Crystal Bridge to the Future

RoHS Compliant
Directive 2011/65/EU

SPECIFICATION

Customer: IRZ

Item:	CRYSTAL OSCILLATOR
Type:	NT2520SA
Nominal frequency:	26 MHz
Customer's Spec. No.:	----------
NDK Spec. No.:	END4172A

Receipt

Charge:

Sales	NDK-I Paola Bandera	Tel. +39-02-96702920
Engineer	Engineering Dept. 3 A.Konda	Tel. +81-4-2900-6634

Approved	A.Konda
Checked	A.Konda
Drawn	E.Hoshi

Revision Record

Rev.	Rev. Date	Items	Contents	Remarks
-----	Aug. 26. 2010	Issue		
A	Jan. 19. 2016	12. TEMPERATURE CHARACTERISTICS GRAPH	Addition	

1. Type
NT2520SA

2. Rating
2.1 Nominal frequency
26 MHz (2 digits marking)
2.2 Supply voltage
+3.0 V +/-0.3 V DC (-Earth)
2.3 Current consumption
Max. 2.0 mA (at maximum supply voltage)
2.4 Output voltage
Min. 0.8Vp-p (at minimum supply voltage) Clipped sine wave (DC-Coupling)
2.5 Operating temp. range
-40 to +85 °C
2.6 Storage temp. range
-40 to +85 °C
2.7 Load impedance
(10 kΩ // 10 pF) +/-5 %
2.8 DC-cut capacitor
DC-cut capacitor of output is not put in TCXO.
Please add DC-cut capacitor (1000 pF) in output line.

3. Electrical specification
3.1 Frequency stability
3.1.1 Frequency/Temperature characteristics
Max. +/-1.0 ppm / -30 to +85 °C
Max. +/-2.5 ppm / -40 to -30 °C
(Based on frequency at +25 +/-2°C)
3.1.2 Frequency temperature slope
Max. +/-1.0 ppm/°C / -40 to +85 °C
(Minimum of 1 frequency reading every 2 °C, over the operating temperature range)
3.1.3 Hysteresis
Max. +/-0.6 ppm
(Frequency change after reciprocal temperature ramped over the operating range.
Frequency measured before and after at +25 °C)
3.1.4 Frequency/Voltage coefficient (at +25 °C)
Max. +/-0.2 ppm / +3.0 V +/-5 %
3.1.5 Frequency/Load coefficient
Max. +/-0.2 ppm / (10 kΩ // 10 pF) +/-5 %
3.1.6 Frequency tolerance at control voltage (V_{cont}) = +1.65 V DC
Max. +/-1.0 ppm (at +25 +/-2 °C, before reflow soldering, based on nominal frequency)
3.1.7 Reflow shift
Max. +/-1.0 ppm (2 consecutive reflows as per attached profile after 1 hour recovery)
3.1.8 Long-term frequency stability
Max. +/-1.0 ppm / year
3.2 External adjustment
3.2.1 Control voltage (V_{cont})
+1.65 V +/-1.15 V DC
3.2.2 Frequency control range based on frequency at V_{cont} = +1.65 V DC
Min. +/-6.0 ppm
3.2.3 Frequency change polarity
Positive
3.2.4 Input impedance
Min. 500kΩ

3.3 Phase noise (at +25 °C)
Typ. -57 dBc/Hz (@1 Hz offset)
Typ. -88 dBc/Hz (@10 Hz offset)
Typ. -112 dBc/Hz (@100 Hz offset)
Typ. -134 dBc/Hz (@1 kHz offset)
Typ. -149 dBc/Hz (@10 kHz offset)
Typ. -151 dBc/Hz (@100 kHz offset)

4. Reflow soldering
Conditions of temperature profile (Refer to Fig.1)
Soldering peak temp. +260 °C

5. Marking
(1) Manufacture Name(NDK symbol mark)
(2) YH (Type identification number)
(3) Trace code
(4) Nominal frequency (MHz)
(5) Lot No.

