Specification

Date : Aug. 26, 08

TO : Digi-Key

Approved by

Selling agency
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TEL 075-604-3500, FAX 075-604-3501

Manufacturer
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Let us Submit 1Copy of the approved Specification on the below items.

Product	Crystal Oscillator
Model	KT2520F27456ZAW28TBA **(RoHS Compliant)**
Frequency	27.456MHz
Specification No.	----------
Customer Parts No.	----------

Engineering	Issued by	Approved by	Drawing No.
KYOCERA KINSEKI Yamagata Corporation Crystal Oscillator Manufacturing Department Crystal Oscillator Engineering section	N. Nakano	Y. Kakuta	K1101-08334-581

[Management]KYOCERA KINSEKI Yamagata Corporation
Crystal Oscillator Engineering section in charge : Yoshihiro Kakuta

*Recycled paper is being used for the conservation of nature.

Revision History

Revision No.	Revision Date	Customer Receipt Date	Supplier Receipt Date	Revision Content and reason	Notes	Approved By	Checked By	Prepared By
1	Aug.26,08			ODocument not based on Digi-Key Specification. O The first edition.				

KYOCERA KINSEKI Corporation	Dwg. Date	8/26/2008	Dwg. No.	K1101-08334-581-1/12

1. Purpose and scope

This document contains specification related to CRYSTAL OSCILLATOR model KT2520F27456ZAW28TBA for Digi-Key.

2. Nominal condition

	Item	MIN.	TYP.	MAX	Unit	Conditions
1	Operating temperature range	-40	---	+85	deg.C	
2	Storage temperature range	-40	---	+85	deg.C	
3	Nominal frequency	---	27.456	---	MHz	
4	Supply voltage Range	2.3	---	3.6	V	
	Supply voltage	Vcc±5% (※Do not exceed the range of the power-supply voltage.)			V	
5	Load impedance	9	10	11	kΩ	
		9	10	11	pF	
6	Output signal condition	---	Clipped sine			

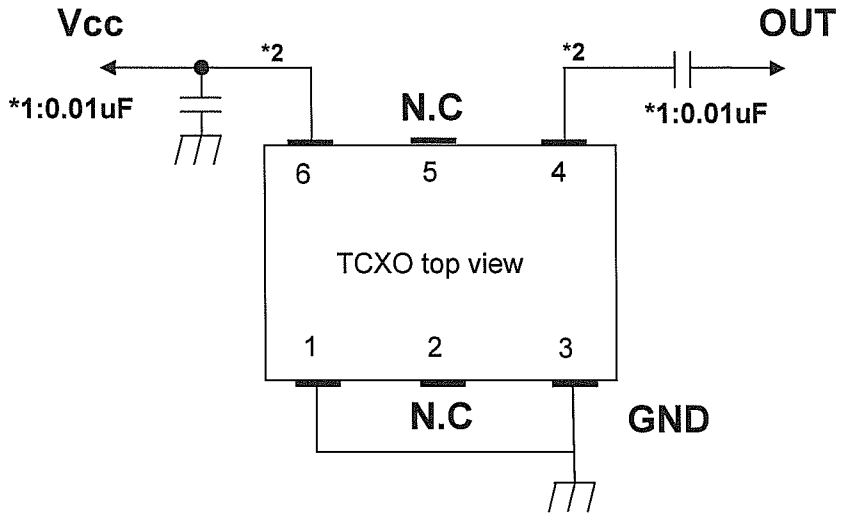
3. Electrical characteristics

Ta= -40 deg.C to +85 deg.C, Vcc=2.8V, Vcon=GND , Load 10kΩ//10pF

	Item	MIN.	TYP.	MAX	Unit	Conditions	Remarks
1	Temp characteristics	-0.5	---	+0.5	$x10^{-6}$	-30 deg.C to +85 deg.C	On the basis of 25 deg.C frequency
		-5.0	---	+5.0	$x10^{-6}$	-40 deg.C to -30 deg.C	
2	Voltage characteristics	-0.2	---	+0.2	$x10^{-6}$	Vcc±5% (※Do not exceed the range of the power-supply voltage.)	
3	Load characteristics	-0.2	---	+0.2	$x10^{-6}$	10kΩ//10pF+/-10%	
4	Aging characteristics	-1.0	---	+1.0	$x10^{-6}$/Y	1year	at 25+/-2 deg.C
5	Frequency tolerance	-2.0	---	+2.0	$x10^{-6}$	After 2 times reflow soldering	at 25+/-2 deg.C
6	Current	---	---	1.5	mA		
7	Output voltage	0.8	---	---	Vp-p		
8	Harmonics	---	---	-8.0	dBc		

