PRODUCT SPECIFICATION		CUSTOMER:MESSRS.
TDK PT/NO: VLC6045T-○○○□-XLC	SPEC. NO.	CUSTOMER PT/NO:

Ⅰ. Refernce：

This specification applies to the high current type SMD inductors for VLC6045T-○○○□-XLC.

Ⅱ. INDEX：

LISTED ITEM	ATTACHEMENT & TABLES	PAGES
1. SHAPES AND DIMENSIONS	Please see (1)	2/9
2. ELECTRICAL SPECIFICATIONS	Please see (2)	2/9，3/9
3. CHARACTERISTICS	Please see (3)	2/9
4. ELECTRICAL SCHEMATICS	Please see (4)	3/9
5. RELIABILITY TEST METHOD	Please see (5)	4/9，5/9，6/9
6. LAND DIMENSION (Ref.)	Please see (6)	7/9
7. PACKAGING	Please see (7)	8/9，9/9
8. STANDARD TEST CONDITIONS Unless otherwise specified, test condition should be Temp.＝20±15℃, Humidity＝35～85% But if needed, then test condition should be Temp.＝20±2℃, Humidity＝65±5%		

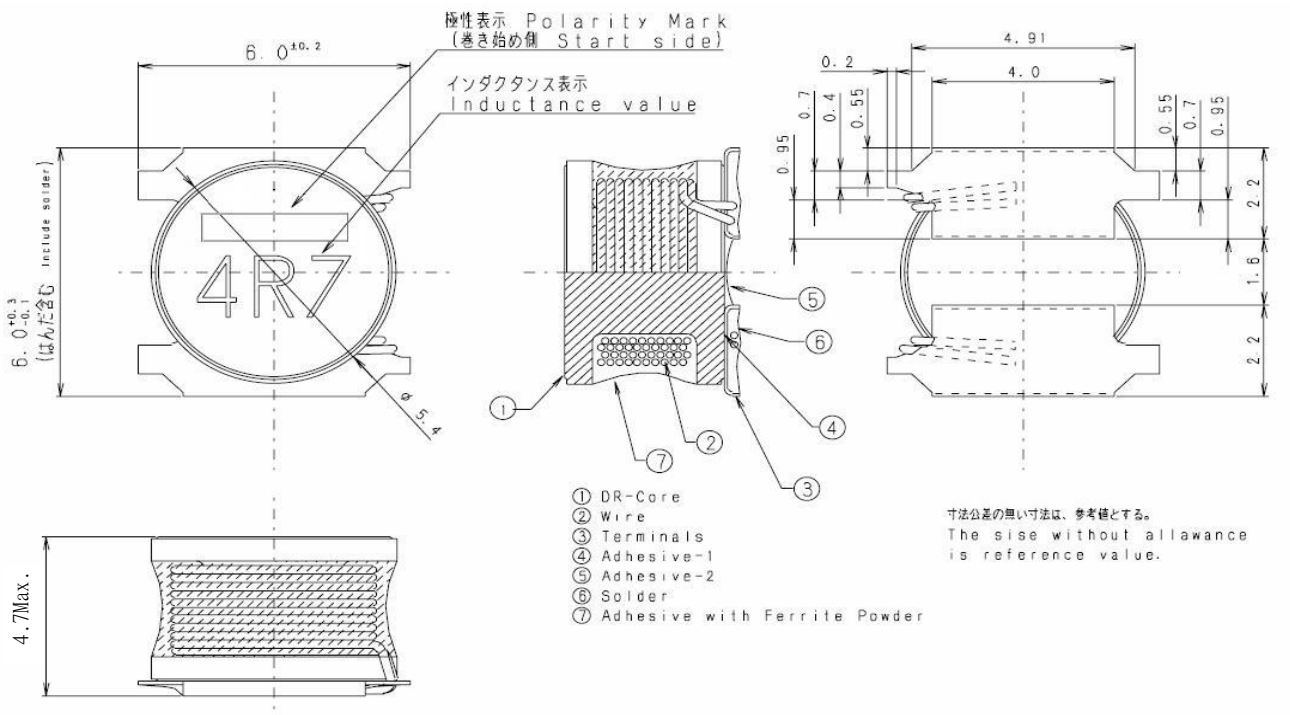
Ⅲ. Manufacturing Location

1) XIAMEN in CHINA

APPROVED BY
CONFIRMED BY
CHECKED BY
MADE BY

PRODUCT SPECIFICATION		CUSTOMER:MESSRS.
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(1) Shapes and Dimension



(2) Electrical Specifications

SEE TABLE 1

TEST INSTRUMENTS

L : IMPEDANCE GAIN/PHASE ANALYZER4194A (or equivalent)

RDC : MILLIOHM METER VP-2941A MATUSITA (or equivalent)

(3) Temperature Characteristics

3-1 Operate temperature range ..... −40℃～+85℃
(Including self temp. rise)

3-2 Storage temperature range ..... −40℃～+105℃

NO.	ITEM	MATERIAL
1	DR CORE	FERRITE
