

High Current Ferrite Chip Bead(Lead Free)

HCB2012KF-800T40

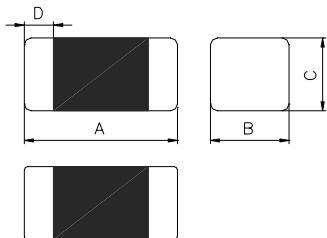
1. Features

1. Monolithic inorganic material construction.
2. Closed magnetic circuit avoids crosstalk.
3. Suitable for reflow soldering.
4. Shapes and dimensions follow E.I.A. spec.
5. Available in various sizes.
6. Excellent solder ability and heat resistance.
7. High reliability.
8. 100% Lead(Pb) & Halogen-Free and RoHS compliant.
9. Low DC resistance structure of electrode to prevent wasteful electric power consumption.



Certificate
Green Partner

2. Dimensions



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

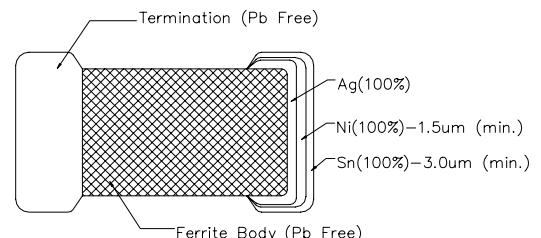
Units: mm

3. Part Numbering

HCB 2012 KF - 800 T 40

A B C - D E F

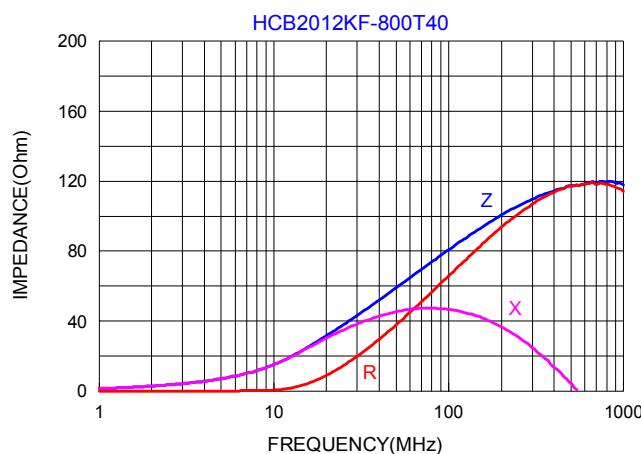
A: Series
B: Dimension L x W
C: Material Lead Free Material
D: Impedance 800=80
E: Packaging T=Taping and Reel, B=Bulk(Bags)
F: Rated Current 40=4000mA



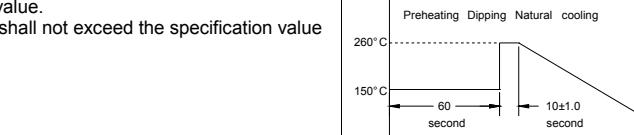
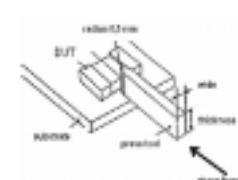
4. Specification

Tai-Tech Part Number	Impedance ()	Test Frequency (Hz)	DC Resistance () max.	Rated Current (mA) max.
HCB2012KF-800T40	80±25%	60mV/100M	0.03	4000

