德砚电子
DE YAN DIAN ZI

一体成型功率电感

Data Sheet

RoHS ISO 9001 质量管理体系认证 ISO 14001 环境管理体系认证

Shenzhen Deyan Electronics Co., Ltd

MODIFY RECORD

Version	Date	Content	Draft	Checked	Approve
A0	2023-11-3	New released	叶枫	李林	谢东

1. Scope

Featurs

1.1 Metal material for large current and low loss.
1.2 High performance (Isat) realized by metal dust core.
1.3 Low loss realized with low DCR.
1.4 Closed magnetic circuit design reduces leakage flux.
1.5 Vinyl thermal spray, better surface compactness.
1.6 Environmental requirements must comply with the QESP-44 document
1.7 100% lead (Pb) free meet RoHS2.0 and Halogen， Reach and other legal and regulatory requirements standard.

Application

2.1 DC/DC converters.
2.2 Pad,Smart phone.
2.3 Portable gaming devices, Smart wear, Wi-Fi module.
2.4 Notebooks, VR, AR.
2.5 LCD displays, HDDs, DVCs, DSCs, etc.
2.6 Baseband power supply, Amplifier, Power management, Module power supply, Camera power manageme.

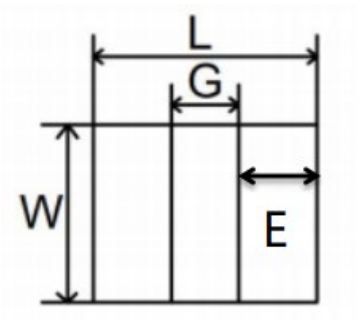
2. Ordering Procedure

D	2520	12	TP	-	100	MT	-	G
①	②	③	④		⑤	⑥		⑦

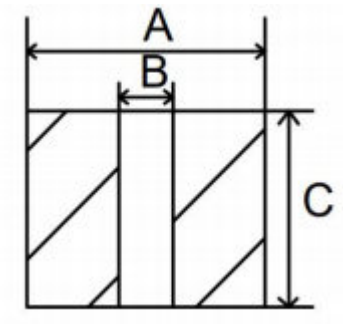
①Series Name: Mini Molded Chip Power Inductor
②External Dimensions(L×W):2520=2.5*2.0 mm
③External Dimensions(H):12=1.2mm
④Size Tolerance:S=±0.2mm D=±0.1mm
⑤Material:carbonyl
⑥Tolerance:K=±10% M=±20% N=±30%
⑦Coating color

3. Shape and Dimensions

Outline Dimensions



Recommend Land Pattern Dimensions



Units:mm

Series	L	G	W	E	T	A	B	C
D252012TP	2.5±0.2	0.8±0.2	2.0±0.2	0.85±0.2	1.20Max.	2.60	0.70	2.10

4.Marking

No Marking

5.Specifications

P/N	L0(μH) @(0A) 1MHz	Rdc(mΩ)		Heat rating current Irms(A)		Saturation current Isat(A)	
		Typical	Max	Typical	Max	Typical	Max
D252012TP-100MT-G	10.0	330	400	1.2	1.05	1.6	1.45

Test remarks

Note 1: All test data is referenced to 25 ℃ ambient.

Note 2: Test Condition: 1MHz, 1.0Vrms.

Note 3: Test equipment:

(1)Ls、Irms、Isat: WK6500B

(2)Rdc: HIOKI-RM3545

(3)Interlayer pressure: Chroma 19301A

(4)Size: Mitsutoyo 150mm

Note 4: Irms: DC current (A) that will cause an approximate △T of 40 ℃.

Note 5: Isat: DC current (A) that will cause L0 to drop approximately 30%.

Note 6: Operating Temperature Range -55℃ to +125℃.

Note 7: The part temperature (ambient + temp rise) should not exceed 125 under ℃ the worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provision all affect the part temperature. Part temperature should be verified in the end application.

Note 8: The rated current as listed is either the saturation current or the heating current depending on which value is lower.

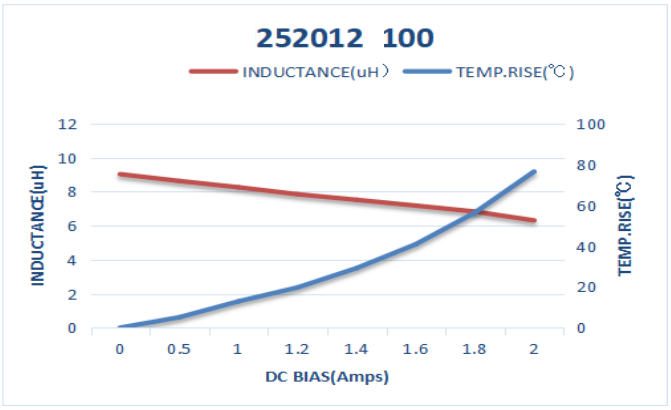
6.Bill of Materials

No	Item	Material
1	Core	carbonyl iron powder
2	Wire	Copper line
3	Coating	Resin
4	Solder	Cu: 5±2um Ni: 5±2um Sn: 10±5um
6	Cover Tape	Clear PC/PS Cover Tape
7	Carrier Tape	Clear PC/PS Carrier Tape

