

FEATURES 特征

- High saturation current, low DCR.
高饱和电流, 低DCR
- Suitable for surface mounting equipment.
适合表面贴装
- Close magnetic circuit design reduce leakage.
闭合磁路结构设计, 减少漏磁
- Operating Temp : -40°C~+125°C(Including self heating)
工作温度范围:-40°C~+125°C(包括自身温度上升)



APPLICATIONS 用途

- Used for filtering, DC/DC conversion, and decoupling in industrial electronics such as security and instrumentation, as well as consumer electronics such as TVs, routers, and game consoles.
用于安防、仪器仪表等工业电子和 TV、路由器、游戏机等消费电子的滤波、DC/DC 转换、去耦

PART NUMBERING 产品型号

ARH	103	R	-	100	M	T	XE
①	②	③		④	⑤	⑥	⑦

① Series Name	
ARH	Wire Wound SMD Type Power Inductors (With Metallic Base)

② External Dimensions [LxWxT mm]	
103	10.6x10.5x3.0
104	10.6x10.5x4.0
105	10.6x10.5x5.2

③ Product identification code	
	R

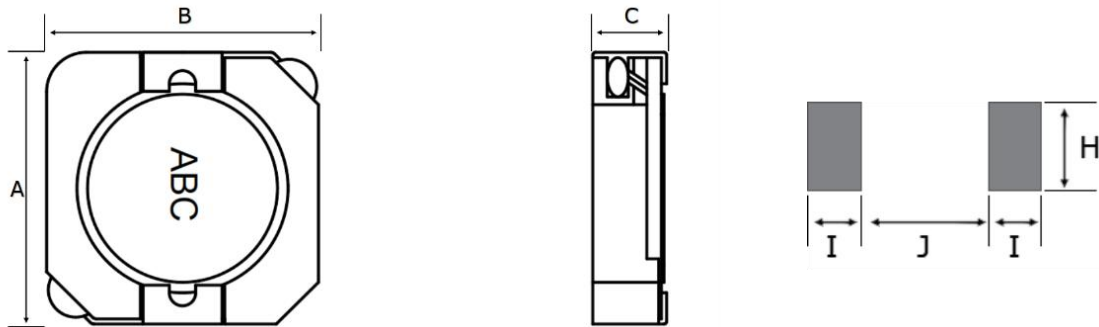
④ Inductance	
Code (example)	Nominal inductance [μH]
1R0	1.0
100	10
101	100

⑤ Inductance Tolerance	
N	±30%
M	±20%

⑥ Packaging	
T	Tape & Reel

⑦ Internal Code	
	XE

DIMENSIONS & RECOMMENDED LAND PATTERN 尺寸及推荐焊盘



Unit: mm

Dimensions				Recommended Land Pattern		
Series	A Max.	B Max.	C Max.	I Typ.	J Typ.	H Typ.
ARH103R	10.6	10.5	3.1	1.7	7.3	3.6
ARH104R	10.6	10.5	4	1.7	7.3	3.6
ARH105R	10.6	10.5	5.1	1.7	7.3	3.6

ELECTRICAL CHARACTERISTICS 特性规格表

● ARH103R-XE Series

Part Number	Inductance (μ H)	L Test Condition	DC resistance (Ω)	Rated Current(A)	Marking
		Hz,mV	Max.	Max.	
ARH103R-1R5NTXE	1.5 $\pm$ 30%	100K,500	0.018	7.00	1R5
ARH103R-2R2NTXE	2.2 $\pm$ 30%	100K,500	0.023	6.50	2R2
ARH103R-3R3NTXE	3.3 $\pm$ 30%	100K,500	0.028	6.00	3R3
ARH103R-4R7MTXE	4.7 $\pm$ 20%	100K,500	0.047	5.50	4R7
ARH103R-5R6MTXE	5.6 $\pm$ 20%	100K,500	0.055	4.80	5R6
ARH103R-6R8MTXE	6.8 $\pm$ 20%	100K,500	0.058	3.84	6R8
ARH103R-8R2MTXE	8.2 $\pm$ 20%	100K,500	0.072	4.50	8R2
ARH103R-100MTXE	10 $\pm$ 20%	100K,500	0.097	3.18	100
ARH103R-150MTXE	15 $\pm$ 20%	100K,500	0.122	2.80	150
ARH103R-220MTXE	22 $\pm$ 20%	100K,500	0.143	2.40	220
ARH103R-330MTXE	33 $\pm$ 20%	100K,500	0.230	2.20	330
ARH103R-470MTXE	47 $\pm$ 20%	100K,500	0.341	1.90	470
ARH103R-560MTXE	56 $\pm$ 20%	100K,500	0.371	1.70	560
ARH103R-680MTXE	68 $\pm$ 20%	100K,500	0.511	1.50	680
ARH103R-820MTXE	82 $\pm$ 20%	100K,500	0.541	1.30	820
ARH103R-101MTXE	100 $\pm$ 20%	100K,500	0.803	1.10	101
ARH103R-151MTXE	150 $\pm$ 20%	100K,500	1.260	0.92	151
ARH103R-221MTXE	220 $\pm$ 20%	100K,500	1.760	0.75	221

