

# SPECIFICATION



ZenithTek

Brand **ZenithTek**  
 Product Series Code **ZHFL-SERIES**  
 File Version **V0**  
 Description **SMD Power Inductor**

## Features

- Low Profile Package.
- High Rated Current.
- Low DC Resistance.
- Halogen Free, Lead Free, RoHS and REACH Compliance.

## Applications

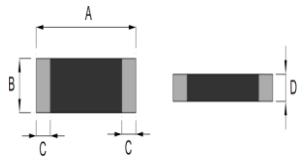
- DC to DC Converter.
- Tablet, Mobile, Wearable Devices.
- HDD, SSD, Storage Devices.
- Thin type Power Supply Module.

## Product Identification

**ZHFL 160808 A6 R47 M S**  
 1 2 3 4 5 6

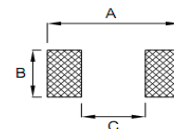
- 1.Product Code: ZHFL = ZenithTek Code.
- 2.Dimension Code: 160808 = 1.7 \* 0.9 \* 0.7 mm.
- 3.Type Code: A6.
- 4.Inductance Code: R47 = 0.47μH.
- 5.Tolerance Code: M = ±20%.
- 6.Inner Code: S.

## Dimension (Unit: mm)



Type	A	B	C	D
ZHFL160808A6	1.70±0.10	0.90±0.10	0.30±0.20	0.70±0.10
ZHFL201208A2	2.00±0.20	1.20±0.20	0.50±0.30	0.80(MAX.)
ZHFL201208A3	2.10±0.10	1.30±0.10	0.50±0.20	0.70±0.10
ZHFL201210A6	2.00±0.20	1.20±0.20	0.50±0.30	0.90±0.10
ZHFL201610A1	2.00±0.20	1.60±0.20	0.50±0.30	0.90±0.10
ZHFL252008A2	2.50±0.20	2.00±0.20	0.50±0.30	0.70±0.10
ZHFL252010A1	2.50±0.20	2.00±0.20	0.50±0.30	0.90±0.10

## Land Pattern (Unit: mm)



Type	A(Ref.)	B(Ref.)	C(Ref.)
ZHFL160808A6	1.80	1.00	0.80
ZHFL201208A2	2.40	1.45	0.80
ZHFL201208A3	2.40	1.30	0.80
ZHFL201210A6	2.40	1.45	0.80
ZHFL201610A1	2.40	1.80	1.00
ZHFL252008A2	2.80	2.20	1.20
ZHFL252010A1	2.80	2.20	1.20

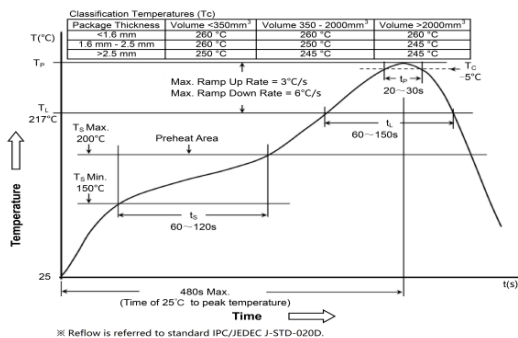
## Product Structure



## Schematic



## Reflow Heat Endurance



## Operating Conditions

Operating Temp. : -40°C~+125°C (including self-temp. rise)

## Standard & Atmospheric Condition

Ambient Temp. : 25°C±15°C / Relative Humidity : 65±20%.  
 If there may be any doubt on the result, measurement shall be made within the following limits :  
 Ambient Temp. : 25°C±2°C / Relative Humidity : 65±5%.

## Test Equipment

LCR Meter : WK-3260B + WK-3265B / Fixture : 10164.  
 Micro ohm Meter : HIOKI-RM3545 / Fixture : L2002.  
 CHORMA-16502 / Fixture : A165016.  
 Caliper : Mitsutoyo 150mm.

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Part Number	Inductance (μH)	Tolerance (%)	Test Frequency (MHz)0.5V	DCR (mΩ/Max.)	DCR (mΩ/Typ.)	Saturation Current Isat(A/Max.)	Saturation Current Isat(A/Typ.)	Heat Rating Current Irms(A/Max.)	Heat Rating Current Irms(A/Typ.)
ZHFL160808A6R47MS	0.47	±20	1	53	37	3.1	3.4	2.9	3.2
ZHFL160808A61R0MS	1.00	±20	1	145	115	2.0	2.2	1.7	2.0

Note 1: Isat: The DC current at which the inductance decreases approximately 30% from the actual initial value.  
Note 2: Irms: The DC current at which the temperature rises approximately ΔT=40°C.

