

SPECIFICATION



ZenithTek

Brand

Product Series Code

File Version

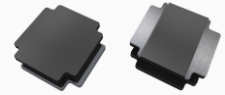
Description

ZenithTek

ZCAD030315S13R3MB

V0

SMD Low Profile Magnetic Epoxy Inductor



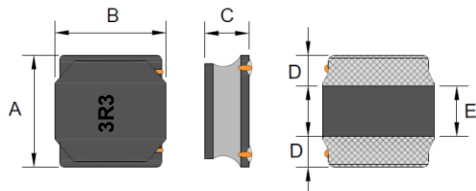
Features

- High Rated Current.
- Low DC Resistance.
- A Series of Package Size and Wide Inductance Range.
- Halogen Free, Lead Free, RoHS and REACH Compliance.
- Comply with AEC-Q200 verified.

Product Identification

ZCAD	030315	S1	3R3	M	B
1	2	3	4	5	6

Dimension (Unit: mm)



Type	A(±0.2)	B(±0.2)	C(Max.)	D(Ref.)	E(Ref.)
ZCAD030315	3.00	3.00	1.50	0.90	2.50

Applications

- DC to DC Converter.
- Computing, Mobile, Networking.
- IoT, Gaming, Audio Devices.
- Industrial PC, Storage Devices.

1.Product Code:
ZCAD = ZenithTek Code.

4.Inductance Code:
3R3 = 3.30μH.

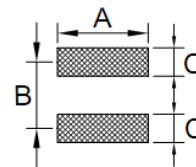
2.Dimension Code:
030315 = 3.0 * 3.0 * 1.5mm.

5.Tolerance Code:
M = ±20%.

3.Type Code:
S1.

6.Inner Code:
B.

Land Pattern (Unit: mm)



Type	A(Ref.)	B(Ref.)	C(Ref.)
ZCAD030315	3.20	2.10	1.10

Electrical Characteristic

Part Number	Inductance (μH)	Tolerance (%)	Test Frequency (MHz)/1V	SRF (MHz/Min.)	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.)	Marking
ZCAD030315S13R3M	3.30	±20	1	48	98	82	1.30	1.50	1.35	1.55	Black

Note 1: Tolerance Code: M= ±20%.

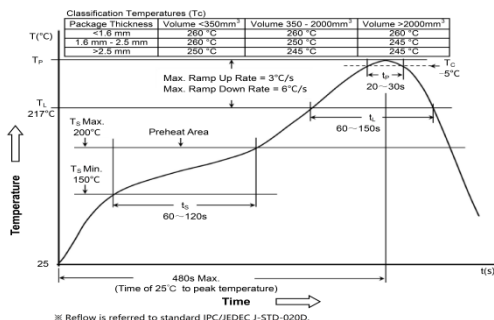
Note 2: Isat: The DC current at which the inductance decreases approximately 30% from the actual initial value.

Note 3: Irms: The DC current at which the temperature rises approximately ΔT=40°C.

Product Structure



Reflow Heat Endurance



Schematic



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 / DC Source : WK-3265B.

Resistance Meter : HIOKI-RM3545.

Caliper : Mitsutoyo 150mm.



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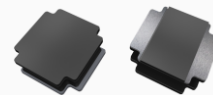
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Care Note

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) Recommendation: inductors should be used within 12 months from the time of delivery.
- (2) Packaging material should be kept away from where chlorine or sulfur exists.
- (3) Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
- (4) The use of tweezers or vacuum pick up is strongly recommended for individual components.
- (5) Bulk handling should ensure that abrasion and mechanical shock are minimized.



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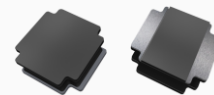
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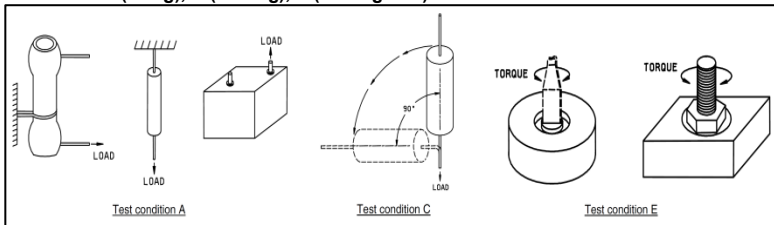
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Reliability Test

