

FEATURES 特征

- Low Profile & High Current.
超薄大电流
- Magnetically Shielded.
磁屏蔽结构
- Operating Temp : -40℃~+125℃(Including self heating)
工作温度范围:-40℃~+125℃(包括自身温度上升)



APPLICATIONS 用途

- Portable Communication Equipment.
移动通讯设备
- Mobile Phone, Tablet PC.
手机, 平板
- Wearable Devices.
智能穿戴设备

PART NUMBERING 产品型号

$\frac{\text{APH}}{\text{①}}$

 $\frac{252012}{\text{②}}$

 $\frac{-}{\text{③}}$

 $\frac{2R2}{\text{④}}$

 $\frac{M}{\text{⑤}}$

 $\frac{S}{\text{⑥}}$

① Series Name	
APH	Mini Molded SMD Power Inductors

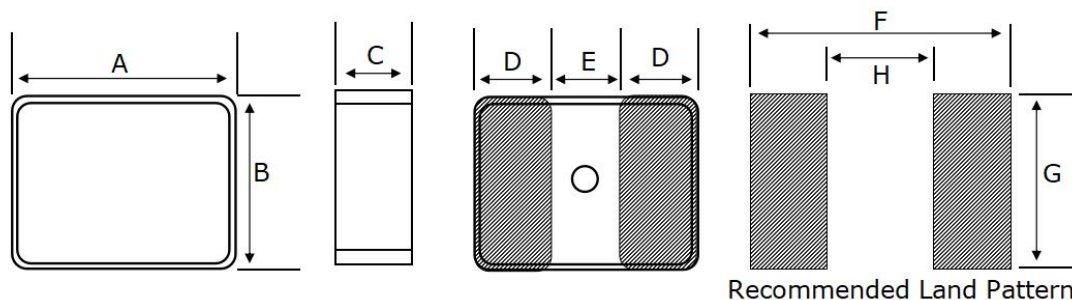
② External Dimensions [LxWxT mm]	
201610	2.0x1.6x1.0
252010	2.5x2.0x1.0
252012	2.5x2.0x1.2

③ Inductance	
Code (example)	Nominal inductance [μH]
R22	0.22
1R0	1.0

④ Inductance Tolerance	
M	±20%

⑤ Product Type	
S	Standard Coil

DIMENSIONS & RECOMMENDED LAND PATTERN 尺寸及推荐焊盘



Unit: mm

Series	Dimensions					Recommended Land Pattern		
	A	B	C	D	E	F	G	H
	±0.2	±0.2	Max.	±0.3	Typ.	Typ.	Typ.	Typ.
APH201610	2.0	1.6	1.0	0.5	1.0	2.3	1.9	0.8
APH252010	2.5	2.0	1.0	0.6	1.3	2.8	2.4	1.0
APH252012	2.5	2.0	1.2	0.6	1.3	2.8	2.4	1.0

ELECTRICAL CHARACTERISTICS 特性规格表

● APH201610 Series

Part Number	Inductance	Inductance Tolerance	DC Resistance		Saturation Current		Heat Rating Current	
	@1MHz,1V		Max.	Typ.	Max.	Typ.	Max.	Typ.
Unit	μH	-	mΩ		A		A	
Symbol	L	-	DCR		Isat		Irms	
APH201610-R24MS	0.24	±20%	27	20	5.10	5.70	4.60	5.10
APH201610-R33MS	0.33	±20%	35	25	4.60	5.10	3.70	4.20
APH201610-R47MS	0.47	±20%	45	33	4.10	4.50	3.20	3.60
APH201610-R68MS	0.68	±20%	55	40	3.40	3.80	3.10	3.50
APH201610-1R0MS	1.0	±20%	70	60	2.70	3.00	2.30	2.70
APH201610-1R5MS	1.5	±20%	130	115	2.30	2.60	1.90	2.10
APH201610-2R2MS	2.2	±20%	150	135	1.80	2.00	1.60	1.80

