

# 深圳市维拓精电科技有限公司

## WTL International Limited

### APPROVAL SHEET

DESCRIPTION :	2.5*2.0mm 4 Pads SMD Crystal Oscillator			
NOMINAL FREQ.:	40.000000MHz			
WTL P/N:	WTL2B80383MC			
VERSION:	1			
DATE:	2021.05.19			
Customer	Customer P/N			
<b>IBS</b>	/			
Customer Signature	WTL			
	Approved by: <i>Kevin Liu</i>			
	Checked by: <i>Shu Ping</i>			
	Issued by: <i>Shengbiao</i>			
<b>REVISION HISTORY</b>				
Revised Page	Revision Content	Date	Ref. No.	Reviser



## CONTENT CATALOG

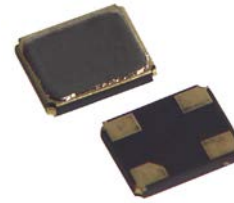
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Attachment(s):

- 1.Product Specification Sheet
- 2.Electrical Testing Report
- 3.Reliability Report
- 4.ICP Test Report (SGS)

**FEATURE**

- Typical 2.5×2.0×0.9mm ceramic SMD package
- Tight symmetry (45 to 55%) available
- Operation voltage: 3.3V
- Tri-state enable/disable



**APPLICATIONS**

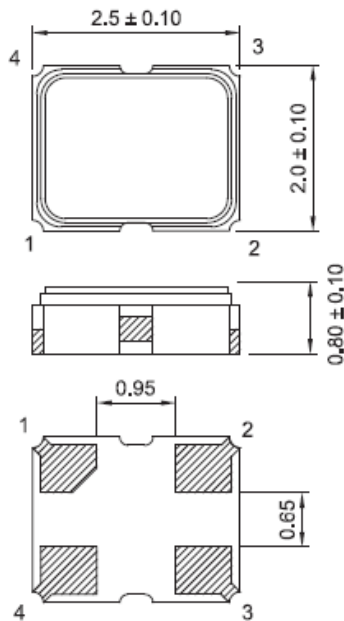
- WLAN/WIMax
- Mobile Phone
- DSC, Set-top Box, HDTV

**1、ELECTRICAL SPECIFICATIONS**

Parameter		Min.	Typ.	Max.	Units	Test Condition
1.1	Nominal Frequency	40.000000			MHz	
1.2	Frequency stability vs. operating temperature range	-25		+25	ppm	Inclusive of initial tolerance at 25°C, 1st year aging at 25°C, and variations over operating temperature, rated power supply voltage and load.
	Aging	-3		+3	ppm	Frequency drift in first year
1.3	Operating Temperature Range	-20		+70	°C	The operating temperature range over which the frequency stability is measured
1.4	Storage Temperature Range	-55		+125	°C	
1.5	Supply voltage	2.97	3.3	3.63	V	
1.6	Current			15	µA	At maximum supply voltage
1.7	Output waveform	CMOS				
1.8	Duty Cycle	45	50	55	%	
1.9	Start Time			2	mSec	
1.10	Transition Time :Rise/Fall Time			2	nSec	
1.11	Output Level	Out High(Logic"1")	2.97		V	
		Out Low(Logic"0")			0.99	V
1.12	Output Load			15	pF	
1.13	Tri-State	Output Active	2.31 or floating		V	Pin 1 Tri-state
		Output in High-Impedance			0.99	V
1.14	Standby current			10	µA	

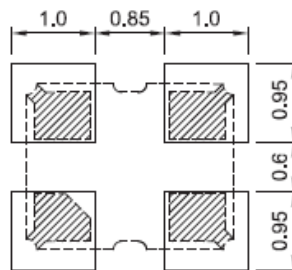
**REMARK:** SPECIFICATIONS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE CONFIRM WITH OUR SALES ENGINEER.

