

深圳市维拓精电科技有限公司
WTL International Limited

APPROVAL SHEET

DESCRIPTION :	6.0*3.5mm 4 Pads SMD Quartz Crystal			
NOMINAL FREQ.:	32.768MHz			
WTL P/N:	WTL6M21054			
VERSION:	1			
DATE:	2023.03.16			
Customer	Customer P/N			
MICROS sp.j. W.Kedra i J.Lic	/			
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

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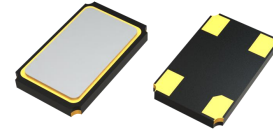
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Attachment(s):

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

FEATURE

- SMD type crystal units
- High precision and high frequency stability
- Excellent heat resistance and environmental characteristics
- Designed for automatic mounting and reflow soldering
- RoHS Compliant / Pb Free

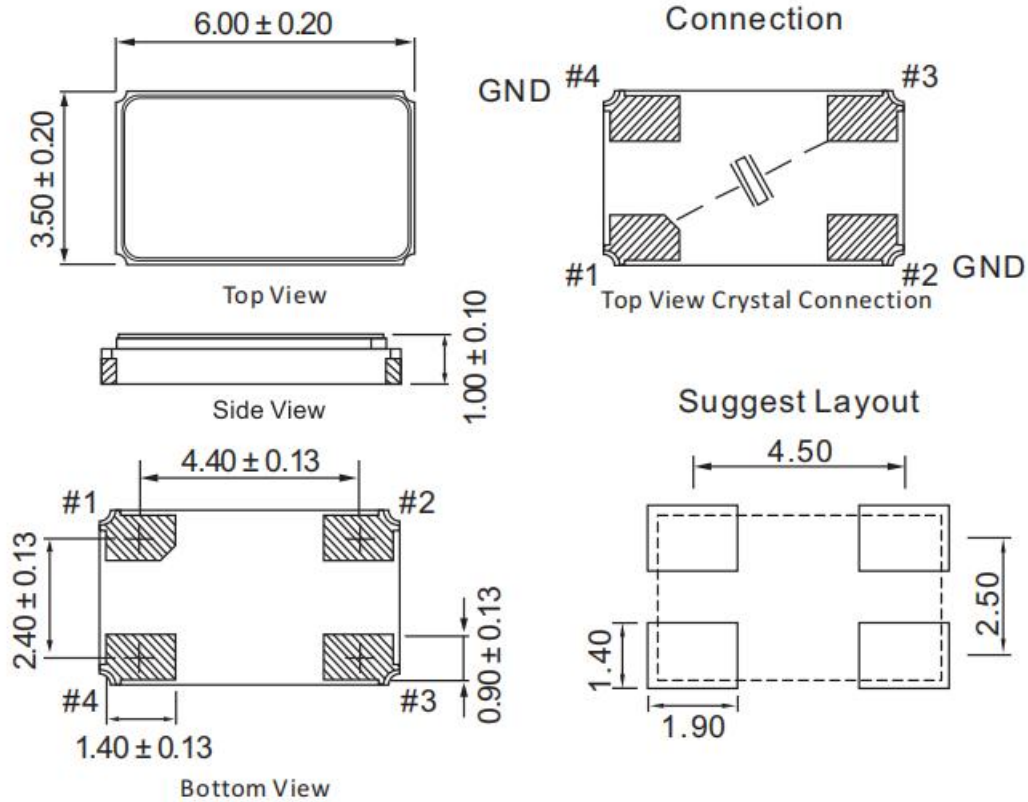


1、 ELECTRICAL SPECIFICATIONS

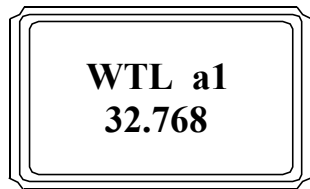
Hold Style	6035 Seam
Nominal Frequency	32.768MHz
Mode	Fundamental / AT
Frequency Tolerance (at 25°C)	±20ppm
Frequency Stability Over Operating Temperature Characteristics	±20ppm
Operating Temperature Range	-20°C ~ +70°C
Storage Temperature Range	-55°C ~ +125°C
Shunt Capacitance (C ₀)	5.0pF Max
Driver Level (Typical)	100μW
Load Capacitance(C _L)	18pF
ESR	40Ω Max
Insulation Resistance	More than 500Mohms 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

