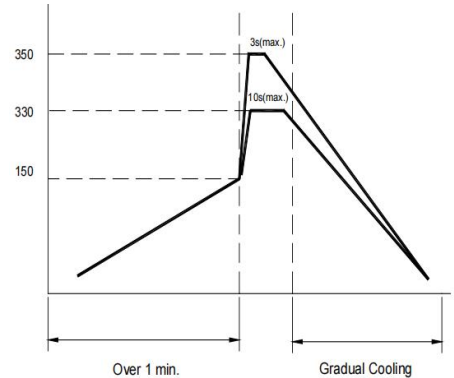
RECOMMENDED SOLDERING TECHNOLOGIES 回流焊建议

- 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



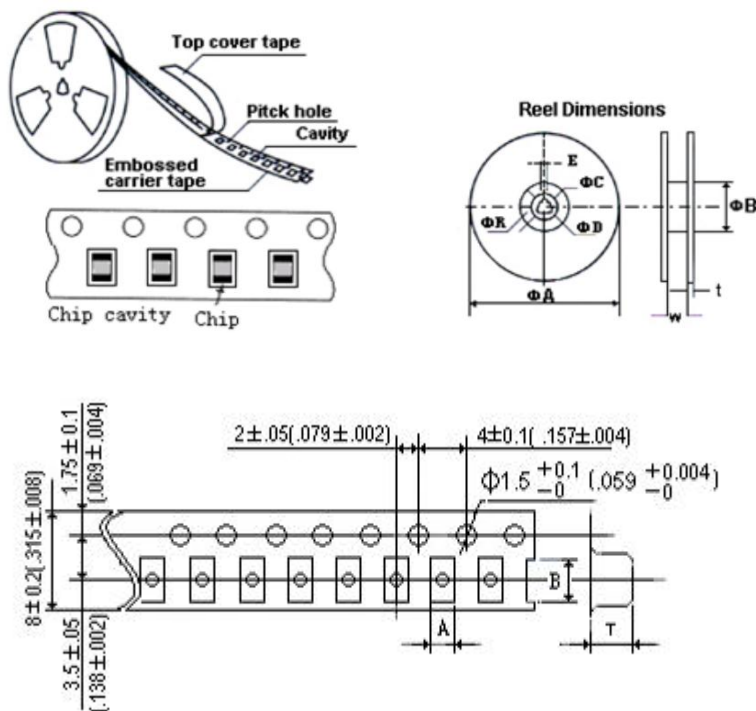
- Note: Take care not to apply the tip of the soldering iron to the terminal electrodes.

RELIABILITY TEST 可靠性试验

Test Item	Test Requirements	Test Conditions
High Temperature	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Test temperature: $105 \pm 3^\circ\text{C}$, Test duration: 96 hours. Samples shall be stabilized under normal conditions for 24 ± 4 hours before measurement.
Low Temperature	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Test temperature: $-40 \pm 3^\circ\text{C}$, Test duration: 96 hours. Samples shall be stabilized under normal conditions for 24 ± 4 hours before measurement.
Damp Heat, Steady State	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Test temperature: $85 \pm 3^\circ\text{C}$, Test humidity: $85 \pm 3\%\text{RH}$, Test duration: 96 hours. Samples shall be stabilized under normal conditions for 24 ± 4 hours before measurement.
Thermal Shock	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Test temperature: $-40 \pm 3^\circ\text{C}/30\text{min} \leftrightarrow 105 \pm 3^\circ\text{C}/30\text{min}$, 100 cycles. Samples shall be stabilized under normal conditions for 24 ± 4 hours before measurement.
Endurance (Operational Life)	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Test temperature: $85 \pm 3^\circ\text{C}$, Test duration: 96 ± 2 hours. Rated current applied. Samples shall be stabilized under normal conditions for 24 ± 4 hours before measurement.
Vibration	1. No visible mechanical damage 2. $\Delta L/L \leq 10\%$ 3. $\Delta R/R \leq 10\%$	Frequency range: (10~55~10) Hz, 1G peak-to-peak amplitude: 1.5mm. Duration: 2 hours in each of X, Y, Z axes (total 6 hours). Samples shall be stabilized under normal conditions for 1~2 hours before 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 , Test duration: T: 7.0min, 1 time reflow soldering preconditioning. Solder paste: Sn/3.0Ag/0.5Cu. Samples shall be stabilized under normal conditions for 1~2 hours before measurement.
Solderability	No visible mechanical damage	1. Solder bath temperature: $245 \pm 5^\circ\text{C}$, Immersion time: $3 \pm 0.5\text{s}$. 2. Solder coverage shall be $\geq 95\%$ on terminations, excluding the seating plane. Precondition: 1 time reflow soldering.
Board Flex (Substrate Bending)	No visible mechanical damage	Samples shall be soldered onto PCB with terminations tinned. Static load applied gradually, T: $60 \pm 5\text{s}$. Board deflection: $\leq 2.0\text{mm}$.
Terminal Strength	No visible mechanical damage	Specified static load applied vertically to terminals, held for 30 ± 1 seconds. Verify no detachment of terminals from component body.

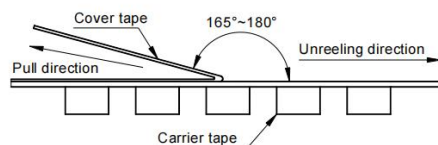
PACKAGING 包装

- Packaging type: Strapping packaging.
- 1608~2012 Series



Type	ΦA	ΦB	ΦC	ΦD	E	W	t	A	B	T
1608	178	60	13	21	2.0	8.4	2.0	1.15	1.83	0.95
2012	178	60	13	21	2.0	8.4	2.0	1.90	2.40	1.45

- Peeling off force
- Pull strength 1608~2012:20g~80g.
- Speed of peeling off:300mm/min ±10%.



- Packing Quantity.

Series	Quantity/Reel
AHW1608F	4000Pcs
AHW2012F	2000Pcs

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 strong solvents, strong alkalis and chlorine-based cleaners. They swell and soften the UV coating, which may dissolve and peel off, damaging device appearance and partial functions.
- 24.Avoid ultrasonic processing, which may cause component falling off and poor pad contact.
- 25.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.