

Specification

Drawing No.	TKY1D-H1-18349-00 [12]
Issued Date.	August 6, 2018

TO: Digi-key

Note: In case of specification change, KYOCERA Part Number also will be changed.

Product Name	Temperature Compensated Crystal Oscillator
Product Model	KT2520K
Frequency	37.4MHz
Customer Part Number	_____
Customer Specification Number	_____
KYOCERA Part Number	KT2520K37400ZAW18TBS
Remarks	RoHS Compliant, MSL=1

Customer Acceptance

Accept Signature	Accept Date	
	Department	
	Person in charge	

Seller
 KYOCERA Corporation
 Corporate Electronic Components Group
 Electronic Components Sales Division
 6 Takeda Tobadono-cho, Fushimi-ku, Kyoto
 612-8501 Japan
 TEL. No. 075-604-3500
 FAX. No. 075-604-3501

Manufacturer
 KYOCERA Corporation
 Corporate Electronic Components Group
 Crystal Components Division
 Yamagata higashine Plant
 5850, Higashine-koh, Higashine-shi, Yamagata
 999-3701 Japan
 TEL. No. 0237-43-5611
 FAX. No. 0237-43-5615

Design Department	Quality Assurance	Approved by	Examined by	Written by
Manufacturing Engineering Department Application Engineering Section	Y.Kakuta	N.Nakano	Y.Hosoya	C.Nitoube

KYOCERA Corporation

1. Purpose and scope

This document contains specification related to CRYSTAL OSCILLATOR model
KT2520K37400ZAW18TBS 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	---	37.4	---	MHz	
4	Supply voltage	1.7	1.8	1.9	V	1.8V+/-0.1V
5	Absolute maximum rating voltage (Supply voltage)	-0.6	---	+4.6	V	
6	Load impedance	9	10	11	kohm	
		9	10	11	pF	
7	Output signal condition	---	Clipped sine	---	---	

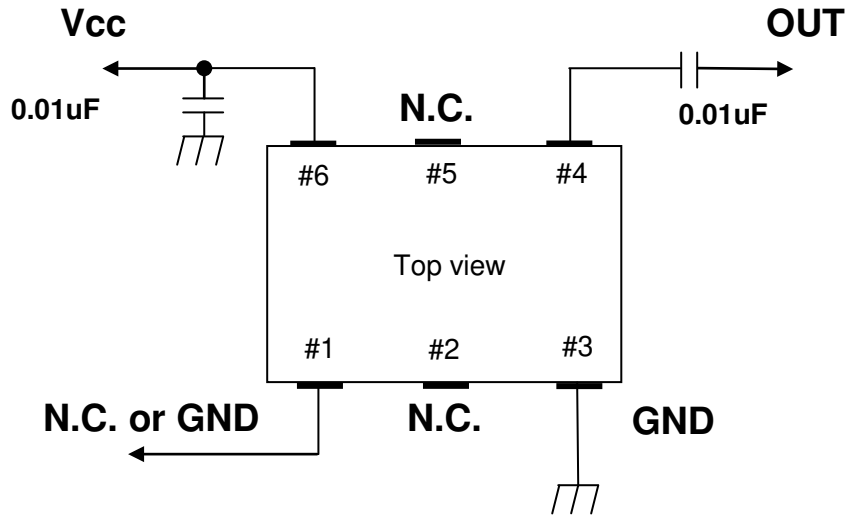
3. Electrical characteristics

Ta=-40 to +85deg.C, Vcc=1.8V, Load=10kohm//10pF

	Item	MIN.	TYP.	MAX	Unit	Conditions	Remarks
1	Temp characteristics	-0.5	---	+0.5	$\times 10^{-6}$	Ta= -30 to +85 deg.C	On the basis of 25deg.C frequency
		-4.0	---	+4.0	$\times 10^{-6}$	Ta= -40 to -30 deg.C	
2	Voltage characteristics	-0.2	---	+0.2	$\times 10^{-6}$	1.8V+/-0.1V	
3	Load characteristics	-0.2	---	+0.2	$\times 10^{-6}$	10k Ω //10pF+/-10%	
4	Aging characteristics	-1.0	---	+1.0	$\times 10^{-6}/Y$	1year	at 25+/-2 deg.C
5	Frequency tolerance	-2.0	---	+2.0	$\times 10^{-6}$	After 2 times reflow soldering	at 25+/-2 deg.C
6	Current	---	---	2.0	mA		
7	Output voltage	0.8	---	---	Vp-p		
8	Harmonics	---	---	-8.0	dBc		
9	Phase noise	---	---	-50	dBc/Hz	@1Hz offset	at 25+/-2 deg.C
		---	---	-82	dBc/Hz	@10Hz offset	
		---	---	-108	dBc/Hz	@100Hz offset	
		---	---	-130	dBc/Hz	@1kHz offset	
		---	---	-145	dBc/Hz	@10kHz offset	

