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PRODUCT SPECIFICATION

SPEC. NO. XC-05001B

GALAXY

DATE: 2011/11/15

CUSTOMER' S PT/NO.

TDK PT/NO.

VLC6045T-SERIES-XLC

THIS SPECIFICATION IS:

- FULLY ACCEPTED
 DENIED
 ACCEPTED UNDER THE FOLLOWING CONDITIONS

SIGNATURE: _____

DATE: _____

NAME(PRINT): _____

TITLE: _____

PRODUCT SPECIFICATION

CUSTOMER: MESSRS.

TDK PT/NO:

VLC6045T-○○○□-XLC

SPEC. NO.

XC-05001B

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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 6 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 equipmen

6) Transportation control equipmen

2) Medical equipment

7) Military equipment

which directly endanger human lif

8) Safety equipment

3) Power-generation control equipmen

9) Other applications that are not considered

4) Atomic energy-related equipmen

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.



TDK

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I . Reference :

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



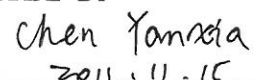
CONFIRMED BY



CHECKED BY



MADE BY



PRODUCT SPECIFICATION

CUSTOMER: MESSRS.

TDK PT/NO:

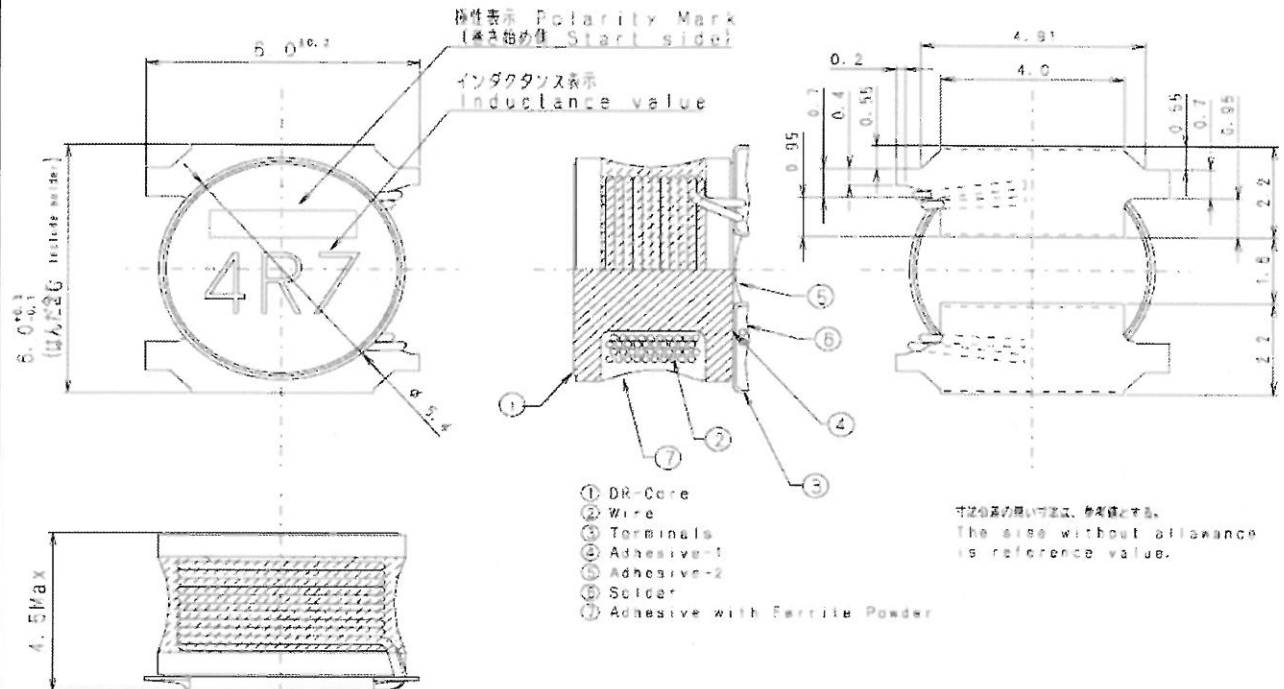
VLC6045T-○○○□-XLC

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CUSTOMER PT/NO:

(1) Shapes and Dimension



(2) Electrical Specifications

SEE TABLE 1

TEST INSTRUMENTS

L : IMPEDANCE GAIN/PHASE ANALYZER4194A (or equivalent)

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

(3) Temperature Characteristics

3-1 Operate temperature range $-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$