2	WIRE	ENAMELLED COPPER BRONZE
3	TERMINAL	TINED PHOSPHOR BRONZE (t=0.08mm,Finish:Sn-2%Cu.)
4	Adhesive-1	EPOXY
5	Adhesive-2	EPOXY
6	SOLDER	Sn : Cu,Sn: Ag: Cu
7	Adhesive-3	Adhesive with ferrite power

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CUSTOMER PT/NO:	

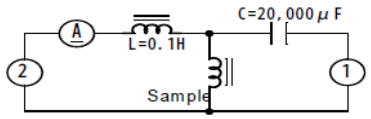
(4) Electrical Characteristics

No	TDK PT/NO. VLC6045T-	INDUCTANCE L(μH)		TEST OF L[Hz]	RESISTANCE RDC[Ω] MAX		IDC[A]		MARK
					max.	(Typ)	Idc1 max	Idc2 Typ	
1	R47N-XLC	0.47	±30%	100k	0.008	0.006	10.0	7.5	R47
2	1R0N-XLC	1	±30%	100k	0.013	0.010	6.7	5.7	1R0
3	1R5N-XLC	1.5	±30%	100k	0.015	0.011	5.7	5.1	1R5
4	2R2N-XLC	2.2	±30%	100k	0.017	0.013	5.5	4.8	2R2
5	3R3N-XLC	3.3	±30%	100k	0.020	0.017	4.7	4.2	3R3
6	4R7M-XLC	4.7	±20%	100k	0.027	0.023	3.8	3.8	4R7
7	6R8M-XLC	6.8	±20%	100k	0.041	0.035	3.0	2.9	6R8
8	100M-XLC	10	±20%	100k	0.058	0.046	2.5	2.5	100
9	150M-XLC	15	±20%	100k	0.091	0.076	2.1	2.1	150
10	220M-XLC	22	±20%	100k	0.130	0.100	1.7	1.7	220
11	330M-XLC	33	±20%	100k	0.180	0.150	1.4	1.4	330
12	470M-XLC	47	±20%	100k	0.260	0.220	1.2	1.1	470
13	680M-XLC	68	±20%	100k	0.410	0.340	0.9	1.0	680
14	101M-XLC	100	±20%	100k	0.590	0.490	0.8	0.7	101
15	151M-XLC	150	±20%	100k	0.750	0.630	0.6	0.6	151
16	221M-XLC	220	±20%	100k	1.070	0.890	0.5	0.5	221

※ Idc1： Depend on inductance change (-30% reduction from initial value)

※ Idc2： Depend on self temperature rise (40℃ typical)

