

零件承认书

SPECIFICATION FOR APPROVAL

客户名称： 立创

客户料号： _____

增益料号： FCM2012HF-152T04

规格描述： FCM2012HF-152T04

日 期： 2023/10/23

版 本： A

增益签核：

制订	审核	核准
夏琳		李万



客户签核：

工程	审核	核准



东莞市增益实业有限公司

地址：东莞市塘厦镇林村塘厦大道北552号

电话：0769-87321000

传真：0769-87891229

物料类型：

贴片磁珠

日 期：

2023/10/23

版 本：

A

图 面 规 格 变 更 履 历 表

客户			料号		品名	
客户版本	增益版本	变更内容	日期	制定	审核	核准
	A	初版	2023/10/23	夏琳	李万	李万
 东莞市增益实业有限公司 地址：东莞市塘厦镇林村塘厦大道北552号 电话：0769-87321000 传真：0769-87891229				物料类型：	贴片磁珠	
				日 期：	2023/10/23	
				版 本：	A	

Ferrite Chip Bead(Lead Free)

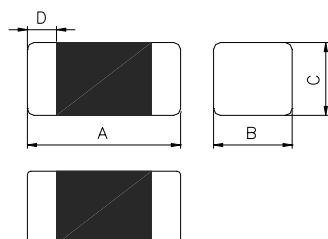
FCM2012HF-152T04

1.Features

1. Monolithic inorganic material construction.
2. Closed magnetic circuit avoids crosstalk.
3. S.M.T. type.
4. Suitable for reflow soldering.
5. Shapes and dimensions follow E.I.A. spec.
6. Available in various sizes.
7. Excellent solderability and heat resistance.
8. High reliability.
9. 100% Lead(Pb) & Halogen-Free and RoHS compliant.
10. Operating Temperature : -55~+125°C (Including self-temperature rise)



2.Dimensions



Chip Size	
A	2.00±0.20
B	1.25±0.20
C	0.85±0.20
D	0.50±0.30

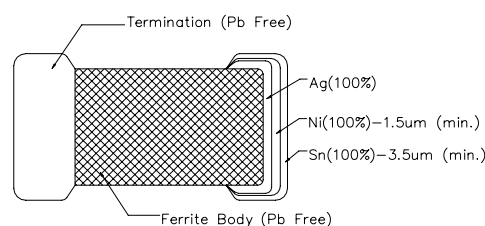
Units: mm

3.Part Numbering



A: Series
 B: Dimension
 C: Material
 D: Impedance
 E: Packaging
 F: Rated Current

L x W
 Lead Free Material
 152=1500Ω
 T=Taping and Reel, B=Bulk(Bags)
 04=400mA

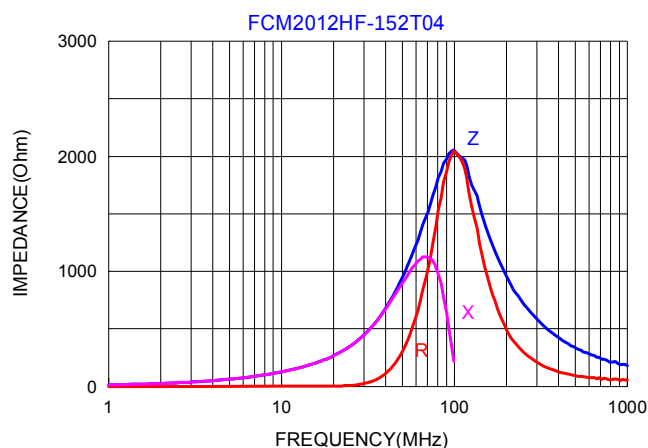


4.Specification

Tai-Tech Part Number	Impedance (Ω)	Test Frequency (Hz)	DC Resistance (Ω) max.	Rated Current (mA) max.
FCM2012HF-152T04	1500±25%	60mV/100M	0.60	400

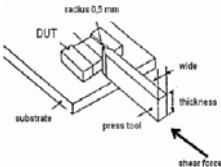
- Rated current: based on temperature rise test
- In compliance with EIA 595