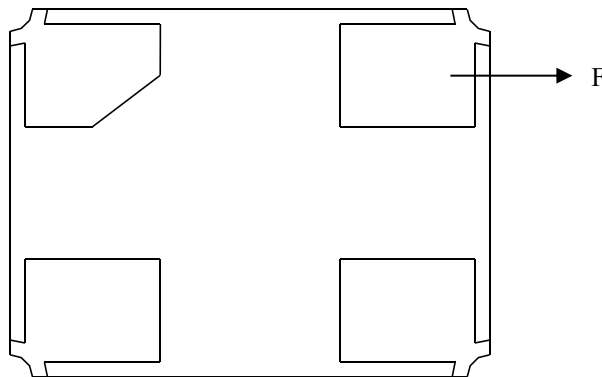
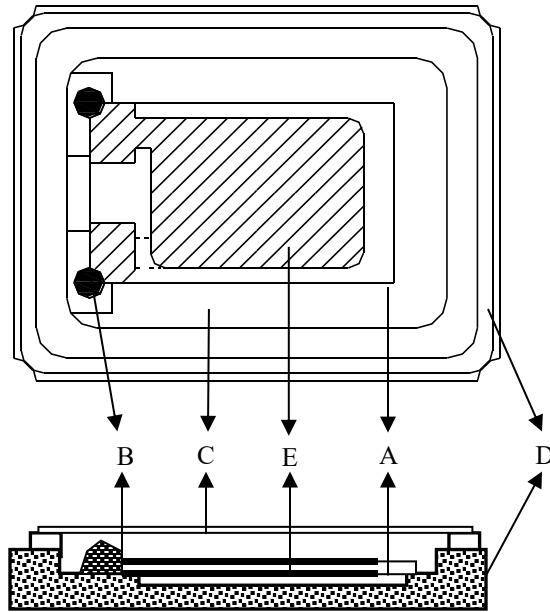


- WTL → Brand Logo
- 32.768 → Frequency (MHz)
- a → Week (a、b、c...z、A、B、C...Y、Z ,from 1 to 52week)
- 1 → YEAR (1=2021year, 2=2022year, 9=2029year....)

Marking Instruction:

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

4、STRUCTURE ILLUSTRATION

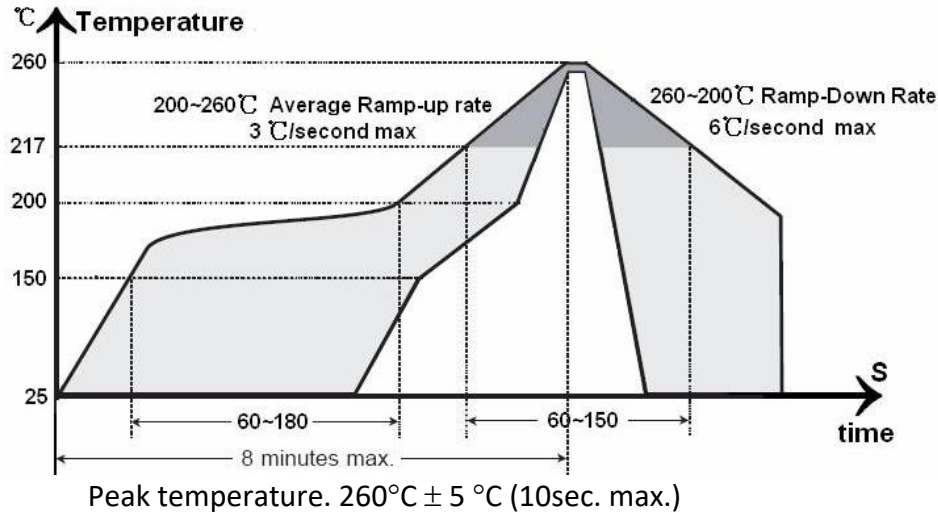


Parts		Material	QTY	COLOR
A	Blank	Mostly SiO ₂	1	White
B	Conductive paste	Ag:80%, silicone resin 10%	2	Greyish
C	Lid	Fe:52~56%,Ni:16~18%,Co:28~30%	1	Silvery
D	Package	Ceramic	1	Brown
E	Plating(blank)	Ag:99.99%	2	Silvery
F	Pad	Cu:6.6%,Au:0.2%,Fe:56%,Ni:18%	4	Golden

