

深圳市维拓精电科技有限公司

WTL International Limited

APPROVAL SHEET

DESCRIPTION :	1.6*1.0mm 2 Pads SMD Tuning Fork Crystal			
NOMINAL FREQ.:	32.768KHz			
WTL P/N:	WTL8W80437MC			
VERSION:	1			
DATE:	2021.11.14			
Customer	Customer P/N			
IBS				
Customer Signature	WTL			
	Approved by: <i>Kavin Liu</i>			
	Checked by: <i>Shu Ping</i>			
	Issued by: <i>colin zhan</i>			
REVISION HISTORY				
Revised Page	Revision Content	Date	Ref. No.	Reviser



CONTENT CATALOG

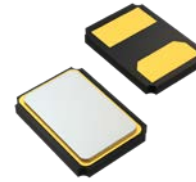
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Attachment(s):

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

FEATURE

- Ultra small size 1.6×1.0×0.5 mm
- High reliability environmental performance
- High frequency stability and high precision
- Designed for automatic mounting and reflow soldering
- RoHS Compliant / Pb Free

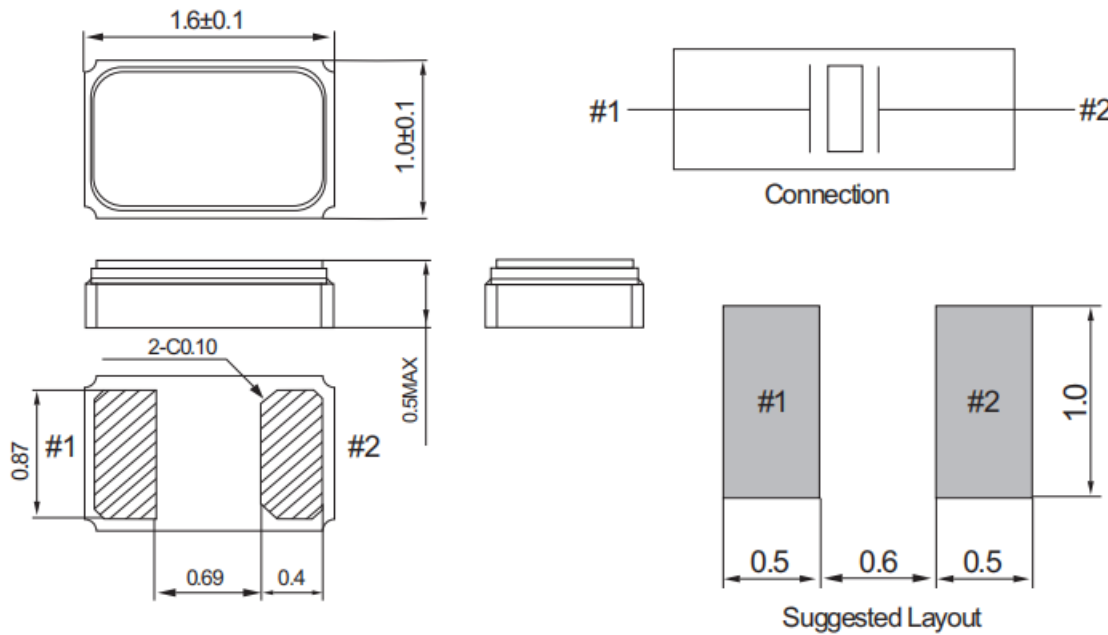


1、 ELECTRICAL SPECIFICATIONS

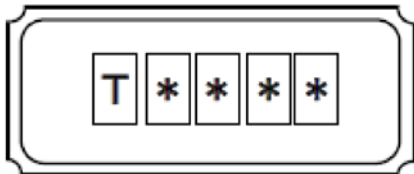
Hold Style	1.6X1.0MM SMD TUNING FORK CRYSTAL
Nominal Frequency	32.768 KHz
Frequency Tolerance (at 25°C)	±10 PPM
Load Capacitance(CL)	7pF
ESR	90 kΩ Max
Turnover Temperature	25 ± 5°C
Parabolic Coefficient	-0.04ppm/°C ²
Operating Temperature Range	-40 °C to + 85 °C
Storage Temperature Range	-55 °C to +125 °C
Shunt Capacitance (C ₀)	1.3pF Typ.
Dynamic Capacitance (C ₁)	6.5 fF Typ.
Driver Level (Typical)	0.1μW
Driver Level(Max)	0.5μW
Insulation Resistance	More than 500MΩ at DC100V
Aging @25°C 1 st year (Max)	±3ppm/year

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

2、 DIMENSIONS (Unit: mm)



