



Victorlands Technical Specification

Product name	Quartz crystal unit
Model	2012/32.768KHz
Product code	K2A32768L5Q4B2
Product parameters	12.5PF/±20PPM
Product reliability	P. 2-8
Packing form	P. 4-5



1. QUARTZ CRYSTAL UNIT SPECIFICATION

Description : Quartz Crystal

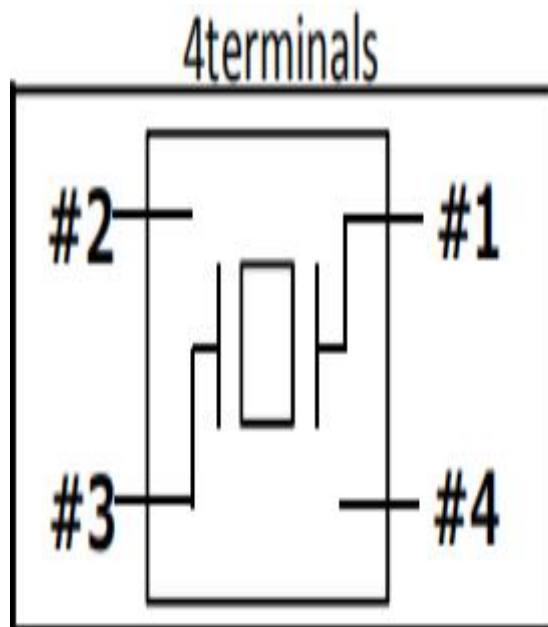
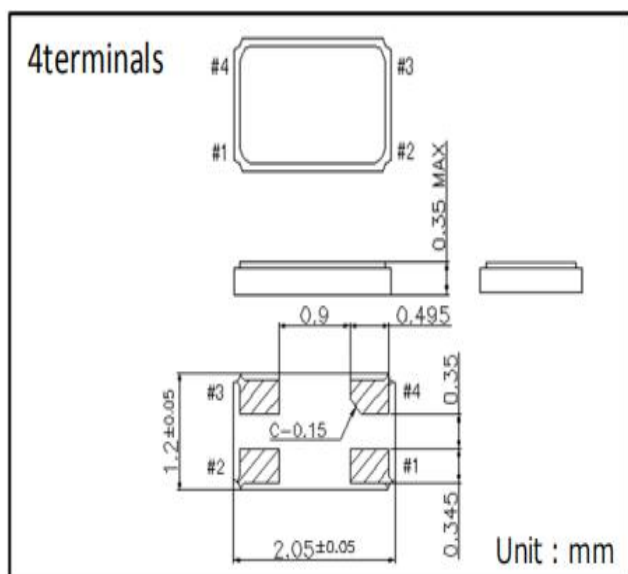
Product Type : SF-2012

Measure equipment : S&A 250B

Electrical Characteristics

	Item	Symbol	Electrical Specification				Notes
			Min.	Typ.	Max.	Units	
1	Nominal Frequency	FL	32.768000				KHz
2	Oscillation Mode		Fundamental				
3	Load Capacitance	CL	12.5				pF
4	Frequency Tolerance		-20		20	ppm	At 25°C ± 3°C
5	Equivalent Series Resistance	ESR			90	KΩ	
6	Drive Level	DL		0.1	0.5	μW	
7	Parabolic Coefficient		-	-	-0.04	PPM/°C ²	
8	Operating Temperature		-40		85	°C	
9	Storage Temperature		-40		85	°C	
10	Aging		-3		3	ppm	Per Year
11	Insulation Resistance		500			MΩ	At DC 100V
12	Shunt Capacitance	C0		1.5		pF	
13	Motional Capacitance	C1		6.50		fF	
14	Quality Factor	Q	13			K	

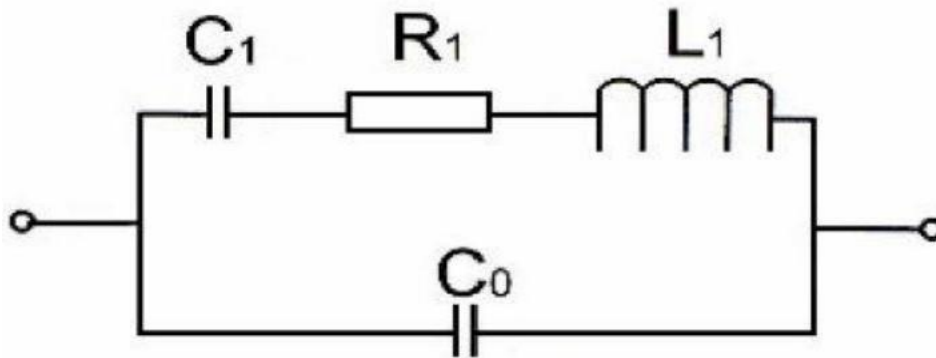
2. DIMENSIONS (Units:mm)