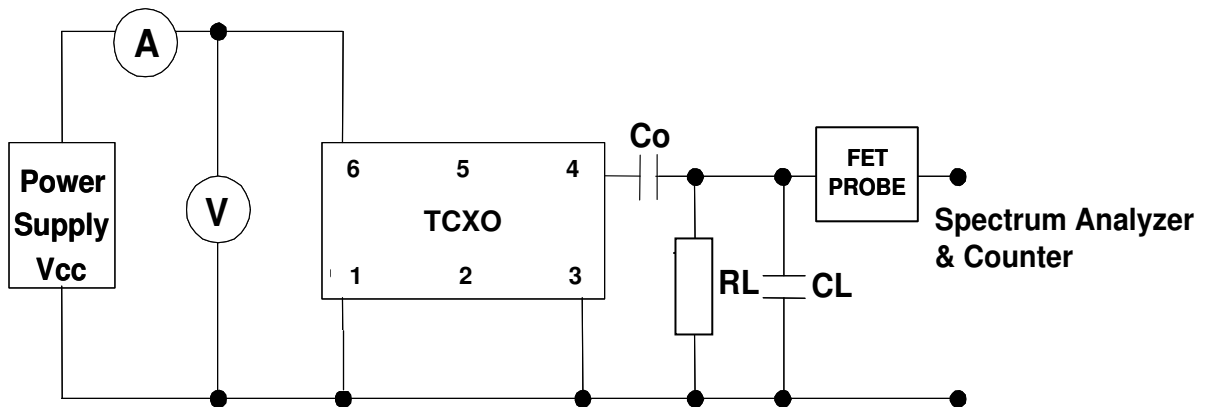
4. Circuit

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.
 And these Capacitor should be placed as close as possible to the pin(No.4 and No.6).



5. Test circuit

*Load 10kohm//10pF contains the internal impedance of FET probe.



6. Environment mechanical characteristics

	Item	Conditions	Remark
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=-40 to +85deg.C 30min. each 10cycles	
5	Drop test	A test piece (100g) made of Teflon is dropped 3cycles (1cycle: 6 directions) from the height of 150cm on hard board	
6	Vibration test	10 to 55 to 10Hz 1.5mm constant amplitude 1min. period X, Y, Z direction each 2H total 6H.	
7	Solder heat test	All terminal electrode shall be soldered at temperature of 350+/-5deg.C for 3+/-1sec. using a soldering iron.	
8	Solderability	Dip each of terminal electrode into 230+/-5deg.C solder pod for 5+/-0.5sec. after close, the test area of loads surfaces must be covered loads 90% by solder.	
9	Reflow soldering	Reflow soldering at 2times.	

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

Judge

Item	Specification
At 25deg.C frequency	+/-2.0ppm max(Before and After)

7. Reflow profile

7-1. Preheat: $180 \pm 0/-10$ deg.C, 120sec (max)7-2. Peak Temperature: $260 \pm 0/-10$ deg.C, 10sec (max)

