

SPECIFICATION(Draft)

SPEC. No. C473NAA00103 ISSUE 1

DATE: September 27, 2018

To

FOXTAR

CUSTOMER'S PRODUCT NAME

TDK'S PRODUCT NAME

VLBS1007050T-R20M

RECEIPT CONFIRMATION

DATE YEAR MONTH DAY

TDK Corporation

Sales

Electronic Components
Sales & Marketing Group

Engineering

TDK Corporation
Electronic Components Business Company
Magnetics Business Group
Wire-wound Inductors B.U.

APPROVED	Person in charge

APPROVED	Person in charge	Person in charge
H.Sasaki	S.Sugimoto	C.Wang

CAUTION WHEN HANDLING

Before use the products, please read this specification.

CAUTION FOR SAFETY USING

When use the products, be careful to mentioned below for safety using.



CAUTION

- + The product should be used within 12 months.
Be careful to the storage conditions. (Temperature : 5 to 30deg.C, Humidity : 75%RH Max.)
Solderability might be decreased if the period is exceeded.
- + Do not use and store the product in condition of gas corrosion (Salt, Acid, Alkaline).
- + The products must be preheated before soldering.
Difference between preheat and soldering temperature must be within 150deg.C.
- + Rework by soldering iron ; Please keep the mentioned conditions in this specification.
- + In case of insert P.C. Board on chassis, do not add mechanical stress to the product.
- + The product has self heat (temperature rise) by current, so keep margin for heat design.
- + Be careful to arrange of non-magnetic shield type inductors.
The error may be caused by magnetic field coupling.
- + In case handle the products, please use wrist strap for ground static discharge on human body.
- + The product keeps away from magnet or magnetized things.
- + Do not use the product beyond the mentioned conditions in this specification.
- + About an application

The products listed on this specification sheet are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.

The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property. Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this specification sheet.

- | | |
|------------------------------------------------------------|-------------------------------------------------------------------------------|
| 1) Aerospace/Aviation equipment | 6) Transportation control equipment |
| 2) Medical equipment
which directly endanger human life | 7) Military equipment |
| 3) Power-generation control equipment | 8) Safety equipment |
| 4) Atomic energy-related equipment | 9) Other applications that are not considered
general-purpose applications |
| 5) Seabed equipment | |

If you intend to use the products in the following applications, please contact our sales office.

Transportation equipment (cars, electric trains, ships, etc.) , Public information-processing equipment,
Electric heating apparatus / burning equipment , Disaster prevention/crime prevention equipment

When using this product in general-purpose applications, you are kindly requested to take into consideration securing protection circuit/equipment or providing backup circuits, etc., to ensure higher safety.

CUSTOMER FOXTAR	TDK PART No. VLBS1007050T-R20M	CUSTOMER'S DWG. No.
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1,SCOPE

This specification applies to the high current type SMD inductors for VLBS1007050T-R20M

2,INDEX

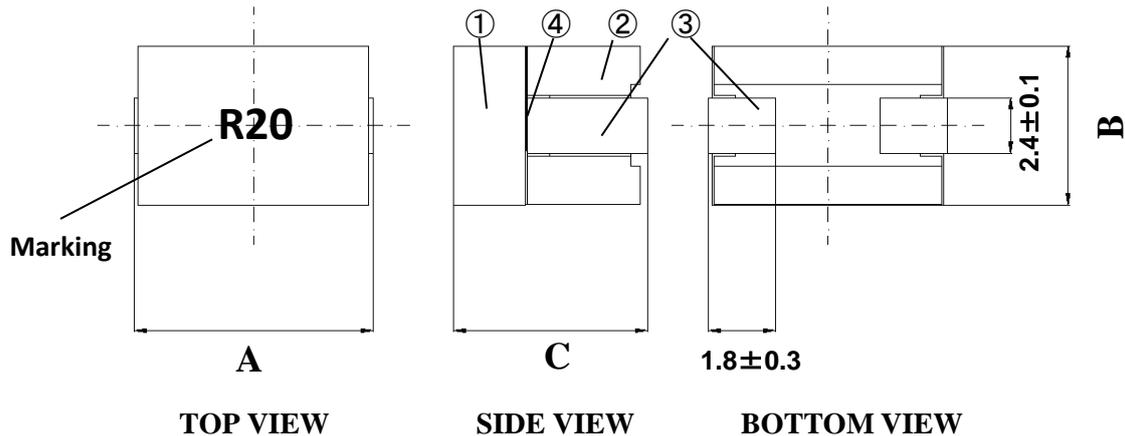
Listed item	Attachment & Tables	Page
1, Shapes and Dimensions	Please see (1)	3/8
2, Electrical Schematics	Please see (2)	3/8
3, Characteristics	Please see (3)	3/8
4, Electrical Specifications	Please see (4)	4/8
5, Reliability Tests	Please see (5)	4/8,5/8,6/8
6, Land dimension(Ref.)	Please see (6)	6/8
7, Packaging	Please see (7)	6/8,7/8,8/8
8, Note	Please see (8)	8/8
9, Standard test conditions Unless otherwise specified , test condition should be Temp. = 5 ~35 °C, Humidity = 35~85% But if needed , then test condition should be Temp. = 20±2 °C, Humidity = 65±5%.		

