

FEATURES 特征

- Lowest molded height in this package Footprint.
该封装方案具有极低的模压高度
- Shielded construction.
采用屏蔽式结构设计
- Handles high transient current spikes without saturation.
能有效应对高瞬态电流冲击而不发生饱和现象
- Ultra low buzz noise, due to composite construction.
复合材料结构显著降低嗡嗡声噪声
- Encapsulated body offers improved environmental protection and moisture resistance.
封装外壳提供更优的环境防护与防潮性能
- Corrosion resistant package.
耐腐蚀封装结构
- Operating Temp : -55°C~+125°C(Including self heating)
工作温度范围:-55°C~+125°C(包括自身温度上升)



APPLICATIONS 用途

- PDA,notebook,desktop,server applications. High current POL converters.
PDA、笔记本电脑、台式机及服务器应用。高电流聚合物光敏二极管（POL）转换器
- Low profile, high current power supplies. Battery powered devices.
低剖面、大电流电源。电池供电设备
- DC/DC converters in distributed power systems. DC/DC converter for Field Programmable Gate Array.
通讯设备、工业设备

PART NUMBERING 产品型号

APH	1260	T	100	M	P
①	②	③	④	⑤	⑥

① Series Name	
APH	Molded SMD Power Inductors

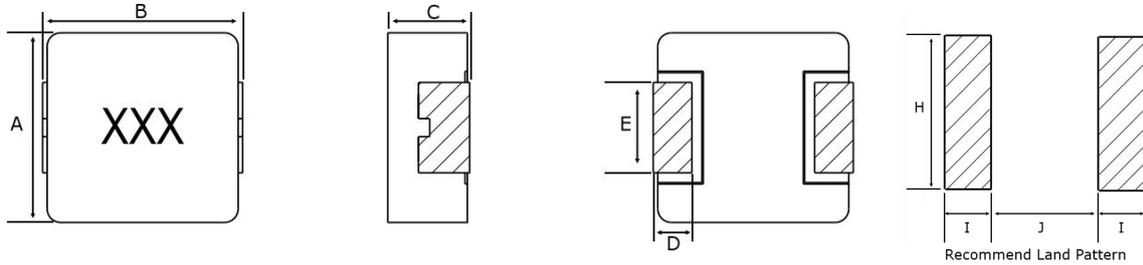
③ Feature Type	
T	Standard

④ Nominal Inductance	
Code (example)	Nominal Value [μH]
R47	0.47
1R0	1
100	10

② External Dimensions[LxWxT mm]	
0840	8.8x8.0x3.8
0850	8.8x8.0x4.8
1240	13.45x12.8x3.8
1250	13.45x12.8x4.8
1260	13.45x12.8x5.8
1265	13.45x12.8x6.5

⑤ Inductance Tolerance	
M	20%

⑥ Internal Code	
	P

DIMENSIONS & RECOMMENDED LAND PATTERN 尺寸及推荐焊盘


Unit: mm

Series	A	B	C	D	E	I	J	H
						Typ.		
APH0840TP	8.2±0.3	8.8±0.5	3.8±0.2	1.4±0.3	5.0±0.3	2.75	4.0	5.5
APH0850TP	8.2±0.3	8.8±0.5	4.8±0.2	1.4±0.3	5.0±0.3	2.8	4.0	5.5
APH1240TP	12.8±0.50	13.45±0.5	3.8±0.2	2.0±0.5	5.0±0.3	3.25	8.0	5.5
APH1250TP	12.6±0.50	13.45±0.5	4.8±0.2	2.0±0.5	5.0±0.3	3.25	8.0	5.5
APH1260TP	12.6±0.50	13.45±0.5	5.8±0.2	2.0±0.5	5.0±0.3	3.25	8.0	5.5
APH1265TP	12.6±0.50	13.45±0.5	6.5Max.	2.0±0.5	5.0±0.3	3.25	8.0	5.5