7-3. PC-Board

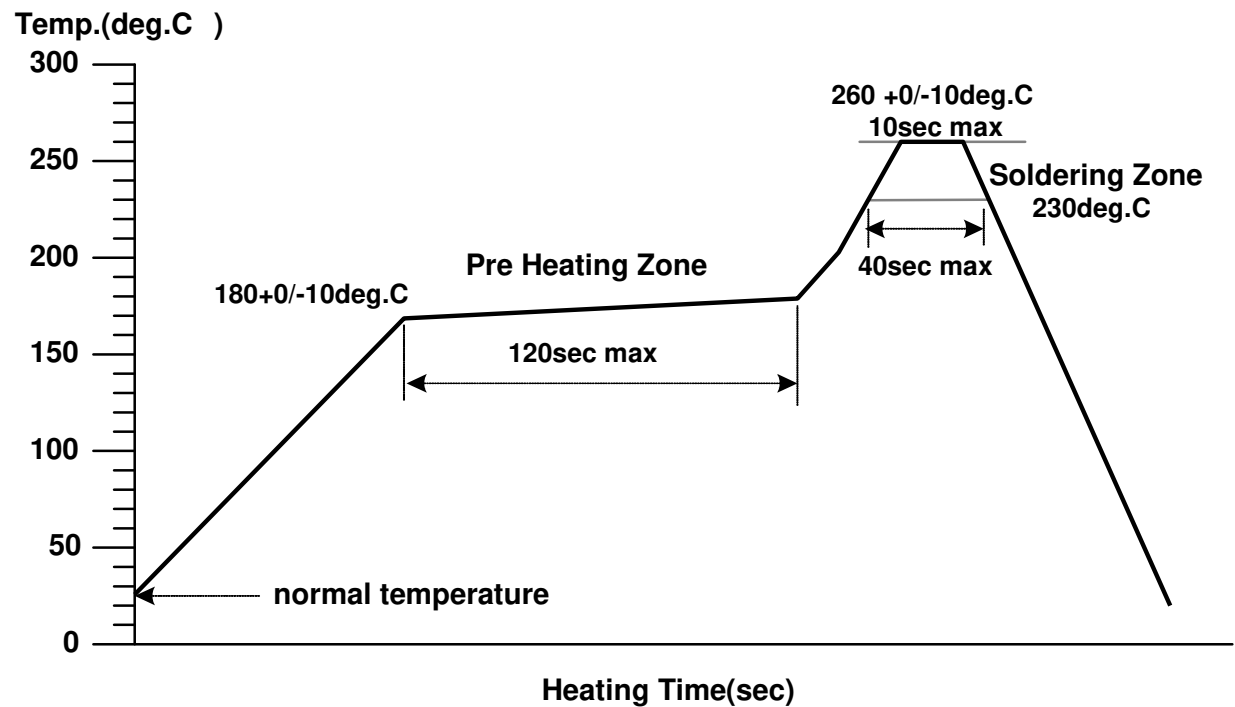
Material : FR-4

Size : 140mm*110mm

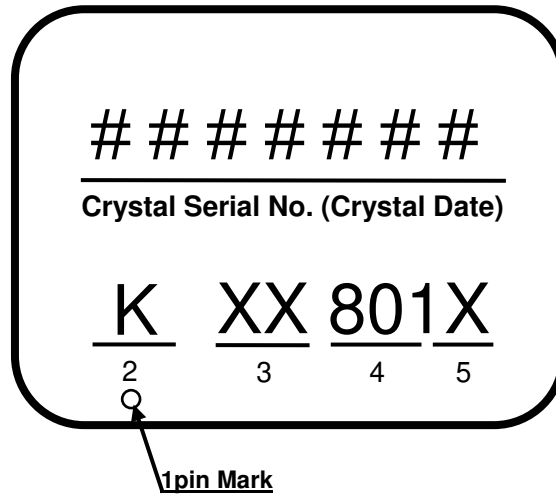
Thickness : $t=0.8$ mm

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

Reflow Soldering Condition



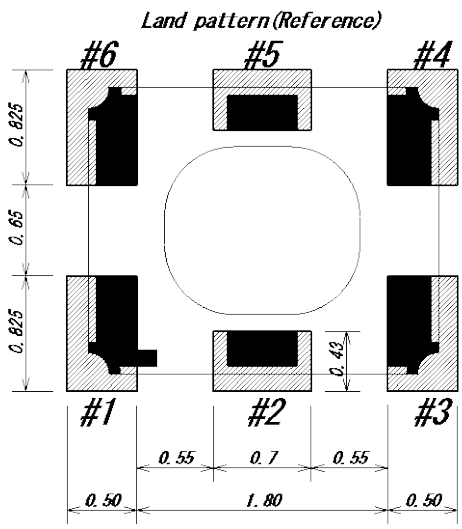
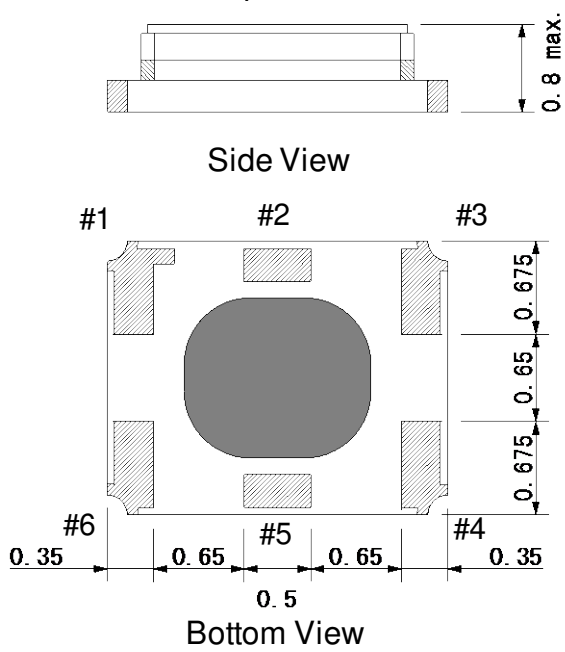
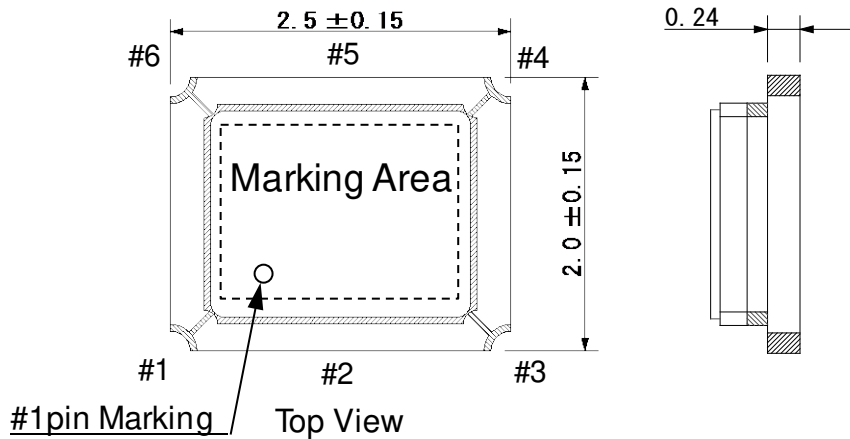
8. Marking contents



*Laser Marking

	Contents	Example
1	1Pin identifier	○
2	Control Code1	K
3	Control Code2	XX
4	Weekly Code.	801 *The 2018 1st week 802 *The 2018 2nd week
