



## CHIP INDUCTORS

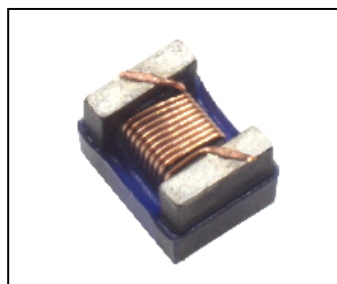
## MODEL NO : VSFWI-0603D SERIES

## Features :

- \* SMD version.
- \* Ultra-small size.
- \* High SRF and low DCR.
- \* Compliant with RoHS and REACH.
- \* AEC-Q200 compliance.

## Application :

- \* Automotive.



## Electrical Specification :

PART NO	Inductance (uH) NOTE(1)	Tolerance NOTE(2)		Q MIN. NOTE(1)	SRF (MHz) MIN.	DCR (Ω) ±30%	Isat (mA) NOTE(4)	I <sub>rms</sub> (mA) NOTE(5)		Color Coding
								@25°C	@125°C	
VSFWI-0603D-R27	0.27	M		13	900	0.26	950	820	700	Green
VSFWI-0603D-R47	0.47	M		13	900	0.26	920	800	670	Blue
VSFWI-0603D-R68	0.68	M		13	650	0.27	920	800	670	Violet
VSFWI-0603D-R78	0.78	M		16	410	0.28	920	800	670	Gray
VSFWI-0603D-1R0	1.0	M		16	390	0.32	860	700	650	Black
VSFWI-0603D-1R5	1.5	M		16	160	0.40	720	600	520	Brown
VSFWI-0603D-1R8	1.8	M		16	121	0.43	640	580	500	Red
VSFWI-0603D-2R2	2.2	M		16	103	0.56	600	580	500	Orange
VSFWI-0603D-2R7	2.7	M		16	72	0.62	540	500	420	Yellow
VSFWI-0603D-3R3	3.3	M		16	66	0.70	500	500	420	Green
VSFWI-0603D-3R9	3.9	M		16	61	0.83	460	460	360	Blue
VSFWI-0603D-4R7	4.7	M		16	51	0.97	400	420	250	Violet
VSFWI-0603D-5R6	5.6	K	M	16	47	1.10	380	380	220	Gray
VSFWI-0603D-6R8	6.8	K	M	16	43	1.50	340	340	200	White
VSFWI-0603D-8R2	8.2	K	M	16	40	1.68	300	300	150	Black
VSFWI-0603D-100	10	K	M	14	36	1.85	280	280	140	Brown
VSFWI-0603D-120	12	K	M	14	32	2.28	260	260	130	Red
VSFWI-0603D-150	15	K	M	14	29	2.60	240	240	120	Orange
VSFWI-0603D-180	18	K	M	14	28	2.90	220	220	110	Yellow

PART NO	Inductance (uH) NOTE(1)	Tolerance NOTE(2)		Q MIN. NOTE(1)	SRF (MHz) MIN.	DCR (Ω) ±30%	Isat (mA) NOTE(4)	Irms (mA) NOTE(5)		Color Coding
								@25°C	@125°C	
VSFWI-0603D-220	22	K	M	14	24	3.61	200	200	100	Green
VSFWI-0603D-270	27	K	M	14	20	5.20	140	140	60	Blue
VSFWI-0603D-330	33	K	M	14	15	6.60	120	120	45	Violet
VSFWI-0603D-470	47	K	M	12	11	11.20	100	110	40	Gray

NOTE(1): Measuring frequency: 0.27uH ~8.2uH: 7.9MHZ  
: 10uH ~47uH: 2.5MHZ

NOTE(2): Tolerance: K = ±10%, M = ±20%

NOTE(3): L, Q, SRF: Agilent/HP E4991A+ Agilent/HP16197A or HP16193A  
(The electrical specification test by the smallest gap position)

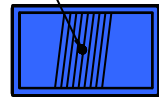
NOTE(4): The saturation current indicates the value of DC current is approximately 30% lower than its initial value of inductance.

NOTE(5): ΔT=40°C approximately under the Irms current.