ELECTRICAL CHARACTERISTICS 特性规格表

● APH0840-P Series

Part Number	Inductance	Inductance Tolerance	DC Resistance	Saturation Current		Heat Rating Current	
	@100KHz,1V		Max.	Max.	Typ.	Max.	Typ.
Unit	μH	-	mΩ	A		A	
Symbol	L	-	DCR	Isat		Irms	
APH0840TR15MP	0.15	±20%	1.65	65	70	33	39
APH0840TR22MP	0.22	±20%	1.8	55	60	30	36
APH0840TR33MP	0.33	±20%	2.4	40	45	25	30
APH0840TR47MP	0.47	±20%	2.8	36	42	25	28
APH0840TR56MP	0.56	±20%	3.2	23	26	22	24
APH0840TR68MP	0.68	±20%	3.8	22	24	21	23
APH0840TR82MP	0.82	±20%	4.4	19	21	19	21
APH0840T1R0MP	1	±20%	4.62	17	19	17	19
APH0840T1R5MP	1.5	±20%	7.6	15	17	15	17
APH0840T1R8MP	1.8	±20%	11	13.5	15	12.5	15
APH0840T2R2MP	2.2	±20%	11.4	12	14	12	14
APH0840T3R3MP	3.3	±20%	15	11	12.5	10	12
APH0840T4R7MP	4.7	±20%	26.5	10.5	11.5	8.5	9.5
APH0840T5R6MP	5.6	±20%	30	10	11	8	9
APH0840T6R8MP	6.8	±20%	36.8	8	9	7	8
APH0840T8R2MP	8.2	±20%	46	7.7	8.7	6	7
APH0840T100MP	10	±20%	59	7	8	5.5	6.5
APH0840T150MP	15	±20%	71	4.9	5.5	4.8	5.4
APH0840T220MP	22	±20%	113	4.5	5	4.2	4.8

ELECTRICAL CHARACTERISTICS 特性规格表
● APH0840-P Series

Part Number	Inductance	Inductance Tolerance	DC Resistance	Saturation Current		Heat Rating Current	
	@100KHz,1V		Max.	Max.	Typ.	Max.	Typ.
Unit	μH	-	mΩ	A		A	
Symbol	L	-	DCR	Isat		Irms	
APH0840T330MP	33	±20%	156	3.3	3.5	3	3.5
APH0840T470MP	47	±20%	225	2.9	3.1	2.5	2.9

● APH0850-P Series

Part Number	Inductance	Inductance Tolerance	DC Resistance	Saturation Current		Heat Rating Current	
	@100KHz,1V		Max.	Max.	Typ.	Max.	Typ.
Unit	μH	-	mΩ	A		A	
Symbol	L	-	DCR	Isat		Irms	
APH0850TR50MP	0.5	±20%	2.4	30	40.5	25	28.1
APH0850T2R2MP	2.2	±20%	12	14	16	8.5	10
APH0850T3R3MP	3.3	±20%	15	11.5	13	8	9
APH0850T4R7MP	4.7	±20%	20	10.5	12	7	8
APH0850T100MP	10	±20%	45	7	8	4.8	5.5
APH0850T150MP	15	±20%	50	6	7	4.5	5
APH0850T220MP	22	±20%	88	4.8	5.5	3.5	4
APH0850T330MP	33	±20%	140	4.5	5	2.5	3
APH0850T470MP	47	±20%	195	3	3.5	2.2	2.5
APH0850T680MP	68	±20%	265	2.5	3	1.7	2
APH0850T101MP	100	±20%	326	2	2.5	1.3	1.5

● APH1240-P Series

Part Number	Inductance	Inductance Tolerance	DC Resistance	Saturation Current		Heat Rating Current	
	@100KHz,1V		Max.	Max.	Typ.	Max.	Typ.
Unit	μH	-	mΩ	A		A	
Symbol	L	-	DCR	Isat		Irms	
APH1240TR68MP	0.68	±20%	3.5	37.6	47	24	28
APH1240TR82MP	0.82	±20%	4.5	32	40	24	28
APH1240T1R0MP	1	±20%	7.5	28	35	20	24
APH1240T1R5MP	1.5	±20%	9.5	24.4	30.5	17	20
APH1240T2R2MP	2.2	±20%	11.5	20.8	26	15	18
APH1240T3R3MP	3.3	±20%	13	16.8	21	13	15
APH1240T4R7MP	4.7	±20%	14.5	14.4	18	11	13
APH1240T6R8MP	6.8	±20%	20	11.2	14	8	9
APH1240T100MP	10	±20%	25	8	10	7	8
APH1240T150MP	15	±20%	39	6	7.5	5.8	6.5
APH1240T220MP	22	±20%	51	4.8	6	3.8	4.5