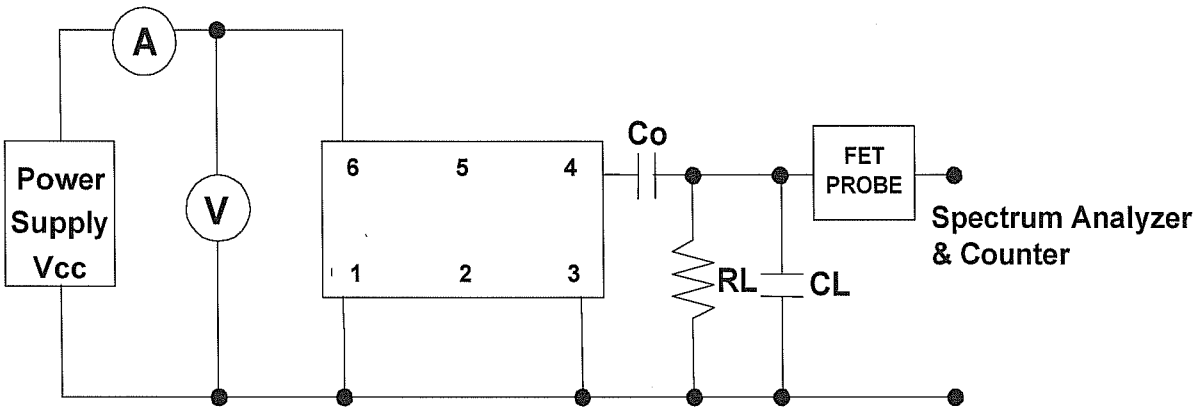
4. Circuit

*1 Bypass Capacitor and DC-Blocking Capacitor do not build in this TCXO.
So, Bypass Capacitor and DC-Blocking Capacitor are attached outside and please use it.
*2 And these Capacitor should be placed as close as possible to the pin(No.4 and No.6).



5. Test circuit

*Load 10kΩ//10pF contains
The internal impedance of FET probe.



6. Environment mechanical characteristics

	Item	Conditions	Specifications
1	High temperature storage	Ta=+85deg.c, judge on 240H storage	It must be met to the characteristics Judging criterion. Measurement shall be taken at room ambient within 2 to 24hours after each test.
2	Low temperature storage	Ta=-40deg.c, judge on 240H storage	
3	High temperature and High Humidity storage	Ta=+85deg.c, RH=85%RH, judge on 240H storage	
4	Temperature Cycle test	Ta=-40deg.c to =+85deg.c 30min. Each 10 cycle	
5	Drop test	A test piece (100g) made by Teflon is dropped 3 cycles (1cycle: 6 direction) from the height of 150cm hard board	
6	Vibration test	10 to 55 to 10Hz 1.5mm constant amplitude 1min. Period X, Y, Z direction 2H each 6H total.	
7	Solder heat test	All leads shall be soldered at temperature of 350±5 deg.c for 3±1 sec . using a soldering iron.	
8	Lead solderbility	Dip each of lead into 230±5 deg.c solder pod for 5±0.5 sec. after close , the test area of loads surfaces must be covered loads 90% by solder.	
9	Reflow soldering	Reflow solderling at 2 times.	