■ Impedance-Frequency Characteristics



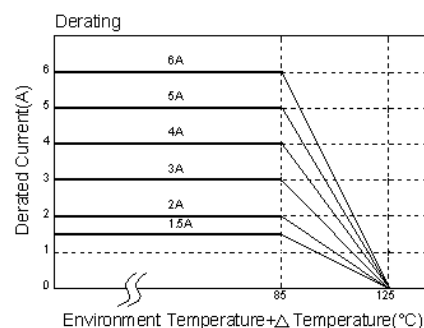
5. Reliability and Test Condition

Item	Performance					Test Condition				
Series No.	FCB	FCM	HCB	GHB	FCA	--				
Operating Temperature	-55~+125℃ (Including self-temperature rise)					--				
Transportation Storage Temperature	-55~+125℃ (on board)					For long storage conditions, please see the Application Notice				
Impedance (Z)	Refer to standard electrical characteristics list					Agilent4291 Agilent E4991 Agilent4287 Agilent16192				
DC Resistance						Agilent 4338				
Rated Current						DC Power Supply Over Rated Current requirements, there will be some risk				
Temperature Rise Test	Rated Current < 1A ΔT 20℃Max Rated Current ≥ 1A ΔT 40℃Max					1. Applied the allowed DC current. 2. Temperature measured by digital surface thermometer.				
Life test	Appearance: no damage. Impedance: within±15%of initial value. RDC : within ±15% of initial value and shall not exceed the specification value					Preconditioning: Run through IR reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Temperature: 125±2℃ Applied current: rated current. Duration: 1000±12hrs. Measured at room temperature after placing for 24±2 hrs.				
Load Humidity						Preconditioning: Run through IR reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Humidity: 85±2%R.H. Temperature: 85±2℃. Duration:1000hrsMin.Bead:with100%ratedcurrent Inductance: with 10% rated current Measured at room temperature after placing for 24±2 hrs.				
Thermal shock	Appearance: no damage. Impedance: within±15%of initial value. RDC : within ±15% of initial value and shall not exceed the specification value					Preconditioning: Run through IR reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Condition for 1 cycle Step1: -55±2℃ 30±5 min. Step2: 125±2℃ ≦ 0.5min Step3: 125±2℃ 30±5min. Number of cycles: 500 Measured at room temperature after placing for 24±2 hrs.				
Vibration	Appearance : No damage. Impedance : within±15% of initial value RDC : within ±15% of initial value and shall not exceed the specification value					Preconditioning: Run through IR reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Oscillation Frequency: 10Hz ~ 2KHz ~ 10Hz for 20 minutes Equipment : Vibration checker Total Amplitude:10g Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations) °				
Bending	Appearance : No damage. Impedance : within±10% of initial value RDC : within ±15% of initial value and shall not exceed the specification value					Shall be mounted on a FR4 substrate of the following dimensions: ≥0805inch(2012mm):40x100x1.2mm <0805inch(2012mm):40x100x0.8mm Bending depth: ≥0805inch(2012mm):1.2mm <0805inch(2012mm):0.8mm Duration of 10 sec for a min.				
Shock	Appearance : No damage. Impedance : within±10% of initial value RDC : within ±15% of initial value and shall not exceed the specification value					Test condition:				
						Type	Peak Value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (V)ft/sec
						SMD	50	11	Half-sine	11.3
						Lead	50	11	Half-sine	11.3
Solderability	More than 95% of the terminal electrode should be covered with solder.					a.Method B, 4 hrs @155℃ dry heat @235℃±5℃ Test time:5 +0/-0.5 seconds. b. Method D category 3. (steam aging 8hours ± 15 min)@ 260℃±5℃ Test time: 30 +0/-0.5 seconds..				

Item	Performance	Test Condition		
Resistance to Soldering Heat	Appearance : No damage. Impedance : within±15% of initial value RDC : within ±15% of initial value and shall not exceed the specification value	Number of heat cycles: 1		
		Temperature (°C)	Time (s)	Temperature ramp/immersion and emersion rate
		260 ±5 (solder temp)	10 ±1	25mm/s ±6 mm/s
		Depth: completely cover the termination		
Terminal strength	Appearance : No damage. Impedance : within±15% of initial value RDC : within ±15% of initial value and shall not exceed the specification value	 Preconditioning: Run through IR reflow for 3 times.(IPC/JEDEC J-STD-020E Classification Reflow Profiles) Component mounted on a PCB apply a force >0805inch(2012mm):1kg <=0805inch(2012mm):0.5kg to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to shock the component being tested.		