## 2、DIMENSIONS (Unit: mm)



PAD FUNCTION:  
 1:ENABLE CONTROL  
 2:GND  
 3:OUT  
 4:VDD

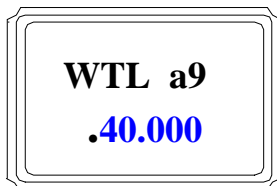
Suggested Layout



Pin	Function
#1	Tri-State/NC
#2	GND
#3	Output
#4	VDD

PIN FUNCTIONS

## 3、MARKING

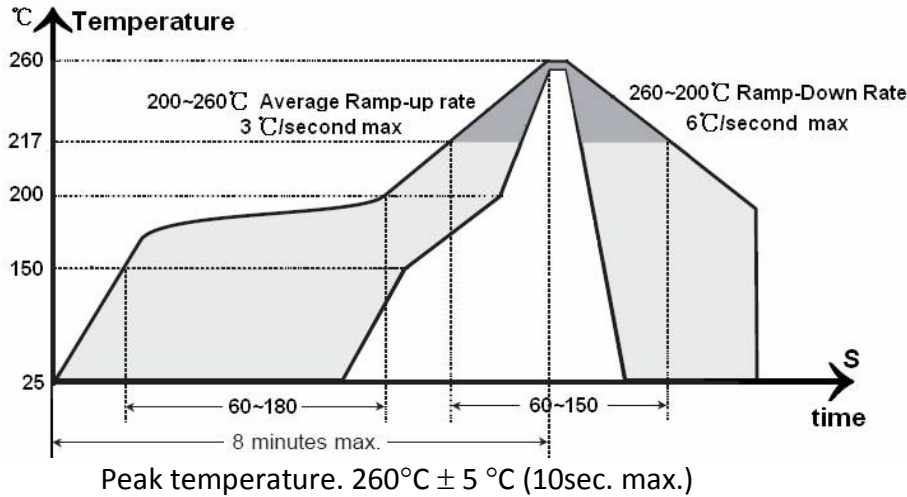


- WTL → Brand Logo
- .40.000 → Frequency ( MHz )
- a → Week ( a、 b、 c...z、 A、 B、 C...Y、 Z ,from 1 to 52week )
- 9 → YEAR ( 8=2018year, 9=2019year, 0=2020year....)

Marking Instruction :

The date code was marked on the crystal body, which will be easily traced back in case of quality issue.

## 4、SUGGESTED REFLOW PROFILE



## 5、RELIABILITY SPECIFICATIONS

Item	Conditions	Result
Low Temp. Storage (MIL-STD-883)	Put the crystal into the -40°C±2°C constant temperature box for 500±2 H, Measurement taken after 2 hour.	ΔF≅±5 PPM
High Temp. Storage (MIL-STD-883)	Put the crystal into the +100°C±2°C constant temperature box for 500±2 H, Measurement taken after 2 hour.	ΔF≅±5 PPM
High Temp & Humidity (JIS C5023)	Put the crystal into the constant temperature & humid with the temperatures 85°C±3°C and the humidity 98% for 500±2 H. Measurement taken after 2 hour.	ΔF≅±5 PPM
Thermal Shock (MIL-STD-883)	Put the crystal into the constant temperature-55°C±2°C for 30±1M, then change the temperature to +85°C±2°C for 30±1M, the total is 100times. Measurement taken after 2 hour.	ΔF≅±5 PPM
Resistance To Soldering Heat (MIL-STD-202)	Passed through the re-flow oven under the following condition. Preheat to 150°C±5°C for 60 to 120sec, and peak 265°C±5°C for 10s±3sec. Measurement taken after DUT being left at room temperature for at 24±2 hours	ΔF≅±5 PPM
Drop Test (JIS C6701)	The crystal fall off the cement floor with the height 100cm±5cm for 3 times . Measurement taken after 2 hour.	ΔF≅±5 PPM
Vibration Test (MIL-STD-883)	Apply 0.75mm vibration at sweep frequency 10~500 Hz, for 2h. 10 cycles in each direction of 3 axis. Measurement taken after 2 hour.	ΔF≅±5 PPM
Shock MIL-STD-202F	Peak 1000m/s <sup>2</sup> , normal width 6ms half sine wave form, 3.7m/s, 3 perpendicular axis of samples, 3 cycles / direction, total 18 cycles. Measurement taken after 2 hour.	ΔF≅±5 PPM
Fine Leak (MIL-STD-883)	Helium Bombing 4.5kgf/cm <sup>2</sup> for 2 hr	Less than 1*10 <sup>-8</sup> atm.c.c./sec, Helium
Solderability	In 245 ± 5°C solder bath for 2 ± 0.5 seconds. 8-12X magnifier.	Terminals shall be covered more then 95% with solder.