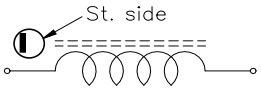
TEST CIRCUIT



1. LCR METER 4285A =100kHz
2. DC CONSTANT CURRENT SOUSE

4-1 Electrical Schematics

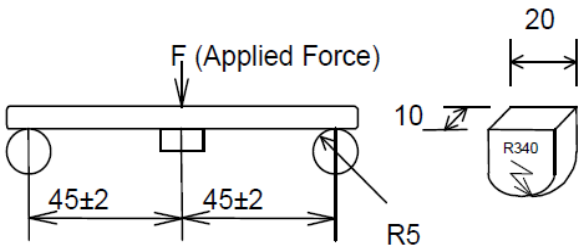
Polarity Marking



PRODUCT SPECIFICATION		CUSTOMER:MESSRS.
TDK PT/NO: VLC6045T-○○○□-XLC	SPEC. NO.	CUSTOMER PT/NO:

(5) Reliability Test Descriptions

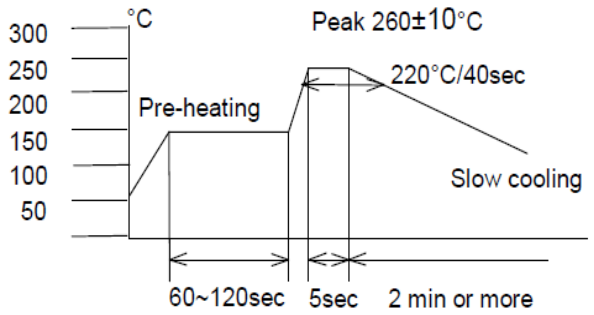
5-1 Mechanical Tests

No.	TEST ITEM	SPECIFICATION	TEST DETAILS
1	Substrated Bending	△L/Lo≦±5% There shall be no mechanical or electrical damege.	The sample shall be soldered onto the printed circuit board in figure 1 and the load applied until the bending in the direction of the arrow is approximately 3mm. (Hold time =30 seconds) The PCB Dimensions can be seen on Page 7/9 
2	Vibration Test	△L/Lo≦±5% There shall be no mechanical damage.	The sample is soldered onto the printed circuit board. It is then a vibration test as follows Vibration Amplitude = 1.52mm Frequency varies from 10Hz to 55Hz and back over a 1 minute period. The test is carried out in the 3 directions (X, Y, Z for 2 hours each (A total of 6 hours).

PRODUCT SPECIFICATION		CUSTOMER:MESSRS.
TDK PT/NO: VLC6045T-○○○□-XLC	SPEC. NO.	CUSTOMER PT/NO:

(5) Reliability Test Descriptions

5-1 Mechanical Tests

No.	TEST ITEM	SPECIFICATION	TEST DETAILS
3	Resistance to Soldering heat (Reflow soldering)	There shall be no damage.	Then remain the following condition 2 times. Measure the test items after leaving them in normal temperature and humidity for more than 1 hour. 
	(Manual soldering)	ΔL/Lo ≤ ±5% There shall be no mechanical damage.	Using soldering iron Max. tip temperature : 350±10 °C Max. exposure time : 3±1 sec. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.
4	Shock	ΔL/Lo ≤ ±5% There shall be no mechanical damage.	The sample shall be soldered onto the PCB. The PCB is then subject to a shock having a peak acceleration of 980 m/s^2(100G) and a duration pulse of 6 ms. Six successive shocks are applied in each direction of a mutually perpendicular axis. (Total of 18 shocks)

5-2 Electrical Tests

5	Insulation resistance	There shall be no damage.	DC 100 voltage shall be applied across top surface of the sample and the terminal. The insulation resistance shall be more 1×10^8 Ω .
6	Dielectric with standing voltage	There shall be no damage.	AC 100 voltage shall be applied for 1 minute across the top surface of the sample and the terminal.

