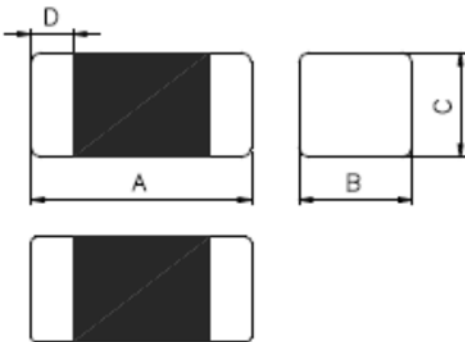


## FEATRLRES

- Monolithic inorganic material construction.
- Closed magnetic circuit avoids crosstalk.
- S.M.T. type.
- Suitable for reflow soldering.
- Shapes and dimensions follow E.I.A. spec.
- Available in various sizes.
- Excellent solder ability and heat resistance.
- High reliability.
- 100% Lead(Pb) & Halogen-Free and RoHS compliant.

## CONFIGLRATIONS & DIMENSIONS ( unit in mm )



Size	A	B	C	D
FCI2012	2.0±0.2	1.25±0.2	$\frac{0.8\pm0.15}{1.25\pm0.20}$	0.5±0.30

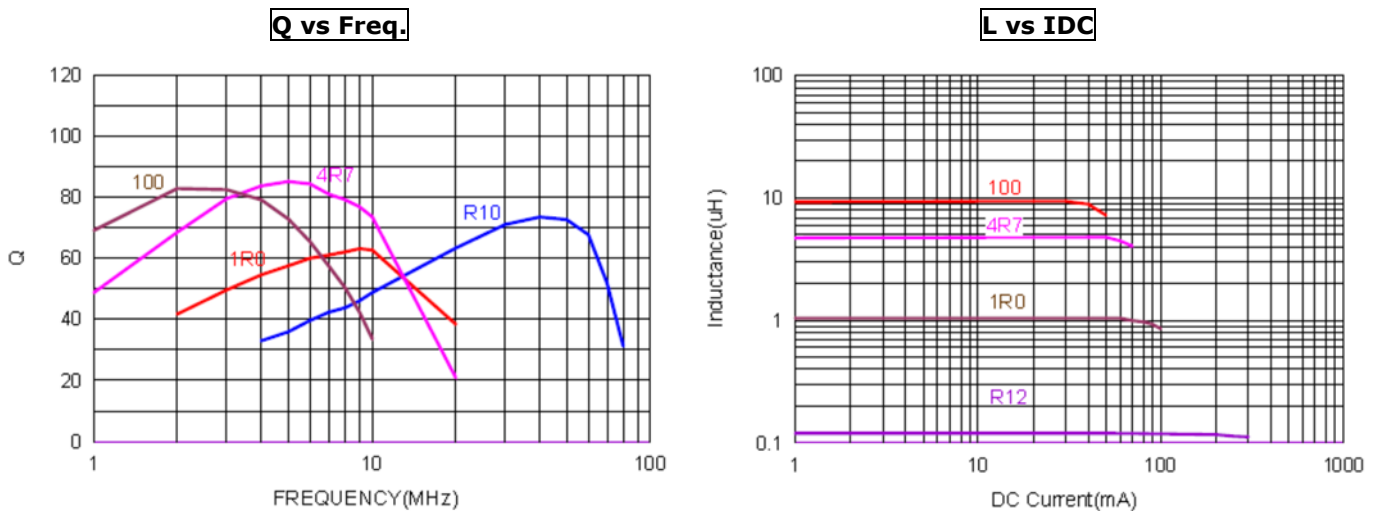
## ELECTRICAL CHARACTERISTICS

Part Number	Thickness	Inductance(uH)		Q		Rated	DCR	SRF
	C size(mm)	Tolerance	Test Frequency	min.	Test	(mA) max.	(Ω) max.	(MHz)
FCI2012F-47N□	0.85±0.20	0.047	60mV / 50M	15	50	300	0.20	320
FCI2012F-68N□	0.85±0.20	0.068	60mV / 50M	15	50	300	0.20	280
FCI2012F-82N□	0.85±0.20	0.082	60mV / 50M	15	50	300	0.20	255
FCI2012F-R10□	0.85±0.20	0.10	60mV / 25M	20	25	250	0.30	235
FCI2012F-R12□	0.85±0.20	0.12	60mV / 25M	20	25	250	0.30	220
FCI2012F-R15□	0.85±0.20	0.15	60mV / 25M	20	25	250	0.40	200
FCI2012F-R18□	0.85±0.20	0.18	60mV / 25M	20	25	250	0.40	185
FCI2012F-R22□	0.85±0.20	0.22	60mV / 25M	20	25	250	0.50	170
FCI2012F-R27□	0.85±0.20	0.27	60mV / 25M	20	25	250	0.50	150
FCI2012F-R33□	0.85±0.20	0.33	60mV / 25M	20	25	250	0.55	145
FCI2012F-R39□	0.85±0.20	0.39	60mV / 25M	25	25	200	0.65	135