ELECTRICAL CHARACTERISTICS 特性规格表
● ARH104R-XE Series

Part Number	Inductance (μ H)	L Test Condition	DC resistance (Ω)	Rated Current(A)	Marking
		Hz,mV	Max.	Max.	
ARH104R-1R0NTXE	1.0 $\pm$ 30%	100K,500	0.014	10.00	1R0
ARH104R-1R5NTXE	1.5 $\pm$ 30%	100K,500	0.017	10.00	1R5
ARH104R-2R2NTXE	2.2 $\pm$ 30%	100K,500	0.021	7.50	2R2
ARH104R-3R3NTXE	3.3 $\pm$ 30%	100K,500	0.025	6.00	3R3
ARH104R-4R7MTXE	4.7 $\pm$ 20%	100K,500	0.028	5.50	4R7
ARH104R-5R6MTXE	5.6 $\pm$ 20%	100K,500	0.031	5.20	5R6
ARH104R-6R8MTXE	6.8 $\pm$ 20%	100K,500	0.038	4.80	6R8
ARH104R-8R2MTXE	8.2 $\pm$ 20%	100K,500	0.042	4.60	8R2
ARH104R-100MTXE	10 $\pm$ 20%	100K,500	0.043	4.40	100
ARH104R-120MTXE	12 $\pm$ 20%	100K,500	0.060	4.00	120
ARH104R-150MTXE	15 $\pm$ 20%	100K,500	0.068	3.60	150
ARH104R-180MTXE	18 $\pm$ 20%	100K,500	0.070	3.30	180
ARH104R-220MTXE	22 $\pm$ 20%	100K,500	0.090	2.90	220
ARH104R-270MTXE	27 $\pm$ 20%	100K,500	0.117	2.60	270
ARH104R-330MTXE	33 $\pm$ 20%	100K,500	0.120	2.40	330
ARH104R-390MTXE	39 $\pm$ 20%	100K,500	0.150	2.20	390
ARH104R-470MTXE	47 $\pm$ 20%	100K,500	0.190	2.10	470
ARH104R-560MTXE	56 $\pm$ 20%	100K,500	0.297	1.80	560
ARH104R-680MTXE	68 $\pm$ 20%	100K,500	0.350	1.50	680
ARH104R-820MTXE	82 $\pm$ 20%	100K,500	0.385	1.45	820
ARH104R-101MTXE	100 $\pm$ 20%	100K,500	0.430	1.35	101
ARH104R-121MTXE	120 $\pm$ 20%	100K,500	0.470	1.25	121
ARH104R-151MTXE	150 $\pm$ 20%	100K,500	0.506	1.15	151
ARH104R-181MTXE	180 $\pm$ 20%	100K,500	0.627	1.00	181
ARH104R-221MTXE	220 $\pm$ 20%	100K,500	0.756	0.92	221
ARH104R-271MTXE	270 $\pm$ 20%	100K,500	0.950	0.75	271
ARH104R-331MTXE	330 $\pm$ 20%	100K,500	1.090	0.70	331
ARH104R-471MTXE	470 $\pm$ 20%	100K,500	1.900	0.60	471
ARH104R-681MTXE	680 $\pm$ 20%	100K,500	2.200	0.55	681
ARH104R-821MTXE	820 $\pm$ 20%	100K,500	4.600	0.40	821
ARH104R-102MTXE	1000 $\pm$ 20%	100K,500	5.110	0.32	102

