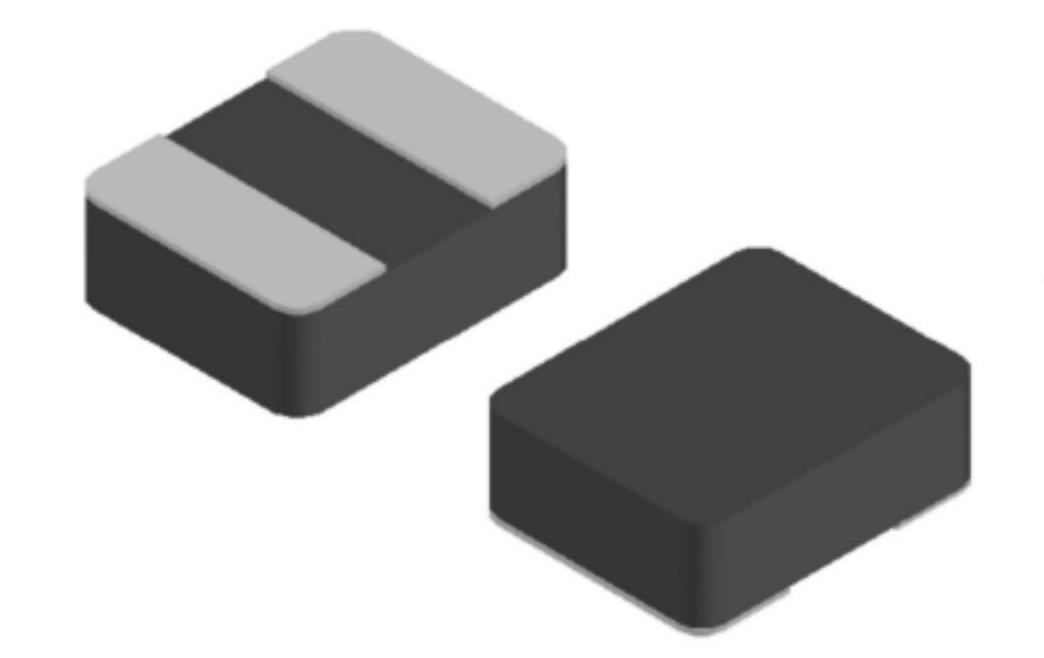
Mimi Molded SMD Power Inductor APH-mini Series



APH-mini series is designed for low profile type with low RDC and ultra large current. Its molded magnetic shielded type is suitable for highdensity mounting and ultra low buzz noise. Soldering conditions can be easily confirmed when mounting onto the board. This series also provides customers with embossed carrier type packaging for automatic mounting machine. Now covers 201208-252012 such as the mainstream sense of size and R22-4R7 series values, especially suitable for mobile phones, headphones and other mobile power supply of portable terminal.

Features

- RoHS, Halogen Free and REACH Compliance
- Metal material for large current and low loss
- Ultra low buzz noise
- Metal material for large current and low loss
- Closed magnetic circuit design reduces leakage