Normal Condition : Temperature 25 deg.C+/-2deg.C
Humidity 30 % to 70 %

Judge

Item	Standard
At 25 deg.C frequency	+/-2.0 x 10^{-6}max. (Before and After)

7. Reflow profie

7-1.Preheat : 180+0/-10deg.C, 120sex(max)

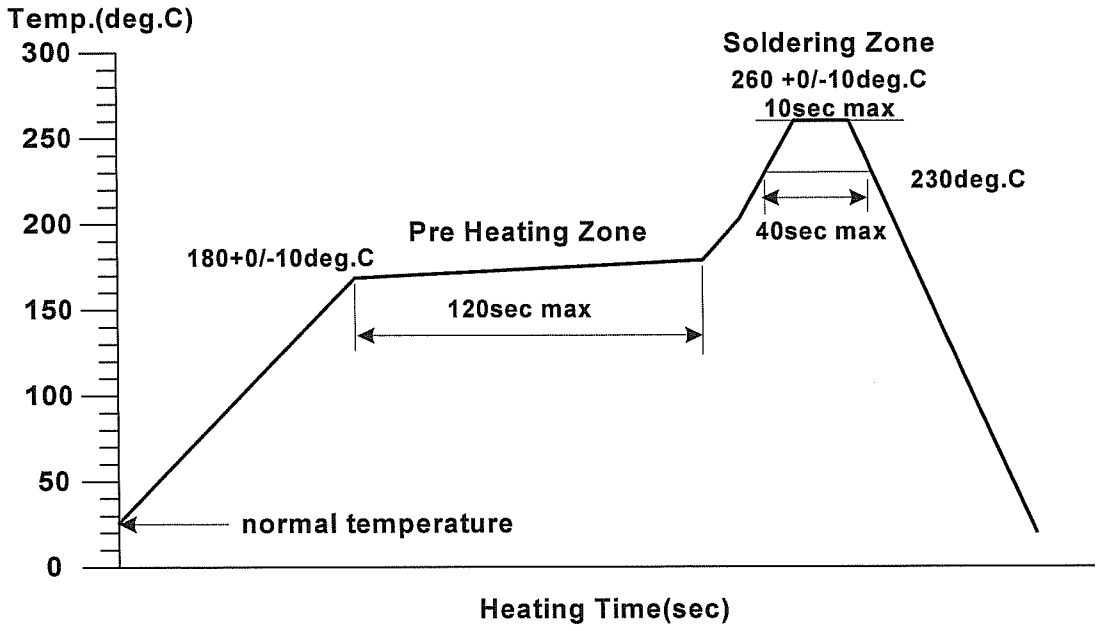
7-2.Peak Temperature :260+0/-10deg.C, 10sec(max)

7-3.PC-Board

Material : FR-4
Size : 140mmx110mm
Thickness : t=0.8mm

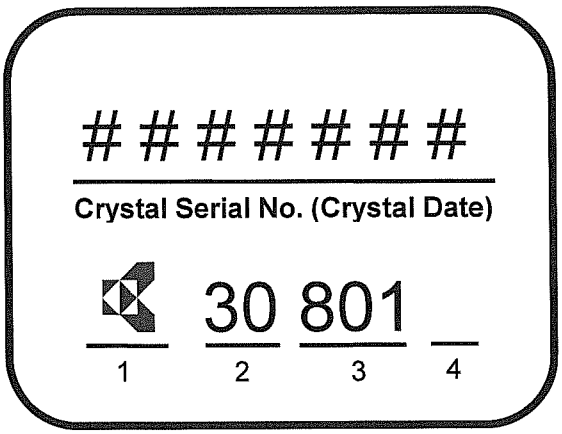
7-4.Condition of Measurement Temperature: Surface of PC-BOARD

7-5.Soldering : 2 times



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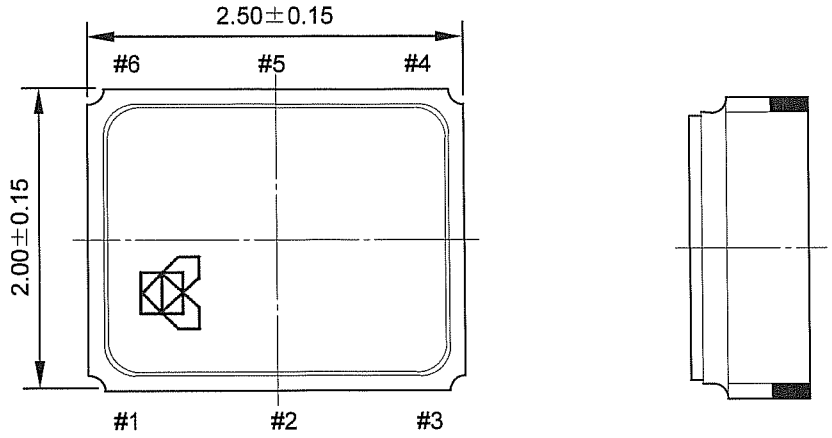
8. Marking contents