3、 MARKING



T □ □ □ □
 *1 *2 *3 *4 *5

- *1 Product name
- *2 Year of Production(Last digit of year)
- *3 ,4 Week of Production(01 ~ 52)
- *5 CL
- #CL : A :12.5pF B:9pF C:7pF D:6pF

Marking Instruction :

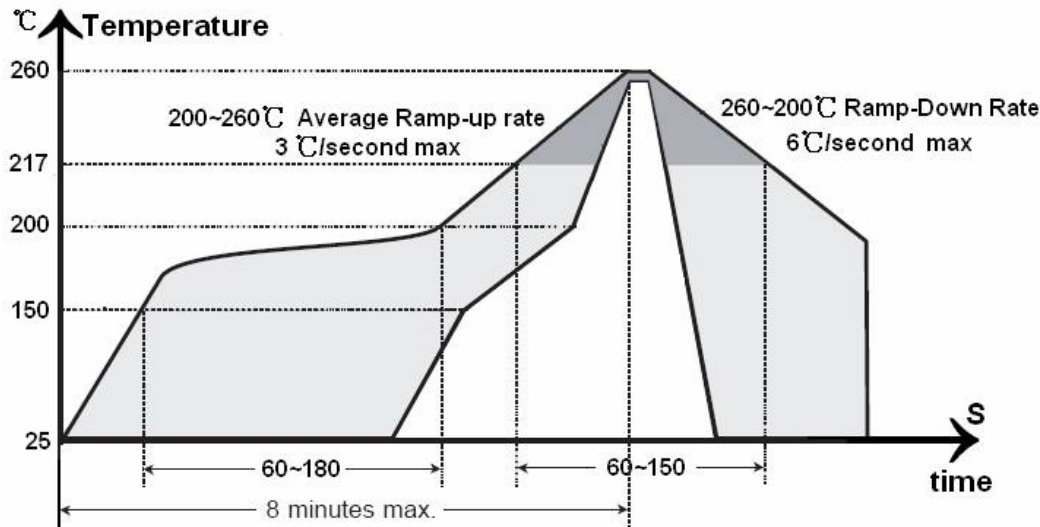
The date code was marked on the crystal body, which will be easily traced back in case of quality issue.

4、RELIABILITY SPECIFICATIONS

Item	Conditions	Result
Low Temp. Storage	After storage under -40°C for 1000 hours, measure at room temperature. (*1 *3)	$\Delta f/f_0 = \pm 20\text{ppm}$
High Temp. Storage	After storage under 125°C for 1000 hours, measure at room temperature. (*1 *3)	$\Delta f/f_0 = \pm 20\text{ppm}$
High Temp & Humidity	After storage under $+85\pm 2^{\circ}\text{C}$, 85 % RH for 1000h, measure at room temperature. (*1 *3)	$\Delta f/f_0 = \pm 20\text{ppm}$
Thermal Shock	Measure at room temperature after 100 cycles. $-55^{\circ}\text{C} \leftrightarrow +125^{\circ}\text{C}$ for 30 minutes. (*1 *3)	$\Delta f/f_0 = \pm 20\text{ppm}$
IR Reflow	Measure after 2 time reflow under reflow profile specified (*1)	$\Delta f/f_0 = \pm 20\text{ppm}$
Mechanical shock	Measure after 100g-dummy (SII Standard) drop from 1500mm height on the concrete 3 directions 10times. (*2)	$\Delta f/f_0 = \pm 20\text{ppm}$
Vibration Test	Amplitude 1.5mm and 10~60Hz with cycle time 2~3 minutes in 3 direction (X,Y,and Z axis) each for 2 h. (*2)	$\Delta f/f_0 = \pm 20\text{ppm}$
Shear strength	Pressuring force $10\text{N}\times 10\pm 1\text{sec}$. according to IEC60068-2-21 (*2)	No peeling-off
Peel strength	Pressuring force $10\text{N}\times 10\pm 1\text{sec}$. according to IEC60068-2-21 (*2)	No peeling-off
Bending test	Bending: $3\text{mm}\times 5\pm 1\text{sec}$. Thickness of the testing board: 1mm (*2)	No peeling-off

1. Each test shall be done independently. (not in series tests)
2. *1: Measure after 24 hours left at room temperature.
3. *2: Measure after 2 hours left at room temperature.
4. *3: Pre conditions
 - (1) IR Reflow : 2 times
 - (2) Initial values shall be measured after 24 hours at room temperature.
5. Shift in series resistance after the above tests shall be less than $\pm 20\%$ or less than $\pm 20\text{k}\Omega$. In case of resistance to IR reflow and high temperature storage($\pm 125^{\circ}\text{C}$ for 1000 hours), shift in series resistance after the above tests shall be less than $\pm 30\%$ or $\pm 30\text{k}\Omega$.