● APH252010 Series

Part Number	Inductance	Inductance Tolerance	DC Resistance		Saturation Current		Heat Rating Current	
	@1MHz,1V		Max.	Typ.	Max.	Typ.	Max.	Typ.
Unit	μH	-	mΩ		A		A	
Symbol	L	-	DCR		Isat		Irms	
APH252010-R22MS	0.22	±20%	25	22	5.50	6.50	4.80	5.50
APH252010-R33MS	0.33	±20%	30	25	4.80	5.00	4.00	5.00
APH252010-R47MS	0.47	±20%	35	28	4.60	4.80	3.60	4.00
APH252010-R68MS	0.68	±20%	45	32	3.90	4.40	3.10	3.50
APH252010-1R0MS	1.0	±20%	60	45	3.20	3.60	2.80	3.10
APH252010-1R5MS	1.5	±20%	100	80	2.40	2.70	2.10	2.50

ELECTRICAL CHARACTERISTICS 特性规格表

● APH252010 Series

Part Number	Inductance	Inductance Tolerance	DC Resistance		Saturation Current		Heat Rating Current	
	@1MHz,1V		Max.	Typ.	Max.	Typ.	Max.	Typ.
Unit	μH	-	mΩ		A		A	
Symbol	L	-	DCR		Isat		Irms	
APH252010-2R2MS	2.2	±20%	130	110	2.20	2.50	2.00	2.20
APH252010-3R3MS	3.3	±20%	225	195	1.80	2.00	1.40	1.70
APH252010-4R7MS	4.7	±20%	265	220	1.60	1.90	1.25	1.40