■ Impedance-Frequency Characteristics



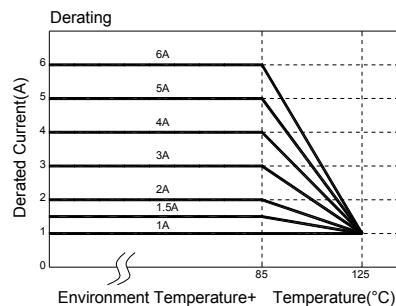
5. Reliability and Test Condition

Item	Performance								Test Condition																
Series No.	FCB	FCM	HCB	GHB	FCA	FCI	FHI	FCH	HCI	--															
Operating Temperature	-40~+125 (Including self-temperature rise)				-40~+105 (Including self-temperature rise)				--	--															
Transportation Storage Temperature	-40~+125				-40~+105				For long storage conditions, please see the Application Notice																
Impedance (Z)	Refer to standard electrical characteristics list				Agilent4291																				
Inductance (Ls)					Agilent E4991																				
Q Factor					Agilent4287																				
DC Resistance					Agilent16192																				
Rated Current					Agilent 4338																				
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.																
Resistance to Soldering Heat	Appearance : No damage. Impedance : within±15% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value								Preheat: 150 ~60sec. Solder: Sn99.5%-Cu0.5% Solder temperature: 260±5 Flux for lead free: Rosin. 9.5% Temperature ramp/immersion and immersion rate: 25±6 mm/s Dip time: 10±1sec. Depth: completely cover the termination.																
Solderability	More than 95% of the terminal electrode should be covered with solder.																								
									Preheat: 150 ~60sec. Solder: Sn99.5%-Cu0.5% Solder temperature: 245±5 Flux for lead free: Rosin. 9.5% Depth: completely cover the termination. Dip time: 4±1sec.																
Terminal strength	Appearance : No damage. Impedance : within±15% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value								 Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Component mounted on a PCB apply a force (>0805:1kg <=0805:0.5kg)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.																
Bending	Appearance : No damage. Impedance : within±10% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification 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:>=0805:40x100x1.2mm <0805:40x100x0.8mm Bending depth:>=0805:1.2mm <0805:0.8mm Duration of 10 sec for a min.																
Vibration Test	Appearance : No damage. Impedance : within±15% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value								Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Oscillation Frequency: 10 2K 10Hz for 20 minutes Equipment : Vibration checker Total Amplitude:1.52mm±10% Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations),																
Shock	Appearance : No damage. Impedance : within±15% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value								Test condition:																
									<table border="1"> <thead> <tr> <th>Type</th><th>Peak Value (g's)</th><th>Normal duration (D) (ms)</th><th>Wave form</th><th>Velocity change (Vi)ft/sec</th></tr> </thead> <tbody> <tr> <td>SMD</td><td>1,500</td><td>0.5</td><td>Half-sine</td><td>15.4</td></tr> <tr> <td>Lead</td><td>100</td><td>6</td><td>Half-sine</td><td>12.3</td></tr> </tbody> </table>		Type	Peak Value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec	SMD	1,500	0.5	Half-sine	15.4	Lead	100	6	Half-sine	12.3
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SMD	1,500	0.5	Half-sine	15.4																					
Lead	100	6	Half-sine	12.3																					

Item	Performance	Test Condition
Life test	Appearance: no damage. Impedance: within $\pm 15\%$ of initial value. Inductance: within $\pm 10\%$ of initial value. Q : Shall not exceed the specification value. RDC : within $\pm 15\%$ of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Temperature: 125 ± 2 (bead), 85 ± 2 (inductor) Applied current: rated current. Duration: 1000 ± 12 hrs. Measured at room temperature after placing for 24 ± 2 hrs.
Load Humidity		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Humidity: $85 \pm 2\%$ R.H. Temperature: 85 ± 2 Duration: 1000hrs Min. with 100% rated current. Measured at room temperature after placing for 24 ± 2 hrs.
Thermal shock	Appearance: no damage. Impedance: within $\pm 15\%$ of initial value. Inductance: within $\pm 10\%$ of initial value. Q : Shall not exceed the specification value. RDC : within $\pm 15\%$ of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Condition for 1 cycle Step1: -40 ± 2 30 ± 5 min. Step2: 25 ± 2 0.5 min Step3: $+105 \pm 2$ 30 ± 5 min. Number of cycles: 500 Measured at room temperature after placing for 24 ± 2 hrs.
Insulation Resistance	$IR > 1G\Omega$	Chip Inductor Only Test Voltage: $100 \pm 10\%$ V for 30Sec.

**Derating Curve

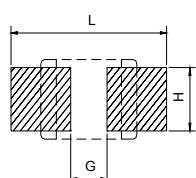
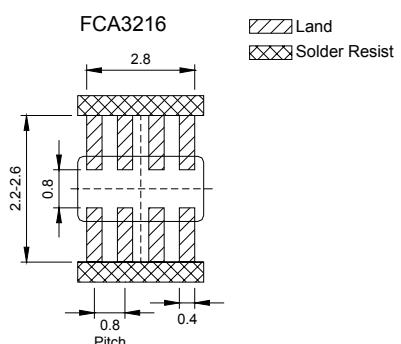
For the ferrite chip bead which withstanding current over 1.5A, as the operating temperature over 85°C , the derating current information is necessary to consider with. For the detail derating of current, please refer to the Derated Current vs. Operating Temperature curve.