5、SUGGESTED REFLOW PROFILE



Peak temperature. 260°C ± 5 °C (10sec. max.) Reflow is permitted 2 times

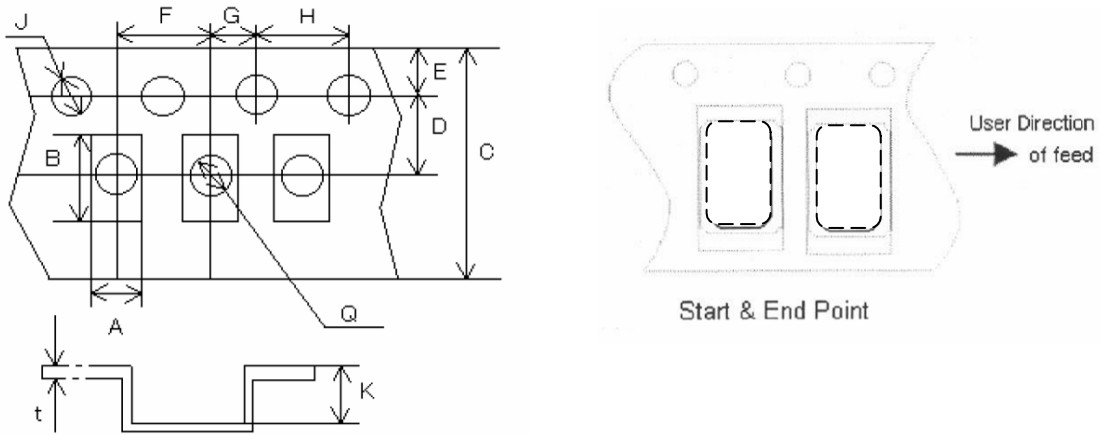
6、SUBSTANCES IN PRODUCT

Breakdown of component	Material Name	Substance Name	CAS No.	Substance Mass					Note	
				(mg)	(g)	(w%) / Part	(ppm) / Total Weight	(w%) / Total Weight		
Crystal Element	Crystal	Silicon Dioxide	SiO ₂	14808-80-7	1.2923	0.00129229	100.00	468219.29	46.82	
	Electrode	Chromium	Cr	7440-47-3	0.0108	0.00001083	100.00	3851.22	0.39	
	Electrode	Gold	Au	7440-57-5	0.0448	0.00004456	100.00	16145.49	1.61	
Lid	Kovar	Iron	Fe	7439-89-6	0.3582	0.00035820	53.33	129782.61	12.98	
		Cobalt	Co	7440-48-4	0.1141	0.00011410	16.98	41340.58	4.13	
		Nickel	Ni	7440-02-0	0.1957	0.00019570	29.13	70905.80	7.09	
		Manganese	Mn	7439-96-5	0.0029	0.00000290	0.43	1050.72	0.11	
		Silicon	Si	7440-21-3	0.0005	0.00000050	0.07	181.16	0.02	
		Chromium	Cr	7440-47-3	0.0003	0.00000030	0.05	108.70	0.01	
		Carbon	C	7440-44-0	0.0001	0.00000010	0.01	36.23	0.00	
	Plating	Nickel	Ni	7440-02-0	0.0720	0.00007200	100.00	26086.96	2.61	
Conductive adhesive		Silver	Ag	7440-22-4	0.0881	0.00008813	78.50	31931.16	3.19	
		Silicone resin	Si	Trade Secret	0.0081	0.00000810	7.20	2934.78	0.29	
		Silsesquioxanes, Me	C12H32O8Si8	68554-70-1	0.0081	0.00000810	7.20	2934.78	0.29	
		n-Dodecane	C12H26	112-40-3	0.0079	0.00000790	7.00	2862.32	0.29	
		Alkoxysilane	C11H22O4Si	3388-04-3	0.0001	0.00000010	0.10	36.23	0.00	
Ceramic package	Ceramic	Aluminum oxide	Al ₂ O ₃	1344-28-1	0.2799	0.00027988	50.99	101406.56	10.14	
		Manganese oxide	Mn2O3	1317-34-6	0.0108	0.00001079	1.88	3909.65	0.39	
		Silicon dioxide	SiO2	7631-86-9	0.0108	0.00001079	1.78	3909.65	0.39	
		Molybdenum oxide	MoO3	1313-27-5	0.0024	0.00000236	0.27	855.24	0.09	
		Magnesium oxide	MgO	1309-48-4	0.0024	0.00000236	0.16	855.24	0.09	
	Metalize	Molybdenum	Mo	7439-98-7	0.0816	0.00008160	14.64	29566.73	2.96	
		Seal ring	Iron	Fe	7439-89-6	0.0548	0.00005463	9.74	19792.61	1.98
	Nickel		Ni	7440-02-0	0.0287	0.00002866	5.23	10385.01	1.04	
	Cobalt		Co	7440-48-4	0.0169	0.00001686	3.07	6108.83	0.61	
	Silver solder	Silver	Ag	7440-22-4	0.0327	0.00003271	5.71	11851.13	1.19	
		Copper	Cu	7440-50-8	0.0054	0.00000540	1.01	1954.83	0.20	
	Electrode	Nickel	Ni	7440-02-0	0.0185	0.00001855	3.46	6719.71	0.67	
		Cobalt	Co	7440-48-4	0.0051	0.00000506	0.87	1832.65	0.18	
		Gold	Au	7440-57-5	0.0067	0.00000674	1.20	2443.53	0.24	
		Thallium	Tl	7440-28-0	0.0000	0.00000000	<1	0.81	0.00	
		Total				2.760000	0.00276000		1000000	100.00