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ZHFL201208A2R24MS	0.24	±20	1	22	17	4.5	4.8	3.9	4.1
ZHFL201208A2R47MS	0.47	±20	1	35	31	4.1	4.3	3.7	3.9
ZHFL201208A2R56MS	0.56	±20	1	48	40	3.2	3.5	3.2	3.5
ZHFL201208A21R0MS	1.00	±20	1	55	48	3.0	3.4	3.0	3.3

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ZHFL201208A3R47YS	0.47	-10%~+30%	1	43	37	4.0	4.2	3.0	3.2

Note 1: Isat: The DC current at which the inductance decreases approximately 30% from the actual initial value.  
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ZHFL201210A6R47MS	0.47	±20	1	33	25	4.9	5.4	4.3	4.5

Note 1: Isat: The DC current at which the inductance decreases approximately 30% from the actual initial value.  
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Part Number	Inductance (μH)	Tolerance (%)	Test Frequency (MHz)0.5V	DCR (mΩ/Max.)	DCR (mΩ/Typ.)	Saturation Current Isat(A/Max.)	Saturation Current Isat(A/Typ.)	Heat Rating Current Irms(A/Max.)	Heat Rating Current Irms(A/Typ.)
ZHFL201610A1R47MS	0.47	±20	1	27	21	5.5	5.7	4.8	5.2
ZHFL201610A11R0MS	1.00	±20	1	46	43	4.0	4.2	3.2	3.5

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Part Number	Inductance (μH)	Tolerance (%)	Test Frequency (MHz)0.5V	DCR (mΩ/Max.)	DCR (mΩ/Typ.)	Saturation Current Isat(A/Max.)	Saturation Current Isat(A/Typ.)	Heat Rating Current Irms(A/Max.)	Heat Rating Current Irms(A/Typ.)
ZHFL252008A21R0MS	1.00	±20	1	43	36	3.8	4.1	4.0	4.2

Note 1: Isat: The DC current at which the inductance decreases approximately 30% from the actual initial value.  
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ZHFL252010A11R0MS	1.00	±20	1	36	33	4.7	5.0	4.0	4.3
ZHFL252010A12R2MS	2.20	±20	1	98	85	3.1	3.5	2.3	2.5

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## Care Note

### 1 Care note for Use

- (1) Storage Condition:  
Temperature and humidity conditions : <35°C and < 60%RH.
- (2) Use Temperature:
  - a. Minimum Temperature: -40°C Ambient temperature of power choke coil.
  - b. Maximum Temperature: +125°C The value of temperature including ambient of the transformer and temperature rise of power choke coil.
  - c. There is not a problem from -40°C ~ +125°C in a reliability test.
  - d. However, this is not meant a temperature grade guarantee of UL.
- (3) Model:  
When this power choke coil was used in a similar or new product to the original one, sometimes it might be unable to satisfy the specifications due to difference of condition of usage.
- (4) Drop:  
If the power choke coil suffered mechanical stress such as drop, characteristic may become poor (due to damage on coil bobbin, etc.). Never use such stressed power choke coil.

### 2 Care note for Safety

- (1) Provision to Abnormal Condition:  
This power choke coil itself does not have any protective function in abnormal condition such as overload, short-circuit and open-circuit conditions, etc.  
Therefore, it shall be confirmed as the end product that there is no risk of smoking, fire, dielectric withstand voltage, insulation resistance, etc. in abnormal conditions to provide protective devices and/or protection circuit in the end product.
- (2) Temperature Rise:  
Temperature rise of power choke coil depends on the installation condition on end products.  
It shall be confirmed on the actual end product that temperature rise of power choke coil is in the limit of specified temperature class.
- (3) Dielectric Strength:  
Dielectric withstanding test with higher voltage than specific value will damage insulating material and shorten its life.
- (4) Water:  
This power choke coil must not be used in wet condition by water, coffee or any liquid because insulation strength becomes very low on the condition.
- (5) Detergent:  
Please consult our company once in case of this because the confirmation of reliability etc. is needed when the washing medicine is used for the power choke coil.

### 3 To maintain the solderability of terminal electrodes

- (1) Packaging material should be kept away from where chlorine or sulfur exists.
- (2) Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
- (3) The use of tweezers or vacuum pick up is strongly recommended for individual components.
- (4) Bulk handling should ensure that abrasion and mechanical shock are minimized.

