Specification for Approval

Customer	
Product Name	Wire Wound Molded SMD Power Inductors
Customer P/N:	
Cjiang P/N:	FTC404030SR33MBCA

[■New Released, □Revised] SPEC No.:

REMARK：		
Customer Approval Feedback		

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Version change history					
Rev	Date	Description	APPROVED	CHECKED	DRAWN
1.0	2024/11/29	文件制定	Bond	Charles	王云燕

Caution :

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. Aircraft equipment.
2. Aerospace equipment.
3. Undersea equipment.
4. nuclear control equipment.
5. military equipment.
6. Power plant equipment.
7. Medical equipment.
8. Transportation equipment (automobiles, trains, ships,etc.)
9. Traffic signal equipment.
10. Disaster prevention / crime prevention equipment.
11. Data-processing equipment.
12. Applications of similar complexity or with reliability requirements comparable to the applications listed in the above.

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

FTC	4040	30	S	R33	M	B	C	A
①	②	③	④	⑤	⑥	⑦	⑧	⑨

①Series Name: Mini Molding Power Inductors

②External Dimensions(L×W):4040=4.1*4.1 mm

③External Dimensions(H):30=3.0mm

④Size Tolerance:S=±0.2mm

⑤Inductance value:R33=0.33uH

⑥Tolerance:M=±20%

⑦Coating color:B=Black

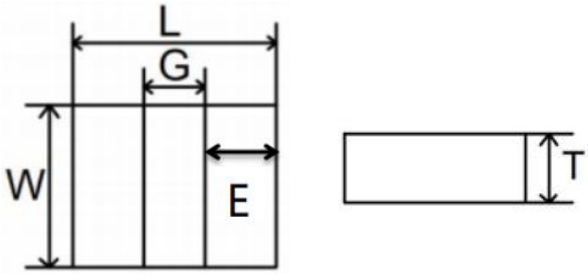
⑧Product type:C=Common

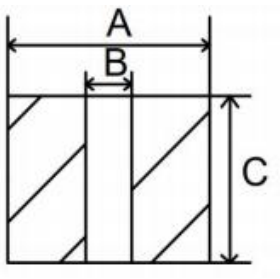
⑨Special define:A=Routine

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
FTC404030S	4.1±0.2	1.4	4.1±0.2	1.35±0.2	3.00Max.	4.10	1.30	4.10

4. Marking(Black)

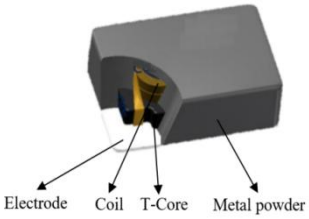
Note 1.: The inductor is marked with a 3-digit code Example – – 0.33μH → R33
Note 2.: The point on the top surface represents winding direction of choke

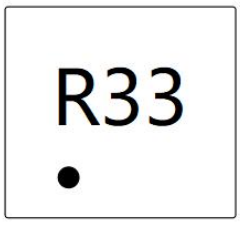
5. Specifications

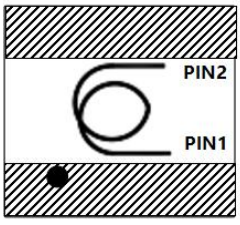
P/N	L0(μH) @(0A) 1MHz	Rdc(mΩ)		Heat rating current Irms(A)		Saturation current Isat(A)	
		Typical	Max	Typical	Max	Typical	Max
FTC404030SR33MBCA	0.33	4.5	6.0	16	15	25	23

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.