NOTE(6): Operating temperature range from -40°C to 125°C (ambient temperature plus self generation of heat)

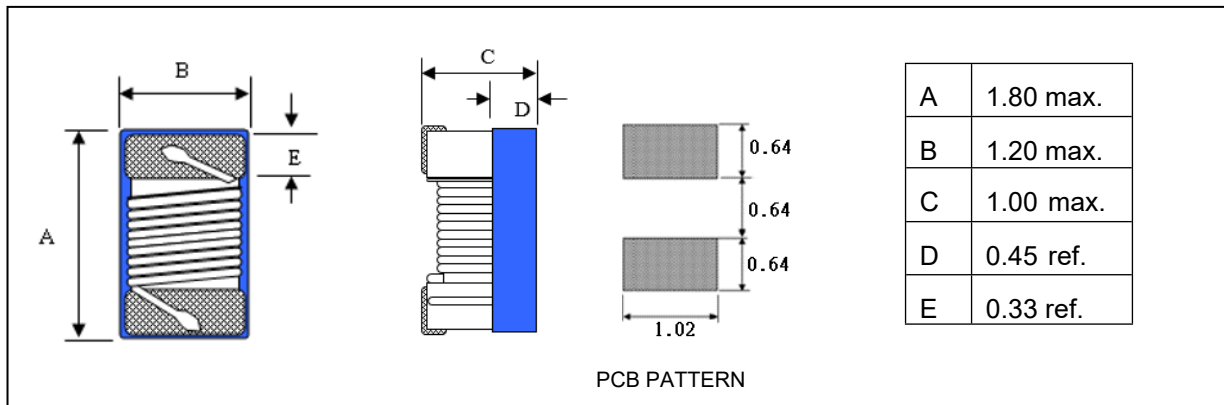
NOTE(7): Storage time: The recommended storage time of chip inductor is maximum 6 months, and don't suggest to use the parts over 6 months.

1st



COLOR

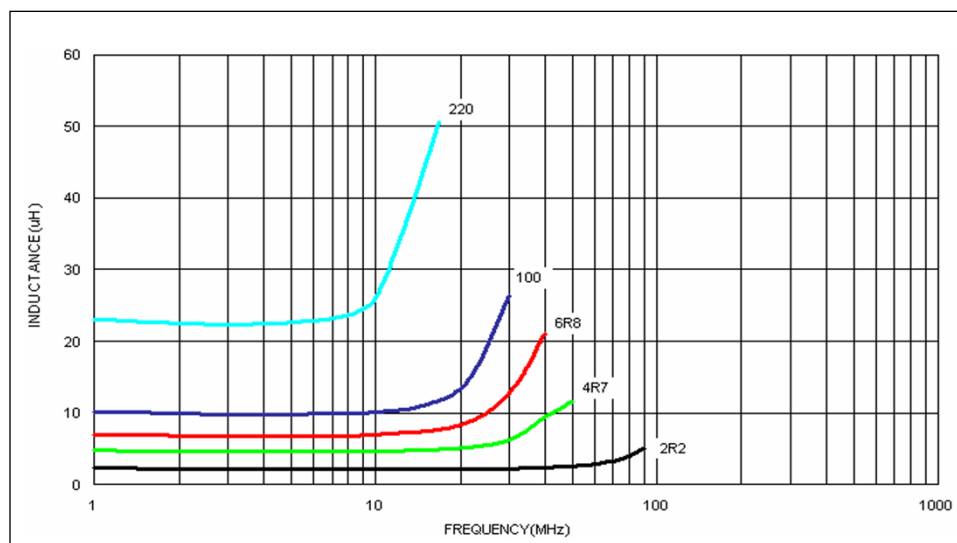
## Physical Dimension : (unit : mm)