(Including self temp. rise)

3-2 Storage temperature range $-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$

NO.	ITEM	MATERIAL
1	DR CORE	FERRITE
2	WIRE	ENAMELLED COPPER BRONZE
3	TERMINAL	TINED PHOSPHOR BRONZE ($t=0.08\text{mm}$, 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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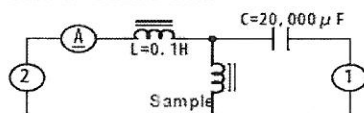
(4) Electrical Characteristics

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

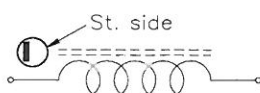
TEST CIRCUIT



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

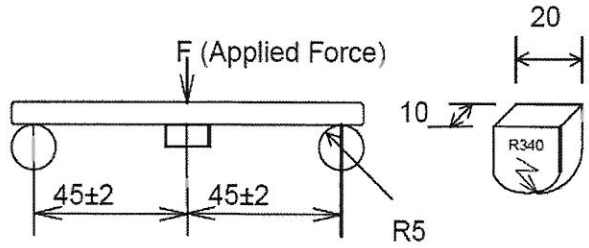
4-1 Electrical Schematics

Polarity Marking



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(5) Reliability Test Descriptions
5-1 Mechanical Tests

No.	TEST ITEM	SPECIFICATION	TEST DETAILS
1	Substrated Bending	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical or electrical damage.	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	$\Delta L/L_0 \leq \pm 5\%$ 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).

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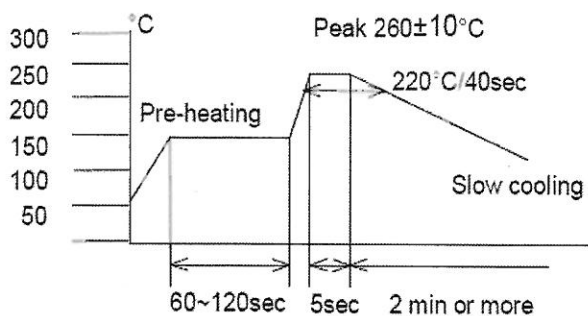
SPEC. NO.

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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)	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage.	Using soldering iron Max. tip temperature : $350 \pm 10^\circ \text{C}$ 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	$\Delta L/L_0 \leq \pm 5\%$ 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 $1 \times 10^5 \Omega$.
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.

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(5) Reliability Test Descriptions

5-3 Environmental Characteristics

No.	TEST ITEM	SPECIFICATION	TEST DETAILS															
7	High temperature storage	$\Delta L/Lo \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 500 ± 12 hours in an atmosphere with a temperature of $105 \pm 2^\circ\text{C}$ 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	$\Delta L/Lo \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 500 ± 12 hours in an atmosphere with a temperature of $-40 \pm 3^\circ\text{C}$. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.															
9	Change of temperature	$\Delta L/Lo \leq \pm 5\%$ 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.															
Table 2 <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>No.</th> <th>Temperature</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>$-25 \pm 2^\circ\text{C}$</td> <td>30 min.</td> </tr> <tr> <td>2</td> <td>Standard Atmospheric</td> <td>5 sec. or less No.1→No.2</td> </tr> <tr> <td>3</td> <td>$+85 \pm 2^\circ\text{C}$</td> <td>30 min.</td> </tr> <tr> <td>4</td> <td>Standard Atmospheric</td> <td>5 sec. or less No.1→No.2</td> </tr> </tbody> </table>				No.	Temperature	Duration	1	$-25 \pm 2^\circ\text{C}$	30 min.	2	Standard Atmospheric	5 sec. or less No.1→No.2	3	$+85 \pm 2^\circ\text{C}$	30 min.	4	Standard Atmospheric	5 sec. or less No.1→No.2
No.	Temperature	Duration																
1	$-25 \pm 2^\circ\text{C}$	30 min.																
2	Standard Atmospheric	5 sec. or less No.1→No.2																
3	$+85 \pm 2^\circ\text{C}$	30 min.																
4	Standard Atmospheric	5 sec. or less No.1→No.2																
10	Moisture storage	$\Delta L/Lo \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left 500 ± 4 hours in a temperature of $+40 \pm 2^\circ\text{C}$ 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)															