**Derating Curve

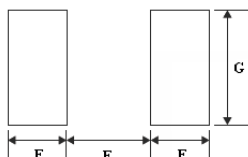
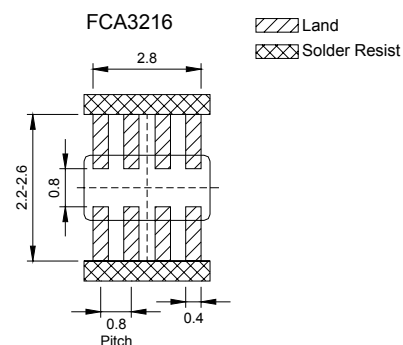
For the ferrite chip bead which withstanding current over 1.5A, as the operating temperature over 85°C, the derating current information is necessary to consider with. For the detail derating of current, please refer to the Derated Current vs. Operating Temperature curve.



6.Soldering and Mounting

6-1. Recommended PC Board Pattern

Chip Size						Land Patterns For Reflow Soldering		
Series	Type	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)
FCB	1005	1.0 $\pm$ 0.10	0.50 $\pm$ 0.10	0.50 $\pm$ 0.10	0.25 $\pm$ 0.10	0.50	0.40	0.60
FCM	1608	1.6 $\pm$ 0.15	0.80 $\pm$ 0.15	0.80 $\pm$ 0.15	0.30 $\pm$ 0.20	0.80	0.85	0.95
HCB	2012	2.0 $\pm$ 0.20	1.25 $\pm$ 0.20	0.85 $\pm$ 0.20	0.50 $\pm$ 0.30	1.05	1.00	1.45
GHB		2.0 $\pm$ 0.20	1.25 $\pm$ 0.20	1.25 $\pm$ 0.20	0.50 $\pm$ 0.30			
FCI	3216	3.2 $\pm$ 0.20	1.60 $\pm$ 0.20	1.10 $\pm$ 0.20	0.50 $\pm$ 0.30	1.05	2.20	1.80
FHI	3225	3.2 $\pm$ 0.20	2.50 $\pm$ 0.20	1.30 $\pm$ 0.20	0.50 $\pm$ 0.30	1.05	2.20	2.70
FCH	4516	4.5 $\pm$ 0.20	1.60 $\pm$ 0.20	1.60 $\pm$ 0.20	0.50 $\pm$ 0.30	1.05	3.30	1.80
HCI	4532	4.5 $\pm$ 0.20	3.20 $\pm$ 0.20	1.50 $\pm$ 0.20	0.50 $\pm$ 0.30	1.05	3.30	3.40



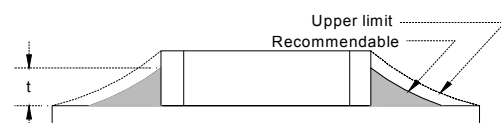
PC board should be designed so that products can prevent damage from mechanical stress when warping the board.

6-2. Soldering

Mildly activated rosin fluxes are preferred. TAI-TECH terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

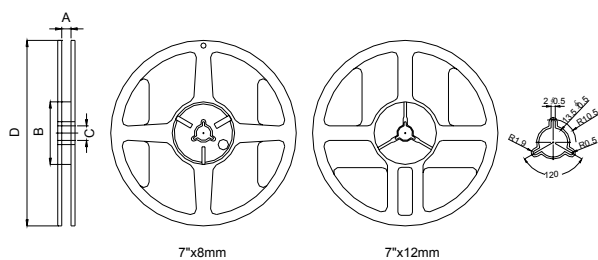
6-2.1 IR Soldering Reflow:

Recommended temperature profiles for lead free re-flow soldering in Figure 1. Table 1.1&1.2 (J-STD-020E)



7. Packaging Information

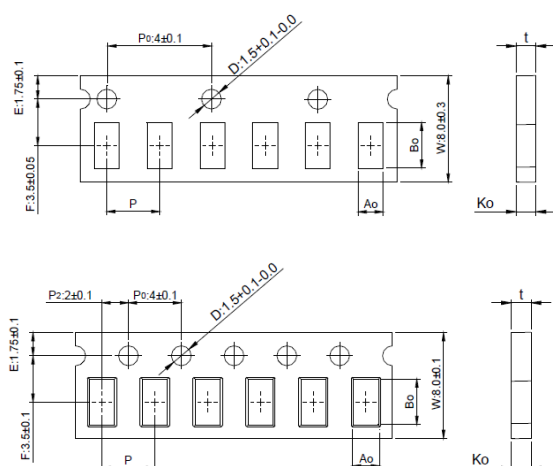
7-1. Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	9.0±0.5	60±2	13.5±0.5	178±2
7"x12mm	13.5±0.5	60±2	13.5±0.5	178±2

