RoHS Compliant
Directive 2011/65/EU

SPECIFICATION

Customer:

Item:	Crystal Oscillator
Type:	NT7050BC
Nominal Frequency:	25.000 MHz
Customer's Spec. No.:	
NDK Spec. No.:	END4174B

Receipt

Charge:

Sales	NDK Italy Srl Paola Bandera	Tel. 39-02-96702920
Engineer	Engineering Dept.2 N. Sekine	Tel. +81 4 2900 6619

Approved	T. Matsumoto
Checked	---
Drawn	N.Sekine

Revision Record

Rev.	Rev. Date	Items	Contents	Remarks
-----	20.Jun.2011	Issue		
A	26.Jun.2012	1.Customer's Spec. No.:	add Q02063	
		2.Type	END4174B→NT7050BC	
		6.Rating Typ	Delete	
		9.Marking	Model →Customer's Spec. No.	
B	19.Sep.2013	9.Marking	Add a Drawing No. Add a document(6/10)	

NIHON DEMPA KOGYO CO., LTD.

This is specification of Temperature compensated crystal oscillator.

1. Customer's Spec. No. Q02063
2. TYPE NT7050BC
3. NDK Spec. No. END4174B
4. External Dimension ETD14B-01491

5. Rating

	Item	Symbol	Rating	Unit
5.1	Nominal Frequency	F_0	25.000	MHz
5.2	Supply Voltage	VCC	+3.3±5%	V
5.3	Load	CL	15	pF
5.4	Operating Temp. Range	T_{OPR}	-40 to +85	°C
5.5	Storage Temp. Range	T_{stg}	-55 to +125	°C

6. Electrical Specification

Unless otherwise specified, measuring condition T = +25°C, VCC =+3.3V, CL =15pF

	Item	Symbol	Condition	Rating		Unit
				Min.	Max.	
6.1	Current Consumption	ICC	-	-	6	mA
6.2	Frequency Stability		6.2.1 to 6.2.5	-4.6	+4.6	ppm
	6.2.1 Frequency Tolerance	dF/Fo	(*1)	-1	+1	ppm
	6.2.2 Frequency/temperature characteristics	dF/F	-40 to +85°C (*2)	-0.5	+0.5	ppm
	6.2.3 Frequency/voltage coefficient	dF/F	3.3V±5%(*2)	-0.2	+0.2	ppm
	6.2.4 Frequency/load coefficient	dF/F	15pF±10%(*2)	-0.1	+0.1	ppm
	6.2.5 Frequency aging	dF/F	15years (*2)	-2.3	+2.3	ppm
			24h,at constant temperature	-0.01	+0.01	ppm
	6.2.6 Vs. Holdover	dF/F	(*3)	-0.8	+0.8	ppm
6.3	Output		Square Wave			
	6.3.1 Output voltage C-MOS)	VOL		-	0.4	V
		VOH		2.9	-	V
	6.3.2 Symmetry		@1.65V	45	55	%
	6.3.3 sub-harmonic distortion				-40	dBc
	6.3.4 spurious oscillations				-80	dBc
	6.3.5 Phase noise		10Hz offset		-85	dBc/Hz
			100Hz offset		-110	
			1kHz offset		-125	
			Over 10kHz offset		-135	
6.4	Enable/Disable function					
			No connection	Enable Output		-
			VIH ≥ 70% of VCC	Enable Output		-
			VIL ≤ 30% of VCC	Disable Output High Impedance		-

(*1)dF/Fo: Frequency shift at T=+25°C, VCC =+3.3V, CL =15pF in reference to Nominal frequency (fo)

