FEATURES

- Small chip suitable for surface mounting.
- Large inductance with ferrite material.
- Single-sided package.
- Operating Temp：-45℃~+85℃(Including self heating).



APPLICATIONS

- Mobile phones and other electronic devices.
- Bluetooth modules and TWS earphones.

PART NUMBERING

AHW	1608	FE	100	K	T	F
①	②	③	④	⑤	⑥	⑦

① Series Name	
AHW	Wire Wound Chip Inductor

② External Dimensions
1608[0603]
2012[0805]

③ Feature Type	
FE	Ferrite core

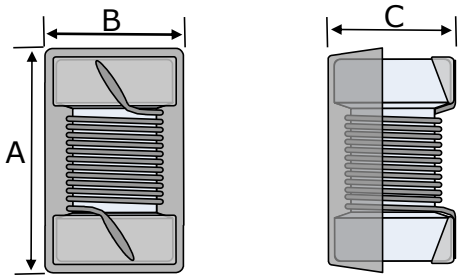
④ Nominal Inductance	
Code (example)	Nominal Inductance［μH］
1R0	1.0
100	10
101	100

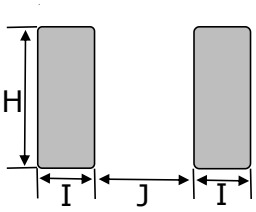
⑤ Inductance Tolerance	
J	±5%
K	±10%
M	±20%

⑥ Packaging	
T	Tape & Reel

⑦ HSF Products	
F	Hazardous Substance Free Products

DIMENSIONS & RECOMMENDED LAND PATTERN





Recommended Land Pattern

Unit: mm

Dimensions				Recommended Land Pattern		
Series	A	B	C	I	H	J
	Max.			Typ.		
AHW1608FE	1.80	1.25	1.10	0.64	1.02	0.64
AHW2012FE	2.40	1.73	1.55	1.02	1.78	0.76

ELECTRICAL CHARACTERISTICS

● AHW1608FE Series

Part Number	Inductance	Inductance Tolerance	L Test Freq.	Quality Factor	Self-resonant Frequency	DC Resistance	Rated Current
				Typ.	Min.	Max.	Typ.
Unit	μH	-	MHz	-	MHz	Ω	mA
Symbol	L	-	Freq.	Q	S.R.F	DCR	Irms
AHW1608FE1R0□TF	1.0	K,M	7.9	16	250	0.41	700
AHW1608FE1R5□TF	1.5	K,M	7.9	16	160	0.52	600
AHW1608FE1R8□TF	1.8	K,M	7.9	16	121	0.56	580
AHW1608FE2R2□TF	2.2	K,M	7.9	16	103	0.72	580
AHW1608FE2R7□TF	2.7	K,M	7.9	16	72	0.81	500
AHW1608FE3R3□TF	3.3	K,M	7.9	16	66	0.91	500
AHW1608FE3R9□TF	3.9	K,M	7.9	16	61	1.08	460
AHW1608FE4R7□TF	4.7	K,M	7.9	16	51	0.97	420
AHW1608FE5R6□TF	5.6	K,M	7.9	16	47	1.43	380
AHW1608FE6R8□TF	6.8	K,M	7.9	16	43	1.95	340
AHW1608FE8R2□TF	8.2	K,M	7.9	16	40	2.18	300
AHW1608FE100□TF	10	J,K,M	2.5	14	36	2.40	280
AHW1608FE120□TF	12	J,K,M	2.5	14	32	2.96	260
AHW1608FE150□TF	15	J,K,M	2.5	14	29	3.38	220
AHW1608FE180□TF	18	J,K,M	2.5	14	28	3.77	220
AHW1608FE220□TF	22	J,K,M	2.5	14	24	4.69	200
AHW1608FE270□TF	27	J,K,M	2.5	14	20	6.76	140
AHW1608FE330□TF	33	J,K,M	2.5	14	15	8.58	120
AHW1608FE470□TF	47	J,K,M	2.5	14	5	12.0	100