Applications

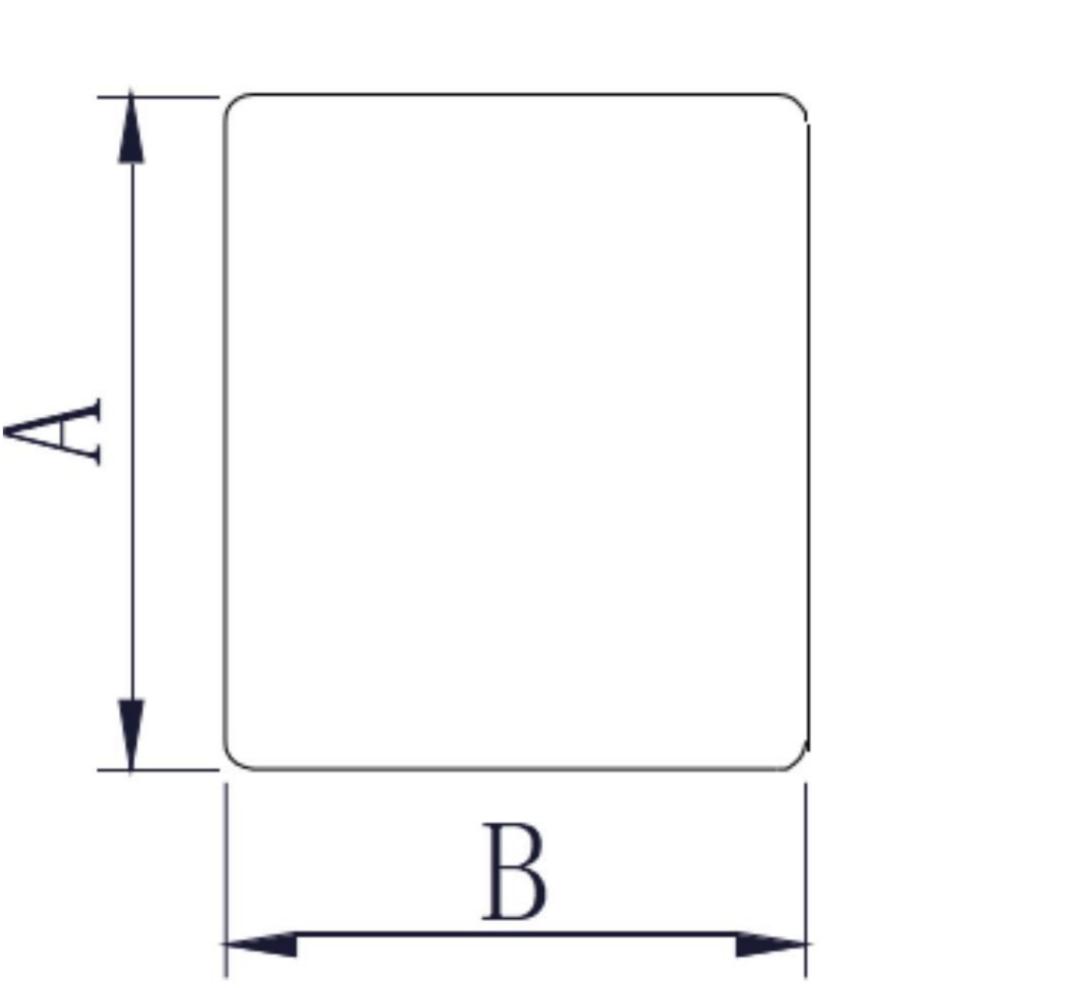
- Smart phone, set top box, VR, AR
- •SSD, Bluetooth, Wi-Fi module
- Laptops and PCs
- Base stations
- Wi-Fi module

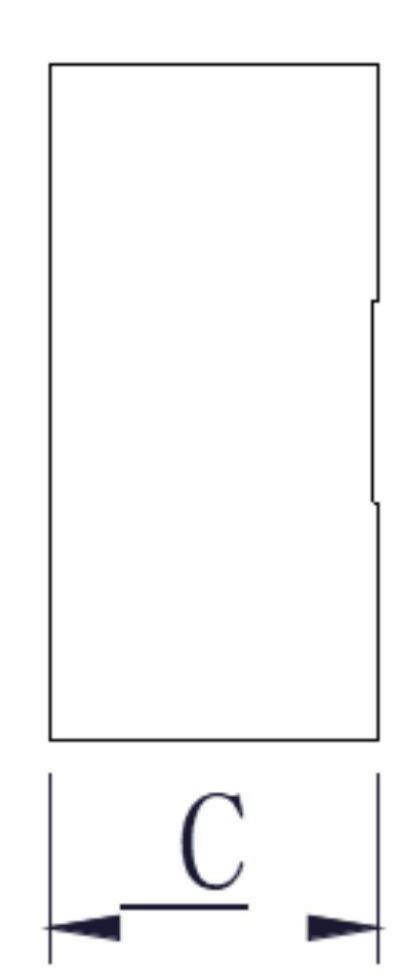
Part Numbering

A	PH	201610		1R0
Grade	Series Name	Dimensions Code	Configuration	Inductance
		(mm)		(µH)
		201208 2.0x1.2x0.8		1R0 1.0
		201610 2.0x1.6x1.0		2R2 2.2
		252010 2.5x2.0x1.0		