6. Soldering and Mounting

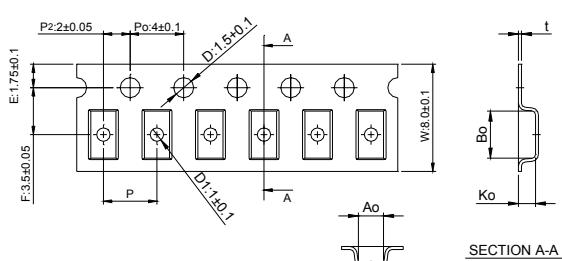
6-1. Recommended PC Board Pattern

Series	Type	Chip Size				Land Patterns For Reflow Soldering		
		A(mm)	B(mm)	C(mm)	D(mm)	L(mm)	G(mm)	H(mm)
FCB	0603	0.6 ± 0.03	0.30 ± 0.03	0.30 ± 0.03	0.15 ± 0.05	0.80	0.30	0.30
FCM	1005	1.0 ± 0.10	0.50 ± 0.10	0.50 ± 0.10	0.25 ± 0.10	1.50	0.40	0.55
HCB	1608	1.6 ± 0.15	0.80 ± 0.15	0.80 ± 0.15	0.30 ± 0.20	2.60	0.60	0.80
GHB	2012	2.0 ± 0.20	1.25 ± 0.20	0.85 ± 0.20	0.50 ± 0.30	3.00	1.00	1.00
FCI		2.0 ± 0.20	1.25 ± 0.20	1.25 ± 0.20	0.50 ± 0.30			
FHI	3216	3.2 ± 0.20	1.60 ± 0.20	1.10 ± 0.20	0.50 ± 0.30	4.40	2.20	1.40
FCH	3225	3.2 ± 0.20	2.50 ± 0.20	1.30 ± 0.20	0.50 ± 0.30	4.40	2.20	3.40
HCI	4516	4.5 ± 0.20	1.60 ± 0.20	1.60 ± 0.20	0.50 ± 0.30	5.70	2.70	1.40
	4532	4.5 ± 0.20	3.20 ± 0.20	1.50 ± 0.20	0.50 ± 0.30	5.90	2.57	4.22



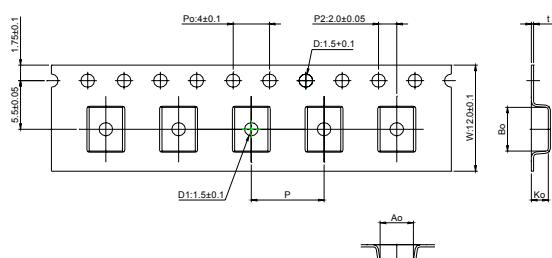
PC board should be designed so that products can prevent damage from mechanical stress when warping the board.

Material of taping is plastic



Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)	D1(mm)
160808	1.95±0.10	1.05±0.10	1.05±0.10	4.0±0.10	0.23±0.05	none
201209	2.25±0.10	1.42±0.10	1.04±0.10	4.0±0.10	0.22±0.05	1.0±0.10
201212	2.35±0.10	1.50±0.10	1.45±0.10	4.0±0.10	0.22±0.05	1.0±0.10
321611	3.50±0.10	1.88±0.10	1.27±0.10	4.0±0.10	0.22±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

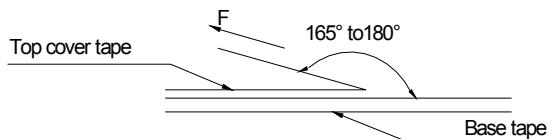


Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)	D1(mm)
451616	4.95±0.1	1.93±0.1	1.93±0.1	4.0±0.1	0.24±0.05	1.5±0.1
453215	4.95±0.1	3.66±0.1	1.85±0.1	8.0±0.1	0.24±0.05	1.5±0.1

7-3. Packaging Quantity

Chip Size	453215	451616	322513	321611	321609	201212	201209	160808	100505	060303
Chip / Reel	1000	2000	2500	3000	3000	2000	4000	4000	10000	15000
Inner box	4000	8000	12500	15000	15000	10000	20000	20000	50000	75000
Middle box	20000	40000	62500	75000	75000	50000	100000	100000	250000	375000
Carton	40000	80000	125000	150000	150000	100000	200000	200000	500000	750000

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

Application Notice

Storage Conditions

To maintain the solder ability of terminal electrodes:

1. TAI-TECH products meet IPC/JEDEC J-STD-020D 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.