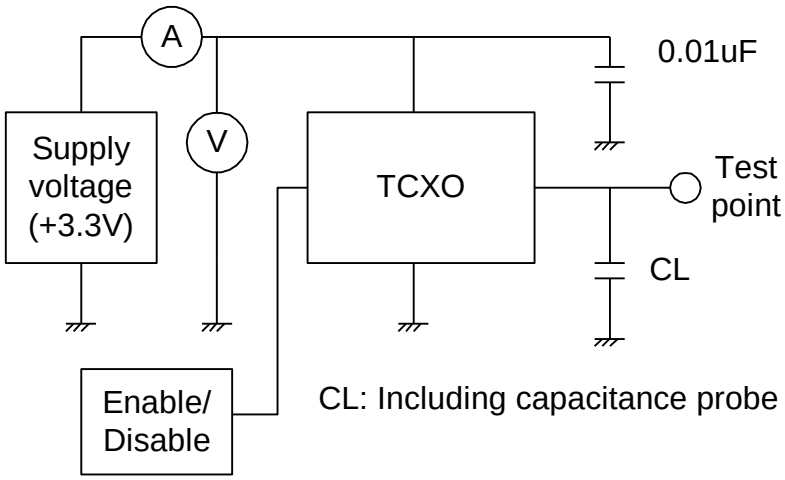
(*2)dF/F: Frequency shift from the reference frequency at T=+25°C, VCC =+3.3V, CL =15pF

(*3)dF/F: Including Tolerance,Temp. Characteristic., supply voltage change 5% and 24Hours aging.

7. Crystal Oscillator Reliability Guarantee Item

Test Item	Test Methods	Specification
1. Vibration	IEC60068-2-6,test Fc Procedure B4 10 to 60Hz, 1.5mm, 98.1ms^{-2} 0.5 hours, 3 direction.	Shall meet electrical specification.
2. Shock	IEC68-2-27,test Ea 980ms^{-2},6ms, Half Sine,3bumps,6 directions.	Shall meet electrical specification

8. Test circuit



9. Marking ETH11B-00455

1. Customer's Spec. No.:
2. Frequency
3. Dot
4. NDK Symbol Mark
5. Lot

10. Inspection Parameters

Clause 4, 5.1, 6.1, 6.2.1, 6.2.2, 6.2.3, 6.3.1, 6.3.2

11. Guarantee Parameters

Clause 6.2.4, 6.2.5, 6.2.6, 6.3.3, 6.3.4, 6.3.5, 6.4,7

12.Others

RoHS compliance

The component must be RoHS compliant

Soldering profile and conditions: the component must be in compliance with IPC- JEDEC J-STD –020C

Pad termination: NiPdAU with Ni>2um and Au ca 0.2um

NO Pb inside the package and in Lead soldering alloy

13. Notice

13.1 Order items are manufactured according to specification. As to conditions, which are not indicated in this specification and unpredictable such as applied condition and oscillation margin, please check them beforehand.

13.2 Unless we receive request for modification within 3 weeks from the issue date of this NDK specification sheet, we will supply products according to this specification. Also, if you'd like to modify specification of order, which has been placed with delivery request within 3 weeks from the issue data of this specification sheet, we would like to discuss with you separately.

13.3 In no event shall the company be liable for any product failure resulting from an inappropriate handling or operation of the product beyond the scope of its guarantee.

13.4 Where any change to the process condition is made due to the change(s) in the production line, inform personnel of the specifications.

13.5 Should this specification data give rise to any disputes relating to any intellectual property rights or any other rights of a third person, the company shall not indemnify anyone for any damage. Their disclosure must not be construed as the grant of a license to use any of the intellectual property rights owned by the company.

13.6 If you intend to use products listed on this specification for applications that may result in loss of life or assets (controls relating to safety, medical equipment, aeronautical equipment, space equipment, etc.), please do not fail to advise us of your intention beforehand.

13.7 In the company's production process whatever amount of ozone depleting substances (ODS) as specified in the Montreal protocol is not used.

13.8 Information contained in this specification must not be quoted, reproduced or used for other purposes including processing either in part or in full without obtaining prior approval from the company.