5、RELIABILITY SPECIFICATIONS

Item	Conditions	Result
Low Temp. Storage	Put the crystal into the $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ constant temperature box for 500 ± 2 H , Measurement taken after 2 hour.	$\Delta F \cong \pm 5$ PPM $\Delta RR \cong 15\%$
High Temp. Storage	Put the crystal into the $+100^{\circ}\text{C} \pm 2^{\circ}\text{C}$ constant temperature box for 500 ± 2 H, Measurement taken after 2 hour.	$\Delta F \cong \pm 5$ PPM $\Delta RR \cong 15\%$
High Temp & Humidity	Put the crystal into the constant temperature & humid with the temperatures $85^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and the humidity 98% for 500 ± 2 H. Measurement taken after 2 hour.	$\Delta F \cong \pm 5$ PPM $\Delta RR \cong 15\%$
Thermal Shock	Put the crystal into the constant temperature $-55^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 30 ± 1 M, then change the temperature to $+85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 30 ± 1 M, the total is 100times. Measurement taken after 2 hour.	$\Delta F \cong \pm 5$ PPM $\Delta RR \cong 15\%$
Resistance To Soldering Heat	Passed through the re-flow oven under the following condition. Preheat to $150^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 60 to 120sec, and peak $265^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 10 ± 3 sec. Measurement taken after DUT being left at room temperature for at 24 ± 2 hours	$\Delta F \cong \pm 5$ PPM $\Delta RR \cong 15\%$
Drop Test	The crystal fall off the cement floor with the height $100\text{cm} \pm 5\text{cm}$ for 3 times. Measurement taken after 2 hour.	$\Delta F \cong \pm 5$ PPM $\Delta RR \cong 15\%$
Vibration Test	Apply 0.75mm vibration at sweep frequency $10 \sim 500$ Hz, for 2h. 10 cycles in each direction of 3 axis. Measurement taken after 2 hour.	$\Delta F \cong \pm 5$ PPM $\Delta RR \cong 15\%$
Shock	Peak 1000m/s^2 , 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.	$\Delta F \cong \pm 5$ PPM $\Delta RR \cong 15\%$
Fine Leak	Helium Bombing 4.5kgf/cm^2 for 2 hr	Less than 1×10^{-8} atm.c.c./sec, Helium
Solder ability	In $245 \pm 5^{\circ}\text{C}$ solder bath for 2 ± 0.5 seconds. 8-12X magnifier.	Terminals shall be covered more then 95% with solder.