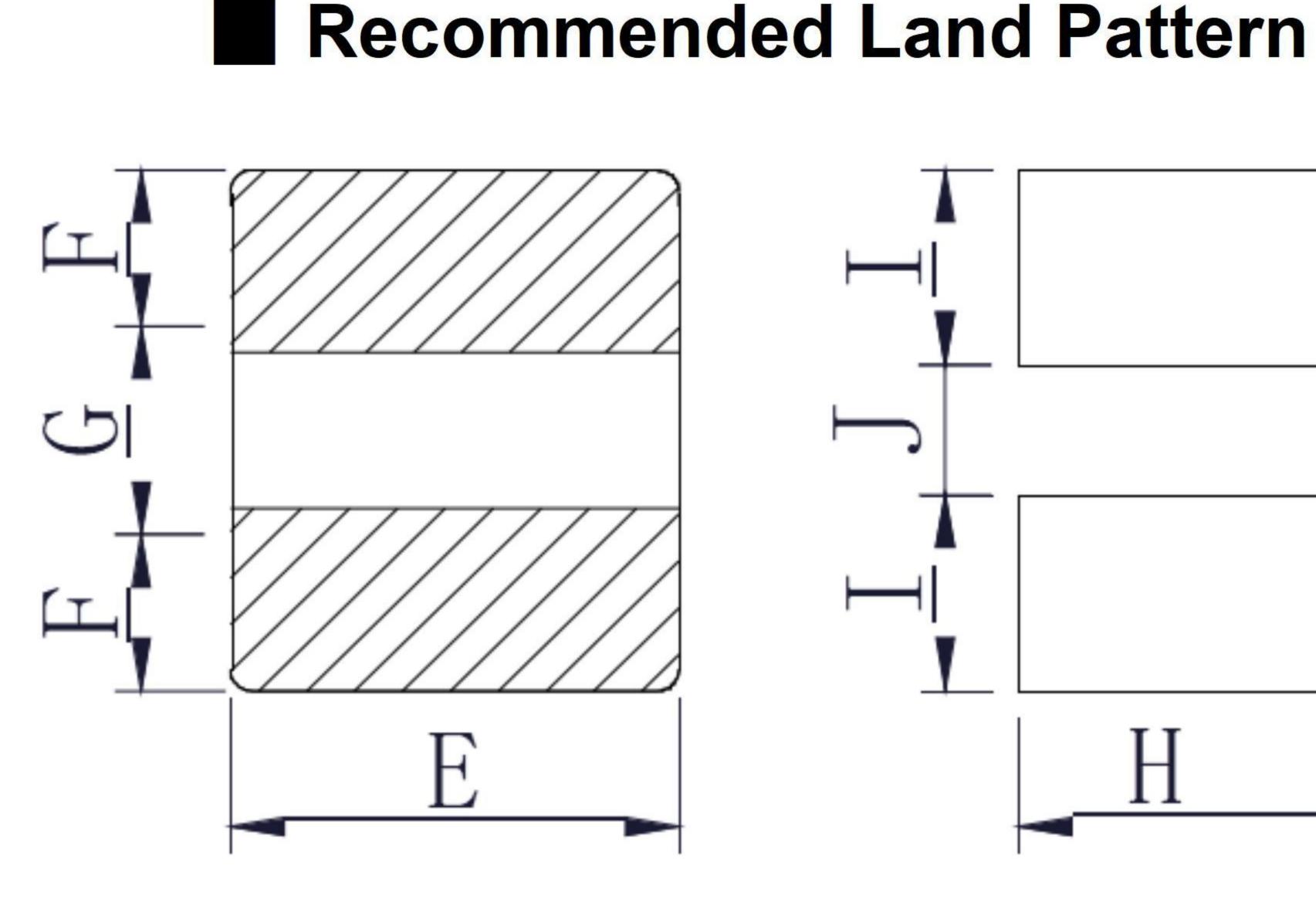
2.5x2.0x1.2

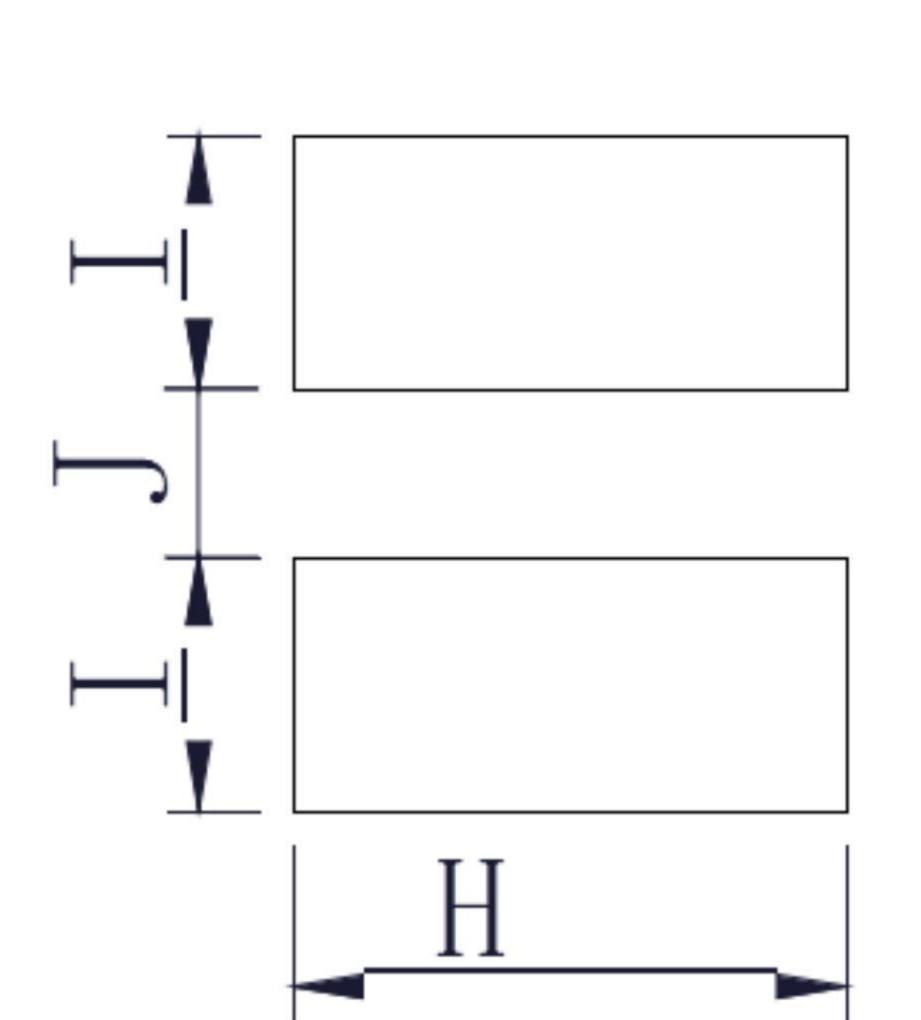
Dimensions





252012





Tolerance

 $\pm 20\%$

Series	A	В	C	E	F	G	H		J
				Typ.	Typ.	Тур.	Typ.	Тур.	Typ.
APH201208T	2.0±0.2	1.2±0.2	0.80MAX	1.2	0.75	0.5	1.4	0.85	0.5
APH201610T	2.0±0.2	1.6±0.2	1.00MAX	1.6	0.7	0.6	1.8	0.85	0.5
APH252010T	2.5±0.2	2.0±0.2	1.00MAX	2	0.9	0.7	2.1	1	0.6
APH252012T	2.5±0.2	2.0±0.2	1.20MAX	2	0.9	0.7	2.1	1	0.6

Electrical Characteristics

APH201208T series

Part Number	Inductance(µH)	Saturation Current (A)	Heat Rating Current(A)	DCR	(mΩ)	Inductance
	@100KHz,1V	Max.	Max.	Max.	Typ.	Tolerance
APH201208TR47M	0.47	4.6	2.7	50	34	±20%
APH201208T1R0M	1	3.5	2.4	70	55	±20%
APH201208T2R2M	2.2	2.3	1.5	185	160	±20%

APH201610T series

Part Number	Inductance(µH)	Saturation Current (A)	Heat Rating Current(A)	DCR	(mΩ)	Inductance
	@100KHz,1V	Max.	Max.	Max.	Тур.	Tolerance
APH201610TR22M	0.22	6.3	5.8	19	16	±20%
APH201610TR24M	0.24	6.3	5.8	19	16	±20%
APH201610TR33M	0.33	6.2	5.3	22	19	±20%