6. Inspection parameters
Para 2.1, 2.3, 2.4, 3.1.1, 3.2.2, 5, 9.2 are inspected.
The other parameters are guaranteed to be within specified characteristics by NDK design.
Inspection data is not submitted for mass production lot. But only if requested, a copy of first lot production data will be submitted.

7. Precaution in the storage
Please keep the oscillator under below condition.

Temperature	+5 °C to +45 °C
Humidity	10 % to 75 % RH
Period	1year max

(table)

8. Frequency establishment condition
When output frequency is set, we suppose to have the ground pattern under the oscillator.

9. Application drawing
9.1 Reliability assurance item
ETS30B-00399
9.2 Dimension of External
ETD14B-01417
9.3 Packing
ETK17B-00307
9.4 Land pattern
ETD15B-00014

10. Notice
10.1 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.
10.2 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.
10.3 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.
10.4 Where any change to the process condition is made due to the change(s) in the production line, inform personnel of the specifications.

10.5 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.

10.6 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.

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

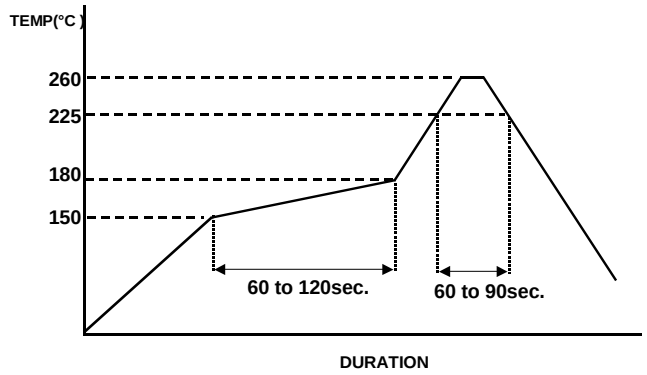
10.8 Information contained in this specification must not be quoted, reproduced or used for other purposes including processing either in part or in full without obtaining prior approval from the company.

11. 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: +265 °C
Heating: +225 °C or higher, 90 sec

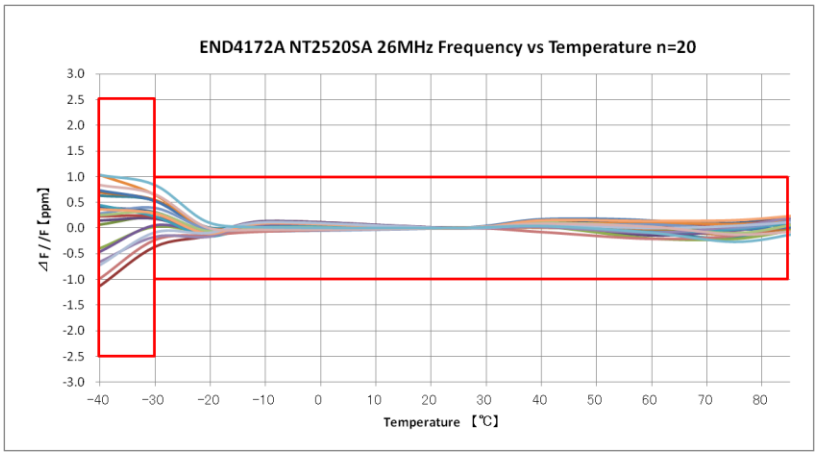
(2) Manual soldering heat resistance
Pressing a soldering iron of +410 °C on the terminal electrode for five seconds.