No.	Item	Judgement	Test Method
1	High Temperature Exposure. (Storage)	Appearance : No visible mechanical damage. Electrical Test : within $\pm 10\%$ of initial.	Reference documents: MIL-STD-202G - Method "108" / Condition "D" Temperature: $T^{\circ}\text{C} \pm 3^{\circ}\text{C}$. (T is defined in note 1) Duration: 1000 hours. Measurement at 24 ± 4 hours after test conclusion.
2	Temperature Cycling.	Appearance : No visible mechanical damage. Electrical Test : within $\pm 10\%$ of initial.	Reference documents: JESD22 - Method "JA-104" / Condition "H" Cycling : -55°C (keep 30min) \Rightarrow Transition Period(≤ 1 minute) $\Rightarrow T^{\circ}\text{C}$ (keep 30min) \Rightarrow Transition Period(≤ 1 minute) $\Rightarrow -55^{\circ}\text{C}$. T is defined in note 1. Duration: 1000 cycles. Measurement at 24 ± 4 hours after test conclusion.
3	Biased Humidity.	Appearance : No visible mechanical damage. Electrical Test : within $\pm 10\%$ of initial..	Reference documents: MIL-STD-202G - Method "103" Temperature: 85°C . Relative Humidity: 85%. Duration: 1000 hours. Measurement at 24 ± 4 hours after test conclusion.
4	Operational Life.	Appearance : No visible mechanical damage. Electrical Test : within $\pm 10\%$ of initial.	Reference documents: MIL-PRF-27 Apply rated current, then operated at max operation temperature $T^{\circ}\text{C}$. Duration: 1000 hours. 5 life cycle/week. T is defined in note 1. Measurement at 24 ± 4 hours after test conclusion.
5	External Visual.	Inspect device construction, marking and workmanship. Electrical Test not required.	Reference documents: MIL-STD-883 - Method "2009" All qualification parts submitted.
6	Physical Dimension.	Meet the specifications.	Reference documents: JESD22 - Method "JB-100" Sample size: 30pcs.
7	Terminal Strength. (Leaded)	Appearance : No visible mechanical damage. Electrical Test : within $\pm 10\%$ of initial.	Reference documents: MIL-STD-202 - Method "211" Test leaded device lead integrity only. Conditions: A (910 g), C (1.13 kg), E (1.45 kg-mm). 
8	Resistance to Solvents.	Appearance: No visible mechanical damage.	Reference documents: MIL-STD-202 - Method "215" Note: Add Aqueous wash chemical. OKEM Clean or equivalent. Do not use banned solvents.



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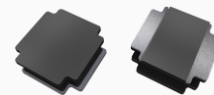


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Reliability Test

No.	Item	Specification	Test Method
9	Mechanical Shock.	Appearance : No visible mechanical damage. Electrical Test : within $\pm 10\%$ of initial.	Reference documents: MIL-STD-202G - Method "213" / Condition "C" Peak acceleration: 100 g's. Duration of pulse: 6ms. Waveform: Half-sine. Velocity change: 12.3 ft/sec. Shocks in each direction along 3 perpendicular axes.
10	Vibration test.	Appearance : No visible mechanical damage. Electrical Test : within $\pm 10\%$ of initial.	Reference documents: MIL-STD-202G - Method "204" Frequency: 10Hz~2KHz~10Hz, 20 minutes cycle. Duration: Approximately 12 hours - 36 cycles in total.
11	Resistance to Soldering Heat.	Appearance : No visible mechanical damage. Electrical Test : within $\pm 10\%$ of initial.	Reference documents: MIL-STD-202G - Method "210" / Condition "K" Setting: Reflow Peak $260 \pm 5^\circ\text{C}$ (30 \pm 5s) / Time above 183°C (90~120s). (The Reflow Peak can be according to customer requirements).
12	ESD	Electrical Test : within $\pm 10\%$ of initial.	Reference documents: ACE-Q200 - Method "002" Voltage is defined in product spec and AEC-Q200 table 2 around 500V~8KV. ESD Waveform is defined in AEC-Q200 Fig 3.
13	Solderability test.	The surface of terminals tested shall be covered with new solder by 95%.	Reference documents: J-STD-002. Preheating: $150 \pm 10^\circ\text{C}$ 60 sec. Soldering: $245 \pm 5^\circ\text{C}$ for 5+0/-0.5 sec.
14	Electrical Characterization.	Meet the specifications.	Reference documents: User Spec. All qualification parts submitted for testing.
15	Flammability	V-0 or V-1 Acceptable. Not have any specimens with glowing combustion that persists for more than 30 sec.	Reference documents: UL-94 The length of the yellow-tipped blue flame: $20 \pm 1\text{mm}$. The test flame is to be placed centrally under the lower end of the test specimen and remain $10 \pm 0.5\text{ sec}$.
16	Board Flex.	Appearance : No visible mechanical damage. Electrical Test : within $\pm 10\%$ of initial.	Reference documents: ACE-Q200 - Method "005" Setting: 2mm minimum downward displacement of PCB board. (or as defined in the customer specification or Q200) Duration: 60+5 sec. The force is to be applied only once to the board.
17	Terminal Strength. (SMD)	Appearance : No visible mechanical damage. Electrical Test : within $\pm 10\%$ of initial.	Reference documents: ACE-Q200 - Method "006" Setting: Mounted to PCB apply a 17.7 N (1.8 Kg) force to the side of a device being tested. Duration: 60+1 sec.