7.Product Characteristics

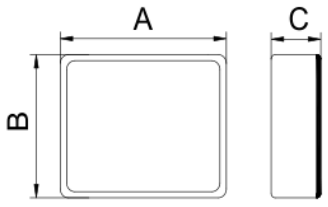
Item	Requirements	Test Methods and Remarks
Solderability	90% or more of electrode area shall be coated by new solder.	Dip pads in flux and dip in solder pot (96.5Sn/3.0Ag/0.5Cu) at (245±5) ℃ for (5±1) seconds.
Resistance to Soldering Heat	No visible mechanical damage. Inductance change: Within ±10%	Dip pads in flux and dip in solder pot(96.5Sn/3.0Ag/0.5Cu) at (260±5) ℃ 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)℃ 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 (+125±2)℃ and keep (1000±2) hours.
Low temperature	No visible mechanical damage. Inductance change: Within ±10%	Temperature is (-55±2)℃ and keep (1000±2) hours.
Thermal shock	No visible mechanical damage. Inductance change: Within ±10%	The test sample shall be placed at (-55±3)℃ and (125±2)℃ for (30±3) min, different temperature 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.
Temperature characteristic	Inductance change Pc-b,Pc-d: Within±10%	a: +20 ℃ (30~45) min → b: -40 ℃ (30~45) min → c: +20 ℃ (30~45) min → d: +125 ℃ (30~45) min → e: +20 ℃ (30~45) min $P_{c\text{-}b}=\frac{L_b-L_c}{L_c}\times 100\%$; $P_{c\text{-}d}=\frac{L_d-L_c}{L_c}\times 100\%$
Static Humidity	No visible mechanical damage. Inductance change: Within ±10%	Inductors shall be subjected to (95±3)%RH . at (60±2)℃ for (1000±4) 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)℃ for (1000±4) hours with Irms applied. Placed at room temperature for 2 hours, within 48 hours of testing

Current Characteristic



8. Test Date

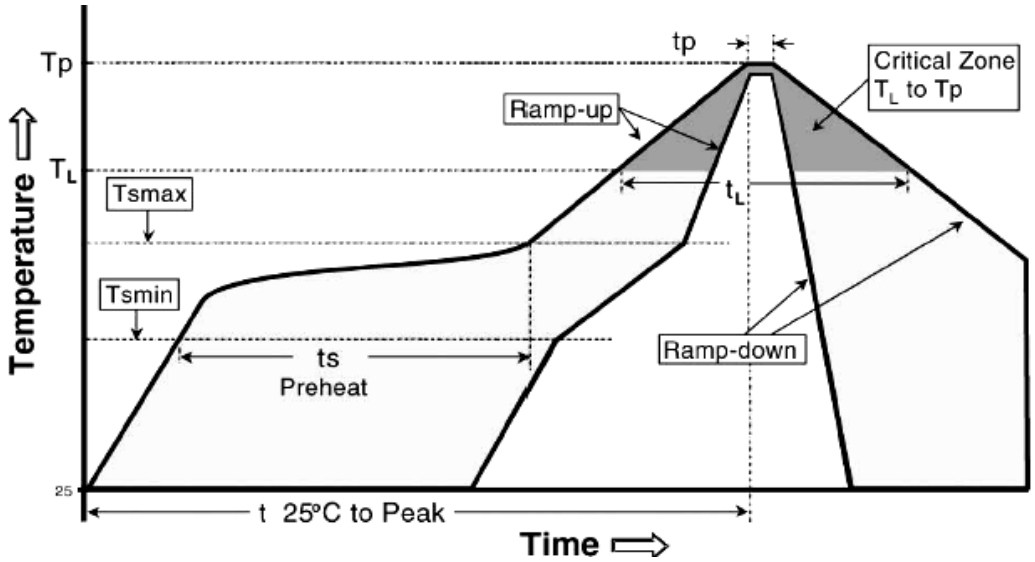
Item	Dimension			Electrical character			
	A（mm）	B（mm）	C（mm）	L0(μH) @ (0A) 1MHz	L0(μH) @ (1.45A) 1MHz	Isat	Rdc（mΩ）
No	2.3~2.7	1.8~2.2	MAX 1.2	8~12			MAX: 400
1	2.68	2.17	1.11	9.50	7.83	17.58%	324.00
2	2.68	2.17	1.09	9.16	7.66	16.38%	323.00
3	2.67	2.17	1.10	9.96	8.09	18.78%	329.00
4	2.68	2.18	1.10	9.93	8.02	19.29%	330.00
5	2.67	2.17	1.11	9.76	8.03	17.74%	325.00
6	2.69	2.19	1.10	8.98	7.42	17.37%	324.00
7	2.67	2.17	1.12	9.59	7.82	18.46%	321.00
8	2.68	2.17	1.13	9.87	8.03	18.67%	327.00
9	2.67	2.17	1.11	8.50	7.24	14.85%	322.00
10	2.67	2.17	1.11	9.32	7.68	17.55%	322.00
Max	2.65	2.15	1.09	11.04	8.55	19.29%	340.00
Avg	2.68	2.17	1.11	9.46	7.78	17.67%	324.70
Min	2.67	2.17	1.09	8.50	7.24	14.85%	321.00
Range	-0.02	-0.02	0.00	2.54	1.31	4.44%	19.00
All judge	■OK □ NG						