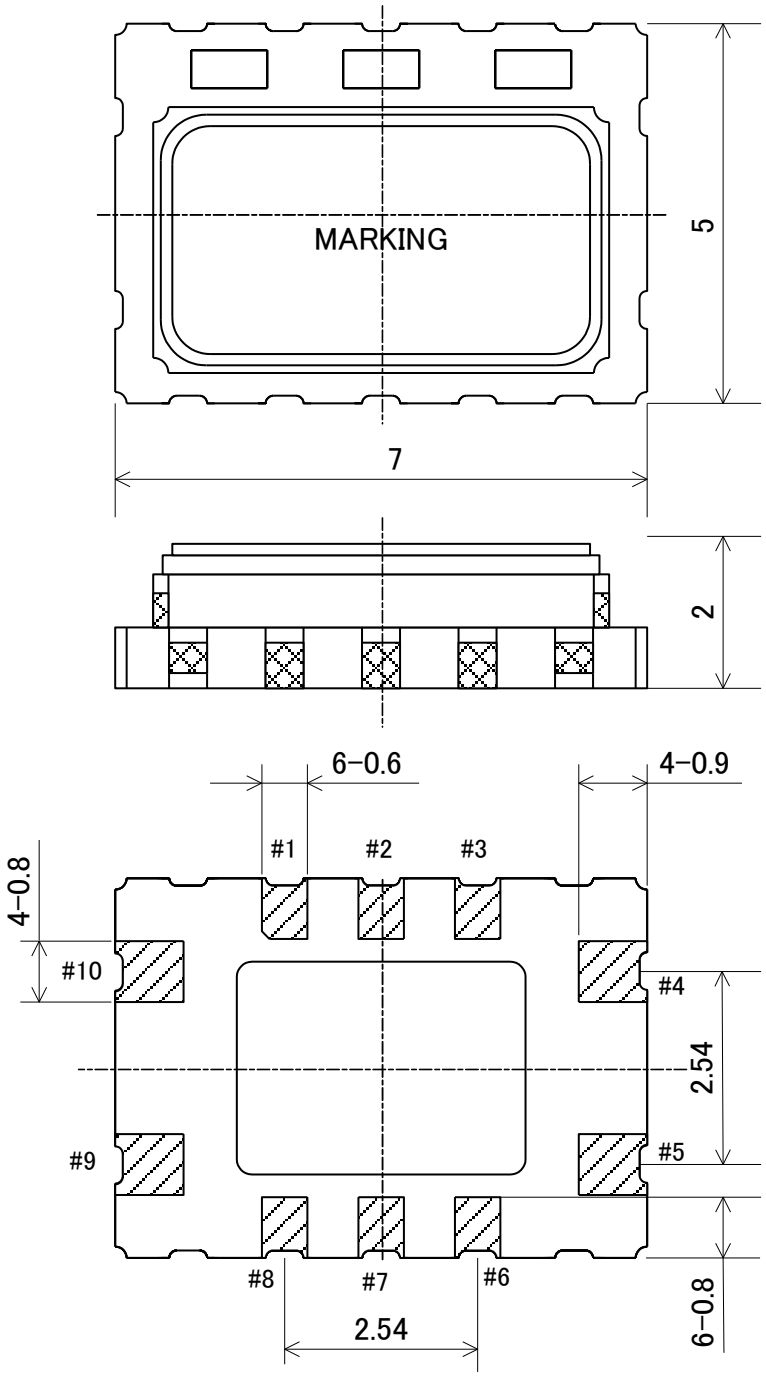
14. Prohibited items

Be sure to use the product under the following conditions. Otherwise, the characteristics deterioration or destruction of the product may result.

(1) Reflow soldering heat resistance

Peak temperature: 260°C, 10 sec
Heating: 225°C or higher, 30 sec
Preheating: 150°C to 180°C, 120 sec
Reflow passage times: twice
In reflowing, the turning over of mounted boards shall be forbidden.