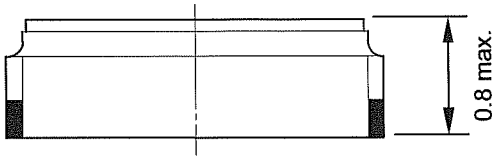
*Laser Marking

	Contents	Example
1	KYOCERA Marking (Pin-1 identifier)	
2	Control Code	30
3	Lot No.	801 *The 2008 1st week 802 *The 2008 2nd week
4	Production place	No marking (KYOCERA KINSEKI Yamagata Corporation) O (KYOCERA KINSEKI Corporation Kagoshima Kokubu Plant)

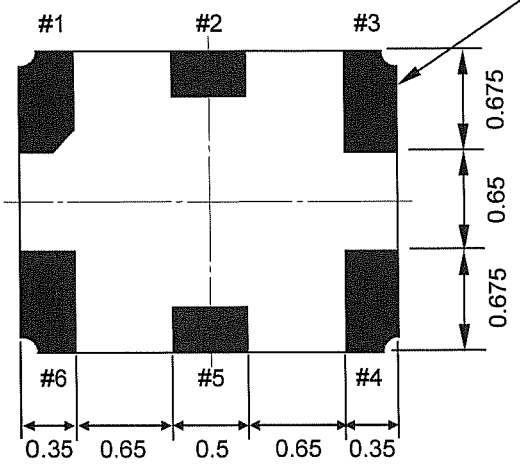
9. Dimensions



Top View



Side View

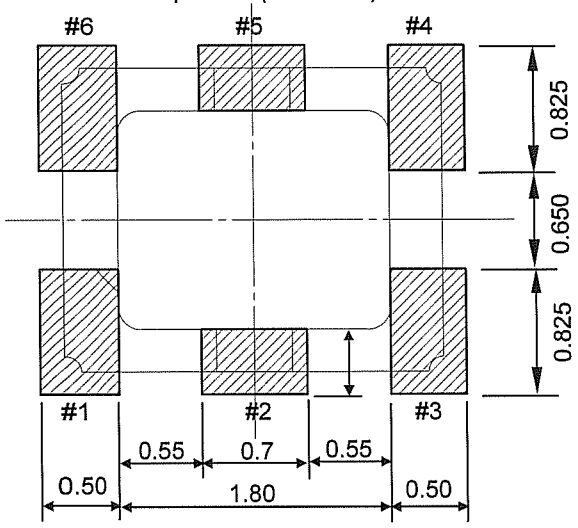


	PIN Layout
#1	GND
#3	GND
#4	OUTPUT
#6	Vcc
#2,5	N.C.

Unit: mm
Terminal Coplanarity: 0.1mm max.

Bottom View

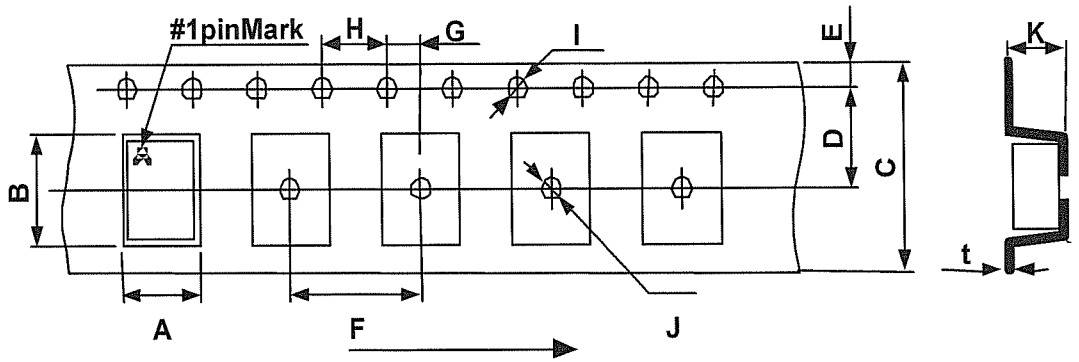
Land pattern (Reference)



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10.Tape & Reel

10-1.Tape dimensions



10-1-1.CarrierTape: PS Included Carbon

10-1-2.Circle hole is designed on right side against the direction of feed.