3, Manufacturing Location

China

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(1)Shapes and Dimensions

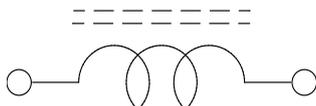


- A: 10.0 mmMax.
- B: 7.0 mmMax.
- C: 5.0 mmMax.

unit : mm

Note : It is OK if it is in the size standard even if the adhesive overflows.

(2)Electrical Schematics



(3)Characteristics

- 3-1, Temperature rise : 40°C TYP. (Itemp)
- 3-2, Operating Temperature Range : -40°C to +125 °C(Including Self Temperature Rise)
- 3-3, Storage Temperature Range : -40°C to +125°C
- 3-4, Rated current : Please see page 4 (Table 1)
- 3-5, Application

Reflow soldering can be used for this product while dip-flow can not.
 The condition in soldering by hand should confirm to the heat capacitance corresponding to the test of resistance to soldering heat.

④	Spacer	Resin beads
④	Glue	Epoxy resin
③	Wire and Terminal	Tin plated copper
②	Core 2	Ferrite
①	Core 1	Ferrite
No.	Item	Material
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(4)Electrical Specification

Table 1

Customer P#	TDK P# VLBS1007050T -	Inductance L(μ H) at 100kHz	D.C. Resistance RDC(m-ohm)	*Rated current(A)		Marking
				Isat typ.	Itemp typ.	
				@25°C		
	R20M	0.20 \pm 20%	0.22 \pm 10%	32	39	R20

*Rated current : the less value which is Isat or Itemp.

(Current is D.C.)

Isat : Based on inductance change(Δ L:-30% from initial L value.)

Itemp : Based on temperature rise(Δ T:40°C TYP.)

Test Instruments

L : 4294A IMPEDANCE/GAIN-PHASE ANALYZER, AGILENT OR EQUIV.

RDC : HP34420A MICRO OHM METER OR EQUIV.

L(Isat) : WK 3260B PRECISION MAGNETICS ANALYZER
with WK 3265B 25A DC BIAS UNIT OR EQUIV.

(5)Reliability tests

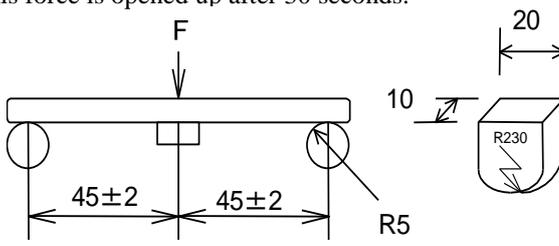
No.	Test item	Test details	Specification
1	Temperature Characteristics	The test shall be performed after the sample has stabilized in an ambient temperature of -40 to +125°C.	Δ L/L20°C \leq \pm 15%
2	Short time over load	1.5 times the rated current for 5 minutes.	There shall be no damage such as smoke or sparks
3	Substrate bending	<p>The sample shall be soldered onto the printed circuit board and a load applied until the Figure in the arrow direction is made approximately 3mm. (Speed:0.5mm/s) This force is opened up after 30 seconds.</p> 	Δ L/L ₀ \leq \pm 15% There shall be no mechanical damage