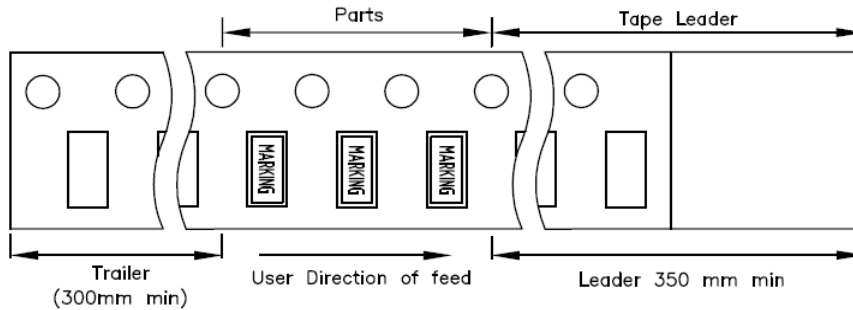
All the products we provide meet the requirements of RoHS and Reach regulations, and we send SGS for ICP test every year.

7、PACKING SPECIFICATIONS (Unit: mm)

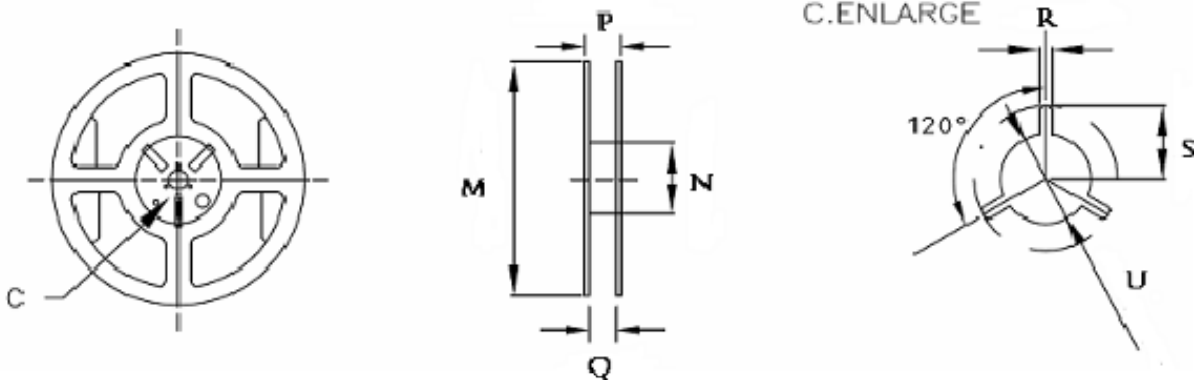
TAPE SPECIFICATION:



Item	A	B	C	D	E	F	G	H	J	K	t
DIM	1.15	1.78	8.0	3.5	1.75	4.0	2.0	4.0	1.5	0.65	0.25



OUTLINE DIMENSION:



Item	M	N	P	Q	R	S	U
DIM	178	60.2	11.5	8.0	2.5	11.0	13.0

Reel Q'ty: 3000pcs/Reel

8、WTL PART NUMBER SYSTEM :

For example: WTL8W23226CH

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

WTL - 8W - 23226 - CH

WTL: Brand

8W : Package Code

23226: Serial number, flow code , without any rules

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