7-2.1 Tape Dimension / 8mm

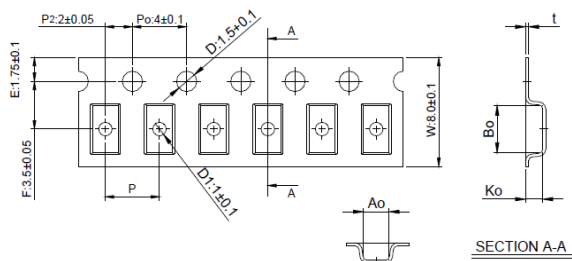
Material of taping is paper



Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)
100505	1.12±0.03	0.62±0.03	0.60±0.03	2.0±0.05	0.60±0.03

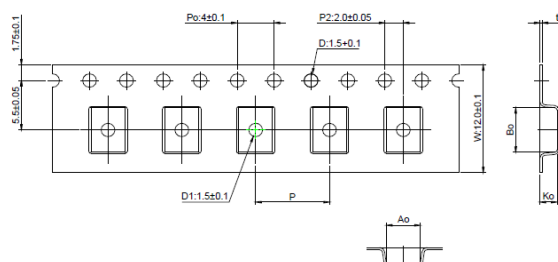
Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)
160808	1.80±0.05	0.96±0.05/-0.03	0.95±0.05	4.0±0.10	0.95±0.05
201209	2.10±0.05	1.30±0.05	0.95±0.05	4.0±0.10	0.95±0.05

Material of taping is plastic



Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)	D1(mm)
201212	2.10±0.10	1.28±0.10	1.28±0.10	4.0±0.10	0.22±0.05	1.0±0.10
321611	3.35±0.10	1.75±0.10	1.25±0.10	4.0±0.10	0.23±0.05	1.0±0.10
322513	3.42±0.10	2.77±0.10	1.55±0.10	4.0±0.10	0.22±0.05	1.0±0.10
321609	3.40±0.10	1.77±0.10	1.04±0.10	4.0±0.10	0.22±0.05	1.0±0.10

7-2.2 Tape Dimension / 12mm

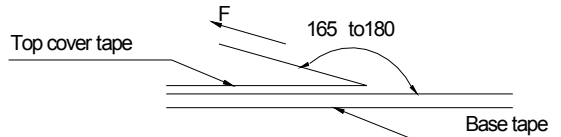


Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)	D1(mm)
451616	4.70±0.10	1.75±0.10	1.75±0.10	4.0±0.10	0.24±0.05	1.5±0.10
453215	4.70±0.10	3.45±0.10	1.60±0.10	8.0±0.10	0.24±0.05	1.5±0.10

7-3. Packaging Quantity

Chip Size	453215	451616	322513	321611	321609	201212	201209	160808	100505
Chip / Reel	1000	2000	2500	3000	3000	2000	4000	4000	10000
Inner box	4000	8000	12500	15000	15000	10000	20000	20000	50000
Middle box	20000	40000	62500	75000	75000	50000	100000	100000	250000
Carton	40000	80000	125000	150000	150000	100000	200000	200000	500000

7-4. Tearing Off Force



The force for tearing off cover tape is 15 to 60 grams in the arrow direction under the following conditions.

Room Temp. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5~35	45~85	860~1060	300

Application Notice

- Storage Conditions(component level)
To maintain the solder ability of terminal electrodes:
 1. TAI-TECH products meet IPC/JEDEC J-STD-020E standard-MSL, level 1.
 2. Temperature and humidity conditions: Less than 40°C and 60% RH.
 3. Recommended products should be used within 12 months from the time of delivery.
 4. The packaging material should be kept where no chlorine or sulfur exists in the air.
- Transportation
 1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
 2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
 3. Bulk handling should ensure that abrasion and mechanical shock are minimized.