Figure 1

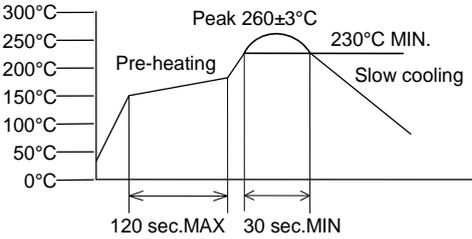
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No.	Test item	Test details	Specification
4	Resistance to Soldering heat (reflow soldering)	Temperature profile of reflow soldering Pre-heating : 150~180°C 60~120sec. Peak temperature : 260±3°C 5sec.or less Holding time: 230°C or over ,30~60sec.  <p>The graph shows a temperature profile starting at 0°C, rising to 150°C (120 sec. MAX), then to a peak of 260±3°C (30 sec. MIN), and finally cooling down to 230°C MIN.</p>	$\Delta L/L_0 \leq \pm 10\%$ There shall be no mechanical damage
	Resistance to soldering heat (manual soldering)	Manual soldering Solder Temperature : 400±3°C Dip time : 3+1/-0s Depth : From the min body bottom to 1mm.	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage
5	Solderability	Precondition : Steam aging 4h or PCT105°C, 100%RH4H Flux : Rosin, isopropyl alcohol Solder : M705(Senju metal industry) Temperature: 245±3°C Dip time : 3±0.2s	New solder more than 90%
6	Low temperature storage	The sample will be left for 500±4 hours in an atmosphere with a temperature of -40±3°C. Upon completion of the test the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1hour.	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage
7	High temperature storage	The sample shall be left for 500±4 hours in an atmosphere with a temperature of 125±2°C and a normal humidity. Upon completion of the measurement shall be made after the sample has been left in normal temperature and normal humidity for 1 hour.	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage
8	Moisuture storage	The sample shall be left for 500±4 hours in a temperature of 60±2°C and a humidity (RH) of 90 to 95%. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity more than 1 hour.	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage

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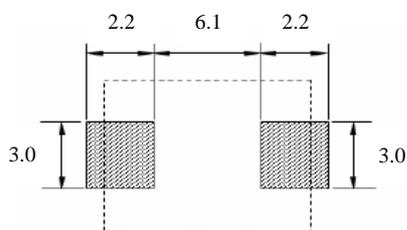
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No.	Test item	Test details	Specification												
9	Change of temperature	The sample shall be subject to 500 cycles , such as shown in the Table 2 below and then it shall be subjected to standard atmospheric conditions for 1 hour , after which measurement shall be made. Table 2 <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Temperature</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40°C</td> <td>30min.</td> </tr> <tr> <td></td> <td style="text-align: center;">⇕</td> <td></td> </tr> <tr> <td>2</td> <td>+125°C</td> <td>30min.</td> </tr> </tbody> </table>		Temperature	Duration	1	-40°C	30min.		⇕		2	+125°C	30min.	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage
	Temperature	Duration													
1	-40°C	30min.													
	⇕														
2	+125°C	30min.													
10	Vibration	Vibration frequency : 10Hz to 500Hz Double amplitude : 1.5mm P-P Test time : X,Y,Z 2h each axis, total 6h	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage												
11	Shock	Acceleration : 1000m/s ² Duration : 6ms (Half sine pulse) Direction and Number of time : X,Y,Z,X',Y',Z' each 3 times Total 18 times	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage												

(6) Land dimension(ref.)

(Standard Pattern)

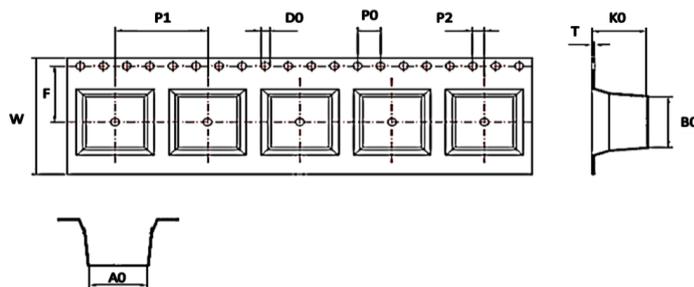
unit : mm



Neighboring copper parts, for example the lines from land, be land, be treated with resist.