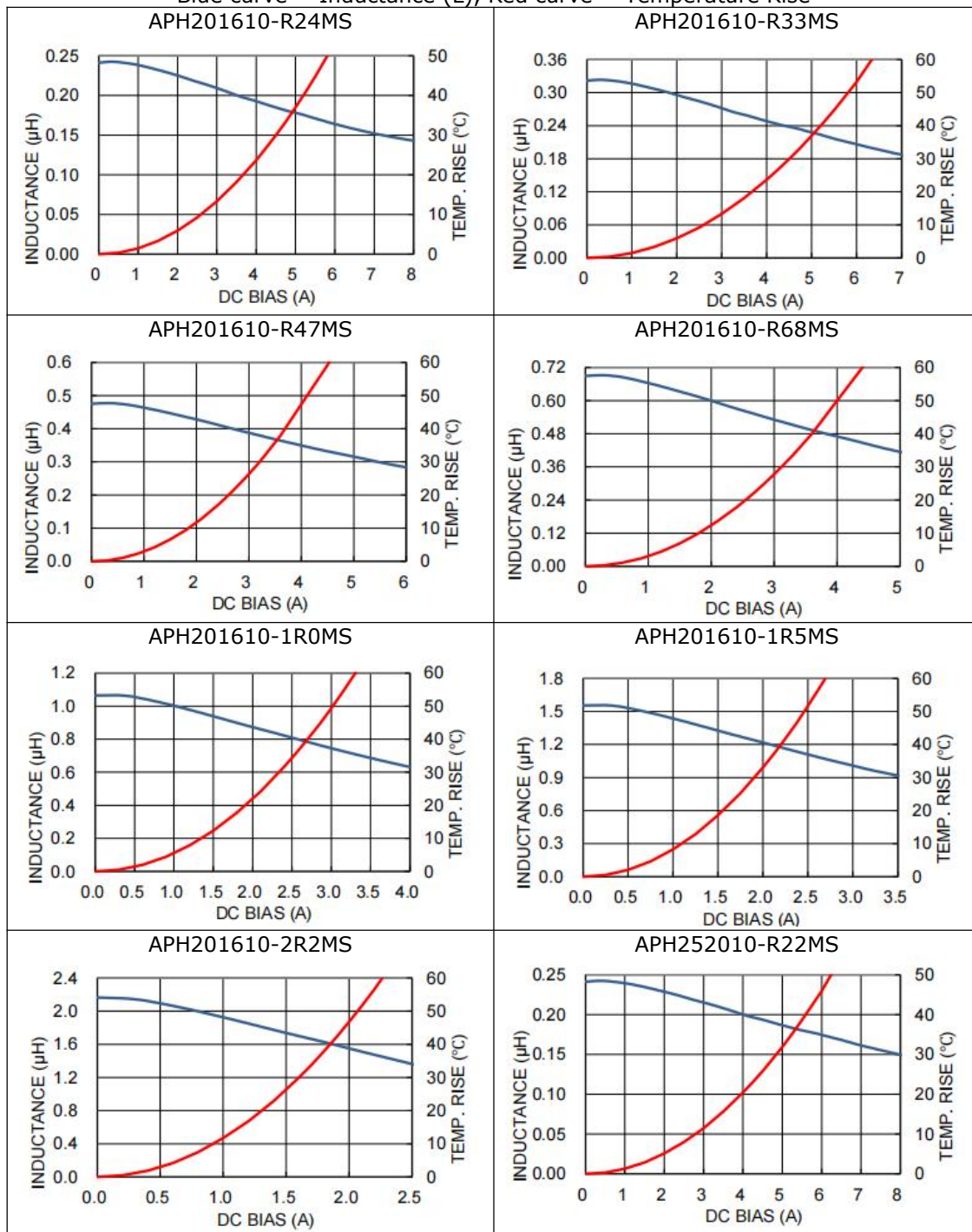
● APH252012 Series

Part Number	Inductance	Inductance Tolerance	DC Resistance		Saturation Current		Heat Rating Current	
	@1MHz,1V		Max.	Typ.	Max.	Typ.	Max.	Typ.
Unit	μH	-	mΩ		A		A	
Symbol	L	-	DCR		Isat		Irms	
APH252012-R22MS	0.22	±20%	23	20	6.00	7.00	5.20	6.00
APH252012-R33MS	0.33	±20%	27	22	5.50	6.50	4.70	5.20
APH252012-R47MS	0.47	±20%	32	25	5.20	6.00	4.20	4.70
APH252012-R68MS	0.68	±20%	40	35	4.65	5.10	3.40	3.80
APH252012-1R0MS	1.0	±20%	55	42	4.10	4.50	3.20	3.60
APH252012-1R5MS	1.5	±20%	85	70	3.00	3.30	2.30	2.60
APH252012-2R2MS	2.2	±20%	105	85	2.80	3.10	2.10	2.30
APH252012-3R3MS	3.3	±20%	160	130	1.90	2.20	1.90	2.10
APH252012-4R7MS	4.7	±20%	260	200	1.65	2.00	1.45	1.65

- All test data is referenced to 25℃ ambient.
- Rated current: Isat or Irms, whichever is smaller.
- Isat: DC current at which the inductance drops approximate 30% from its value without current.
- Irms: DC current that causes the temperature rise ($\Delta T = 40^{\circ}\text{C}$) from 20℃ ambient.

