APPROVAL SHEET

WLBD3216

Chip Bead

*Contents in this sheet are subject to change without prior notice.

FEATURES

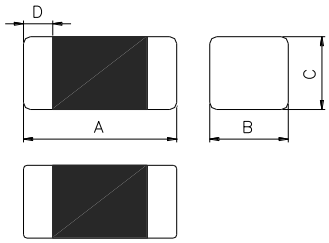
1. Closed magnetic circuit.

APPLICATIONS

1. Noise reduction for general signal and DC line for General electronic circuits. Ex:PCs、Networking and Consumer electronics.

.

SHAPE and DIMENSION



Chip Size	
A	3.20±0.20
B	1.60±0.20
C	1.10±0.20
D	0.50±0.30

Units: mm

Ordering Information

WL	BD	3216	K1	U	260	T	B
Product Code WL: Inductor	**Series** BD :Chip Bead.	**Dimensions** 3.2 * 1.6 mm 3216 :EIA 1206	**Series extension** Refer to characteristic	**Tolerance** U: ±25%	**Value** 260 =26 OHM 221 =220 OHM	**Packing Code** P = 7” Plastic Tape	B:STD

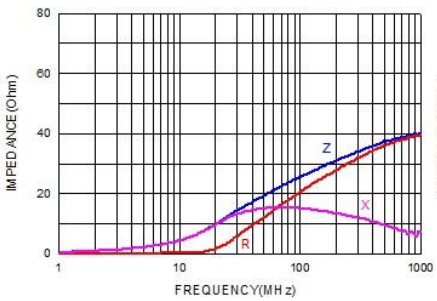
Electrical Characteristics

● WLBD3216 series

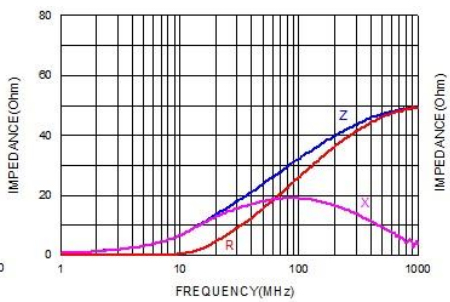
Walsin Part Number	Impedance (Ω)	Test Frequency (MHz)	DC Resistance (Ω) max.	Rated Current (mA) max.
WLBD3216K1U260PB	26±25%	100	0.20	500
WLBD3216K1U310PB	31±25%	100	0.20	500
WLBD3216K1U420PB	42±25%	100	0.20	500
WLBD3216K1U500PB	50±25%	100	0.20	500
WLBD3216K1U700PB	70±25%	100	0.20	500
WLBD3216K1U900PB	90±25%	100	0.20	500
WLBD3216K1U121PB	120±25%	100	0.15	900
WLBD3216K1U151PB	150±25%	100	0.15	900
WLBD3216K1U201PB	200±25%	100	0.35	600
WLBD3216K1U221PB	220±25%	100	0.35	700
WLBD3216K1U301PB	300±25%	100	0.35	700
WLBD3216K1U471PB	470±25%	100	0.35	400
WLBD3216K1U601PB	600±25%	100	0.40	400