PRODUCT SPECIFICATION		CUSTOMER:MESSRS.
TDK PT/NO: VLC6045T-○○○□-XLC	SPEC. NO.	CUSTOMER PT/NO:

(5) Reliability Test Descriptions

5-3 Enviromental Characterisics

No.	TEST ITEM	SPECIFICATION	TEST DETAILS
7	High temperature storage	△L/Lo≦±5% There shall be no mechanical damage.	The sample shall be left for 500±12 hours in an atmosphere with a temperature of 105±2℃ and normal humidity. Upon completion of the test the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.
8	Low temperature storage	△L/Lo≦±5% There shall be no mechanical damage.	The sample shall be left for 500±12 hours in an atmosphere with a temperature of -40±3℃. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.
9	Change of temperature	△L/Lo≦±5% There shall be no mechanical damage.	The sample shall be subject to 5 continuous cycles such as shown in table 2 below. Then it shall be subjected to standard atmospheric conditions for 1 hour after which measurement shall be made.
10	Moisuture storage	△L/Lo≦±5% There shall be no mechanical damage.	The sample shall be left 500±4 hours in a temperature of +40±2℃ and a humidity (RH) of 90 ~ 95%. Upon completion of the test, the measurement shall be made of left in a normal temperature and normal humidity more than 1 hour. (No Bias)

Table 2

No.	Temperature	Duration
1	−25±2℃	30 min.
2	Standard Atmospheric	5 sec. or less No.1→No.2
3	+85±2℃	30 min.
4	Standard Atmospheric	5 sec. or less No.1→No.2

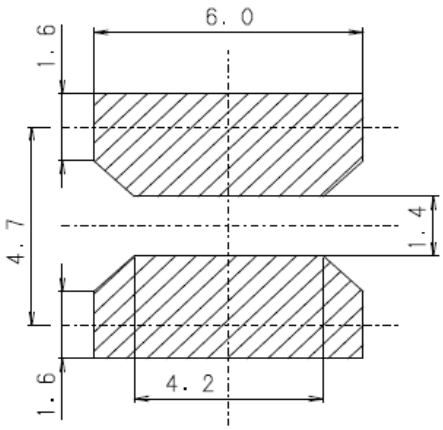
PRODUCT SPECIFICATION		CUSTOMER:MESSRS.
TDK PT/NO: VLC6045T-○○○□-XLC	SPEC. NO.	CUSTOMER PT/NO:

(5) Reliability Test Descriptions

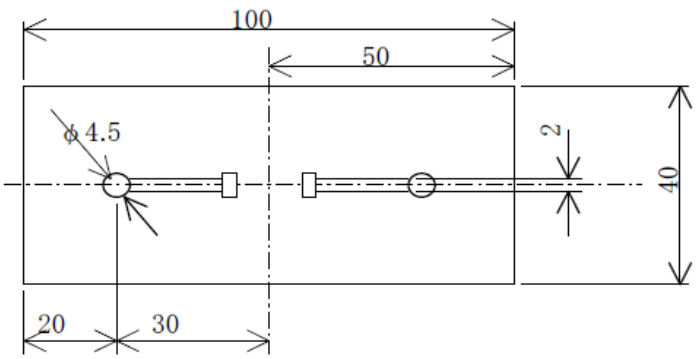
5-4 Enviromental Characterisics

No.	TEST ITEM	SPECIFICATION	TEST DETAILS
11	Moisture Storage under biased conditions	△L/Lo≦±5% There shall be no mechanical damage.	Allowable current shall be applied to the coil at a temperature of +60±2℃ and a relative humidity (RH) of 90 ~ 95% for 500 hours. 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.
12	Solderability	At least 75% Area should be covered with new solder	The sample shall be immersed for 5 to 10 seconds in flux, then immersed in molten solder at 240±5℃ for 3 +1/-0 seconds.