15. Packing ETK17B-00338



Terminal land connections

#1	Do not connect	∗1
#2	NC	
#3	NC	
#4	GND	
#5	OUTPUT	
#6	Do not connect	∗1
#7	NC	
#8	Enable/Disable	
#9	VCC	∗2
#10	Do not connect	∗1

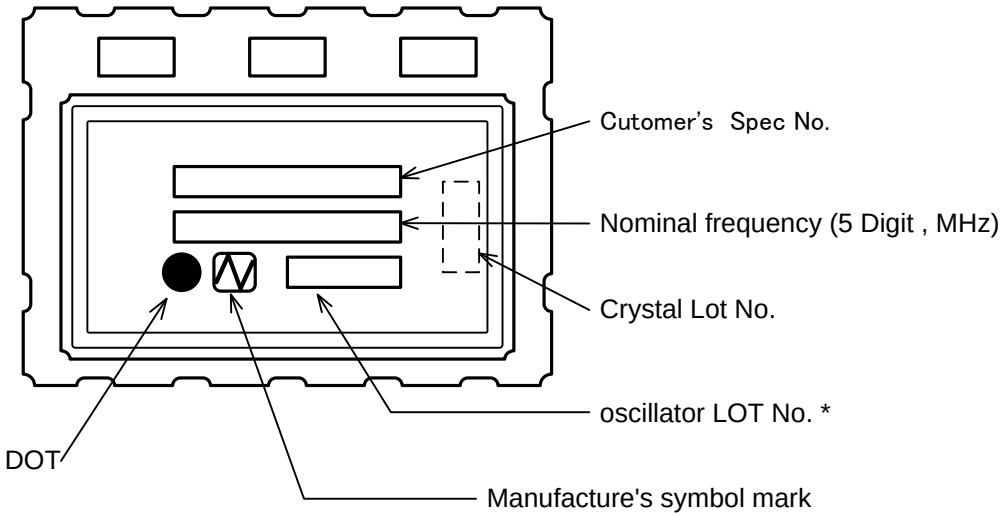
*1 Please do not connect with terminal.

*2 Please connect a 0.01 uF bypass capacitor near the VCC terminal.

	Date of Revise	Charge	Approved	Reason
A				

	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	7.May.2011	N.Sekine	Dimension:mm	±0.2	10/1
Designed	7.May.2011	N.Sekine	Title	Drawing No.	Rev.
Checked	-----	-----	**External Dimension**	**ETD14B-01491**	
Approved	7.May.2011	Y.Yokozeki			

NIHON DEMPA KOGYO CO., LTD.



