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

Mini Molding Power Inductors

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 Rdc.
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	-	6R8	MT	-G
①	②	③	④		⑤	⑥	⑦

①Series Name: Mini Molding Power Inductors

②External Dimensions(L×W):2520=2.5*2.0 mm

③External Dimensions(H):12=1.2 mm

④Material:Carbonyl Iron Powder

⑤Inductance value:6R8=6.8uH

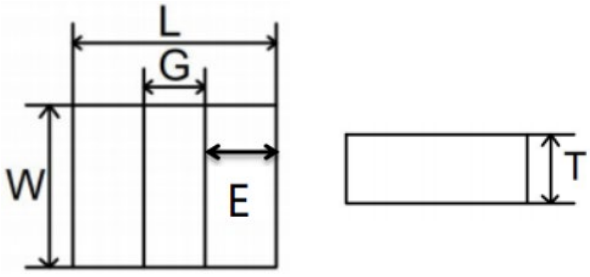
⑥Tolerance: M=±20%

⑦Coating color:Black

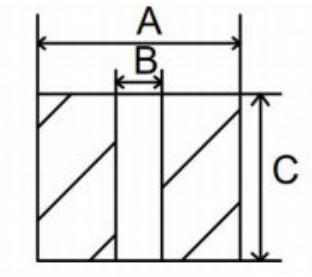
For special characteristics, please refer to the specific values in Item 5 "Specifications".

3. SHAPE AND DIMENSIONS

Outline Dimensions



Recommend Land Pattern Dimensions



Units:mm

Series	L	G/Typ	W	E	T	A/Typ	B/Typ	C/Typ
D252012TP	2.5±0.2	0.8	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-6R8MT-G	6.8	245	270	1.6	1.4	2.0	1.7

Test remarks

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

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

Note 3.: Irms:DC current (A) that will cause an approximate △T of 40 ℃.

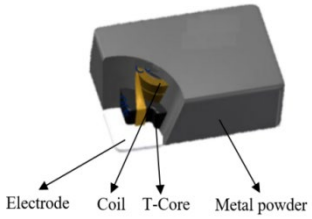
Note 4.: Isat:DC current (A) that will cause L0 to drop approximately 30%.

Note 5.: Operating Temperature Range -55℃ to + 125℃.

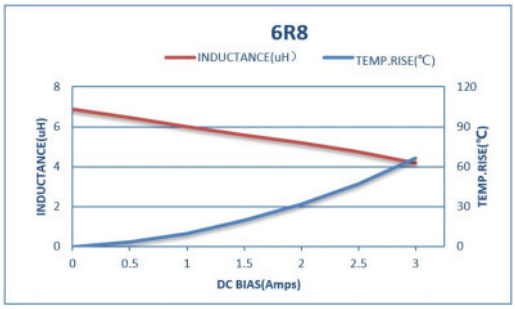
Note 6.: The part temperature (ambient + temp rise) should not exceed 125 under ℃ the worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provision all affect the part temperature. Part temperature should be verified in the end application.

Note 7.: The rated current as listed is either the saturation current or the heating current depending on which value is lower.