Characteristic Curve

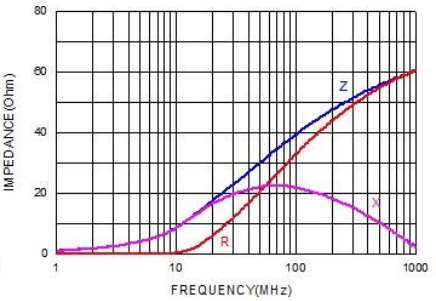
WLBD3216K1U260PB



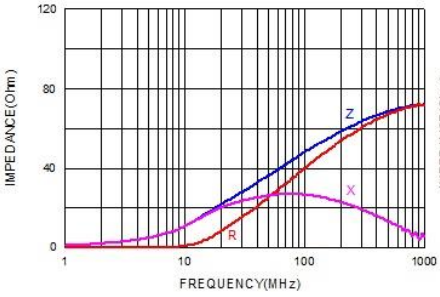
WLBD3216K1U310PB



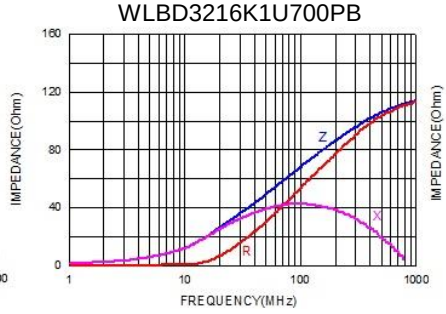
WLBD3216K1U420PB



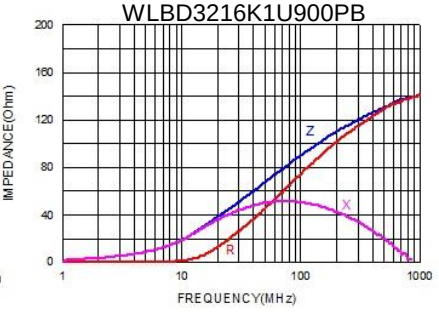
WLBD3216K1U500PB



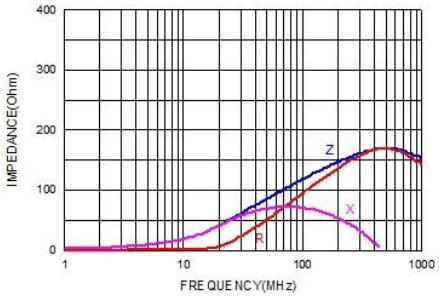
WLBD3216K1U700PB



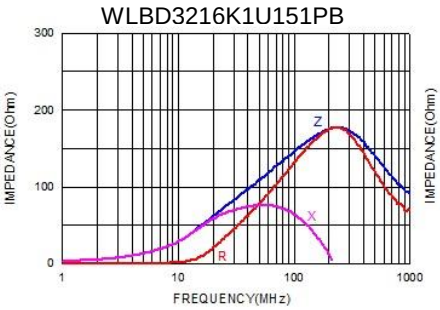
WLBD3216K1U900PB



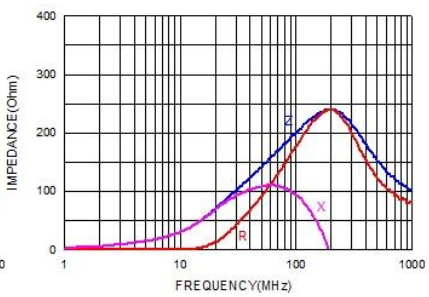
WLBD3216K1U121PB



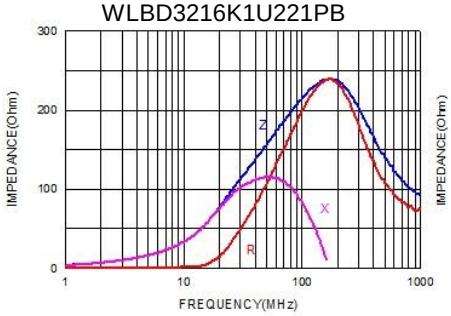
WLBD3216K1U151PB



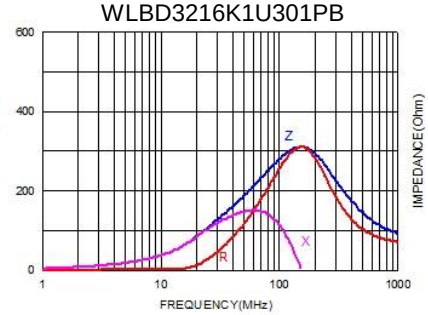
WLBD3216K1U201PB



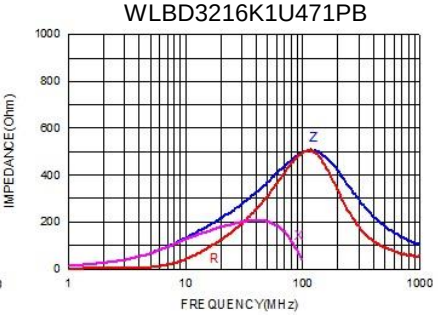
WLBD3216K1U221PB



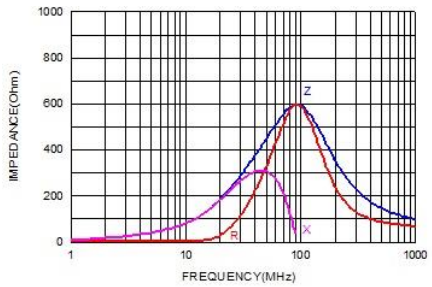
WLBD3216K1U301PB



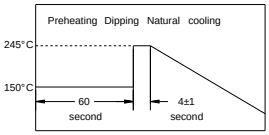
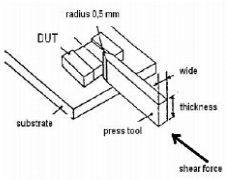
WLBD3216K1U471PB



WLBD3216K1U601PB



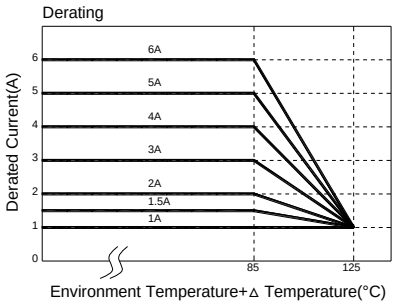
Test condition & Requirements

<table>
<tr><th>Item</th><th>Performance</th><th>Test Condition</th></tr>
<tr><td>Operating Temperature</td><td>-40~+125℃
(Including self-temperature rise)</td><td>--</td></tr>
<tr><td>Transportation Storage Temperature</td><td>-40~+125℃
(on board)</td><td>For long storage conditions, please see the Application Notice</td></tr>
<tr><td>Impedance (Z)</td><td rowspan="5">Refer to standard electrical characteristics list</td><td>Agilent4291</td></tr>
<tr><td>Inductance (Ls)</td><td>Agilent E4991</td></tr>
<tr><td>Q Factor</td><td>Agilent4287</td></tr>
<tr><td>DC Resistance</td><td>Agilent16192
Agilent 4338</td></tr>
<tr><td>Rated Current</td><td>DC Power Supply
Over Rated Current requirements, there will be some risk</td></tr>
<tr><td>Temperature Rise Test</td><td>Rated Current < 1A ΔT 20℃Max
Rated Current ≧ 1A ΔT 40℃Max</td><td>1. Applied the allowed DC current.
2. Temperature measured by digital surface thermometer.</td></tr>
<tr><td>Resistance to Soldering Heat</td><td>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</td><td>Number of heat cycles: 1