LOT No. *

○○○○

Year Code（Last one digit）

Month Code（see table）

Month	1	2	3	4	5	6	7	8	9	10	11	12
Month code	1	2	3	4	5	6	7	8	9	O	N	D

Production Factory

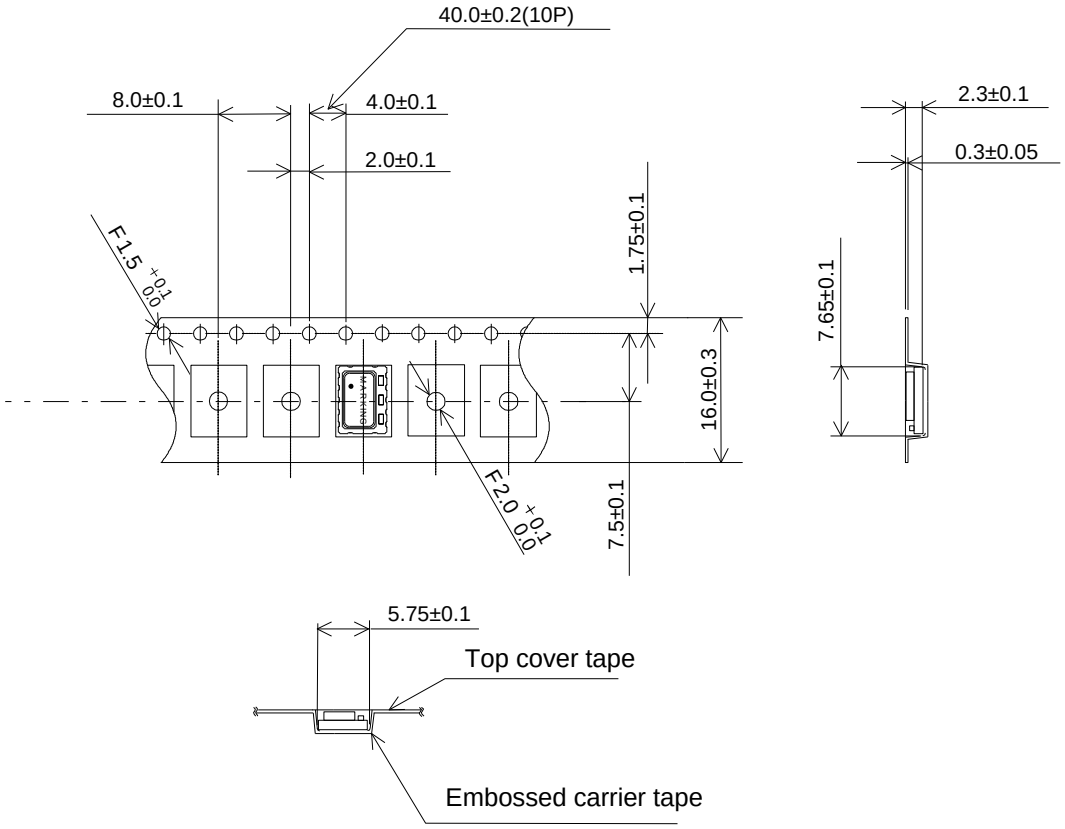
0: SAYAMA Factory

Following No.

	Date of Revise	Charge	Approved	Reason
A				

	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	19.Sep.2013	N.Sekine	Dimension:mm	-	-
Designed	19.Sep.2013	N.Sekine	Title	Drawing No.	Rev.
Checked	-----	---	**Marking Drawing**	**ETH11B-00455**	
Approved	19.Sep.2013	T. Matsumoto			

NIHON DEMPA KOGYO CO., LTD.