ELECTRICAL CHARACTERISTICS

- AHW2012FE Series

Part Number	Inductance	Inductance Tolerance	L Test Freq.	Quality Factor	Self-resonant Frequency	DC Resistance	Rated Current
				Typ.	Min.	Max.	Typ.
Unit	μH	-	MHz	-	MHz	Ω	mA
Symbol	L	-	Freq.	Q	S.R.F	DCR	Irms
AHW2012FER68□TF	0.68	K,M	7.9	14	765	0.19	1480
AHW2012FE1R0□TF	1.0	K,M	7.9	14	208	0.17	1350
AHW2012FE1R2□TF	1.2	K,M	7.9	14	208	0.17	1180
AHW2012FE1R5□TF	1.5	K,M	7.9	14	130	0.22	1080
AHW2012FE1R8□TF	1.8	K,M	7.9	14	112	0.26	1060
AHW2012FE2R2□TF	2.2	K,M	7.9	12	80	0.31	1040
AHW2012FE3R3□TF	3.3	K,M	7.9	12	50	0.36	870
AHW2012FE4R7□TF	4.7	K,M	7.9	14	51	0.56	840
AHW2012FE5R6□TF	5.6	K,M	7.9	12	42	0.65	640
AHW2012FE6R8□TF	6.8	K,M	7.9	14	35	0.88	700
AHW2012FE8R2□TF	8.2	K,M	7.9	13	33	0.94	570
AHW2012FE100□TF	10	J,K,M	2.5	14	25	1.17	560
AHW2012FE120□TF	12	J,K,M	2.5	14	30	1.50	390
AHW2012FE150□TF	15	J,K,M	2.5	15	28	1.82	380
AHW2012FE180□TF	18	J,K,M	2.5	15	27	2.01	360
AHW2012FE220□TF	22	J,K,M	2.5	15	20	2.29	340
AHW2012FE470□TF	47	J,K,M	2.5	14	15	4.42	280
AHW2012FE560□TF	56	J,K,M	2.5	14	10	5.75	150
AHW2012FE680□TF	68	J,K,M	2.5	14	10	5.90	140
AHW2012FE820□TF	82	J,K,M	2.5	14	10	9.75	100
AHW2012FE101□TF	100	J,K,M	1	10	5	9.75	100
AHW2012FE111□TF	110	J,K,M	1	6	5	9.75	100

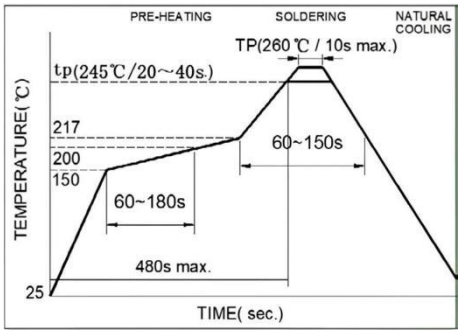
- All test data is referenced to 25°C ambient.
- Rating DC current: Temperature rise(△T) is 40℃ approximately at Irms.
- Storage temp.: -10℃ ~ +40℃ R.H.: 60% Max.
- Moisture sensitivity level : MSL 1.
- The 1608FE and 2012FE with color point Marking can be provided upon customer's request.

RELIABILITY TEST

Test Item	Test Requirement	Test Condition
High Temperature	1. No visible mechanical damage 2. ΔL/L ≤ 10% 3. ΔR/R ≤ 10%	Test temp.: 85±3°C, Test duration:96 hrs. Specimens shall stabilize for 24±4 hrs under standard conditions before re-measurement.
Low Temperature	1. No visible mechanical damage 2. ΔL/L ≤ 10% 3. ΔR/R ≤ 10%	Test temp.: -40±3°C, Test duration:96 hrs. Specimens shall stabilize for 24±4 hrs under standard conditions before re-measurement.
Damp Heat, Steady State	1. No visible mechanical damage 2. ΔL/L ≤ 10% 3. ΔR/R ≤ 10%	Test temp.: 85±3°C, Humidity: 85±3% RH, Test duration: 96 hrs. Specimens shall stabilize for 24±4 hrs under standard conditions before re-measurement.
Thermal Shock	1. No visible mechanical damage 2. ΔL/L ≤ 10% 3. ΔR/R ≤ 10%	Test temp.: -40±3°C/30 min ←→ 105±3°C/30 min, 100 cycles. Speci-mens shall stabilize for 24±4 hrs understandard conditions before re-measurement.
Operational Life	1. No visible mechanical damage 2. ΔL/L ≤ 10% 3. ΔR/R ≤ 10%	Test temp.: 85±3°C, Test duration: 96±2 hrs. Apply rated current. Specimens shall stabilize for 24±4 hrs under standard conditions before re-measurement.
Vibration	1. No visible mechanical damage 2. ΔL/L ≤ 10% 3. ΔR/R ≤ 10%	Frequency: (10→55→10) Hz, 1 G peak-to-peak amplitude: 1.5 mm. Duration: 2 hrs in each of X, Y, Z directions (6 hrs total). Specimens shall stabilize for 1~2 hrs under standard conditions before re-measurement.
Resistance to Soldering Heat	1. No visible mechanical damage 2. ΔL/L ≤ 10% 3. ΔR/R ≤ 10%	Test temp.: 260°C, Duration: T:7.0 min, 1 cycle. After 1 reflow preconditioning with Sn/3.0Ag/0.5Cu solder paste, specimens shall stabilize for 1~2 hrs under standard conditions before re-measurement.
Solderability	No visible mechanical damage	1. Solder temp.: 245±5°C, Dwell time: 3±0.5 s. 2. Solder coverage ≥95% except on contact points.
Board Flexure	No visible mechanical damage	Condition: After 1 reflow preconditioning,terminations are soldered onto a PCB. A static load is gradually applied for 60±5 s with board deflection ≤2.0 mm.
Terminal Strength	No visible mechanical damage	Apply specified static load perpendicular to terminations for 30±1 s; verify no detachment occurs.

