



REFERENCE SPECIFICATION

 Customer: MTK

Item: _____ CRYSTAL OSCILLATOR _____

Type: _____ NT2520SB _____

Nominal frequency: _____ 26 MHz _____

Customer's Spec. No.: _____ ----- _____

 NDK Spec. No.: _____ ENG3369A _____

For your reference we submit this specification.
Please study and keep in your related document file.

Charge:

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Revision Record

Rev.	Date	Items	Contents	Approved	Checked	Drawn
-----	Apr. 23. 2015	Issue	---	A.Konda	A.Konda	E.Hoshi

1. Type NT2520SB

2. Maximum Rating

	Item	Rating	unit
1	Storage temp. range	-55 to +125	°C

3. Electrical specification

	Parameters	Electrical Spec.				Notes
		Min.	Typ.	Max.	Units	
1	Nominal frequency		26		MHz	
2	Supply voltage	+2.18	+2.3	+2.42	V	(-Earth)
3	Current consumption			1.5	mA	
4	Output voltage	0.8		1.2	Vp-p	Clipped sine wave (DC-Coupling)
5	Operating temp. range	-40		+85	°C	
6	Load impedance (resistance part)	9	10	11	kΩ	
7	Load impedance (parallel capacitance)	9	10	11	pF	
8	DC-cut capacitor					DC-cut capacitor of output is not put in TCXO. Please add DC-cut capacitor (1000 pF) in output line.
9	Frequency stability					
	1. Frequency /Temperature characteristics	-0.5		+0.5	ppm	-30 to +85 °C
		-3.0		+3.0	ppm	-40 to -30 °C
	2. Frequency/Voltage coefficient	-0.1		+0.1	ppm	Based on frequency at +25+/-2 °C at control voltage (Vcont)=+1.15 V DC +2.3 V +/-5 % (-40 to +85 °C)
	3. Frequency/Load coefficient	-0.1		+0.1	ppm	(10 kΩ//10 pF) +/-10 % (-40 to +85 °C)
	4. Frequency tolerance	-2.0		+2.0	ppm	at +25+/-2°C, after 2 times reflow soldering, based on nominal frequency at control voltage (Vcont)=+1.15 V DC
5. Long-term frequency stability	-1.0		+1.0	ppm	Year	
10	External adjustment					
	1.Control voltage (Vcont)	+0.3	+1.15	+2.0	V	
	2.Frequency control range	-15.0		-9.0	ppm	based on frequency at (Vcont) = +1.15 V DC
		+9.0		+15.0	ppm	
3.Frequency change polarity					Positive	

	Parameters	Electrical Spec.				Notes
		Min.	Typ.	Max.	Units	
11	Symmetry	40		60	%	at -40 to +85°C
		45		55	%	at +25 °C
						Based on 0V. The output signal after DC cut capacitor passage
12	Start-up time			2.0	ms	More than 90% of final output voltage
13	Stabilization time			3.0	ms	Less than +/-1.0 ppm of steady state frequency
14	Harmonic distortion			-8	dBc	(2 nd)
				-10	dBc	(3 rd)
				-20	dBc	(4 th)
15	Phase noise			-54	dBc/Hz	@1 Hz offset
				-77	dBc/Hz	@5 Hz offset
				-86	dBc/Hz	@10 Hz offset
				-111	dBc/Hz	@100 Hz offset
				-133	dBc/Hz	@1 kHz offset
				-149	dBc/Hz	@10 kHz offset
				-150	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) Trace code
- (3) Nominal frequency (MHz)
- (4) Lot No.

6. Inspection parameters

Para 3.1, 3.3, 3.4, 3.9.1, 3.10.2, 5, 10.2 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 in the ordinary temperature and humidity that are suggested as below table.

	Before taking out of dry bag	After taking out of dry bag
Temperature	+5 °C to +45 °C	+30 °C max.
Humidity	10 % to 75 % RH	70 % max.
Period	6 months	168 hours *

(table)

*It is desirable for the oscillator to be used within 168 hours after taking out of dry bag.

Please pack the oscillator into used dry bag with a desiccant and seal it up by heat sealer etc.

In case the heat sealer is not available, sealing up with cellophane tape or a vinyl tape will do.

8. Frequency establishment condition

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

9. Washing

Not available for washing.