FCI2012F-R47□	1.25±0.20	0.47	60mV / 25M	25	25	200	0.65	125
FCI2012F-R56□	1.25±0.20	0.56	60mV / 25M	25	25	150	0.75	115

FCI2012F-R68□	1.25±0.20	0.68	60mV / 25M	25	25	150	0.80	105
FCI2012F-1R0□	0.85±0.20	1.0	60mV / 10M	45	10	50	0.40	75
FCI2012F-1R5□	0.85±0.20	1.5	60mV / 10M	45	10	50	0.50	60
FCI2012F-1R8□	0.85±0.20	1.8	60mV / 10M	45	10	50	0.60	55
FCI2012F-2R2□	0.85±0.20	2.2	60mV / 10M	45	10	30	0.65	50
FCI2012F-2R7□	1.25±0.20	2.7	60mV / 10M	45	10	30	0.75	45
FCI2012F-3R3□	1.25±0.20	3.3	60mV / 10M	45	10	30	0.80	41
FCI2012F-4R7□	1.25±0.20	4.7	60mV / 10M	45	10	30	1.00	35
FCI2012F-100□	1.25±0.20	10.0	60mV / 2M	45	2	15	1.15	24

- NOTE: □: TOLERANCE K=±10%, L=±15%, M=±20%
- Rated current: based on temperature rise test
- In compliance with EIA 595

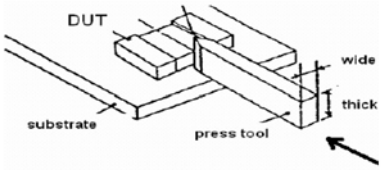
### Q vs Frequency, DC Bias Characteristics (Typical)



### Reliability and Test Condition

Item	Performance	Test Condition
Operating temperature	-40~+125°C (Including self - temperature rise)	
Storage temperature	1. -10~+40°C, 50~60%RH (Product with taping) 2. -40~+125°C (on board)	
<b>Electrical Performance Test</b>		
Inductance	Refer to standard electrical characteristics list.	HP4284A, CH11025, CH3302, CH1320, CH1320S LCR Meter.
DCR		CH16502, Agilent33420A Micro-Ohm Meter.
Saturation Current (Isat)	Approximately $\Delta$ L30%	Saturation DC Current (Isat) will cause L0 to drop $\Delta$ L(%)