APH201610TR47M	0.47	6	5.6	25	22	±20%
APH201610TR68M	0.68	5.5	5	27	24	±20%
APH201610T1R0M	1	4.2	4.1	43	38	±20%
APH201610T1R5M	1.5	2.9	2.3	100	90	±20%
APH201610T2R2M	2.2	2.8	2.1	150	135	±20%
APH201610T3R3M	3.3	2	1.5	180	162	±20%
APH201610T4R7M	4.7	1.5	1.15	250	229	±20%

APH252010T series

Part Number	Inductance(µH)	Saturation Current (A)	Heat Rating Current(A)	DCR	(mΩ)	Inductance
	@100KHz,1V	Max.	Max.	Max.	Тур.	Tolerance
APH252010TR24M	0.24	7.8	6.4	18	15.5	±20%
APH252010TR33M	0.33	7.2	6.2	19	16	±20%
APH252010TR47M	0.47	6.5	5.6	22	17	±20%
APH252010TR68M	0.68	5.5	5	27	22	±20%
APH252010T1R0M	1	4.8	4.1	30	25	±20%
APH252010T1R5M	1.5	3.9	3	55	42	±20%
APH252010T2R2M	2.2	3	2.1	70	62	±20%
APH252010T3R3M	3.3	2.5	2	100	86	±20%
APH252010T4R7M	4.7	2	1.6	160	145	±20%

APH252012T series

Part Number	Inductance(µH)	Saturation Current (A)	Heat Rating Current(A)	DCR	(mΩ)	Inductance
	@100KHz,1V	Max.	Max.	Max.	Typ.	Tolerance
APH252012T1R0M	1	4.3	3.3	42	38	±20%
APH252012T2R2M	2.2	3.3	2.2	75	64	±20%