Note 1: Grade is defined in AEC-Q200 section 1.1.1 and product's spec.

Grade 0: $T=150^\circ\text{C} \pm 3^\circ\text{C}$

Grade 1: $T=125^\circ\text{C} \pm 3^\circ\text{C}$

Grade 2: $T=105^\circ\text{C} \pm 3^\circ\text{C}$

Grade 3: $T=85^\circ\text{C} \pm 3^\circ\text{C}$

Note 2: Interval measurements for 1000 hours tests required at 250 and 500 hours.

Note 3: Flammability and ESD is applied for specific type product or based on customer's need.



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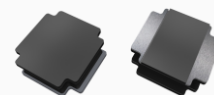


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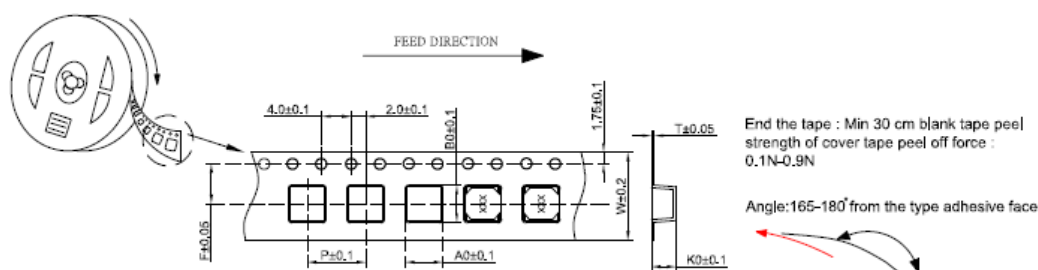


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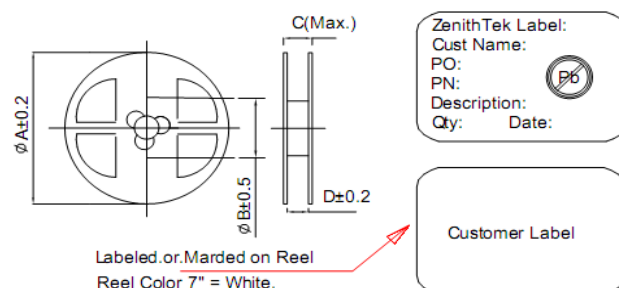
Package

Taping Dimension (mm)



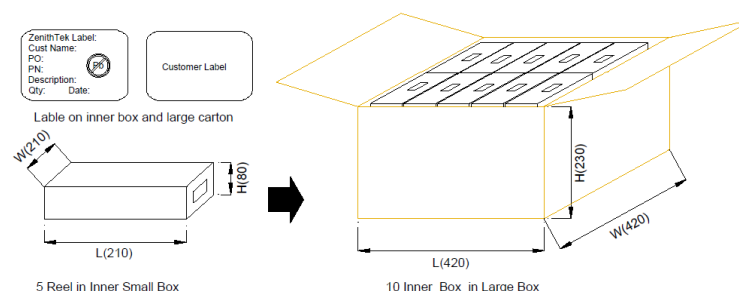
Size(mm)	W	P	A0	B0	K0	T	F
ZCAD030315	8.00	4.00	3.30	3.30	1.90	0.25	3.50

Reel Dimension (mm)



Size(mm)	A	B	C	D	Reel/Size	Qty./Size
ZCAD030315	178	60	14.4	8.4	7"	2000 Pcs

Box Dimension (mm)



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