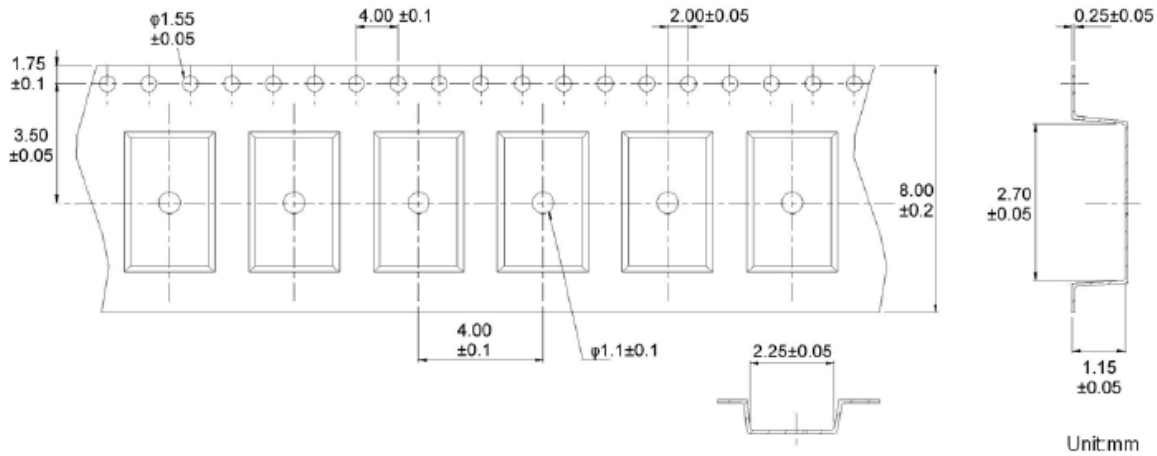
## 6、SUBSTANCES IN PRODUCT (weigh:16.5mg)

Drawing number	Component Part		Homogeneous Material						
			Name of part	Weigh of Material (mg)	Material name	Element name	CAS No.	weight of Element(mg)	Conten(w t%)
2520 OSC	Lid	2.303	Kovar	Fe	7439-89-6	1.13	53.81%		
				Ni	7440-02-0	0.6218	29.61%		
				Co	7440-48-4	0.3419	16.28%		
				C	7440-44-0	0.00002	0.00%		
				Si	7440-21-3	0.0008	0.04%		
				Mn	7439-96-5	0.0055	0.26%		
			Nickel	Ni	7440-02-0	0.203	100.00%		
			Base	11.487	Ceramic	Al2O3	1344-28-1	5.88	91.43%
	SiO2	14808-60-7				0.275	4.28%		
	Cr2O3	1308-38-9				0.096	1.50%		
	MgO	1309-48-4				0.044	0.69%		
	CaO	1305-78-8				0.071	1.10%		
	Others	---				0.064	1.00%		
	Metalization	W			7440-33-7	1.539	95.00%		
		Mo			7439-98-7	0.049	3.00%		
		Others			---	0.032	2.00%		
	Ni plating	Ni			7440-02-0	0.312	91.90%		
		Co			7440-48-4	0.028	8.10%		
	Au plating	Au			7440-57-5	0.07	100.00%		
		Kv Ring			Fe	7439-89-6	1.365	54.05%	
	Co				7440-48-4	0.429	17.00%		
	Ni				7440-02-0	0.731	28.95%		
	Braze Material	Ag			7440-22-4	0.425	85.02%		
		Cu			7440-50-8	0.075	14.98%		
	Blank	0.4			Quartz	SiO2	14808-60-7	0.4	100.00%
	Electrode	0.07			Silver	Ag	7440-22-4	0.1	100.00%
						Ag	7440-22-4	0.0229	76.30%
	Silver Glue	0.03	Silicon resin	Silicone Resin	----	0.0018	5.90%		
				Silsesquioxanes, Me	68554-70-1	0.0026	8.70%		
				n-Dodecane	112-40-3	0.0025	8.30%		
				Alkoxysilane	3388/4/3	0.0002	0.80%		
				IC	0.16	Sillicon	Si	7440-21-3	0.1589
	other material	-----	0.0011				0.68%		
Gold wire	0.03	Gold	Au	7440-57-5	0.029997	99.99%			
			other material	-----	0.000003	0.01%			
IC attach glue	0.02	Epoxy resin	Silver powder	7440-22-4	0.016	80.00%			
			Epoxy resin	-----	0.004	20.00%			