5	Control Code3	X *Specification Code (Blank or alphanumeric)

9. Dimensions



Note1
Terminal Coplanarity: 100um max

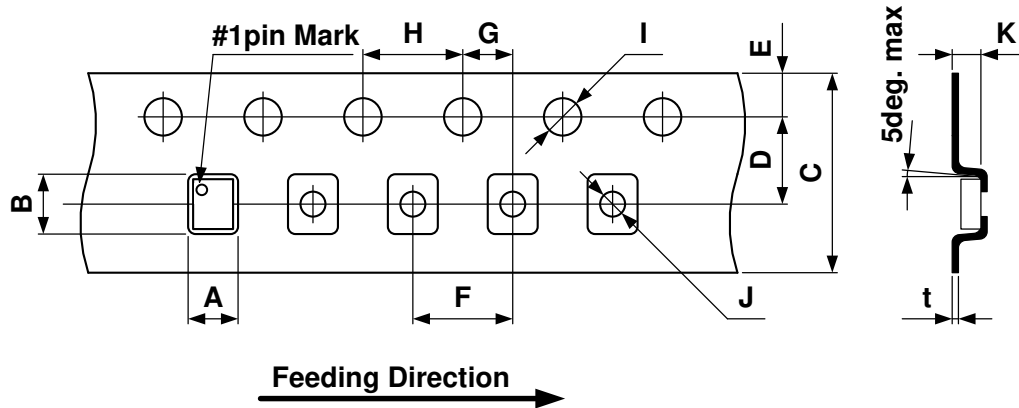
Note2
Electrode : Cu + Ni + Au
(10μ min+3μ min+0.03μ min)

	Pin Connection
# 1 pin	N.C. or GND
# 2 pin	N.C.
# 3 pin	GND
# 4 pin	Output
# 5 pin	N.C.
# 6 pin	Vcc

Unit: mm

10. Tape & Reel

10-1. Tape specification



10-1-1. Carrier Tape material : PS Included Carbon

10-1-2. 1pin Mark is positioned on right side against the direction of feed.