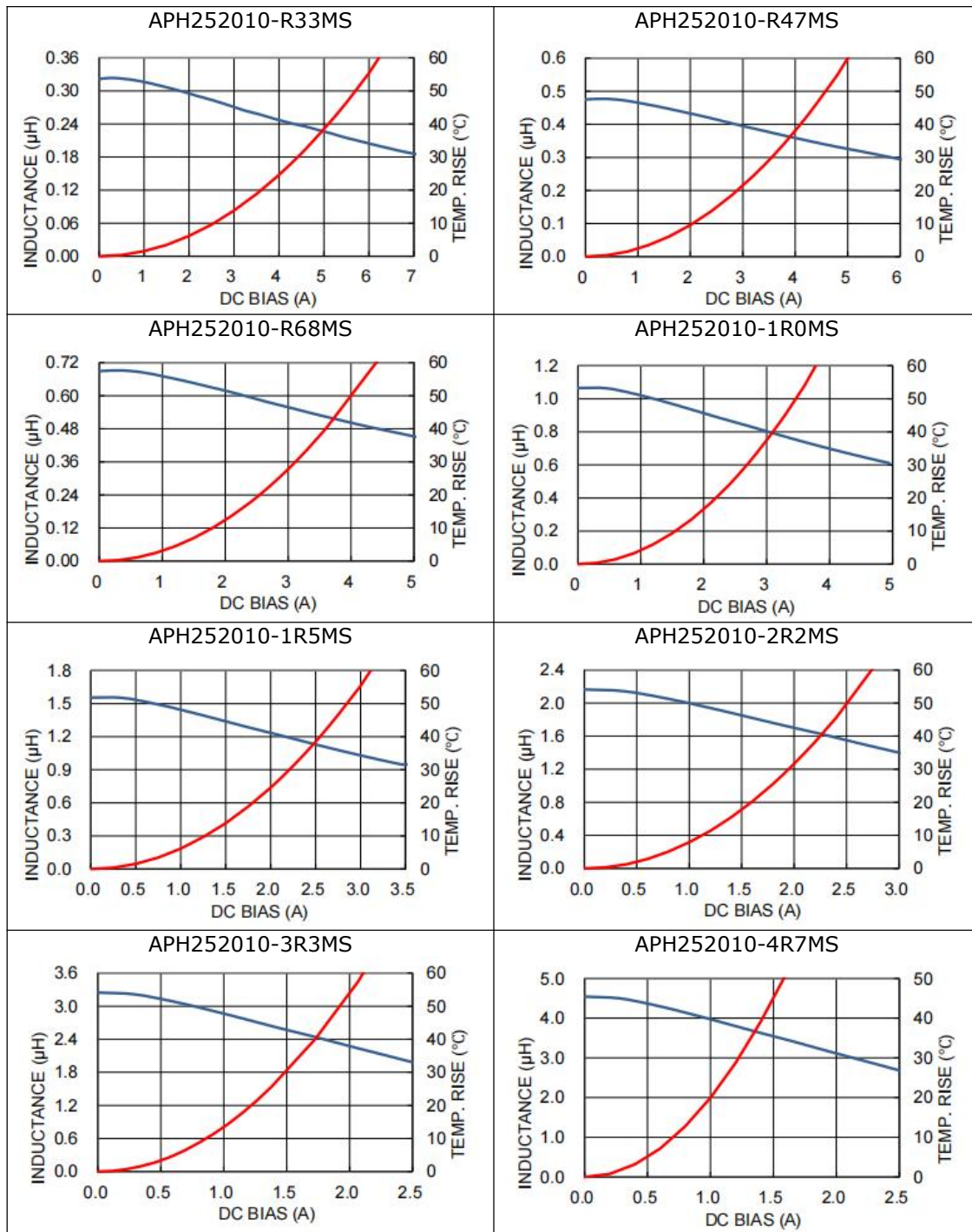
RATED CURRENT CURVE 电流曲线

Blue curve = Inductance (L), Red curve = Temperature Rise



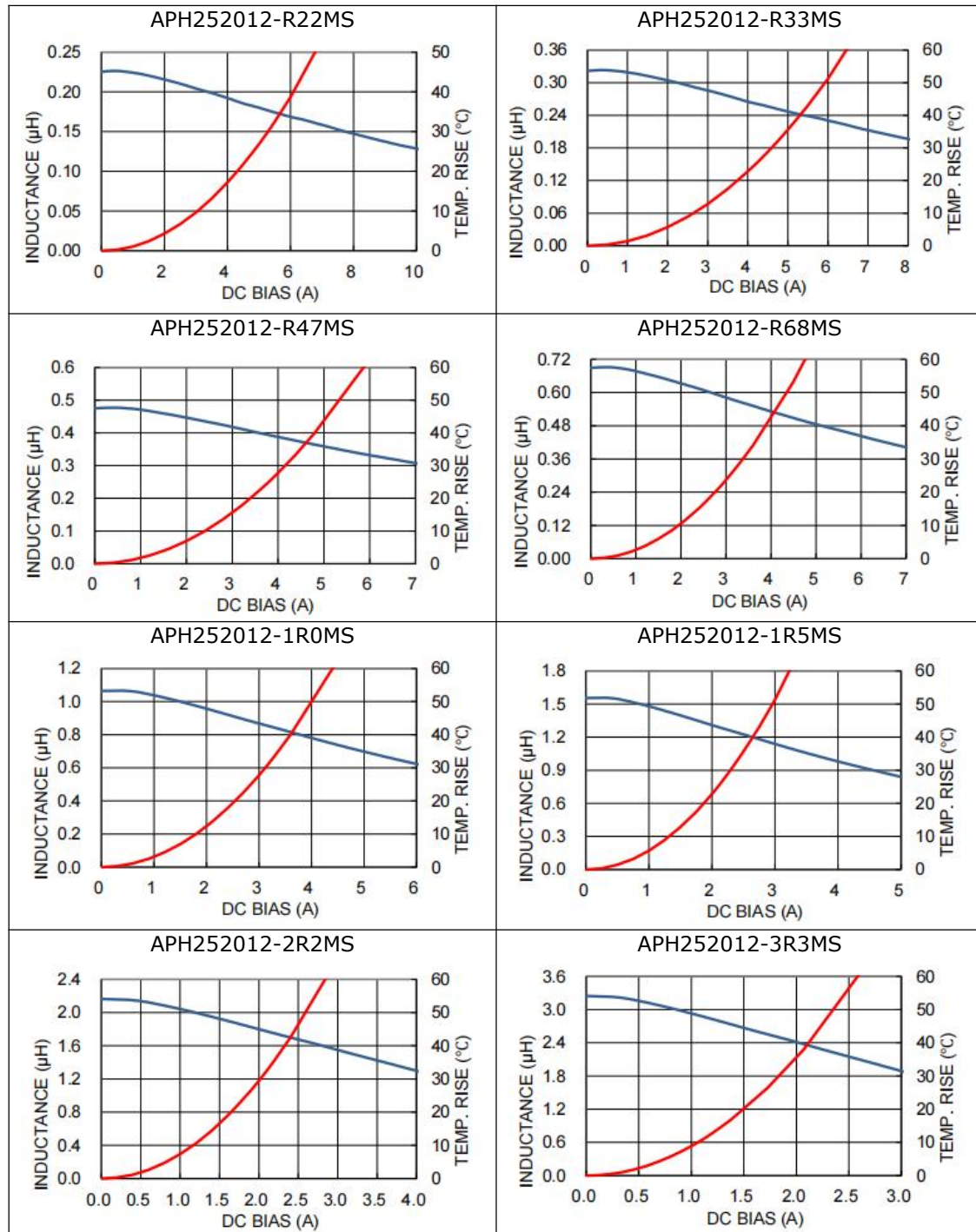
RATED CURRENT CURVE 电流曲线

Blue curve = Inductance (L), Red curve = Temperature Rise



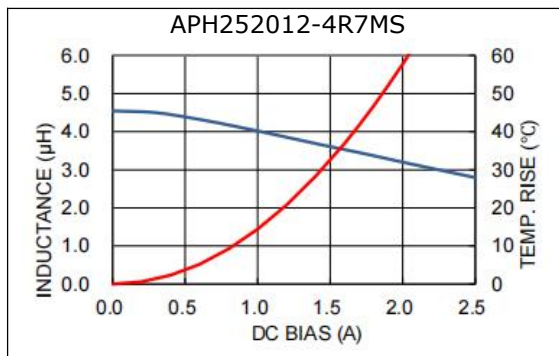
RATED CURRENT CURVE 电流曲线