ELECTRICAL CHARACTERISTICS 特性规格表
● APH1250-P Series

Part Number	Inductance	Inductance Tolerance	DC Resistance	Saturation Current		Heat Rating Current	
	@100KHz,1V		Max.	Max.	Typ.	Max.	Typ.
Unit	μH	-	mΩ	A		A	
Symbol	L	-	DCR	Isat		Irms	
APH1250T3R3MP	3.3	±20%	7	17.6	22	12	14
APH1250T4R7MP	4.7	±20%	9	16	20	11	13
APH1250T6R8MP	6.8	±20%	18	12.8	16	10	12
APH1250T100MP	10	±20%	22	9.6	12	8	9
APH1250T150MP	15	±20%	30	8	10	7	8
APH1250T220MP	22	±20%	58	5.2	6.5	3.8	4.5
APH1250T330MP	33	±20%	84	4.8	6	2.8	3.5
APH1250T470MP	47	±20%	130	4	5	2.6	3

● APH1260-P Series

Part Number	Inductance	Inductance Tolerance	DC Resistance	Saturation Current		Heat Rating Current	
	@100KHz,1V		Max.	Max.	Typ.	Max.	Typ.
Unit	μH	-	mΩ	A		A	
Symbol	L	-	DCR	Isat		Irms	
APH1260T3R3MP	3.3	±20%	6.8	21	25	14	17
APH1260T4R7MP	4.7	±20%	9	19.2	24	12	15
APH1260T5R6MP	5.6	±20%	11	18	22.5	11	13
APH1260T6R8MP	6.8	±20%	13.5	15.2	19	10	12
APH1260T8R2MP	8.2	±20%	16	10.8	13.5	9	11
APH1260T100MP	10	±20%	20.7	11.1	12.5	8.5	10
APH1260T120MP	12	±20%	23	8	10	7.8	9
APH1260T150MP	15	±20%	29	7.2	9	7.5	8.5
APH1260T180MP	18	±20%	35	6.4	8	6.5	7.5
APH1260T220MP	22	±20%	39.5	6	7.5	6	7
APH1260T270MP	27	±20%	56	5.2	6.5	5	6
APH1260T330MP	33	±20%	75	4.8	6	4.8	5.5
APH1260T470MP	47	±20%	90	4.4	5.5	4.2	5
APH1260T680MP	68	±20%	140	3.6	4.5	3.2	4
APH1260T101MP	100	±20%	200	2.8	3.5	2.5	3
APH1260T121MP	120	±20%	235	2.56	3.2	1.7	2
APH1260T151MP	150	±20%	350	2.16	2.7	1.2	1.5

ELECTRICAL CHARACTERISTICS 特性规格表

● APH1265-P Series

Part Number	Inductance	Inductance Tolerance	DC Resistance	Saturation Current		Heat Rating Current	
	@100KHz,1V		Max.	Max.	Typ.	Max.	Typ.
Unit	μH	-	mΩ	A		A	
Symbol	L	-	DCR	Isat		Irms	
APH1265T4R7MP	4.7	±20%	8.5	19	24	12	16
APH1265T5R6MP	5.6	±20%	10.5	18	22.5	10	14
APH1265T6R8MP	6.8	±20%	12	15	19	9	13
APH1265T8R2MP	8.2	±20%	14	13	16	8.5	12
APH1265T100MP	10	±20%	16.5	12	15	7.5	11
APH1265T150MP	15	±20%	26	9	11	6.5	9.5
APH1265T220MP	22	±20%	36	7.5	9	6	8
APH1265T330MP	33	±20%	65	7	8	4.5	6.5
APH1265T470MP	47	±20%	70	5.5	6.8	4	5.5
APH1265T680MP	68	±20%	120	4	5.2	3.4	4.8
APH1265T820MP	82	±20%	135	3.5	4.5	2.7	4
APH1265T101MP	100	±20%	170	3.2	4	1.8	3.5

- All test data is referenced to 20°C ambient.
- Rated current: Isat or Irms, whichever is smaller.
- Isat(Typ) : DC current at which the inductance drops approximate 30% from its value without current.
- Isat(Max) : DC current at which the inductance drops approximate 30% from its value without current.
- Irms(Typ): DC current that causes the temperature rise ($\Delta T = 40^{\circ}\text{C}$) from 20°C ambient.
- Irms(Max): DC current that causes the temperature rise ($\Delta T = 20^{\circ}\text{C}$) from 20°C ambient.