6. Structure



7. Current Characteristic



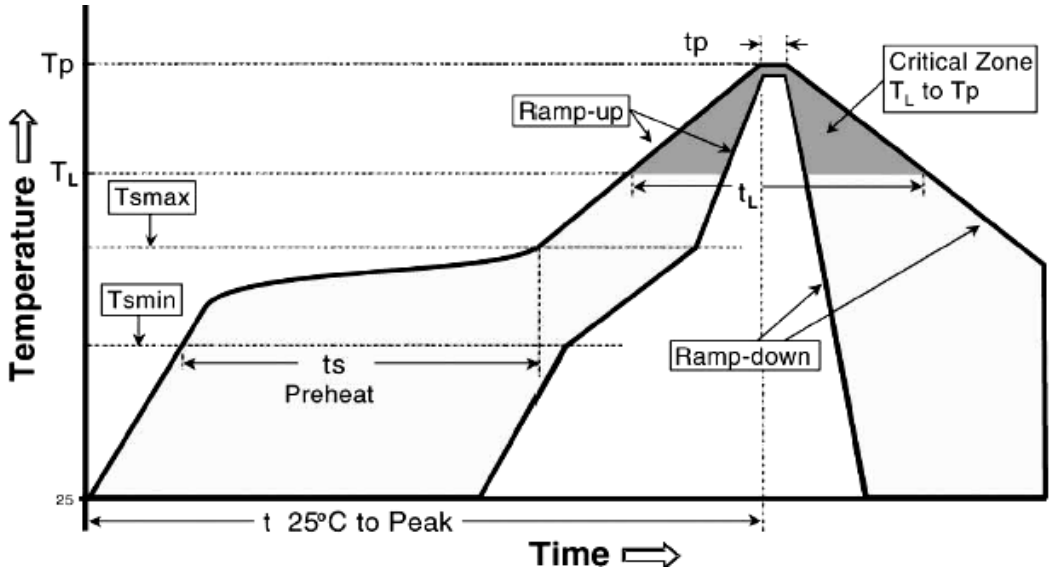
8. Reliability

Item	Requirements	Test Methods and Remarks
Insulation Resistance	≥100MΩ	100 VDC 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 solde.	Dip pads in flux . Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free). Solder Temperature: 245±5℃. Immersion Time: (5±1) s.
Resistance to Soldering Heat	No visible mechanical damage. Inductance change: Within ±10%.	Dip pads in flux. Solder Composition: Sn/Ag3.0/Cu0.5(Pb-Free). Solder Temperature: 260±5℃. Immersion Time: 10±1sec.
Adhesion of teral electrode	Strong bond between the pad and the core, without come off PCB.	Inductors shall be subjected to (260±5)℃ for (20±5)s Soldering in the base whit 0.3mm solder. And then aplombelectrode way plus tax 12 N for (10±1) seconds.
High temperature	No case deformation or change in appearance. Inductance change: Within ±10%	Temperature: 125±2℃. Time : 1000 hours. Measurement at 24±4 hours after test conclusion.
Low temperature	No visible mechanical damage. Inductance change: Within ±10%	Temperature: -55±2℃. Time : 1000 hours. Measurement at 24±4 hours after test conclusion.
Thermal shock	No visible mechanical damage. Inductance change: Within ±10%	The test sample shall be placed at (-55±3)℃ and (125±3)℃ for (30±3) , different temperature conversion time is 2~3 utes. The temperature cycle shall be repeated 32 cycles. Placed at room temperature for 2 hours, within 48±4 hours of testing.
Temperature characteristic	Inductance change Pc-b,Pc-d: Within ±10%	a：+20 ℃ （30~45） → b: -40 ℃ （30~45） → c: +20 ℃ （30~45） → d: +125 ℃ （30~45） → e: +20 ℃ （30~45） $P_{c\text{-}b}=\frac{L_b-L_c}{L_c}\times 100\%$; $P_{c\text{-}d}=\frac{L_d-L_c}{L_c}\times 100\%$
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

9. 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.

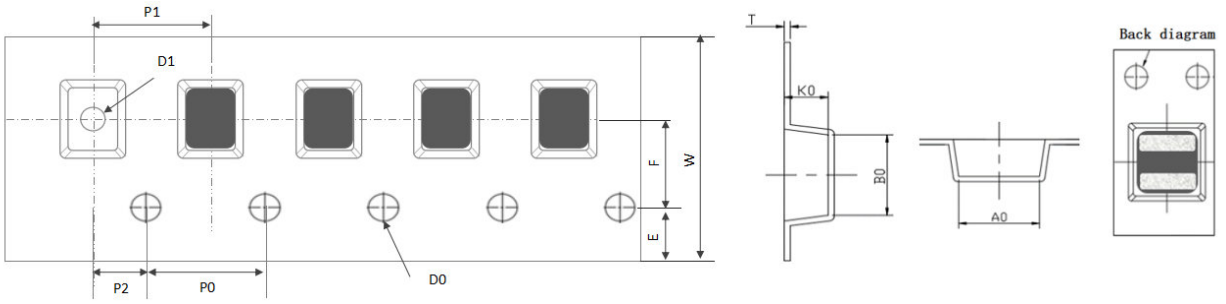
Allowed Re-flow times : 2 times

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

10. Packing

10.1 Dimension of plastic taping: (Unit: mm)

The following dimensions are related to the actual fit of the machine， for reference only.

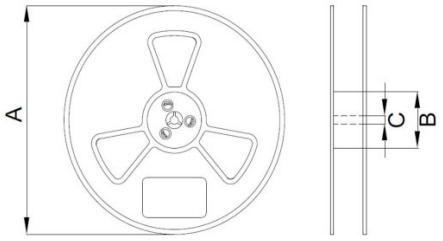


Series	W	A0	B0	D0	D1	E
公差	/	/	/	+0.1/-0	±0.20	±0.10
252012	8.0±0.10	2.35+0.10/−0.05	2.80+0.10/−0.05	1.5	1.0	1.75

Series	F	K0	P0	P2	P1	T	包装
公差	±0.10	/	±0.10	±0.10	±0.10	±0.05	数量
252012	3.5	1.35±0.10	4.0	2.0	4.0	0.23	3K

10.2 Dimension of Reel：(Unit: mm)

Type	A ±2.0	B ±2.0	C ±2.0
All	178	60	13



11. Note

11.1 recommend products store in warehouse with temperature between 15 to 35℃ under humidity between 25 to 75%RH.
Even under storage conditions recommended above, solder ability of products will be degraded stored over 1 year old.

11.2 Cartons must be placed in correct direction which indicated on carton, otherwise the reel or wire will be deformed.

11.3 Storage conditions as below are inappropriate:

a. Stored in high electrostatic environment

b. Stored in direct sunshine, rain, snow or condensation.

c. Exposed to sea wind or corrosive gases, such as Cl_2, H_2S, NH_3, SO_2, NO_2, etc.

11.4 The products are used in circuit board thickness greater than 1.6mm. If customers use less than the thickness of the circuit board that you should confirm with the company, in order to recommend a more suitable product.

12. Record

Version	Description	Page	Date	Amended by	Checked by
A0	First version	1~6	Nov.4.2023	Xirui.Niu	Congdian.Lu