<table><tr><th>Temperature (°C)</th><th>Time (s)</th><th>Temperature ramp/immersion and emersion rate</th></tr><tr><td>260 ±5 (solder temp)</td><td>10 ±1</td><td>25mm/s ±6 mm/s</td></tr></table>Depth: completely cover the termination</td></tr>
<tr><td>Solderability</td><td>More than 95% of the terminal electrode should be covered with solder.
  </td><td>Preheat: 150℃,60sec.
Solder: Sn96.5%-Ag3%-Cu0.5%
Solder temperature: 245±5℃
Flux for lead free: Rosin. 9.5%
Depth: completely cover the termination.
Dip time: 4±1sec.</td></tr>
<tr><td>Terminal strength</td><td>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
  </td><td>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.</td></tr>
<tr><td>Bending</td><td>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</td><td>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.</td></tr>
<tr><td>Vibration Test</td><td>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</td><td>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)。</td></tr>
<tr><td>Shock</td><td>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</td><td>Test condition:
<table><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><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></table></td></tr>
</table>

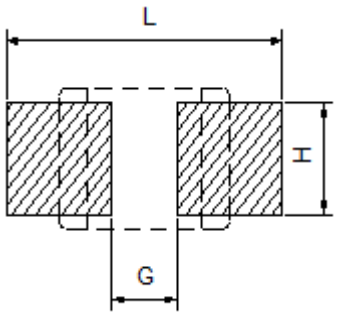
Item	Performance	Test Condition
Life test	Appearance: no damage. Impedance: within±15%of initial value. Inductance: within±10%of initial value. Q：Shall not exceed the specification value. RDC：within ±15% of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles) Temperature: 125±2℃(bead), 105±2℃(Inductor)) Applied current: rated current. Duration: 1000±12hrs. 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±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±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) Condition for 1 cycle Step1: -40±2℃ 30±5 min. Step2: 25±2℃ ≦0.5min Step3: +125±2℃ 30±5min. (Bead) Step3: +105±2℃ 30±5min. (Inductor) Number of cycles: 500 Measured at room temperature after placing for 24±2 hrs.