(6) Recommended Pattern



6-2 Test PCB Dimension



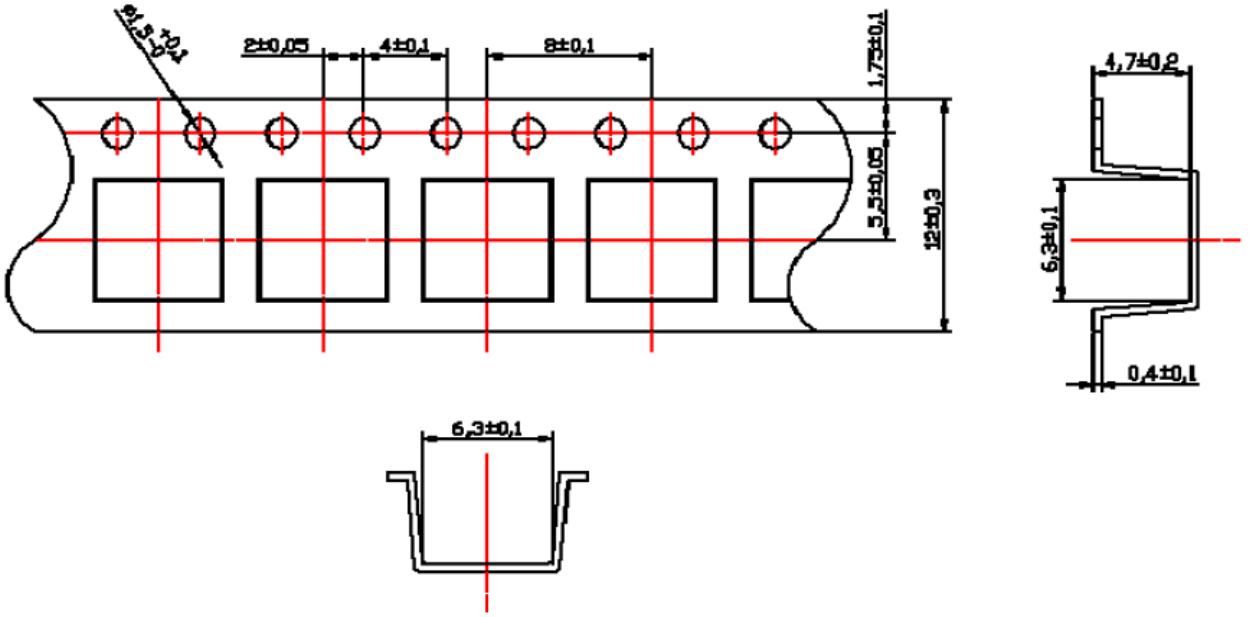
Substrate Bending Test Board

Glass epoxy t = 1.6mm

PRODUCT SPECIFICATION		CUSTOMER:MESSRS.
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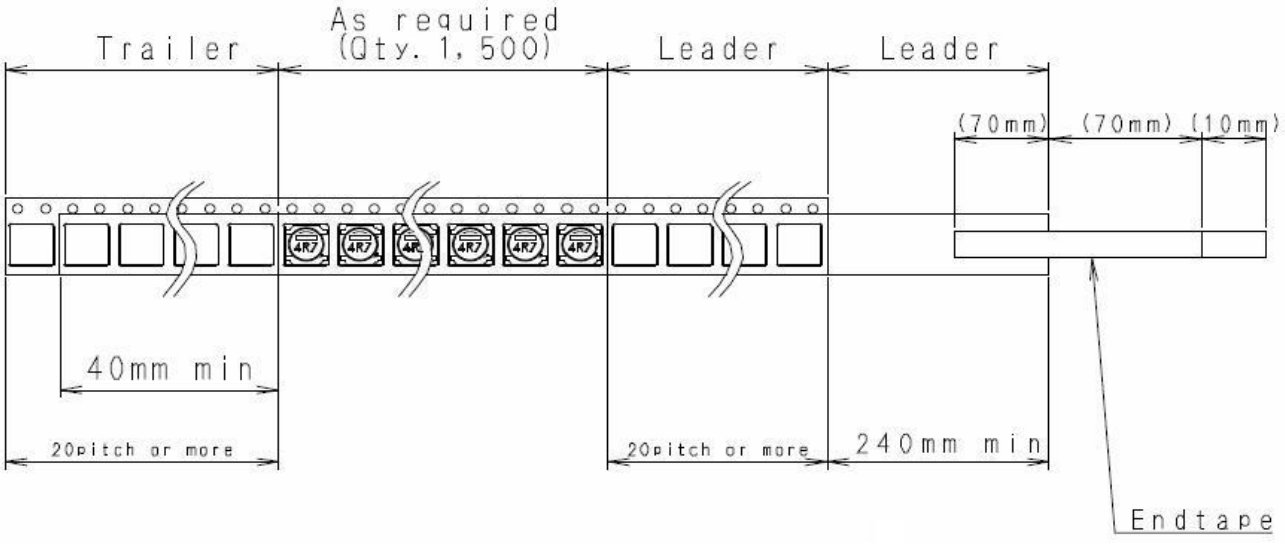
(7) Packaging