Test condition & equipment

Item	Test condition	Test equipment
Ls	1MHz/1V	HP4263B\IM3532-50 or equivalent
RDC	direct-current	HP4263B\RM3545 or equivalent
Isat	1MHz/1V	Microtest 6379 & 6220 or equivalent
Irms	ambient temperature 20°C	Microtest 6379 & 6220 or equivalent

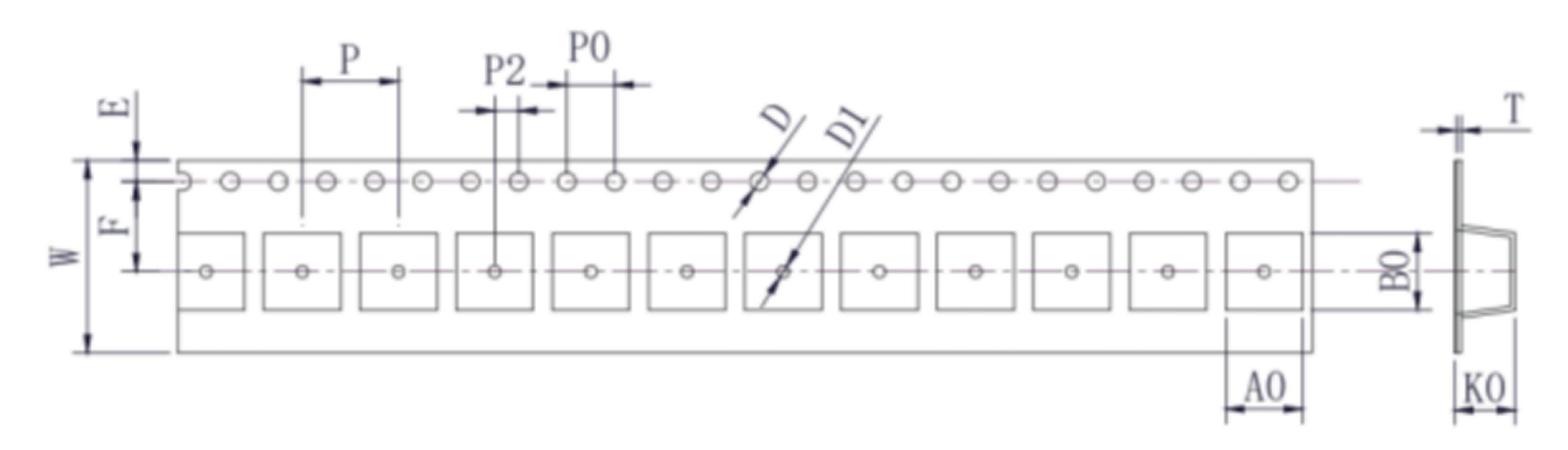
Isat: The DC current at which the inductance drops approximate 30% from its value without current, Load current time within 1s. Irms: The DC current is inductor surface temperature to rise by 40°C.

Reliability Data

Items	Requirements	Test Methods and Remarks		
Insulation Resistance	≥100MΩ	100 V DC between inductor coil and The middle of the top surface of the body for 60 seconds.		
Solderability	90% or more of electrode area shall be coated by new solder.	Dip pads in flux and dip in solder pot (96.5Sn/3.0Ag/0.5Cu) at (245±5) [°] C for (5±1) seconds.		
Resistance to Soldering Heat	No visible mechanical damage. Inductance change: Within ±10%	Dip pads in flux and dip in solder pot (96.5Sn/3.0Ag/0.5Cu) at (260±5) [°] C for (10±1) seconds.		
Adhesion of terminal electrode	Strong bond between the pad and the core, without come off PC board.	Inductors shall be subjected to (260±5)°C for (20±5) s Soldering in the base whit 0.3mm solder. And then aplomb electrode way plus tax 10 N for (10±1) seconds.		
High temperature	No visible mechanical damage. Inductance change: Within ±10%	Temperature is (+85±2) [°] C and keep (96±2) hours.		
Low temperature	No visible mechanical damage. Inductance change: Within ±10%	Temperature is (-40±2)℃ and keep (96±2) hours.		
Thermal shock	No visible mechanical damage. Inductance change: Within ±10%	The test sample shall be placed at (-40±3) [°] C and (125±2) [°] C for (30±3) min, different temperature		
Temperature characteristic	Inductance change P_{c-b} , P_{c-d} : Within ±20%	conversion time is 2~3 minutes. The temperature cycle shall be repeated 32 cycles. Placed at room temperature for 2 hours, within 48 hours of testing. a: $+20~\%~(30\sim45)~\min \rightarrow b: -40~\%~(30\sim45)$ min $\rightarrow c: +20~\%~(30\sim45)~\min \rightarrow d: +125~\%~(30\sim45)~\min \rightarrow e: +20~\%~(30\sim45)~\min$ Pc-b = Lb - Lc ′100%; Pc-d = Ld - Lc ′100% Lc Lc		
Static Humidity	No visible mechanical damage. Inductance change: Within ±10%	Inductors shall be subjected to (93±3)%RH . at (60±2)°C for (96±2) h . Placed at room temperature for 2 hours, within 48 hours of testing.		
Life	No visible mechanical damage. Inductance change: Within ±10%	Inductors shall be store at (85±2) [°] C for (1000±24) hours with Irms applied. Placed at room temperature for 2 hours, within 48 hours of testing.		