**Derating Curve

For the ferrite chip bead which withstanding current over 1.5A, as the operating temperature over 85℃, 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.



Soldering and Mounting



	L (mm)	G (mm)	H (mm)
WLBD3216	**4.40**	**2.20**	**1.40**

Soldering

Mildly activated rosin fluxes are preferred. The terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

Note. If wave soldering is used ,there will be some risk.
Re-flow soldering temperatures below 240 degrees, there will be non-wetting risk

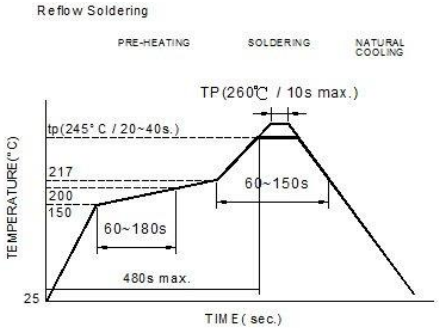
Lead Free Solder re-flow

Recommended temperature profiles for lead free re-flow soldering in Figure 1. (Refered to J-STD-020C)

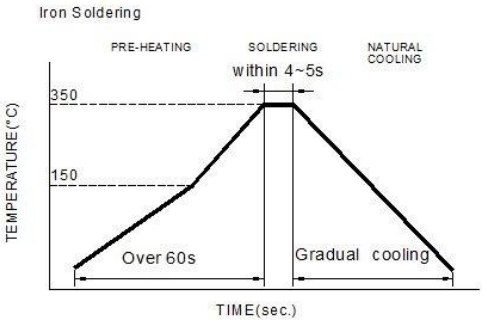
Soldering Iron:

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. If a soldering iron must be employed the following precautions are recommended. for Iron Soldering in Figure 2.

- Preheat circuit and products to 150℃
- 350℃ tip temperature (max)
- Never contact the ceramic with the iron tip
- 1.0mm tip diameter (max)
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- Limit soldering time to 4~5sec.



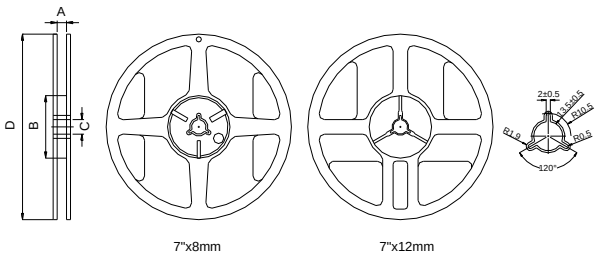
Reflow times: 3 times max
Fig.1



Iron Soldering times：1 times max
Fig.2

Packaging Specification

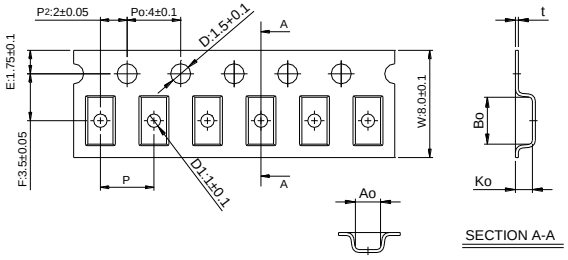
Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
7"x8mm	9.0±0.5	60±2	13.5±0.5	178±2
7"x12mm	13.5±0.5	60±2	13.5±0.5	178±2

Tape Dimension / 8mm

■Material of taping is plastic



Size	Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)	D1(mm)
WLBD3216	3.35±0.10	1.75±0.10	1.25±0.10	4.0±0.10	0.23±0.05	1.0±0.10