ELECTRICAL CHARACTERISTICS 特性规格表

● ARH105R-XE Series

Part Number	Inductance (μ H)	L Test Condition	DC resistance (Ω)	Rated Current(A)	Marking
		Hz,mV	Max.	Max.	
ARH105R-1R0NTXE	1.0 $\pm$ 30%	100K,500	0.013	11.00	1R0
ARH105R-1R5NTXE	1.5 $\pm$ 30%	100K,500	0.011	10.50	1R5
ARH105R-2R2NTXE	2.2 $\pm$ 30%	100K,500	0.013	9.25	2R2
ARH105R-3R3MTXE	3.3 $\pm$ 20%	100K,500	0.017	7.80	3R3
ARH105R-4R7MTXE	4.7 $\pm$ 20%	100K,500	0.019	6.40	4R7
ARH105R-5R6MTXE	5.6 $\pm$ 20%	100K,500	0.022	5.90	5R6
ARH105R-6R8MTXE	6.8 $\pm$ 20%	100K,500	0.025	5.40	6R8
ARH105R-8R2MTXE	8.2 $\pm$ 20%	100K,500	0.029	4.85	8R2
ARH105R-100MTXE	10 $\pm$ 20%	100K,500	0.046	4.50	100
ARH105R-150MTXE	15 $\pm$ 20%	100K,500	0.049	3.60	150
ARH105R-220MTXE	22 $\pm$ 20%	100K,500	0.061	2.95	220
ARH105R-330MTXE	33 $\pm$ 20%	100K,500	0.084	2.40	330
ARH105R-390MTXE	39 $\pm$ 20%	100K,500	0.120	2.20	390
ARH105R-470MTXE	47 $\pm$ 20%	100K,500	0.130	2.00	470
ARH105R-560MTXE	56 $\pm$ 20%	100K,500	0.149	1.90	560
ARH105R-680MTXE	68 $\pm$ 20%	100K,500	0.201	1.65	680
ARH105R-820MTXE	82 $\pm$ 20%	100K,500	0.227	1.50	820
ARH105R-101MTXE	100 $\pm$ 20%	100K,500	0.253	1.35	101
ARH105R-121MTXE	120 $\pm$ 20%	100K,500	0.303	1.28	121
ARH105R-151MTXE	150 $\pm$ 20%	100K,500	0.370	1.12	151
ARH105R-181MTXE	180 $\pm$ 20%	100K,500	0.419	1.04	181
ARH105R-221MTXE	220 $\pm$ 20%	100K,500	0.500	0.94	221
ARH105R-331MTXE	330 $\pm$ 20%	100K,500	0.700	0.80	331
ARH105R-391MTXE	390 $\pm$ 20%	100K,500	0.800	0.75	391
ARH105R-471MTXE	470 $\pm$ 20%	100K,500	1.290	0.60	471
ARH105R-561MTXE	560 $\pm$ 20%	100K,500	1.430	0.54	561
ARH105R-681MTXE	680 $\pm$ 20%	100K,500	1.600	0.52	681
ARH105R-821MTXE	820 $\pm$ 20%	100K,500	1.770	0.50	821
ARH105R-102MTXE	1000 $\pm$ 20%	100K,500	1.990	0.48	102
ARH105R-152MTXE	1500 $\pm$ 20%	100K,500	3.050	0.40	152
ARH105R-222MTXE	2200 $\pm$ 20%	100K,500	5.110	0.30	222
ARH105R-332MTXE	3300 $\pm$ 20%	100K,500	6.000	0.25	332
ARH105R-472MTXE	4700 $\pm$ 20%	100K,500	7.500	0.20	472