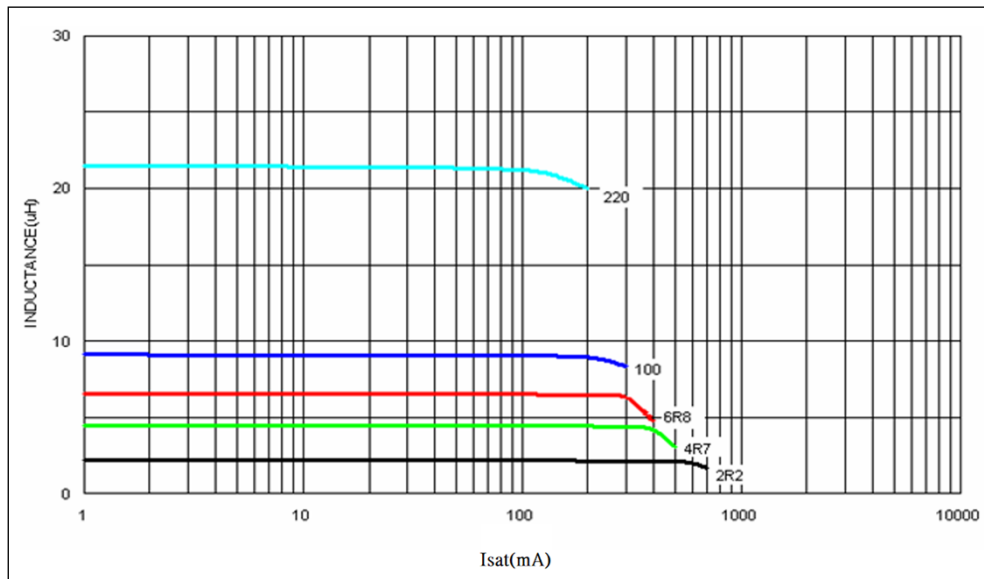
## PACKAGING SPEC

1. REEL SIZE & UNITS PER REEL :7",4000PCS.
2. TAPE WIDTH:8.0 mm.
3. REEL WIDTH:14.4 mm
4. COMPONENT PITCH:4.0 mm

## Inductance v.s Frequency



## Inductance v.s DC Bias



## Cautions and warnings

- Please note the recommendations in our product specification (latest edition) and in the data sheets.
  - Particular attention should be paid to the derating curves given there.
  - The soldering conditions should also be observed. Temperatures quoted in relation to wave soldering refer to the pin, not the housing.
- If the components are to be washed with varnish it is necessary to check whether the washing varnish agent used has a negative effect on the wire insulation, any plastics that are used, or on glued joints. In particular, it is possible for washing varnish agent residues to have a negative effect in the long-term on wire insulation.

Washing processes may damage the product due to the possible static or cyclic mechanical loads (e.g. ultrasonic cleaning). They may cause cracks to develop on the product and its parts, which might lead to reduced reliability or lifetime.
- The following points must be observed if the components are potted in customer applications:
  - Many potting materials shrink as they harden. They therefore exert a pressure on the plastic housing or core. This pressure can have a deleterious effect on electrical properties, and in extreme cases can damage the core or plastic housing mechanically.
  - It is necessary to check whether the potting material used attacks or destroys the wire, wire insulation plastics or glue.
  - The effect of the potting material can change the high-frequency behavior of the components.
  - Many coating material have a negative effect (chemically and mechanically) on the winding wires, insulation materials and connecting points. Customers are always obligated to determine whether and to what extent their coating material influence the component. Customers are responsible and bear all risk for the use of the coating material.
- Ceramics / Ferrites are sensitive to direct impact. This can cause the core material to flake, or lead to breakage of the core.
- Even for customer-specific products, conclusive validation of the component in the circuit can only be carried out by the customer.

## Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statement about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule, we are either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether a product with the properties described in the product specification is suitable for use in a particular customer application.

2. We also point out that **in individual cases, a malfunction of electronic components of failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they operated as specified.** In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
4. We constantly strive to improve our products. Consequently, **the products described in this publication may change from time to time.** The same is true of the corresponding product specifications. Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order.  
We also **reserve the right to discontinue production and delivery of products.** Consequently, we cannot guarantee that all products named in this publication will always be available. The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.
5. **Our manufacturing sites serving the automotive business apply the IATF 16949 standard.** The IATF certifications confirm our compliance with requirements regarding the quality management system in the automotive industry. Referring to customer requirements and customer specific requirements ("CSR") PEC always has and will continue to have the policy of respecting individual agreements. Even if IATF 16949 may appear to support the acceptance of unilateral requirements, we hereby like to emphasize that **only requirements mutually agreed upon can and will be implemented in our Quality Management System.** For clarification purposes we like to point out that obligations from IATF 16949 shall only become legally binding if individually agreed upon.