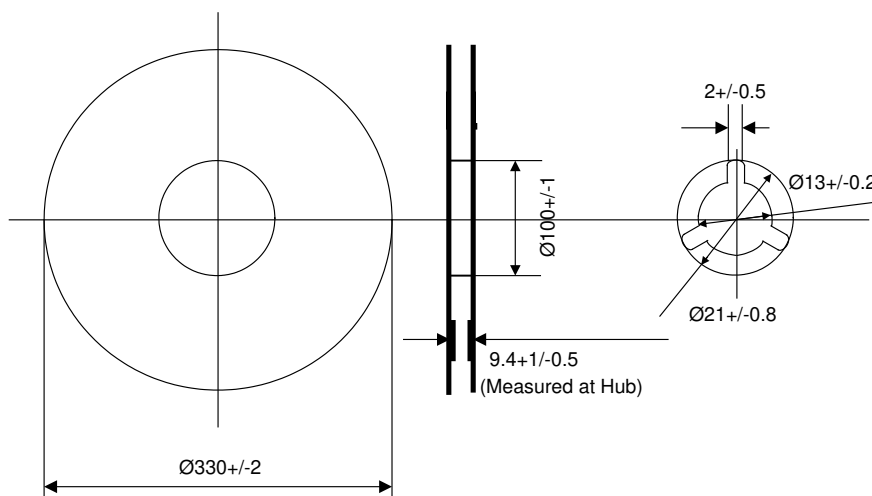
Unit: mm

Symbol	A	B	C	D	E
Dimension	2.40+/-0.1	2.90+/-0.1	8.00+0.3/-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	Φ1.1+/-0.1

Symbol	K	t
Dimension	1.15+/-0.1	0.25+/-0.05

10-2. Reel specification



Unit : mm

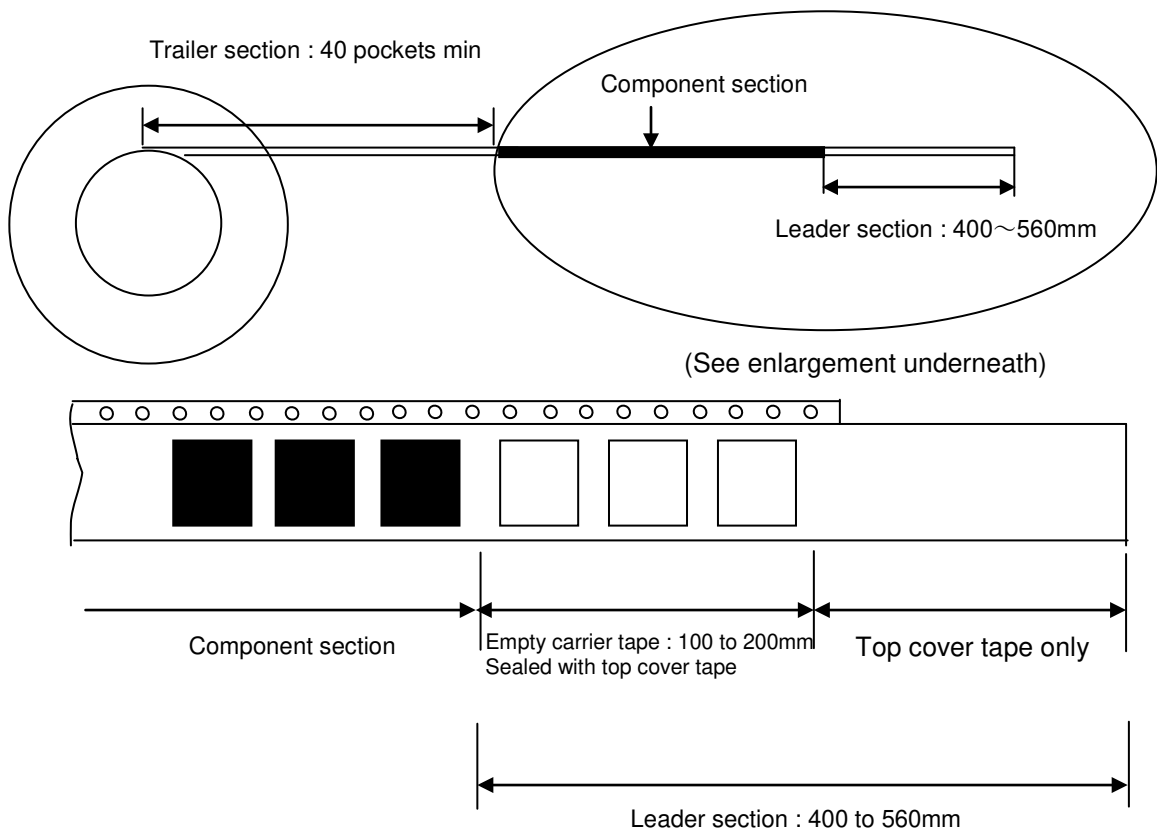
10-2-1. Reel material: PS Included Carbon