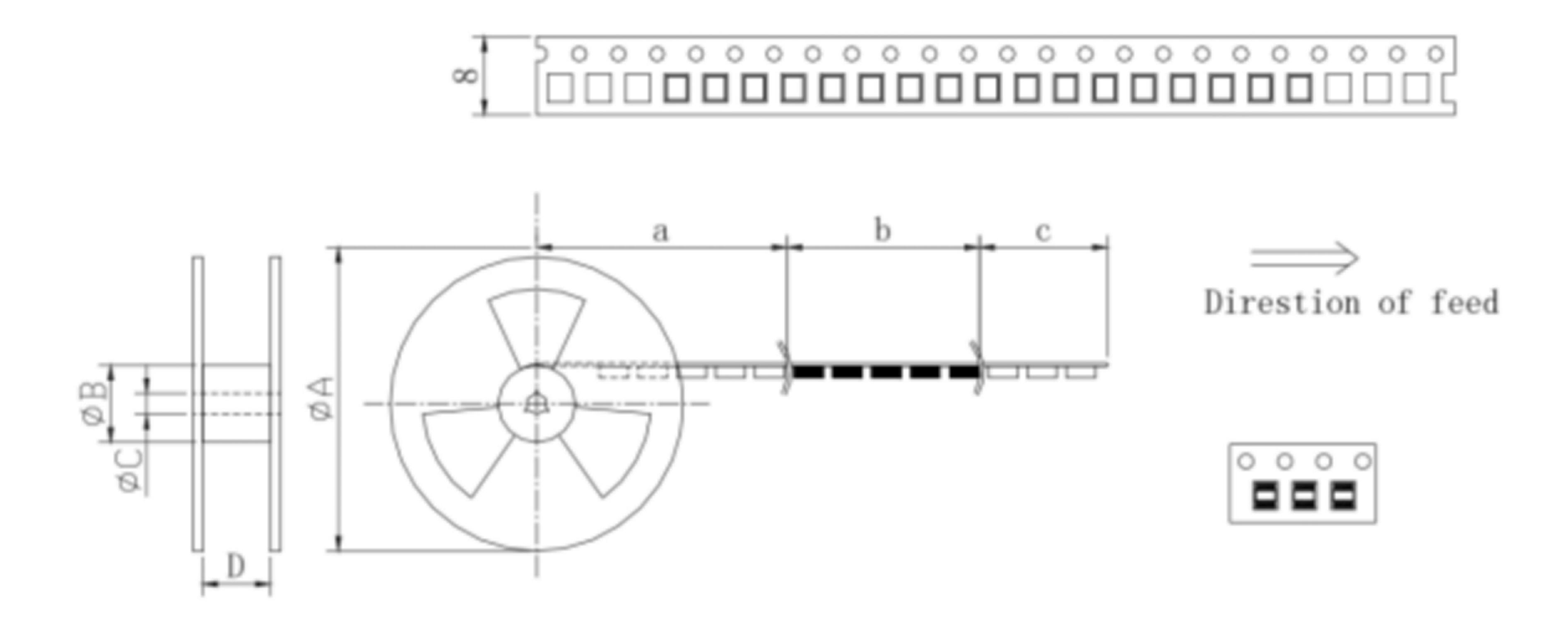
Package

Tape Dimension (Unit:mm)



W	A0	B0	D	D1	E	F	K0	P0	P2	P	T	
8±0.3	2.2±0.1	2.7±0.1	1.5±0.1	1.0MIN	1.75±0.1	3.5±0.1	1.15±0.1	4.0±0.3	2.0±0.3	4.0±0.3	0.25±0.05	

Direction of feed (Unit:mm)