7-1 Carrier Tape Dimensions



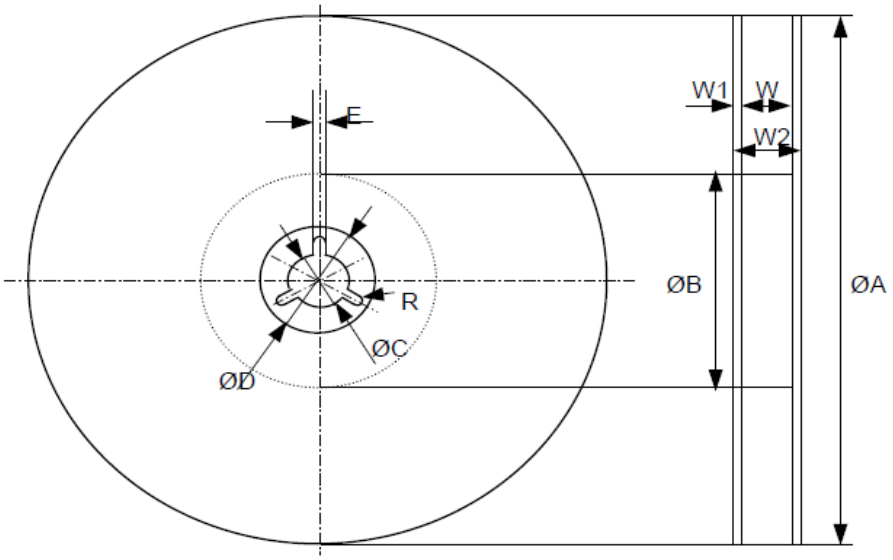
Cumulative 10 pitch = 40±0.15

7-2 Taping Dimensions



PRODUCT SPECIFICATION		CUSTOMER:MESSRS.
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7-3 Reel Dimensions



	ØA	ØB	ØC	ØD	E	W	W1	W2	R
Dimension	330±2	100±1	13.2±0.5	26.3±0.8	2.0±0.5	13.0±1	2.0±0.5	17.4±1	1.0

7-4 Quantity

1500 pcs / Reel

7-5 Marking

The following itemes shall be marked each unit pack.

1. Customer
2. Customer P#
3. TDK-EPC P#
4. TDK-EPC P# cord
5. Inspection No.
6. Quantity
7. Manufacturing Location

7-6 The products are packaged so that no damage will be sustained.

7-7 Material

Carrier tape	: PS	Tape break force	: Min. 10N
Cover tape	: PS	Cover tape strength	: Min. 10N
Reel	: PS		

7-8 Tape Peel Force

0.1N ~ 0.7N (Tape peel angle 165 ~ 180 degr)