6、SUGGESTED REFLOW PROFILE



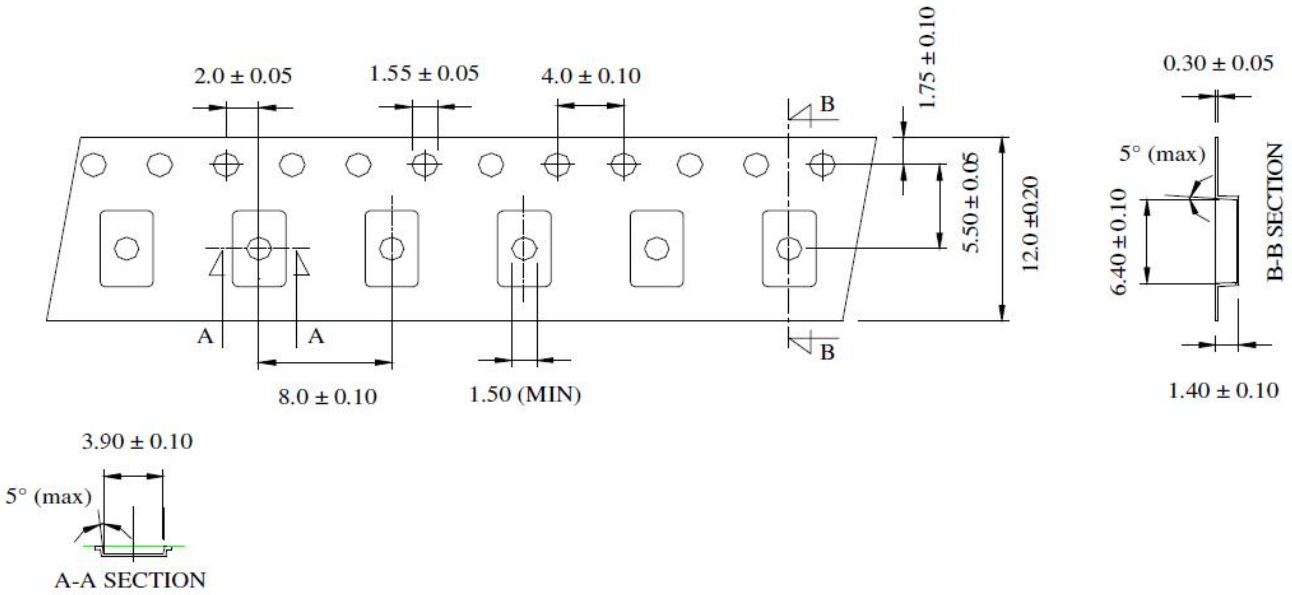
7、SUBSTANCES IN PRODUCT

Drawing number	Disassembly Unit/component description	Homogeneous Material Name.	Substance Name	CAS No.	Substance Mass. (mg)	Content Rate(%)per
SMD6035	Crystal blank	Quartz	SiO ₂	14808-60-7	1.4762	100.00%
	Electrode	Electrode-Ag	Ag	7440-22-4	0.3398	100.00%
	Package	Ceramics	Al ₂ O ₃	1344-28-1	47.5876	90.00%
			Mn ₂ O ₃	1317-34-6	2.1150	4.00%
			SiO ₂	7631-86-9	2.1150	4.00%
			MoO ₃	1313-27-5	0.5288	1.00%
			MgO	1309-48-4	0.5288	1.00%
		Kovar ring	Fe	7439-89-6	0.6159	53.00%
			Ni	7440-02-0	0.3370	29.00%
			Co	7440-48-4	0.2092	18.00%
		Plate	Au	7440-57-5	0.3312	19.00%
			Ni	7440-02-0	1.4119	81.00%
	Metallizing	Mo	7439-98-7	0.5810	100.00%	
	Solder	Ag	7440-22-4	1.2376	71.00%	
		Cu	7440-50-8	0.5055	29.00%	
	Lid	Kovar	Fe	7439-89-6	19.7893	48.50%
			Ni	7440-02-0	14.2809	35.00%
			Co	7440-48-4	6.5284	16.00%
			Mn	7439-96-5	0.2040	0.50%
	Conduct Adhesive	silver adhesive	Ag	7440-22-4	0.8938	70.00%
Pd			7440-05-3	0.0638	5.00%	
C ₁₁ H ₂₄			1120-21-4	0.1277	10.00%	
C ₁₂ H ₂₆			112-40-3	0.0638	5.00%	
SiO ₂			7631-86-9	0.1277	10.00%	

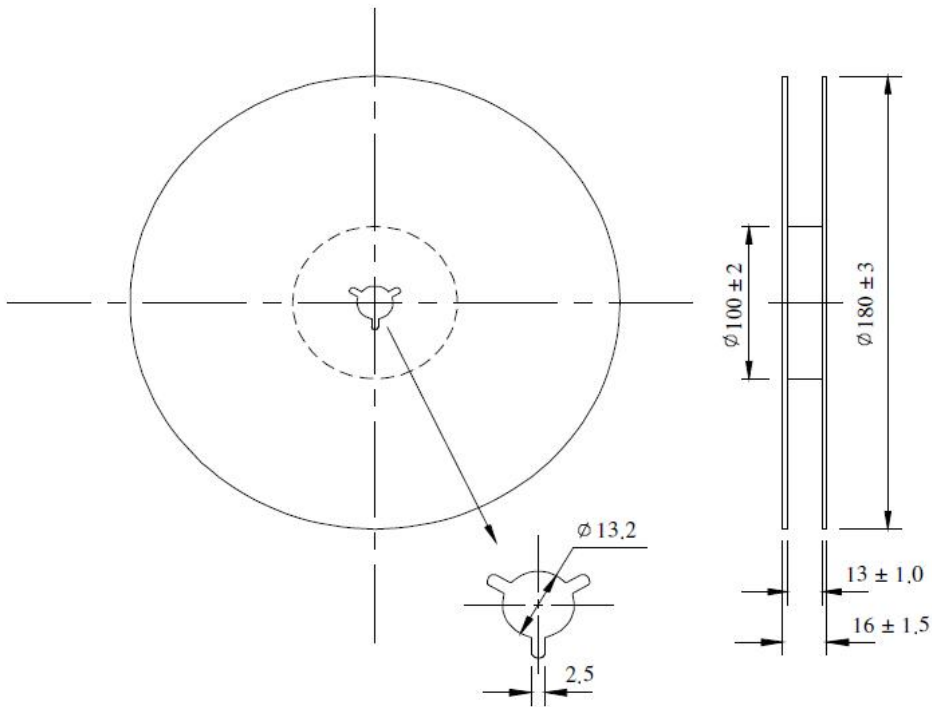
All the products we provide meet the requirements of RoHS and Reach regulations, and we send SGS for ICP test every year.

8、PACKING SPECIFICATIONS (Unit: mm)

TAPE SPECIFICATION:



OUTLINE DIMENSION



Q'ty: 1000pcs/Reel

9、WTL PART NUMBER SYSTEM :

For example: WTL6M25002CH

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

WTL - 6M - 25002 - CH

WTL: Brand

6M : Package Code

25002: Serial number, flow code, without any rules

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