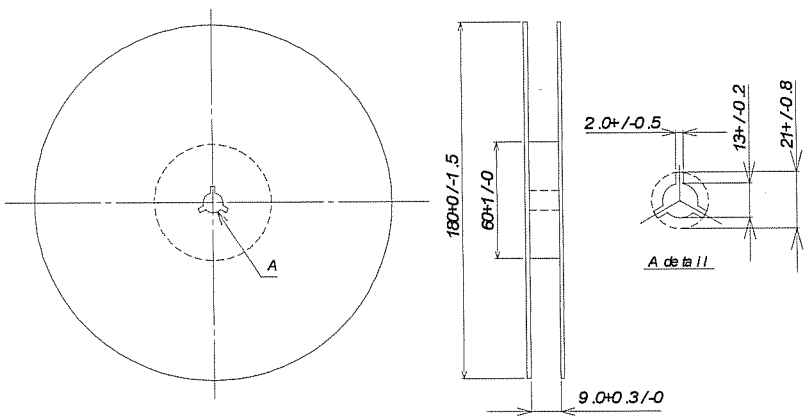
Unit: mm

Symbol	A	B	C	D	E
Dimension	2.40+/-0.05	2.90+/-0.05	8.00+/-0.2	3.50+/-0.05	1.75+/-0.1

Symbol	F	G	H	I	J
Dimension	4.00+/-0.1	2.00+/-0.05	4.00+/-0.1	Φ1.5+0.1/-0	Φ1.0+0.1/-0