Blue curve = Inductance (L), Red curve = Temperature Rise



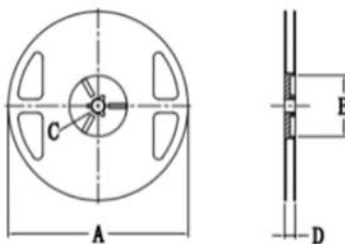
RATED CURRENT CURVE 电流曲线

Blue curve = Inductance (L), Red curve = Temperature Rise



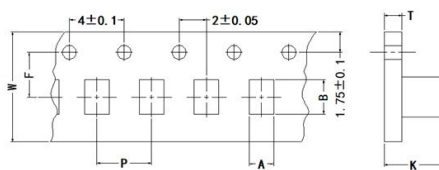
PACKAGING 包装

● Reel Size



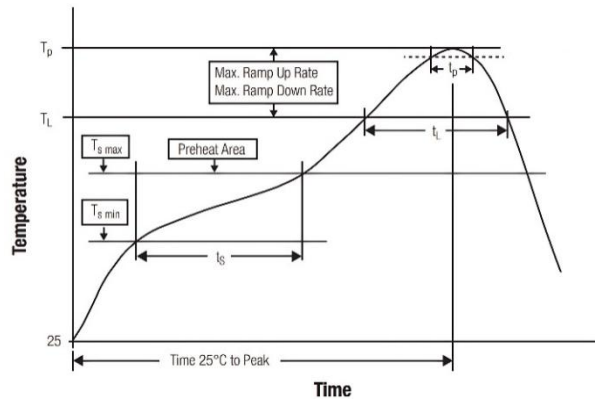
Item	A	B	C	D
APH201610~APH252012	178±2.0	60±2.0	12±0.5	10±1.5