RELIABILITY TEST 可靠性测试

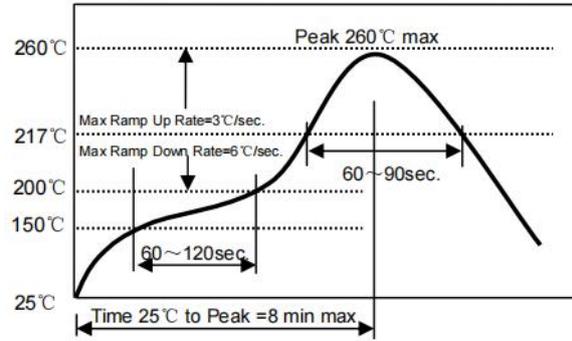
Mechanical Reliability		
Item	Specification and Requirement	Test Method
Solderability	The surface of terminal immersed shall be minimum of 95% covered with a new coating of solder	Solder heat proof: 1.Preheating: $160 \pm 10 \text{ }^\circ\text{C}$ 2.Retention time: $245 \pm 5 \text{ }^\circ\text{C}$ for 2 ± 0.5 seconds
Vibration	Inductance change: Within $\pm 10\%$ Without mechanical damage such as break	1.Vibration frequency: (10 Hz to 55 Hz to 10Hz) in 60 seconds as a period . 2.Vibration time: Period cycled for 2 hours in each of 3 mutual perpendicular directions. 3.Amplitude: 1.5 mm max.
Shock	Inductance change: Within $\pm 10\%$ Without mechanical damage such as break	1.Peak value: 100 G 2.Duration of pulse: 11ms 3.3 times in each positive and negative direction of 3 mutual perpendicular directions
Insulating Resistance	Over 100M Ω	4. Over 100M Ω at 100V D.C. between coil and core
Endurance Reliability		
Item	Specification and Requirement	Test Method
Thermal Shock	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	1. Repeat 100 cycles as follow: ($-55 \pm 2 \text{ }^\circ\text{C}$; 30 ± 3 min) → (Room temp., 5 min) → ($+125 \pm 2 \text{ }^\circ\text{C}$, 30 ± 3 min) → (Room temp., 5 min) 2. Recovery: $48 + 4 / -0$ hours of recovery under the standard condition after the test.
High Temperature Resistance	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	1.Environment condition: $85 \pm 2^\circ\text{C}$ Applied Current: Rated current. 2.Duration: $1000 + 4 / -0$ hours
Humidity Resistance	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	1.Environment condition: $85 \text{ }^\circ\text{C}$ Humidity: 85% Applied Current: Rated current 2.Duration: $1000 + 4 / -0$ hours
Low Temperature Store	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	Store temperature: $-55 \pm 2^\circ\text{C}$, $1000 + 4 / -0$ hours
High Temperature Store	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	Store temperature: $+125 \pm 2^\circ\text{C}$, $1000 + 4 / -0$ hours

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: 260°C
- ◆ Max time at max temp: 10sec.
- ◆ Solder paste: Sn/3.0Ag/0.5Cu
- ◆ Allowed Reflow time: 2x max

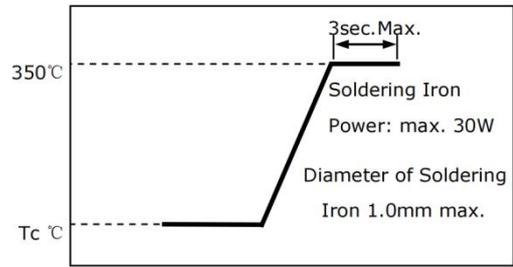
Note: The reflow profile in the above table is only for qualification and is not meant to specify board assembly profiles. Actual board assembly profiles must be based on the customer's specific board design, solder paste and process, and should not exceed the parameters as the Reflow profile shows.



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.

■ SAFETY REMINDERS 注意事项

SAFETY REMINDERS

The Company shall not guarantee the suitability, performance, or quality for the following applications that require a high level of safety and reliability, or where equipment failure, malfunction, or abnormal operation may cause damage to human life, physical well-being, or property, and may have significant social impacts (hereinafter referred to as "specific applications"). If you intend to use this product in the application scenarios listed below, or if you have special requirements exceeding the scope or conditions specified in each product catalog, please contact us.

- (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.