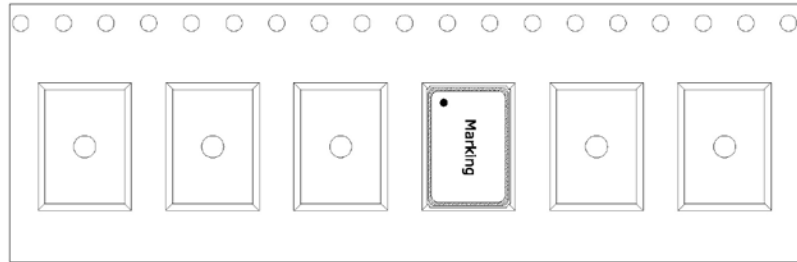
All the products we provide meet the requirements of RoHS and Reach regulations, and we send SGS for ICP test every year.

## 7、PACKING SPECIFICATIONS (Unit: mm)

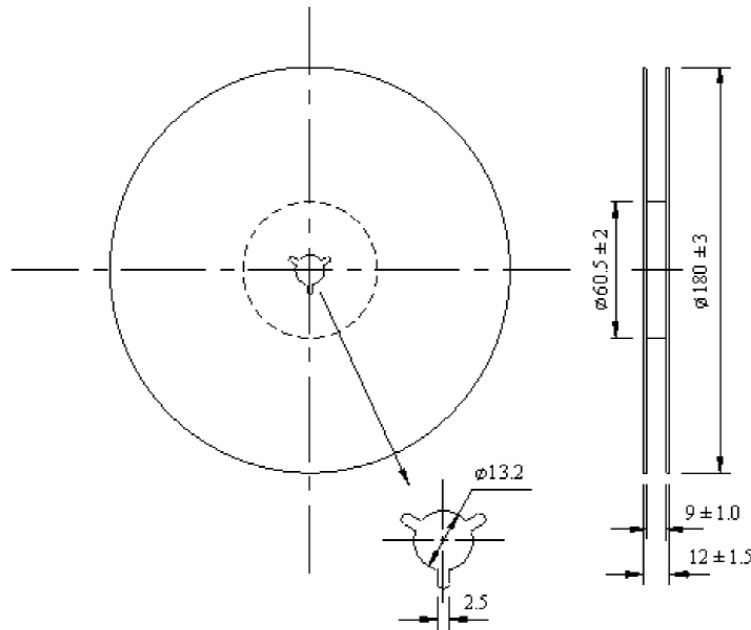
**TAPE SPECIFICATION:**



**THE DIRECTION OF PACKING:**



**OUTLINE DIMENSION:**



Q'ty: 3000pcs/Reel

**8、WTL PART NUMBER SYSTEM :**

For example: WTL8M26106CH

[Instructions: for project management, WTL will trace back the part number to developer wherever it goes]

WTL - 8M - 26106 - CH

WTL: Brand

8M : Package Code

26106: Serial number , flow code , without any rules

CH: WTL Developer Code, for example: VH,CH,PZ,RZ,ML