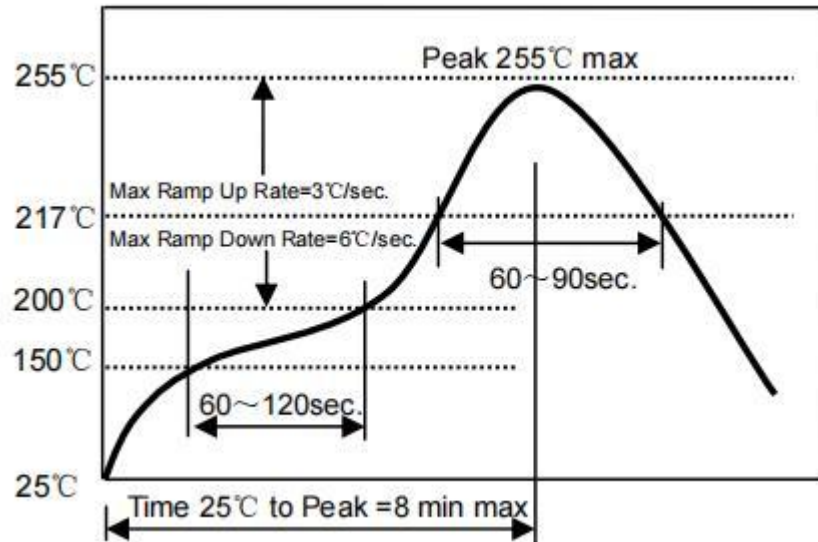
- All test data is referenced to 20°C ambient.
- current at which the inductance drops 10% from its value without saturation , or causes the temperature rise ($\Delta T = 40^\circ\text{C}$) from ambient temperature.

RELIABILITY TEST 可靠性试验

Stress	Test Conditions	Sample Size	Specification	Result
Temperature Cycling	Temperature (°C): -55°C~125°C Cycle: 100	10	1. Electrical characterization change range ($\Delta L \pm 10\%$) 2. Appearance-No damage (OM)	Pass
Biased Humidity	Temperature (°C):40°C Humidity (%): 90~95% Time (Hours): 1000 hrs	10	1. Electrical characterization change range ($\Delta L \pm 10\%$) 2. Appearance-No damage (OM)	Pass
High Temperature Exposure (Storage)	Temperature (°C): 125 °C Time (Hours): 1000 hrs	10	1. Electrical characterization change range ($\Delta L \pm 10\%$) 2. Appearance-No damage (OM)	Pass
Low Temperature Exposure (Storage)	Temperature (°C):-55°C Time (Hours): 1000 hrs	10	1. Electrical characterization change range ($\Delta Z \pm 30\%$) 2. Appearance-No damage (OM)	Pass
Vibration	Axial (X, Y, Z): 10~55 Hz , Amplitude: 1.5mm Time (Hours): 2 hrs	10	1. Electrical characterization change range ($\Delta L \pm 10\%$) 2. Appearance-No damage (OM)	Pass
Resistance to Soldering Heat	Peak temperature (°C):260°C Reflow times: 2 times	10	1. Electrical characterization change range ($\Delta L \pm 10\%$) 2. Appearance-No damage (OM)	Pass
Solderability	Solder temperature (°C): 245±3°C Immersion time (Sec): ≤3 s	10	All terminations shall exhibit a continuous solder coating free from defects for a minimum of 90% of the critical area of any individual termination. (10X magnification)	Pass

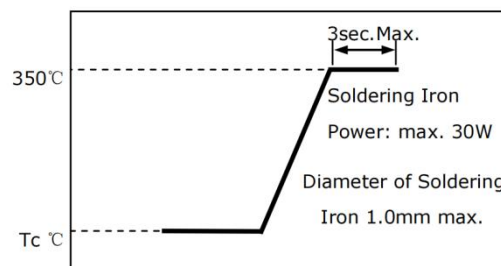
RECOMMENDED SOLDERING TECHNOLOGIES 焊接工艺建议

- Reflowing Profile.
- ☆ Preheat condition: 150~200°C/60~120sec.
- ☆ Allowed time above 217°C: 60~90sec.
- ☆ Max temp: 255°C.
- ☆ Max time at max temp: 10sec.
- ☆ Solder paste: Sn/3.0Ag/0.5Cu.
- ☆ Allowed Reflow time: 2x max.



- ☆ 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.

- Iron Soldering Profile.
- ☆ Iron soldering power: Max. 30W
- ☆ Pre-heating: 150 °C / 60sec.
- ☆ Soldering Tip temperature: 350°C Max.
- ☆ Soldering time: 3sec Max.
- ☆ Solder paste: Sn/3.0Ag/0.5Cu.
- ☆ Max. 1 times for iron soldering



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

■ 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.Avoid ultrasonic processing, which may cause component falling off and poor pad contact.
- ☆ 17.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.