10-2-2. Reel unit: 12,000pcs 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 positioned on upper side against the direction of feed.
No missing components, excluding empty place.



10-4. Shipping label

Following item shall be listed on reel, bag and box.

“Customer’s name”, “Parts No”, “Lot No”, “Quantity”, “Order No”, “Date of manufacture”

The form of the label conforms to JEITA standard pattern C-3.

11. Top Cover breaking and peeling force

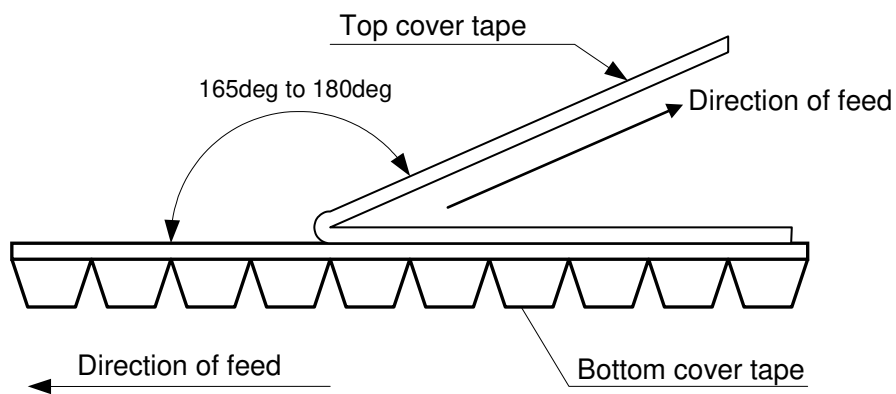
11-1. Reel Angle: 165 to 180deg

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 / minute



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 to 40deg.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%)
- 12-5. Disapprove of washing.
- 12-6. Unless we receive request for modification within 1 month from the issue date of this KCD 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. This product is intended to be used for general electronic equipment (information equipment, communication equipment, audio visual equipment, measuring equipment, home electric appliances, etc.). Devices and systems that are required for special quality and reliability, and whose failure or malfunction directly threatens human lives or that may cause harm to the human body (traffic equipment, safety equipment, aircraft and space, nuclear power control, life support equipment Please contact us in advance in case of using it for medical equipment including medical equipment etc.)..
- 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.
- 12-10. Please keep it at the place that was the ESD protective.
Human model 1.5kohm 100pF : +/-1000V
Machine model 0kohm 200pF : +/-200V

13. Production place

13-1 Manufacturer

KYOCERA Crystal Device Corporation.

13-2 The site of the Factory

1)5850 Higasine-Koh, Higasine-shi, Yamagata, 999-3701, Japan

2) 3-11-1 Osachi Kohagi, Okaya-shi, Nagano, 394-8550 Japan

14. Parts Numbering Guide

KT2520K 37400 Z A W 18 T BS
A B C D E F G H

- A. Series (2.5x2.0 SMD KT2520K)
- B. Frequency (37.4MHz)
- C. Frequency temperature accuracy (Z: Special specification)
- D. Minimum temperature range (A: -40deg.C)
- E. Maximum temperature range (W: +85deg.C)
- F. Supply voltage (18: 1.8V)
- G. Control voltage stability (T: TCXO)
- H. Customer special model Suffix