Heat Rated Current (Irms)	Approximately $\Delta T40^{\circ}\text{C}$	Heat Rated Current (Irms) will cause the coil temperature rise $\Delta T(^{\circ}\text{C})$ . 1.Applied the allowed DC current 2.Temperature measured by digital surface thermometer															
<b>Reliability Test</b>																	
Life Test		Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles) Temperature : $125\pm 2^{\circ}\text{C}$ (Inductor) Applied current : rated current Duration : $1000\pm 12$ hrs Measured at room temperature after placing for $24\pm 2$ hrs															
Load Humidity		Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles) Humidity : $85\pm 2 \times \text{R.H.}$ , Temperature : $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Duration : 1000hrs Min. with 100% rated current Measured at room temperature after placing for $24\pm 2$ hrs															
Moisture Resistance	Appearance : No damage. 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-020DClassification Reflow Profiles 1. Baked at $50^{\circ}\text{C}$ for 25hrs, measured at room temperature after placing for 4 hrs. 2. Raise temperature to $65\pm 2^{\circ}\text{C}$ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to $25^{\circ}\text{C}$ in 2.5hrs. 3. Raise temperature to $65\pm 2^{\circ}\text{C}$ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to $25^{\circ}\text{C}$ in 2.5hrs,keep at $25^{\circ}\text{C}$ for 2 hrs then keep at $-10^{\circ}\text{C}$ for 3 hrs 4. Keep at $25^{\circ}\text{C}$ 80-100%RH for 15min and vibrate at the frequency of 10 to 55 Hz to 10 Hz, measure at room temperature after placing for 1~2 hrs.															
Thermal shock		Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles Condition for 1 cycle Step1 : $-40\pm 2^{\circ}\text{C}$ 30 $\pm$ 5min Step2 : $25\pm 2^{\circ}\text{C}$ $\leq$ 0.5min Step3 : $125\pm 2^{\circ}\text{C}$ 30 $\pm$ 5min Number of cycles : 500 Measured at room temperature after placing for $24\pm 2$ hrs															
Vibration		Oscillation Frequency: 10 ~ 2K ~ 10Hz for 20 minutes Equipment : Vibration checker Total Amplitude:1.52mm $\pm$ 10% Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations).															
Bending		Shall be mounted on a FR4 substrate of the following dimensions: $\geq 0805$ inch(2012mm):40x100x1.2mm $< 0805$ inch(2012mm):40x100x0.8mm Bending depth: $\geq 0805$ inch(2012mm):1.2mm $< 0805$ inch(2012mm):0.8mm duration of 10 sec.															
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	<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>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> <tr> <td>Lead</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> </tbody> </table>	Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)/ft/sec	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3
Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)/ft/sec													
SMD	50	11	Half-sine	11.3													
Lead	50	11	Half-sine	11.3													
Solder ability	More than 95% of the terminal electrode should be covered with solder.	Preheat: $150^{\circ}\text{C}$ ,60sec. Solder: Sn96.5% Ag3% Cu0.5% Temperature: $245\pm 5^{\circ}\text{C}$ ◦ Flux for lead free: Rosin. 9.5% ◦ Dip time: 4 $\pm$ 1sec ◦ Depth: completely cover the termination															
Resistance to Soldering Heat		Depth: completely cover the termination <table border="1"> <thead> <tr> <th>Temperature(<math>^{\circ}\text{C}</math>)</th> <th>Time(s)</th> <th>Temperature ramp/immersion and emersion rate</th> <th>Number of heat cycles</th> </tr> </thead> <tbody> <tr> <td>260 <math>\pm</math>5 (solder temp)</td> <td>10 <math>\pm</math>1</td> <td>25mm/s <math>\pm</math>6 mm/s</td> <td>1</td> </tr> </tbody> </table>	Temperature( $^{\circ}\text{C}$ )	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles	260 $\pm$ 5 (solder temp)	10 $\pm$ 1	25mm/s $\pm$ 6 mm/s	1							
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260 $\pm$ 5 (solder temp)	10 $\pm$ 1	25mm/s $\pm$ 6 mm/s	1														

Terminal Strength	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 e	Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020D Classification Reflow Profiles With the component mounted on a PCB with the device to be tested, apply a force ( $>0.805:1\text{kg}$ , $\leq 0.805:0.5\text{kg}$ ) to the side of a device being tested. This force shall be applied for $60 \pm 1$ seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested. 
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Note : When there are questions concerning measurement result : measurement shall be made after  $48 \pm 2$  hours of recovery under the standard condition.