A	В	C	D	a	b	C
178 T yp.	58 Typ.	13 Typ.	8.4 Typ.	Blank portions	Chip cavity	Leader

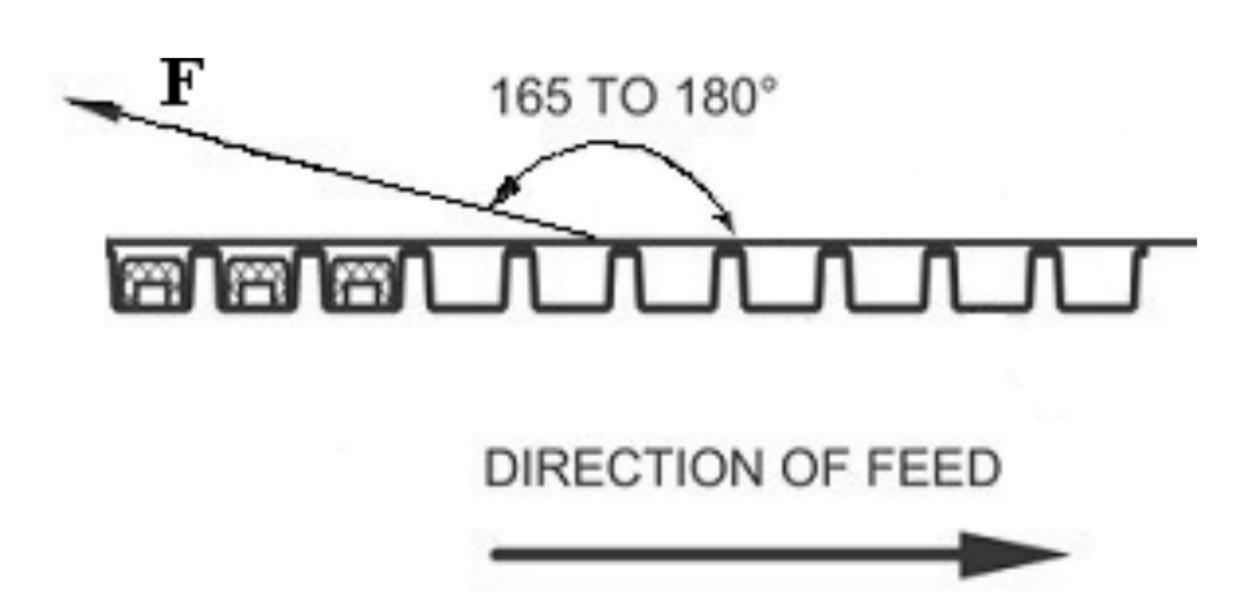
Packing quantity

RELL(PCS)	BOX (PCS)	Carton (PCS)
3000	15000	150000

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Peeling required F force: $10\sim130g$;

Peeling speed: 300mm/min±10%; Peeling angle: 165°~180°.