(Fig.1)

12. TEMPERATURE CHARACTERISTICS GRAPH

Frequency vs Temperature

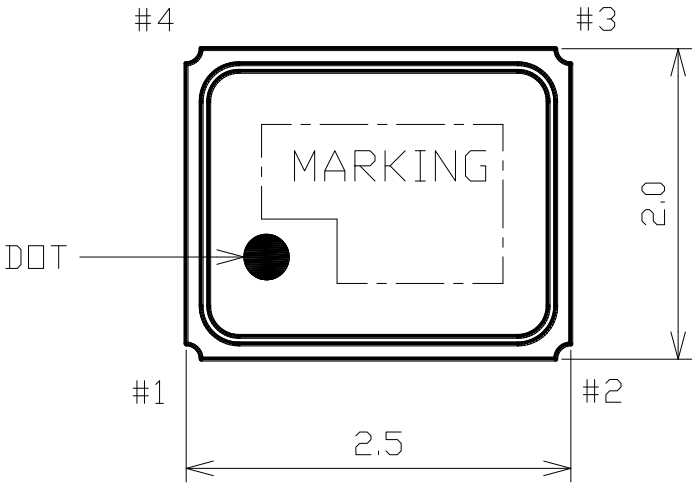


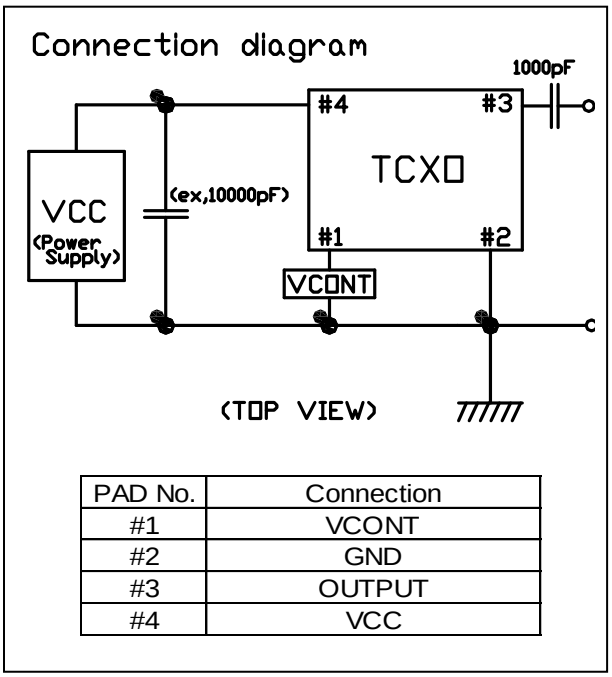
Reliability assurance item

(page: 1/1)

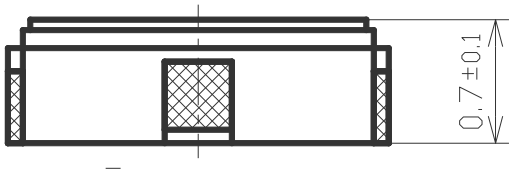
No.	Test Item	Test Methods	Specification Code
1	Vibration	5 to 26Hz: 1.52mm (total amplitude) 26 to 500Hz: 19.6m/s^2 20 minutes per 1 cycle. 2 hours for each 3 planes.	A
2	Shock	Half sine wave 6ms, 980 m/s^2. 3 times for each 3 planes.	A
3	Drop Test	Drop freely on the concrete from the height of 150cm With jig(150g). 3time for each 6 planes.	A
4	Humidity	+60°C, 95% RH for 48H. And normal temperature, with normal humidity for 24H.	A

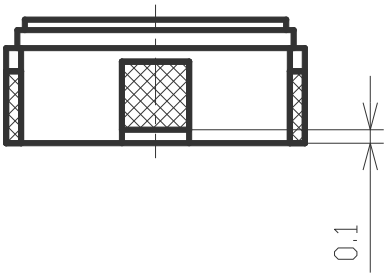
Specification code	Specification
A	After the test, shall meet electrical specification.