(7) Packaging

7-1, Carrier type dimensions



No.	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)
Spec.	7.2	10.2	5.2	4.0	16.0
No.	P2 (mm)	W (mm)	T (mm)	F (mm)	D0 (mm)
Spec.	2.0	24±0.3	0.5±0.05	11.5	1.5+0.1/-0

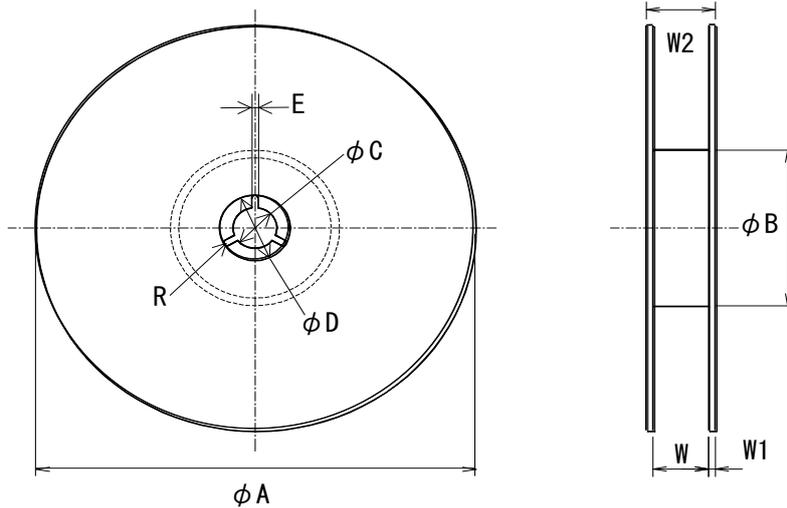
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7-2, Reel dimension



unit : mm

ϕA	ϕB	ϕC	ϕD	E	W	W1	W2	R
330±2	100±1.0	13.0±0.5	21.2±0.8	2.0±0.5	24.4 +2/-0	2.0±0.5	30.4 or less	(1.0)

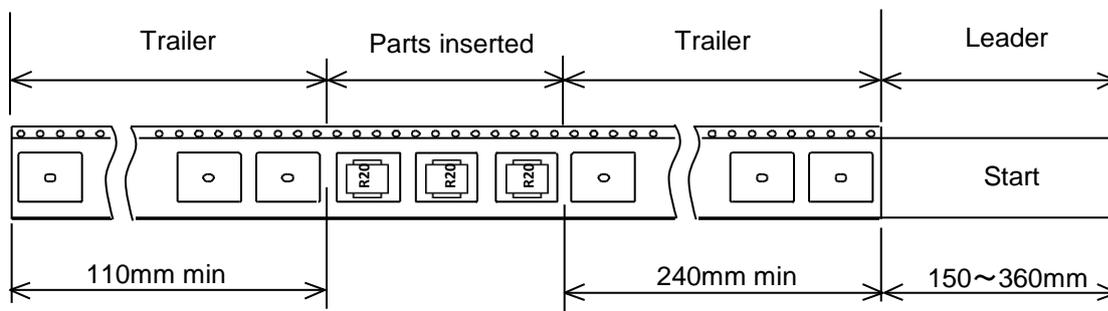
7-3, Quantity : 600 pcs. / Reel

7-4, Marking : The following items shall be marked each unit park.

- | | |
|----------------|---------------------------|
| 1, Customer P# | 4, Inspection No. |
| 2, TDK P# | 5, Quantity |
| 3, TDKP# cord | 6, Manufacturing location |

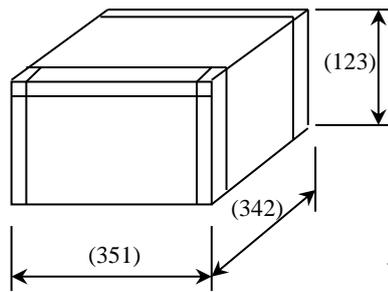
7-5, The products are packaged so that no damage will be sustained.

7-6, Taping dimensions



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7-7, Dimensions of carton



1,800 pcs./ carton
(600 pcs./ reel x 3)

unit : mm

(8) Note

- 8-1. If there occurs something to be discussed, it should be treated on deliberation between customer and TDK Corporation.
- 8-2. Please don't use the product that experienced falling.
However, If the falling is from less than 20cm high to vinyl-tile-like ground, The product with normal appearance and characteristics can be used.
- 8-3. Please don't apply the stress more 10N onto the top of the product.(Cause of ferrite core damage)
- 8-4. If acoustic noise was occurred by magnetostrictive, it is preferable that reject or attenuate the audible frequency of current.

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