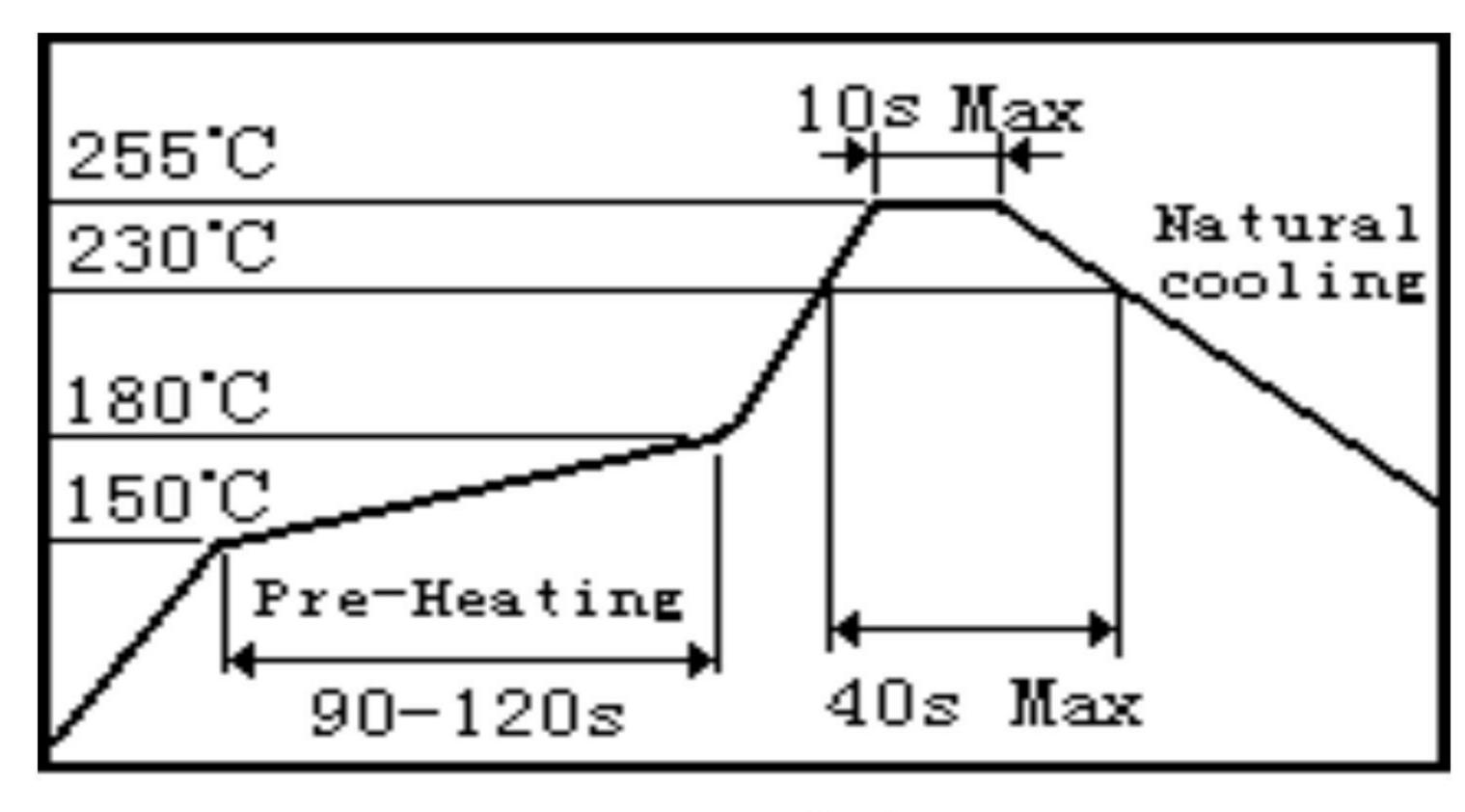
Recommended soldering profile

Applicable soldering process to the products is reflow soldering.

Soldering Materials

(1)Solder: Sn-3.0Ag-0.5Cu

(2) Flux: Use rosin-based flux, but not strongly acidic flux (with chlorine exceeding 0.2 wt%). Do not use water-soluble flux. Soldering Profile



Time(s)

Soldering Iron

Reworking with electric soldering iron must preheating at 150°C for 1 minute is required, and do not directly touch the core with the tip of the soldering iron. The reworking soldering conditions are as follows:

* Temperature of soldering iron tip: 350°C;

*Soldering iron power output: ≤30W;

* Diameter of soldering iron end: ≤1.0mm;

*Soldering time: <3 s

Cleaning

*The following conditions should be observed when cleaning the products:

*Cleaning Temperature: 60°Cmax. (40°Cmax. for alcohol cleaning agents)

Ultrasonic:

Output: 20 W/L max. Duration: 5 min max. Frequency: 28 to 40kHz

Avoid the resonance between PCB and mounted products when it is cleaning.

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Storage Methods

Storage Period

To maintain the solderability of terminal electrodes and to keep the packing material in good condition, product should be used within 6 months from the time of delivery. And the solderability of products electrodes may decrease as time passes, so in case of storage over 6 months, solderability shall be checked before actual usage.

Storage Conditions

Store products in a warehouse in compliance with the following condition:

(Temperature): Inductors (product with taping) -10 to +40°C; Inductors body -40 to +85°C.

(Humidity): 30~70%RH.

*Do not subject products to rapid changes in temperature and humidity.

*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.

*Do not store products in bulk packaging to prevent collision among inductors which causes core chipping and wire breakage.

*Store products on pallets to protect from humidity, dust, etc.

*Avoid heat shock, vibration, direct sunlight, etc.

Precautions For Use

*Our products are designed and promoted for use in general electronic devices such as audio-equipment, office automation equipment, household appliance and information service.

*In case of using the product for the purpose other than general electronics devices, we shall not be held liable for any dysfunctions in or damage to the equipment with which the product is used.

*Our specification limits the quality of the component as a single unit. Please ensure the component is thoroughly evaluated in your application circuit.

*Do not apply excessive vibration or mechanical shock to products.

*Do not touch wire with sharp objects such as tweezers to prevent wire breakage.

*Do not apply excessive stress to products mounted on boards to prevent core breakage.

Please be sure to request approval specifications that provide further details of the products. Kindly not that the content of these specifications are subject to change or may be discontinued without prior notice. This product may not be designed/used in medical or high risk applications without APV approval.