8. Soldering Condition

(This is for recommendation, please customer perform adjustment according to actual application)

Recommend Reflow Soldering Profile: (solder : Sn96.5 / Ag3 / Cu0.5)



Profile Feature	Lead (Pb)-Free solder
Preheat: Temperature Min (Ts_{min}) Temperature Max (Ts_{max}) Time (Ts_{min} to Ts_{max}) (ts)	 150℃ 200℃ 60 -120 seconds
Average ramp-up rate: (Ts max to Tp)	 3℃ / second max.
Time maintained above : Temperature (T_L) Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (Tp)	260℃
Time within $^{+0}_{-5}$℃ of actual peak Temperature (tp)[2]	10 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8minutes max.

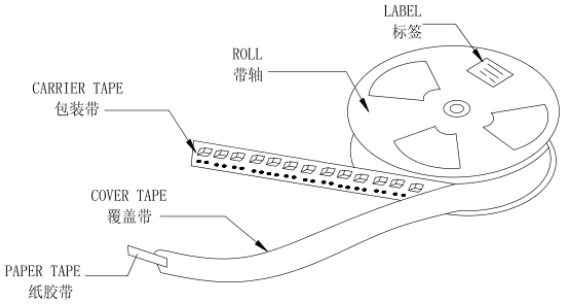
Allowed Re-flow times : 2 times

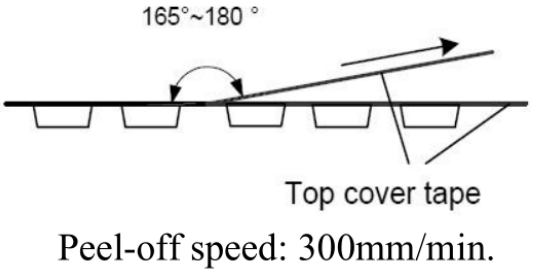
Remark : To avoid discoloration phenomena of chip on terminal electrodes, please use N_2 Re-flow furnace .

9.Package

(1) Packaging -Cover Tape

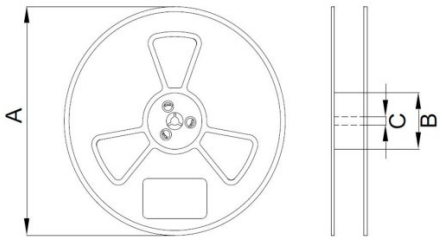
The force for tearing off cover tape is 10 to 130 grams in the arrow direction.





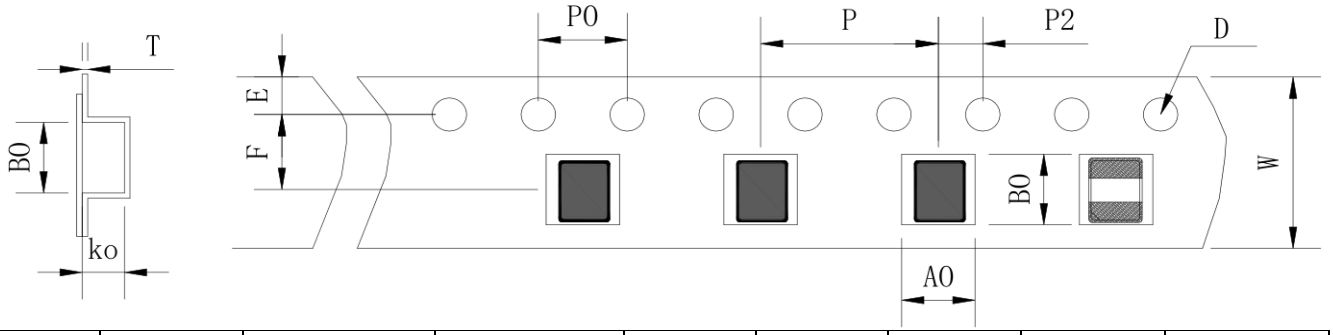
Peel-off speed: 300mm/min.