10. Application drawing

10.1 Reliability assurance item

ETS30B-00399

10.2 Dimension of External

ETD14B-01523A

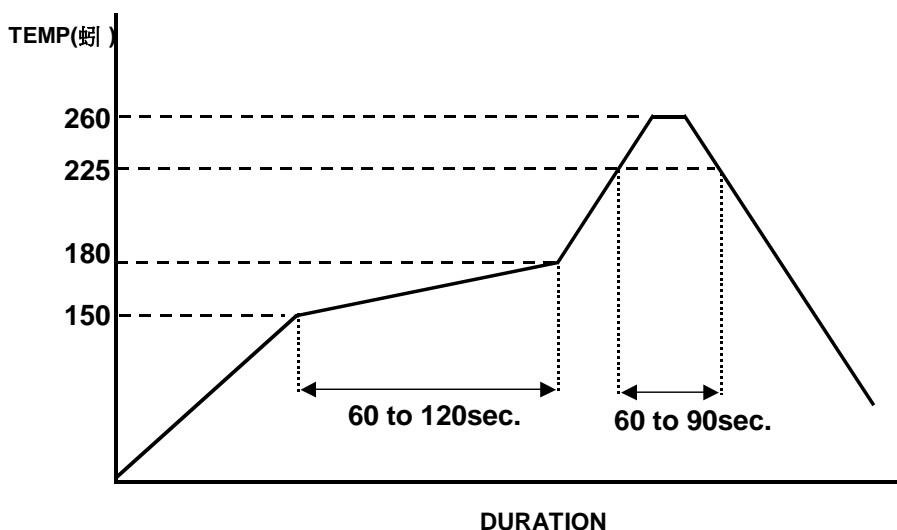
10.3 Land pattern

ETD15B-00022A

11. Notice

11.1 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.

11.2 If you use resin for fixing components during manufacturing, please keep resin from adhering to the oscillator.



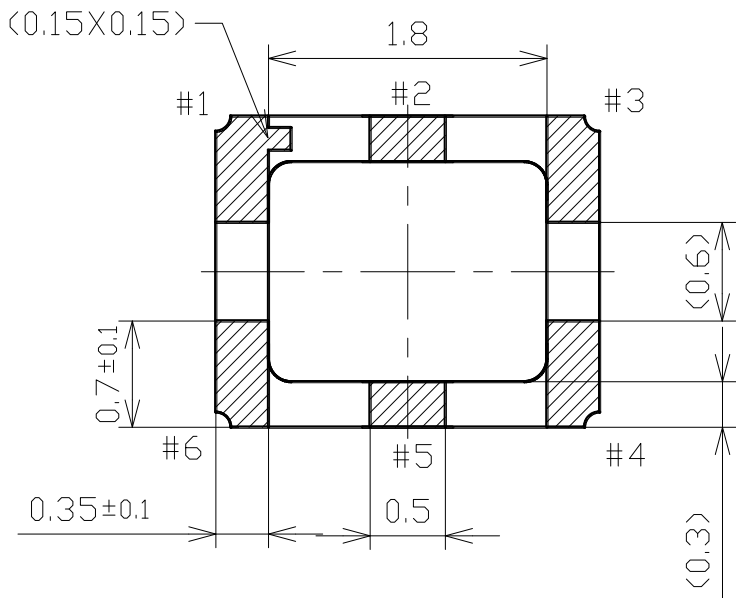
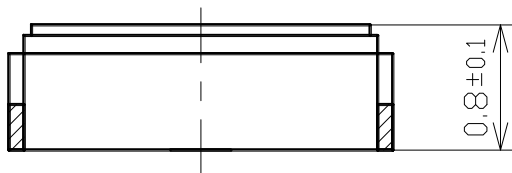
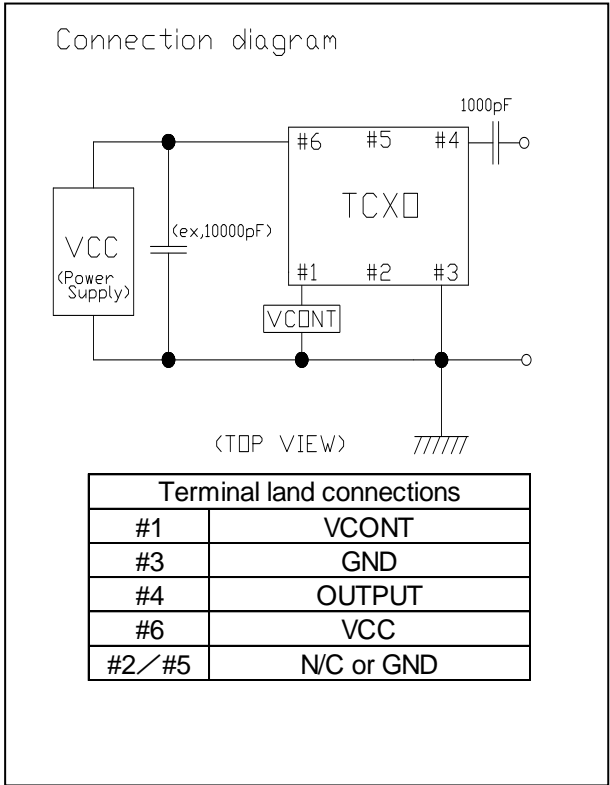
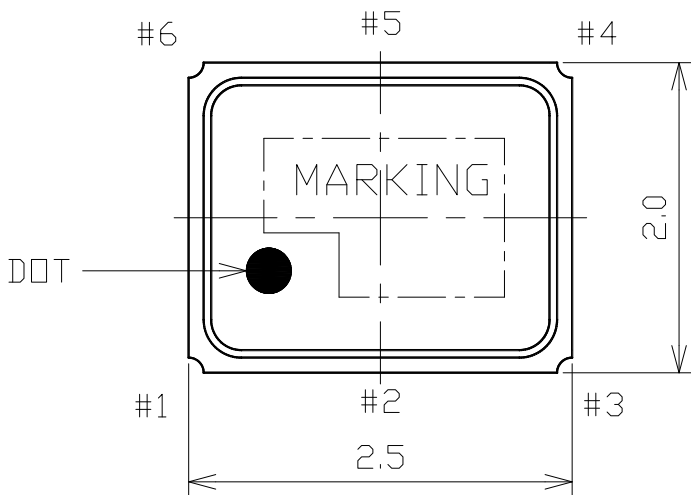
(Fig.1)