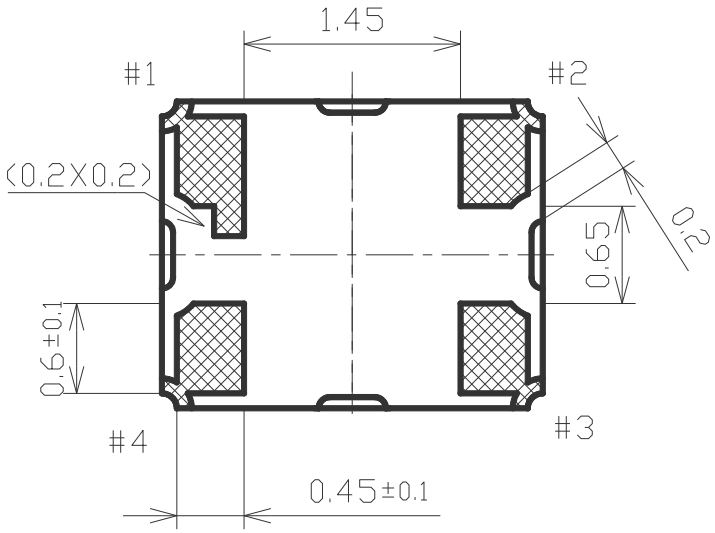




PAD No.	Connection
#1	VCONT
#2	GND
#3	OUTPUT
#4	VCC







	Date of Revise	Charge	Approved	Reason

	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	9.Aug.2010	M.Fukunaga	Dimension:mm	+/- 0.2	20/1
Designed	9.Aug.2010	M.Fukunaga	Title	Drawing No.	Rev.
Checked	9.Aug.2010	K.Moriya	**Dimension of External**	**ETD14B-01417**	
Approved	9.Aug.2010	K.Moriya			

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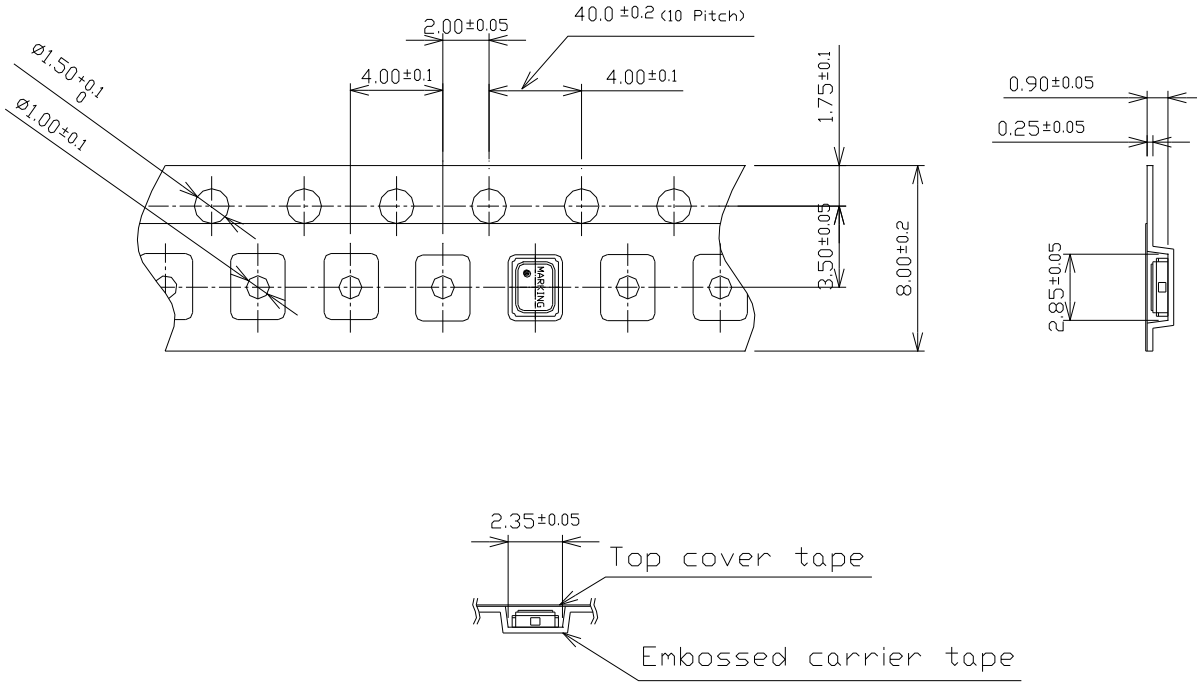