● Tape Size



Item	A	B	T	W	P	F	K	pcs/Reel
APH201610	1.9±0.1	2.3±2.1	0.22±0.05	8.0±0.1	4.0±0.1	3.5±0.1	1.15±0.1	3000
APH252010	2.5±0.1	2.95±2.1						
APH252012	2.5±0.1	2.95±2.1						

SOLDERING CONDITINON 焊接条件



Profile Feature	Lead-Free Assembly
Preheat Temperature Min (T _s min)	150°C
Preheat Temperature Max (T _s max)	200°C
Preheat Time t _s from T _s min to T _s max	60-120 seconds
Average Ramp-Up Rate (T _L to T _p)	3°C /second max.
Liquidous Temperature (T _L)	217°C
Time t _L maintained above T _L (t _L)	60-150 seconds
Peak/Classification Temperature (T _p)	255°C
Time within 5°C of actual peak temperature (t _p)	20-30 seconds
Ramp-down Rate (T _p to T _L)	6°C /second max.
Time 25 °C to Peak Temperature	8 minutes max.

■ PRECAUTIONS 注意事项

- 1.Storage Conditions
Store products in a warehouse in compliance with the following condition:
Temperature: Inductors (product with taping) +15 to +35℃; Humidity: 25~70%RH.
If the product is not used up 24H after opening, desiccant should be placed in the package and sealed
- 2.Do not subject products to rapid changes in temperature and humidity.
- 3.Do not store the products in chemical atmosphere such as one containing sulfurous acid gas or alkaline gas, that will causes poor solderability and corrosion of inductors.
- 4.Do not store products in bulk packaging to prevent collision among inductors which causes core chipping and wire breakage.
- 5.Store products on pallets to protect from humidity, dust, etc.
- 6.Avoid heat shock, vibration, direct sunlight, etc.
- 7.When designing the PCB, please consider the installation position of the non-magnetic shielded components to avoid failures caused by magnetic interference.
- 8.Do not place this product near magnets or objects with magnetic force.
- 9.The product will self-heat (temperature rise) due to power-on, and sufficient margin should be left in thermal design.
- 10.Mounting density
If this product is placed near heat-generating products, be sure to implement sufficient heat-dissipating measures. If this product is subjected to a significant amount of heat from other products, this could adversely affect product quality, resulting in a circuit malfunction or failure of the mounted section. Also, be sure that the product is used in a manner so that the heat that the product is subjected to from other products does not exceed the upper limit of the rated operating temperature for the product.
- 11.Since the static electricity carried by the human body will be transmitted to the ground wire, please use an anti-static wrist strap.
- 12.Grease on human hands may lead to decreased solderability. Please avoid direct contact with the terminals.
- 13.This product refers to the general standard used in audio-visual entertainment, home appliances, computers,office automation, communications, power modules, LED lighting, measuring equipment.Machine tools, industrial control panels and other general electronic equipment. And the general electronequipment should be used under the usual operation and usage methods.
- 14.Reworking with soldering iron

ITEM	Requirement
Pre-heating	150℃/approx. 1 min
Tip temperature of soldering iron	350℃ max.
Soldering time	3 s (+1 s, -0 s)
Number of reworking operations	1 times max.
It is recommended to replace the product directly, rework may cause poor appearance	
- 15.We cannot warrant against failure caused by any use of our product that deviates from the intended use as described in this product specification.
- 16.Please approve our product specifications or transact the approval sheet for product specifications before ordering.
- 17.Our specification limits the quality of the component as a single unit. Please ensure the component is thoroughly evaluated in your application circuit.

■ 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.