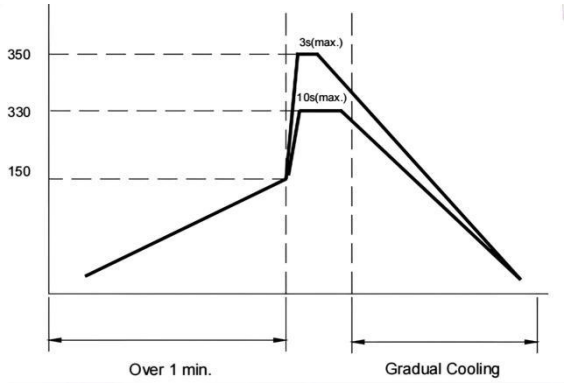
RECOMMENDED SOLDERING TECHNOLOGIES

- Re-flow Soldering (Lead Free)
- ☆ Preheat circuit and products to 150℃
- ☆ 260℃ 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.

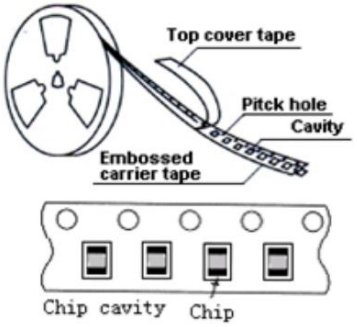
- Hand Soldering
- ☆ Use a 20 watt soldering iron with tip diameter of 1.0mm
- ☆ Limit soldering time to 3 sec

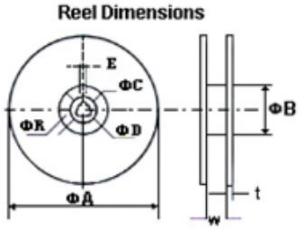


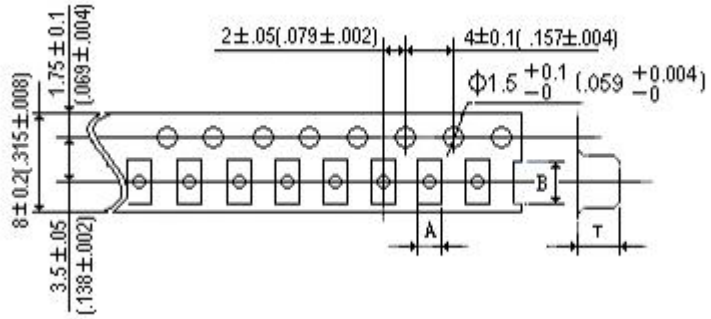
- Note: Take care not to apply the tip of the soldering iron to the terminal electrodes.

PACKAGING

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

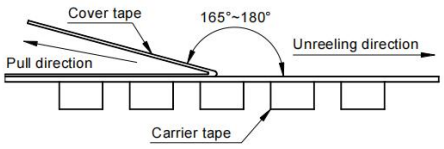






Type	ΦA	ΦB	ΦC	ΦD	E	W	t	A	B	T
1608	178	60	13	21	2.0	8.4	2.0	1.15	1.83	0.95
2012	178	60	13	21	2.0	8.4	2.0	1.90	2.40	1.45

- 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

- 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 handing 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

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.