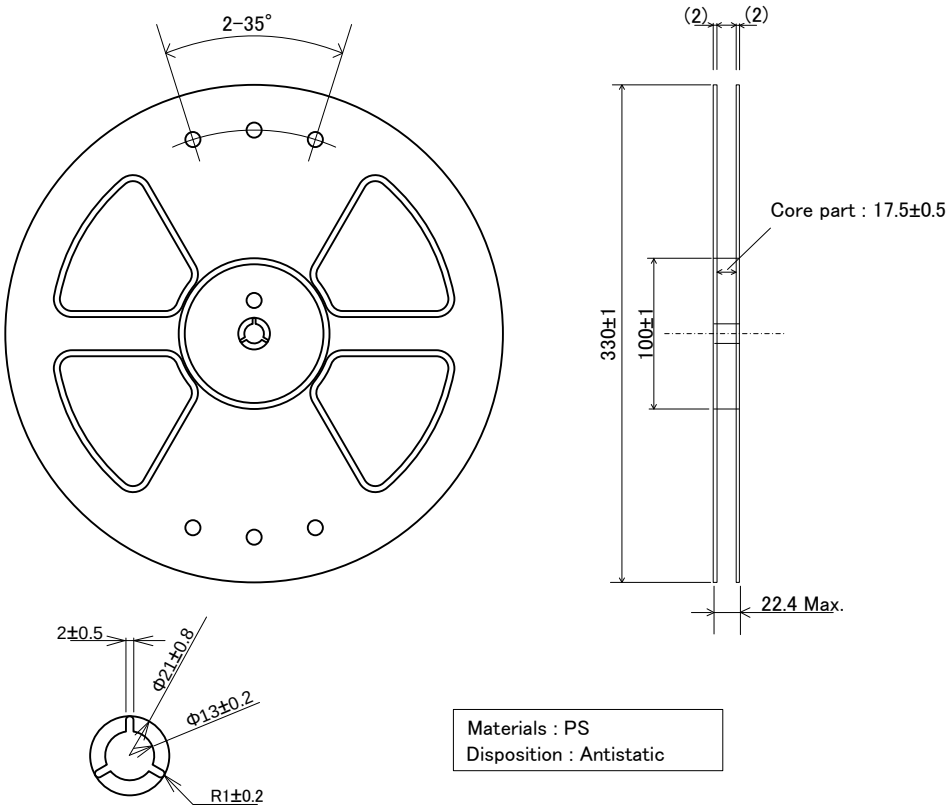


	Embossed carrier tape	Top cover tape
Materials	PS	PET+PE+Adhesive layer
Disposition	Antistatic	Antistatic

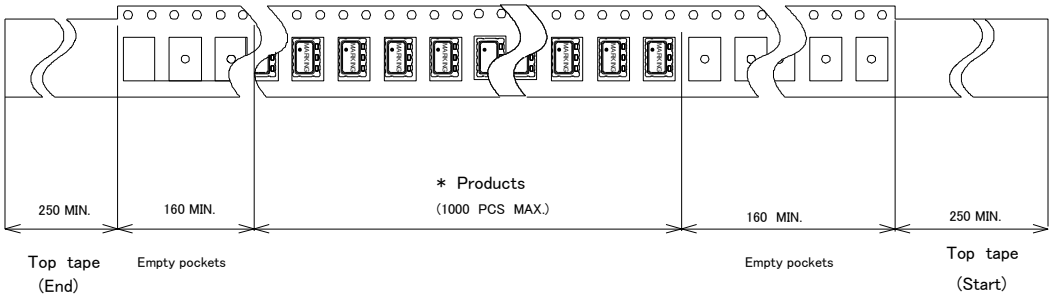
	Date of Revise	Charge	Approved	Reason
A				

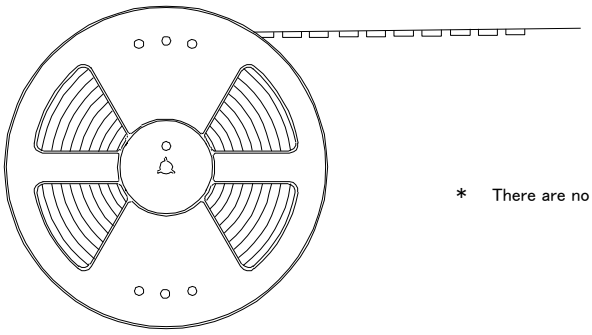
	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	07.Jan.2011	T.Terashima	Dimension : mm	---	---
Designed	07.Jan.2011	T.Terashima	Title	Drawing No.	Rev.
Checked	-----	-----	**Packing**	**ETK17B-00338(1/4)**	
Approved	07.Jan.2011	Y.Yokozeki			

NIHON DEMPA KOGYO CO., LTD.



Materials : PS
Disposition : Antistatic





＊ There are no vacant pockets for this area.

	Date of Revise	Charge	Approved	Reason
A				

	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	07.Jan.2011	T.Terashima	Dimension : mm	---	---
Designed	07.Jan.2011	T.Terashima	Title	Drawing No.	Rev.
Checked	-----	-----	**Packing**	**ETK17B-00338(2/4)**	
Approved	07.Jan.2011	Y.Yokozeki			

NIHON DEMPA KOGYO CO., LTD.

Tape break force, peel strength and angle

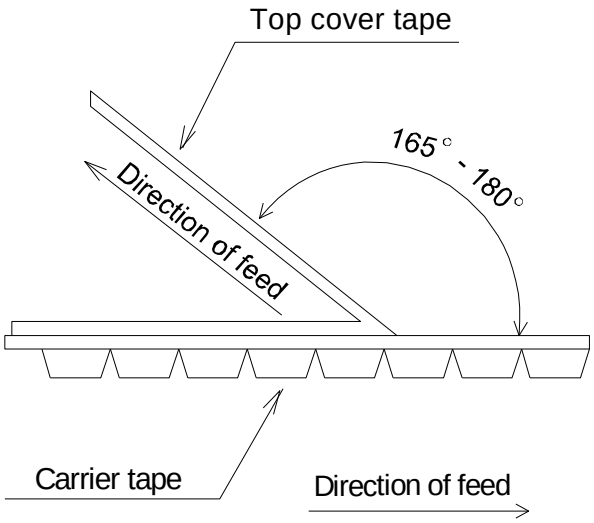
Required setting:

Tape break force: min 10N

Top cover tape strength: min 10N

Top cover tape peel force : 0.1-1.3N(0.1-1.0 for 8mm carrier tapes),at a peel speed of 300 +/-10mm/min.

Angle between the top cover tape and the direction of feed during peel off.
165-180°



The cover tapes not extend over the edge of the carrier tape or cover any part of the sprocket holes.

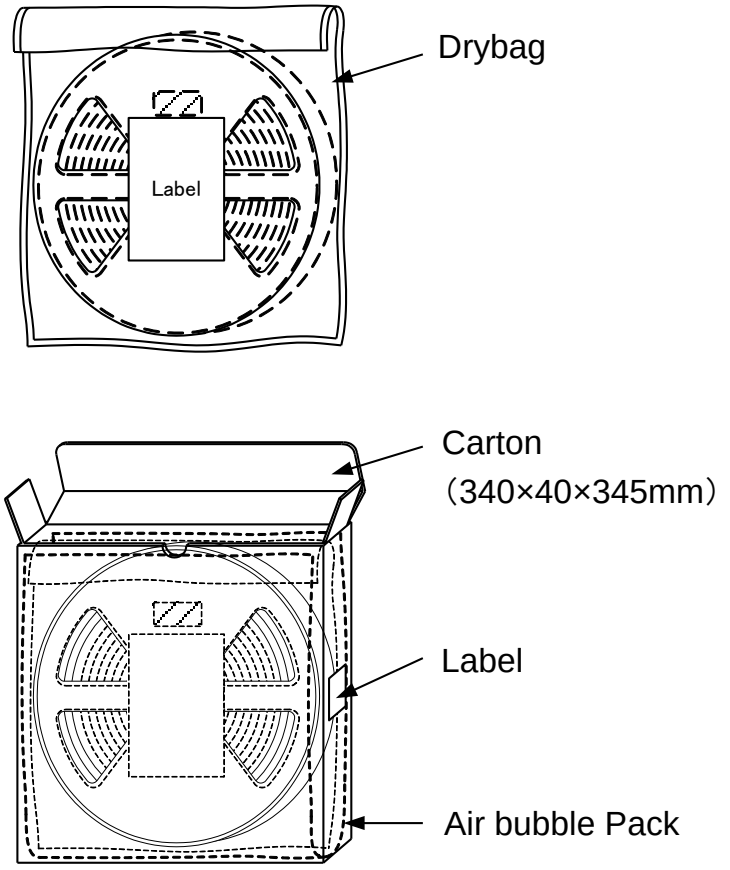
	Date of Revise	Charge	Approved	Reason
A				

	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	07.Jan.2011	T.Terashima	Dimension : mm	---	---
Designed	07.Jan.2011	T.Terashima	Title	Drawing No.	Rev.
Checked	-----	-----	**Packing**	**ETK17B-00338(3/4)**	
Approved	07.Jan.2011	Y.Yokozeki			

NIHON DEMPA KOGYO CO., LTD.

〈Inner packing〉

Max. 1000pcs./ Reel



	Date of Revise	Charge	Approved	Reason
A				

	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	07.Jan.2011	T.Terashima	Dimension : mm	---	---
Designed	07.Jan.2011	T.Terashima	Title	Drawing No.	Rev.
Checked	-----	-----	**Packing**	**ETK17B-00338(4/4)**	
Approved	07.Jan.2011	Y.Yokozeki			

NIHON DEMPA KOGYO CO., LTD.