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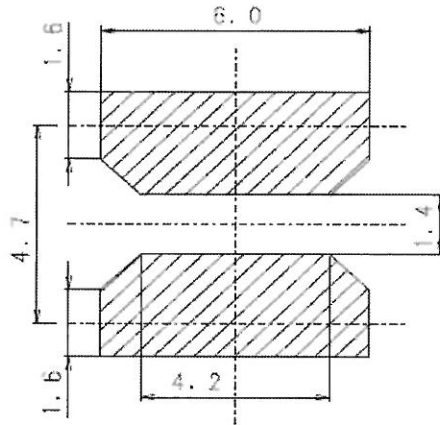
CUSTOMER PT/NO:

(5) Reliability Test Descriptions

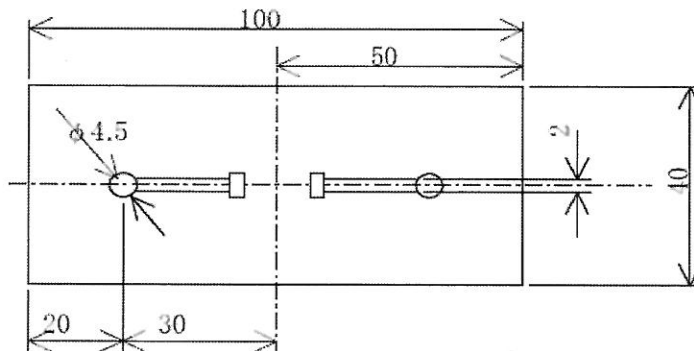
5-4 Environmental Characteristics

No.	TEST ITEM	SPECIFICATION	TEST DETAILS
11	Moisture Storage under biased conditions	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage.	Allowable current shall be applied to the coil at a temperature of $+60 \pm 2^\circ\text{C}$ 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 $240 \pm 5^\circ\text{C}$ for $3 +1/-0$ seconds.