	Embossed carrier tape	Top cover tape
Materials	PS	PET + PE + Adhesive layer
Disposition	Antistatic	Antistatic

	Date of Revise	Charge	Approved	Reason

	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	17.Jun.2010	M.Kashiwamura	Dimension:mm	-----	-----
Designed	17.Jun.2010	M.Kashiwamura	Title	Drawing No.	Rev.
Checked	17.Jun.2010	K. Moriya	**Packing**	**ETK17B-00307 (1/3)**	
Approved	17.Jun.2010	K.Moriya			

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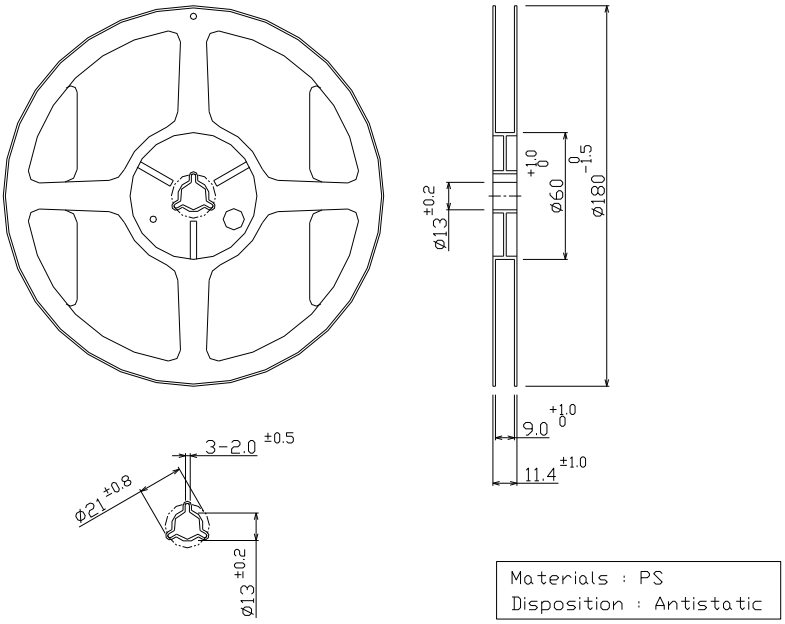
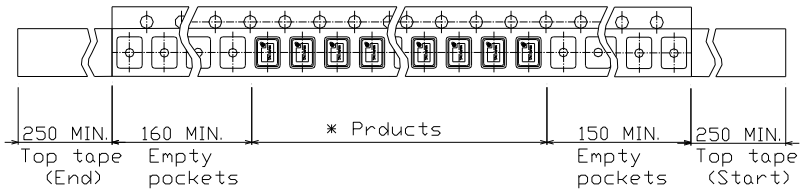
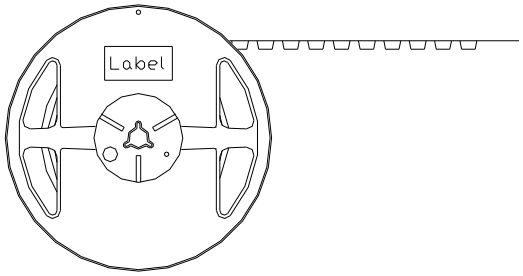




* There are no vacant pockets for this area.