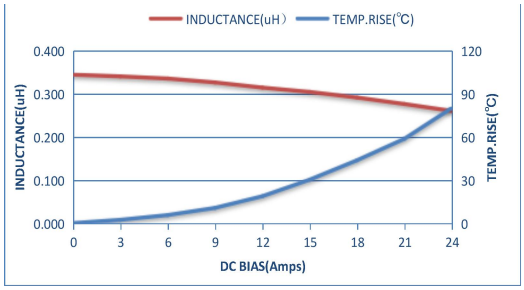
6. Structure







7. Current Characteristic



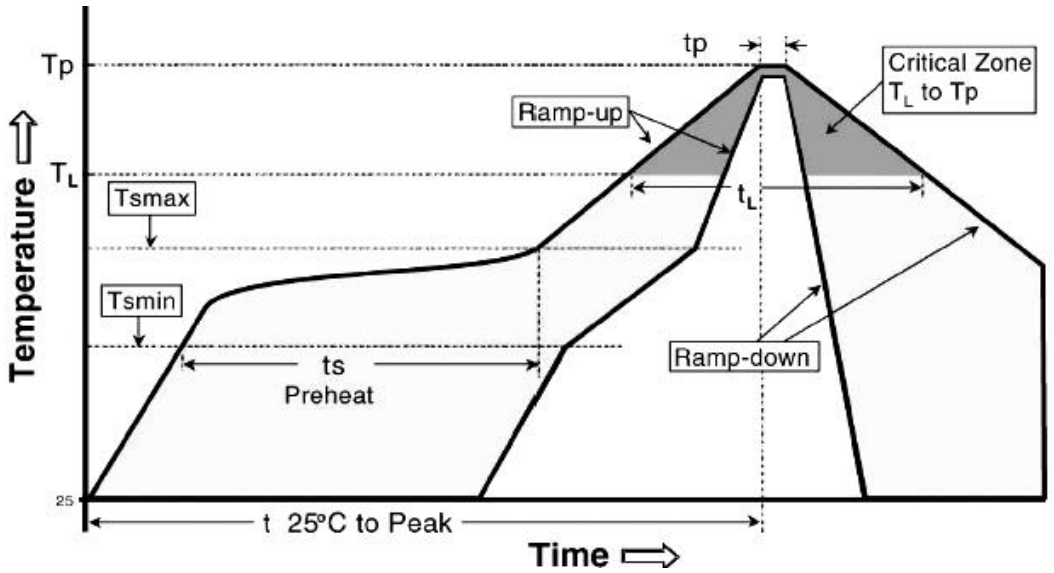
8. Reliability

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.

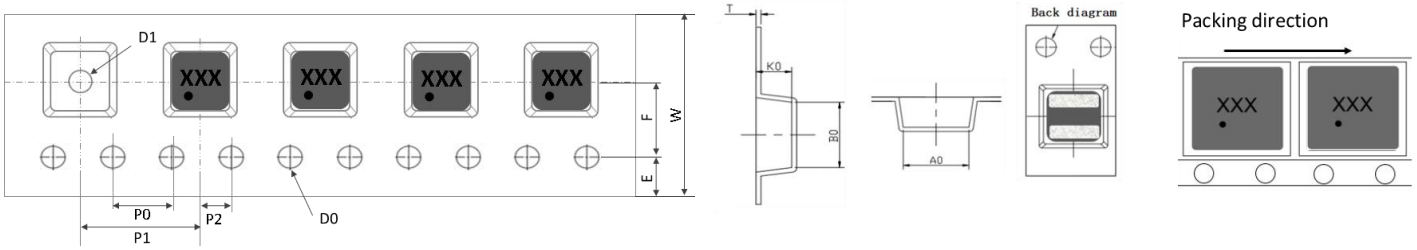
Allowed Re-flow times : 2 times

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.

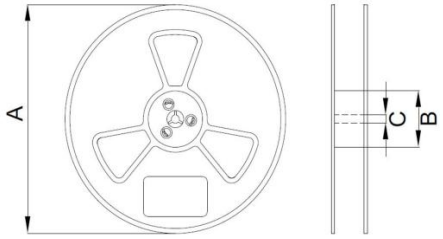


Series	W	A0	B0	D0	D1	E
公差	/	/	/	+0.1/-0	±0.20	±0.10
404030	12.0±0.30	4.40±0.10	4.40±0.10	1.5	1.5	1.75

Series	F	K0	P0	P2	P1	T	包装数量
公差	±0.10	/	±0.10	±0.10	±0.10	±0.05	
404030	5.5	3.10±0.10	4.0	2.0	8.0	0.35	2K

10.2 Dimension of Reel：(Unit: mm)

Type	A ±2.0	B ±2.0	C ±2.0
All	330	100	13.0



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.