Symbol	K	t
Dimension	1.10+/-0.05	0.25+/-0.05

10-2.Reels dimensions



Unit:mm

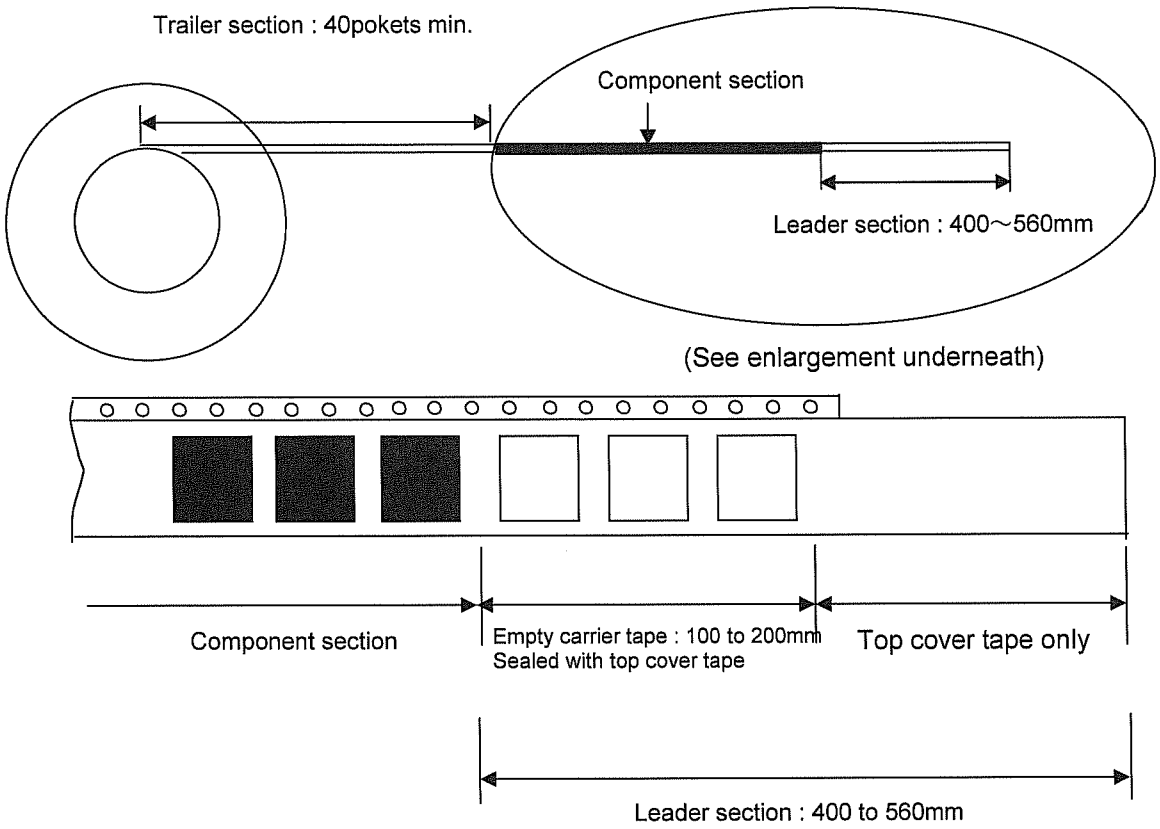
10-2-1.Reel: PS Included Carbon

10-2-2.Reel unit: 3000pcs max. / 1Reel

10-3.Packing

10-3-1.Trailer & Leader

As for the trailer and leader of taping, there are empty pockets as following drawing.
Sprocket hole is designed on upper side against the direction of feed.



10-4. Shipping label

Following item shall be listed on reel, tape, bag and outer box.
"Parts no", "Lot no", "Quantity", "Date of manufacture", "Customer's name"

11. Tape breaking and peeling force

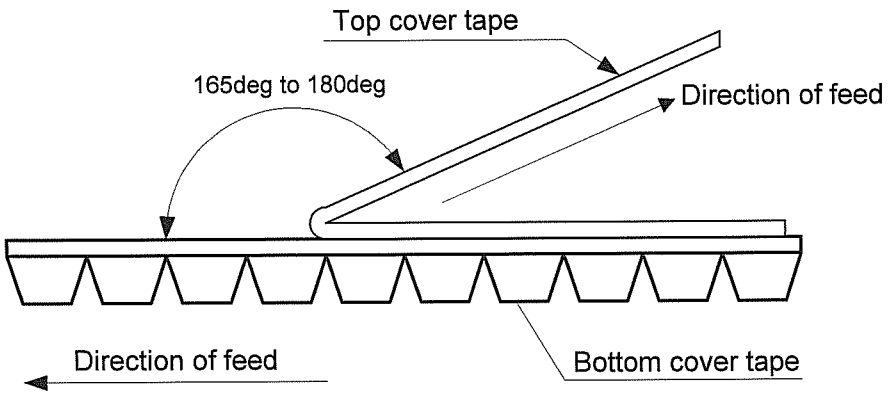
11-1. Angle: 165 deg to 180 deg

11-2. Tape Break Force: 10N min

11-3. Top Cover Tape Strength: 10N min

11-4. Top Cover Tape Peel Force: 0.1 to 1.0N

11-5. Top Cover Tape Peel Speed: 300+/-10mm / minutes



12. Notice

12-1. Please use soldering iron and the spot heater within the range of a solder heat test condition.

12-2. Units should be stored in a dry environment keeping away from the sun.

12-3. Don't leave units in high-Temperature and high-humidity environment due to terminal solderability.
(Please keep 0 deg.C to 40 deg.C and 30% to 70%RH for recommendable storage condition)

12-4. The term of a guarantee of taping packing is 6 months. (0 deg.C to 40 deg.C,RH30% to 70%)
After aluminum pack opening. Since there is fear of solderability and product moisture absorption. Please use it within 168 hours
(Please check solderability if you use units after 168 hours with unpacking.)

12-5. Disapprove of washing.

12-6. Unless we receive request for modification within 1 month from the issue date of this KKC 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 within 1 month from the issue data of this specification sheet, we would like to discuss with you separately.

12-7. 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.

12-8. 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.

12-9. 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.

13. Production place

This product is produced in KYOCERA KINSEKI Yamagata Corporation and the KYOCERA KINSEKI Corporation Kagoshima Kokubu Plant.

14. Parts Numbering Guide

KT2520F	27456	Z	A	W	28	T	BA
A	B	C	D	E	F	G	H

A. Series (2.5x2.0 SMD KT2520F)
B. Frequency (27.456MHz)
C. Frequency temperature accuracy (Z : Special specification)
D. Minimum temperature range (A:-40degC)
E. Maximum temperature range (W :+85degC)
F. Supply voltage (28 : 2.8V)
G. Control voltage stability (T : TCXO)
H. Customer special model Suffix