	Date of Revise	Charge	Approved	Reason

	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	17.Jun.2010	M.Kashiwamura	Dimension:mm	-----	-----
Designed	17.Jun.2010	M.Kashiwamura	Title	Drawing No.	Rev.
Checked	17.Jun.2010	K. Moriya	**Packing**	**ETK17B-00307 (2/3)**	
Approved	17.Jun.2010	K.Moriya			

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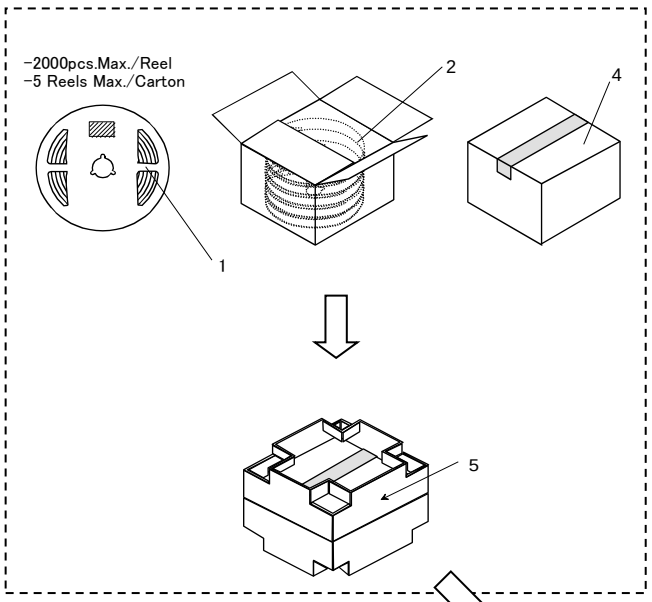
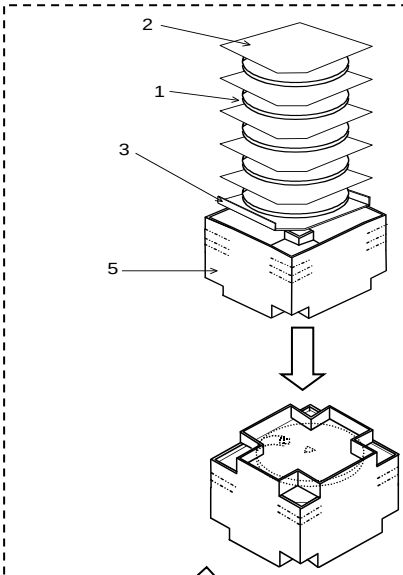
<Inner packing> −2000pcs.Max./Reel
−5 Reels Max./Carton

The inner packing is either type A or type B.

TYPE A

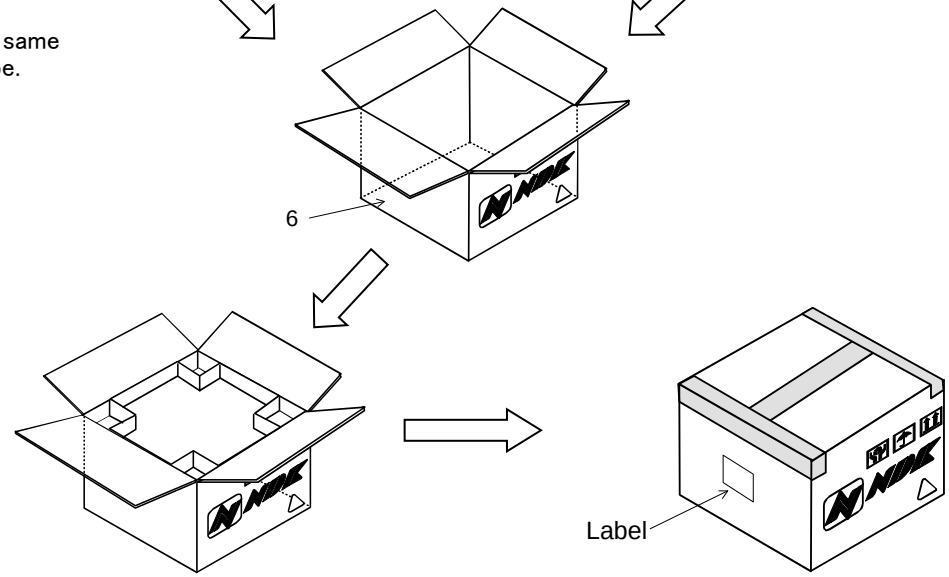


TYPE B



<Outer packing>

The outer packing is same box in each inner type.