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## Reliability Test

No.	Item	Specification	Test Method
1	Temperature Shock.	Appearance: No damage. Inductance: within $\pm 10\%$ of initial.	Temperature: $-40\pm 2^{\circ}\text{C}$ ~ $+125\pm 2^{\circ}\text{C}$ Kept for 30 minutes. Transition time : 5 minutes. 100 Cycles.
2	Humidity Resistance.	Appearance: No damage. Inductance: within $\pm 10\%$ of initial.	Temperature: $40\pm 2^{\circ}\text{C}$ . Relative Humidity: 90%. Duration: 500 +4/-0 hours.
3	High Temperature Resistance.	Appearance: No damage. Inductance: within $\pm 10\%$ of initial.	Temperature: $125\pm 2^{\circ}\text{C}$ . Duration: 1000 +4/-0 hours.
4	Low Temperature Resistance.	Appearance: No damage. Inductance: within $\pm 10\%$ of initial.	Temperature: $-40\pm 2^{\circ}\text{C}$ . Duration: 1000 +4/-0 hours.
5	Vibration test.	Appearance: No damage. Inductance: within $\pm 10\%$ of initial.	Oscillation Frequency: 10Hz to 55Hz to 10Hz in 60 seconds as a period. Total amplitude: 1.5mm. Testing Time: a period of 2 hours in each 3 mutually perpendicular directions (total of 6 hours).
6	Solderability Heat test.	Appearance: No damage. Inductance: within $\pm 10\%$ of initial.	Solder temperature: $260 +0/-5^{\circ}\text{C}$ . Duration: 5 sec. Allowed reflow time: 2 times.
7	Solderability test.	90% or more of electrode area shall be coated by new solder.	Preheating: $160^{\circ}\text{C}$ , 60sec. Solder temperature: $245\pm 5^{\circ}\text{C}$ . Duration : 5 sec.
8	Flexure Strength.	No visible mechanical damage.	Flexure: 2mm. Pressurizing Speed: 0.5mm/sec. Keep time: $30\pm 1$ sec.
9	Terminal Strength.	No visible mechanical damage.	Reflow 2 times. Force: 10N , Keep time: 5 sec , X,Y directs.

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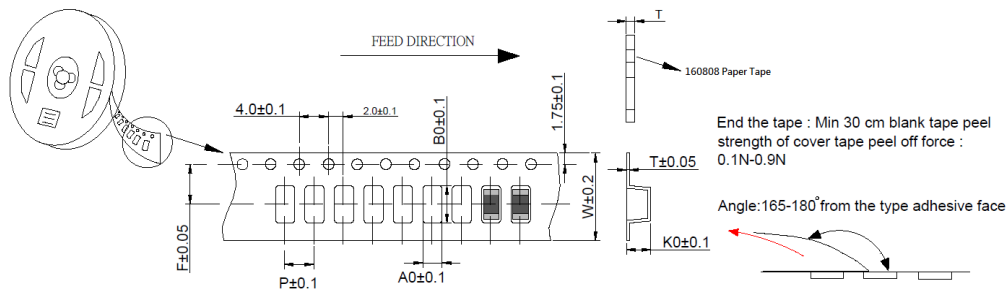


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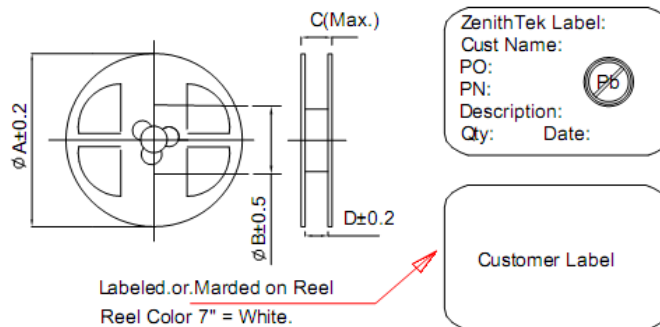
## Package

### Taping Dimension (mm)



Size(mm)	W	P	A0	B0	K0	T	F
ZHFL160808	8.00	4.00	1.14	1.95	-	0.91	3.50
ZHFL201208	8.00	4.00	1.50	2.35	0.90	0.25	3.50
ZHFL201210	8.00	4.00	1.45	2.35	1.09	0.23	3.50
ZHFL201610	8.00	4.00	1.90	2.35	1.15	0.22	3.50
ZHFL252008	8.00	4.00	2.23	2.74	1.17	0.22	3.50
ZHFL252010	8.00	4.00	2.23	2.74	1.17	0.22	3.50

### Reel Dimension (mm)



Size(mm)	A	B	C	D	Reel/Size	Qty./Size
ZHFL160808	178	60	14.4	8.4	7"	4000 Pcs
ZHFL201208	178	60	14.4	8.4	7"	3000 Pcs
ZHFL201210	178	60	14.4	8.4	7"	3000 Pcs
ZHFL201610	178	60	14.4	8.4	7"	3000 Pcs
ZHFL252008	178	60	14.4	8.4	7"	3000 Pcs
ZHFL252010	178	60	14.4	8.4	7"	3000 Pcs

### Box Dimension (mm)