(2) Reel Dimensions (Unit:mm)



Item	Dimension
A	178±2
B	60±2
C	13±2

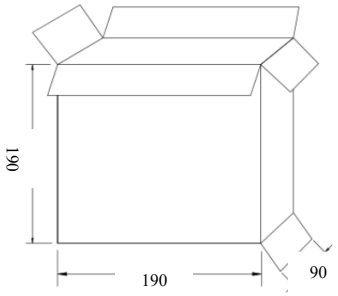
(3) Tape Dimensions(Unit:mm)

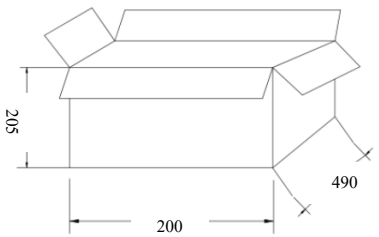


Series	W	A0	B0	D0	D1	E	F	K0
公差	/	/	/	+0.1/-0	±0.20	±0.10	±0.10	/
252012	8.0±0.10	2.35+0.10/−0.05	2.80+0.10/−0.05	1.5	1.0	1.75	3.5	1.35±0.10

Series	P0	P2	P1	T	包装
公差	±0.10	±0.10	±0.10	±0.05	数量
252012	4.0	2.0	4.0	0.23	3K

(4) Packaging Quantity





Quantity (Pcs)		
Reel	Box	Carton
3000	15000	75000
1Reel	5Reel/Box	5Box/Carton

10.Storage Methods

（1）储存期限 Storage Period

为保证端子电极的焊接特性和包装材料处于良好状态，请于本公司发货后12个月内使用本产品。同时，由于端子电极的焊接特性会随时间发生变化，如果贮存时间超过12个月，请首先确认其焊接特性后再安装使用。

To maintain the solderability of terminal electrodes and to keep the packing material in good condition, product should be used within 12 months from the time of delivery. And the solderability of products electrodes may decrease as time passes, so in case of storage over 12 months, solderability shall be checked before actual usage.

（2）储存条件 Storage Conditions

存放货物的仓库应满足以下条件：Store products in a warehouse in compliance with the following condition:

温度(Temperature): Inductors (product with taping) -10 to +40℃;

Inductors body -40 to +85℃.

相对湿度(Humidity): 30~70%RH.

（3）不要使产品遭受温度和湿度的快速变化。

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

（4）不要将产品存放在化学环境中，如硫酸气体或碱性气体中，否则会降低电极端子的焊接特性和使电感器腐蚀。

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.

（5）不要以散包装的形式存放产品以防止电感器间的相互碰撞造成磁芯破裂或断线。

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

（6）为了避免受潮气、灰尘等物质的影响，产品应保管于货架上。

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

（7）产品应避免热冲击、振动以及直接光照等等。

Avoid heat shock, vibration, direct sunlight, etc.

（8）在设计 PCB 时, 请考虑非磁屏蔽元器件的安装位置,避免磁干扰引起的故障.

When designing the PCB, please consider the installation position of the non-magnetic shielded components to avoid failures caused by magnetic interference.

（9）请勿将本产品靠近磁铁或带有磁力的物体

Do not place this product near magnets or objects with magnetic force.

（10）产品会因通电而自我发热 （温度上升），在热设计方面需留有充分余量.

The product will self-heat (temperature rise) due to power-on, and sufficient margin should be left in thermal design.

（11）由于人体所带的静电会传到接地线上，因此请使用防静电腕带.

Since the static electricity carried by the human body will be transmitted to the ground wire, please use an anti-static wrist strap.

（12）人体手上有油脂可能导致可焊性下降. 请避免手直接接触端子.

Grease on human hands may lead to decreased solderability. Please avoid direct contact with the terminals.

（13）本产品是指在通用标准上用于影音娱乐,家电,计算机,办公自动化,通讯,电源模块,LED 照明,测量设备,机械工具,工业控制板等一般电子设备中. 并且该一般电子设备要在通常的操作和使用方法下使用。

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 electronic equipment should be used under the usual operation and usage methods.

（14）当本产品使用在一般电子设备以外的场合,如:车载,交通工具控制设备,医疗设备,军用设备,航空航天设备,海底设备等,请务必联系本公司销售部门,本公司会配合客户需求，一起协商不同于本产品中所记载的使用用途.

When this product is used in occasions other than general electronic equipment, such as: Automotive Electronic products,medical equipment, military equipment, Aerospace equipment, submarine equipment, etc.,
please be sure to contact the company's sales department,the company will cooperate with customer needs, and negotiate different intended use described in this product.