No.	Item	Combination		Material
		TYPE A	TYPE B	
1	Reel	○	○	-
2	Spacer	○	○	Cardboard
3	Paste board	-	○	Corrugated
4	Inner box	○	-	Corrugated paper
5	Shock pad	○	○	Corrugated paper
6	Outer box	○	○	Corrugated paper

	Date of Revise	Charge	Approved	Reason

	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	17.Jun.2010	M.Kashiwamura	Dimension:mm	-----	-----
Designed	17.Jun.2010	M.Kashiwamura	Title: **Packing**	Drawing No.: **ETK17B-00307 (3/3)**	Rev.
Checked	17.Jun.2010	K. Moriya			
Approved	17.Jun.2010	K.Moriya			

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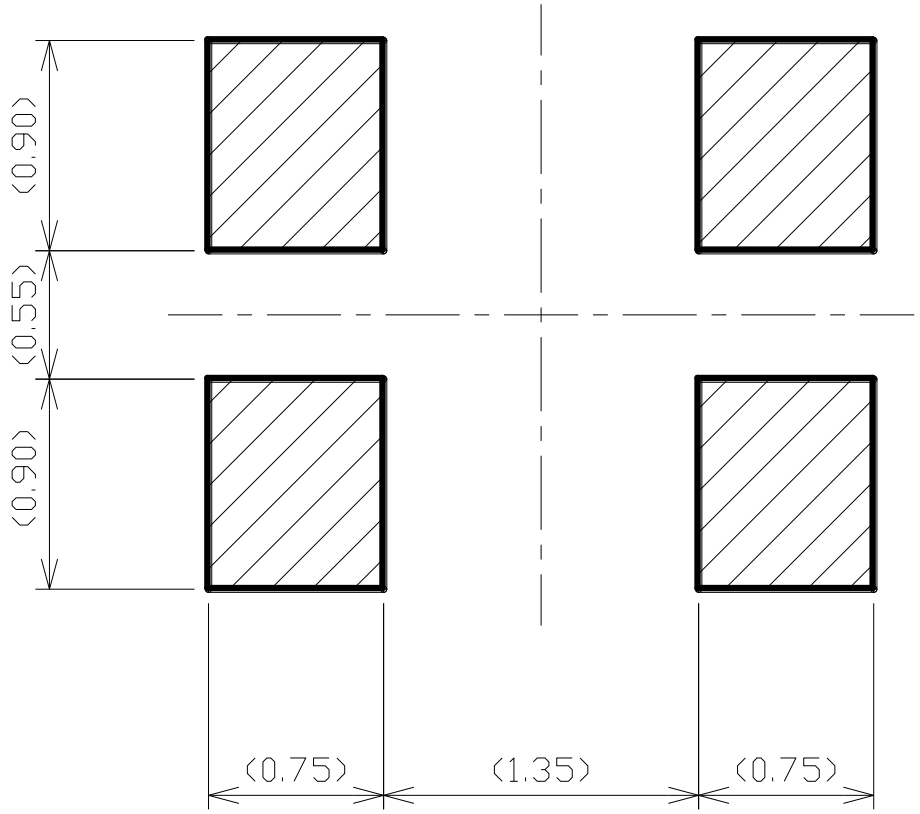

Note) Please reserve a large grand pattern on the PCB where the oscillator is installed.

	Date of Revise	Charge	Approved	Reason
A				

	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	27.Jun.2005	H.Harima	Dimension:mm	-----	30 / 1
Designed	27.Jun.2005	H.Harima	Title	Drawing No.	Rev.
Checked	27.Jun.2005	K.Moriya	**Land pattern**	**ETD15B-00014**	
Approved	27.Jun.2005	H.Mizumura			

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