Reliability assurance item

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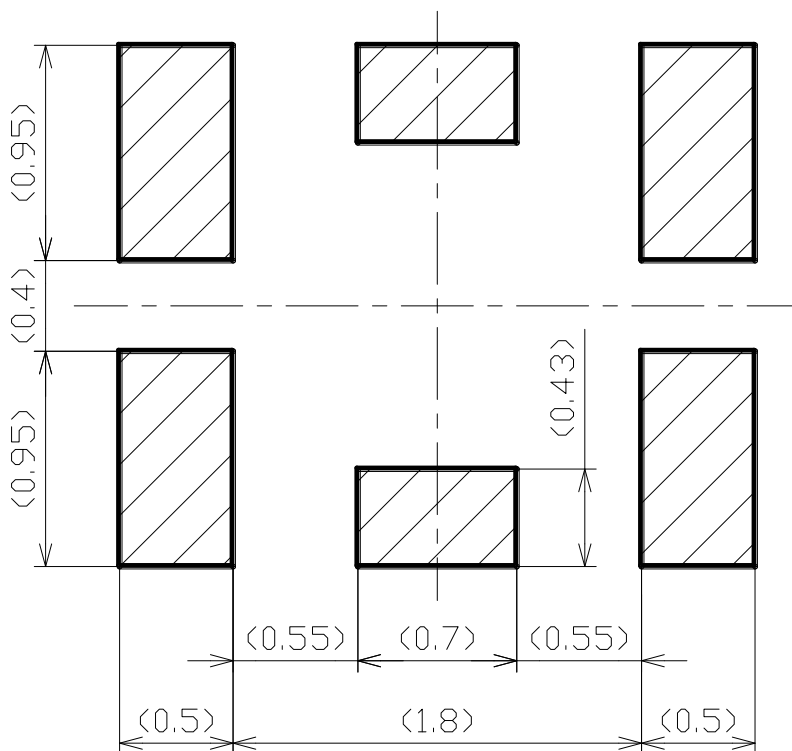
No.	Test Item	Test Methods	Specification Code
1	Vibration	5 to 26Hz: 1.52mm (total amplitude) 26 to 500Hz: 19.6m/s ² 20 minutes per 1 cycle. 2 hours for each 3 planes.	A
2	Shock	Half sine wave 6ms, 980 m/s ² . 3 times for each 3 planes.	A
3	Drop Test	Drop freely on the concrete from the height of 150cm 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.



	Date of Revise	Charge	Approved	Reason	
A	23.Aug.2013	R.Yoshizaki	K.Moriya	Change of Hatching and connection diagram (According to EEN01A-00005)	
	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	15.Jul.2011	K.Hasegawa	Dimension:mm	+/- 0.2	20/1
Designed	15.Jul.2011	K.Hasegawa	Title	Drawing No.	Rev.
Checked	15.Jul.2011	A.Konda			
Approved	15.Jul.2011	K.Moriya			
			Dimension of External	ETD14B-01523	A

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

	Date of Revise	Charge	Approved	Reason	
A	17. Nov. 2011	A.Fujii	K.Moriya	Note change	
	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	18.Apr.2007	H.Harima	Dimension:mm	-----	30 / 1
Designed	18.Apr.2007	H.Harima	Title	Drawing No.	Rev.
Checked	18.Apr.2007	K.Moriya			
Approved	18.Apr.2007	H.Mizumura			
			Land pattern	ETD15B-00022	A

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