(6) Recommended Pattern



6-2 Test PCB Dimension



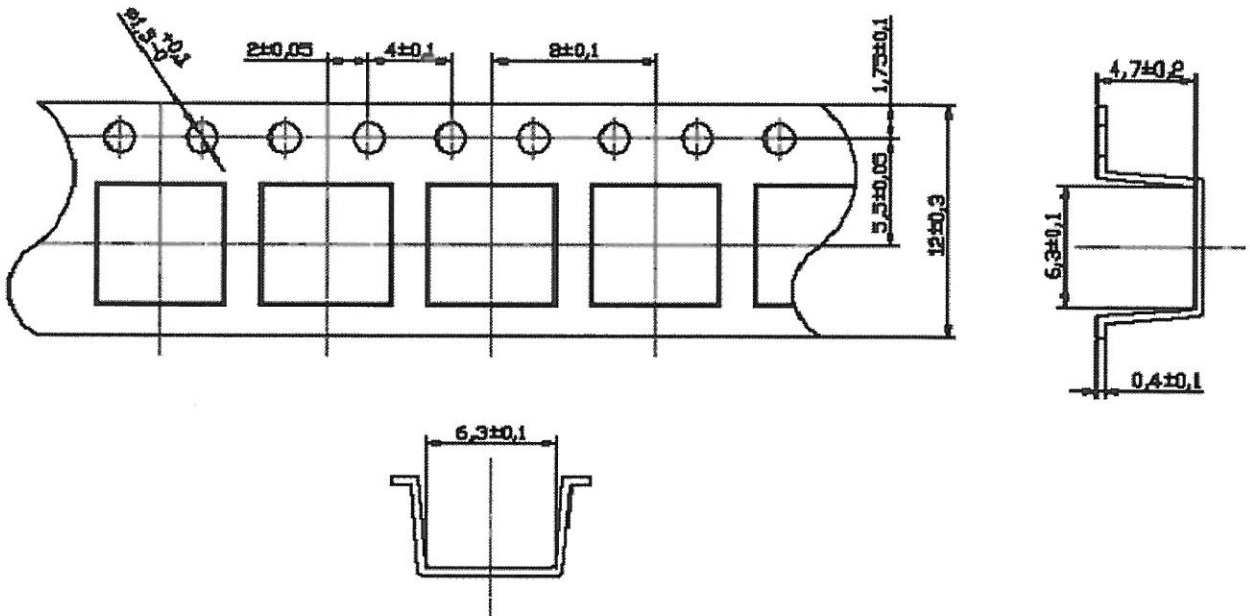
Substrate Bending Test Board

Glass epoxy $t = 1.6\text{mm}$

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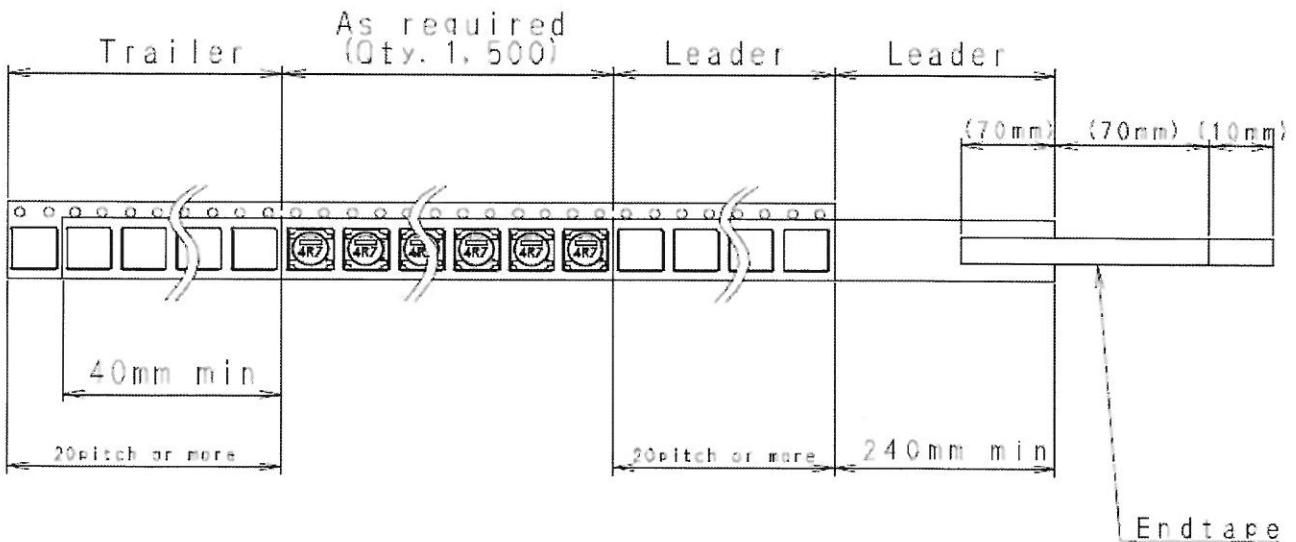
(7) Packaging

7-1 Carrier Tape Dimensions



Cumulative 10 pitch = 40±0.15

7-2 Taping Dimensions



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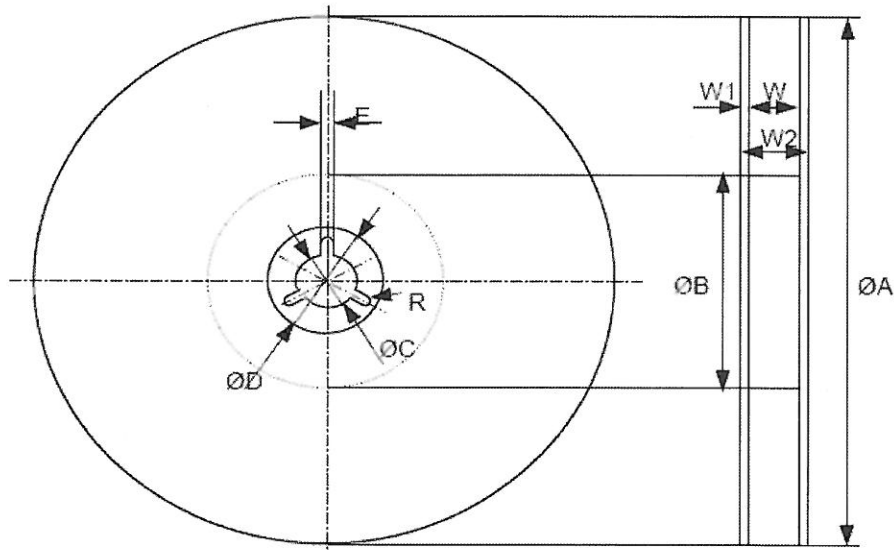
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7-3 Reel Dimensions



Dimension	$\varnothing A$	$\varnothing B$	$\varnothing C$	$\varnothing D$	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 items shall be marked each unit pack.

- Customer
- Customer P#
- TDK-EPC P#
- TDK-EPC P# cord
- Inspection No.
- Quantity
- 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)