3. INSIDE STRUCTURE

No.	COMPONENTS	MATERIALS
1	Package	Ceramic (A 1203)
2	LID	KV (Fe/Co/Ni)
3	Crystal blank	SiO ₂
4	Electrode	(Cr+Au)
5	Adhesive	Resin, Ag

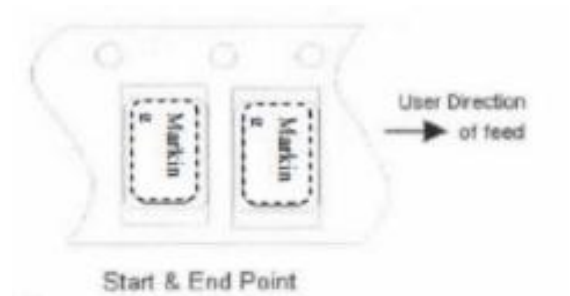
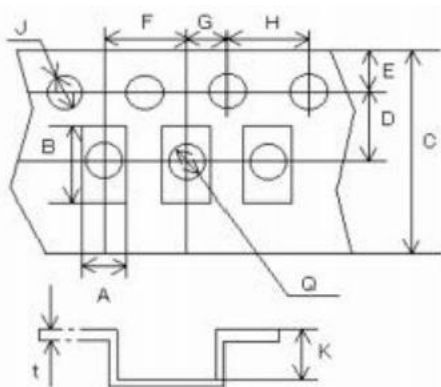
4. EQUIVALENT CIRCUIT



Equivalent Circuit

5. PACKING (Units:mm)

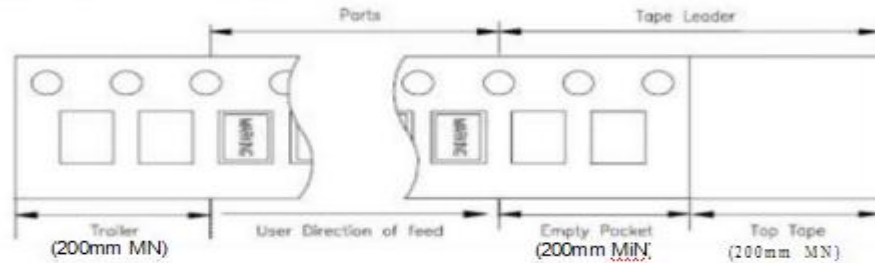
CARRIER TYPE



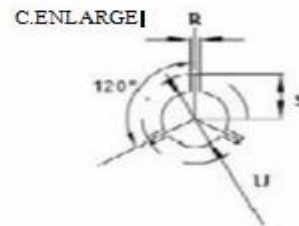
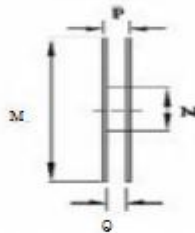


A	B	C	D	E	F	G	H	J	K	t
1.75	3.45	12.0	5.5	1.75	4.0	2.0	4.0	1.5	1.0	0.25

REMARK:



REEL: 3000 PCS/Reel

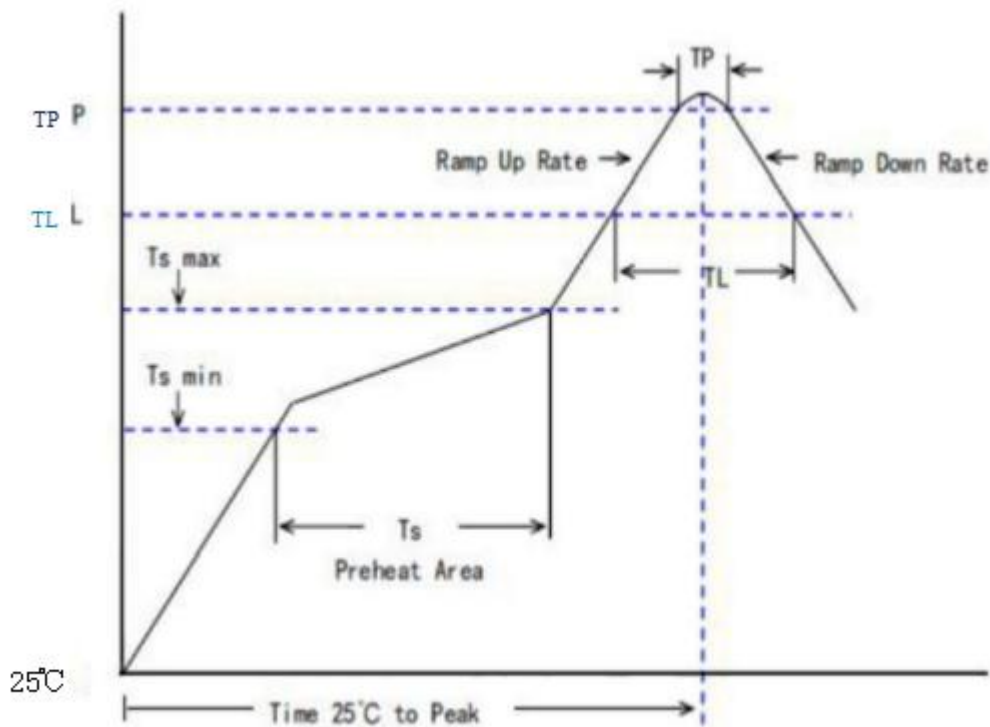


M	N	P	Q	R	S	U
180	60	15.4	13.0	2.0	10.5	13.0

6. REFLOW PROFILES

REFER: JEDEC JSTD-020D

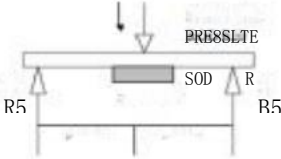
Profiles Feature	Pb-Free Assembly
Preheat/Soak Temperature Min(Ts min)	150°C
Temperature Max(Ts max)	200°C
Time(Ts) from(Ts min to Ts max)	60-120 seconds
Ramp-up rate(TL to TP)	3°C/second max
Liquidous temperature(TL)	217°C
Time(TL) maintained above TL	60-150 seconds
Peak/Classification Temperature(TP)	260±5°C
Time within 5C of actual Peak Temperature(TP)	20~40 seconds
Ramp-down rate(TP to TL)	6°C/second max.
Time 25 • C to peak temperature	8 minutes max
Suggest reflow times	3 Times max



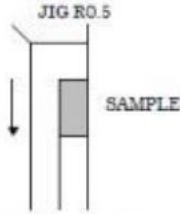
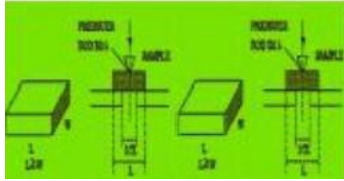
7. RELIABILITY SPECIFICATION

REFER		JISC 6701	
No.	ITBM	CONDITIONS	Criteria
1	HIGH TEMPERATURE	STORED AT $125 \pm 2^\circ\text{C}$ for $500 \pm 12\text{H}$. THE CHARACTERISTIC PARAMETERS OF 250B MUST BE TESTED IN 24H AFTER BEING STATIC FOR MORE THAN 2H AT ROOM TEMPERATURE ($25 \pm 2^\circ\text{C}$) If Customer's temperature request is higher than the standard, Temperature test must be done for customer Requirements.	A. C
2	LOW TEMPERATURE	STORED AT $-40 \pm 2^\circ\text{C}$ for $500 \pm 12\text{H}$. THE CHARACTERISTIC PARAMETERS OF 250B MUST BE TESTED IN 24H AFTER BEING STATIC FOR MORE THAN 2H AT ROOM TEMPERATURE ($25 \pm 2^\circ\text{C}$). If Customer's temperature request is higher than the standard, Temperature test must be done for customer Requirements.	A. C



3	HIGH TEMP. 8 HUMI DITY	STORED AT $85 \pm 2^{\circ}\text{C}$ AND HUMIDITY 85% FOR $500 \pm 12\text{H}$ THE CHARACTERISTIC PARAMETERS OF 250B MUST BE TESTED IN 24H AFTER BEING STATIC FOR MORE THAN 2H AT ROOM TEMPERATURE ($25 \pm 2^{\circ}\text{C}$).	A. C. D
4	TEMPERATURE SHOCK	1. $-40+0/-6^{\circ}\text{C}$ 30 ± 3 MINUTES 分钟 2. $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 2 ~ 3 MINUTES 分钟 3. $125+4/-0^{\circ}\text{C}$ 30 ± 3 MINUTES 分钟 4. $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 2 ~ 3 MINUTES 分钟 THE CRYSTAL UNIT SHALL BE SUBJECTED TO 100 SUCCESSIVE CHANGE OF TEMPERATURE CYCLES. THE CHARACTERISTIC PARAMETERS OF 250B MUST BE TESTED IN 24H AFTER BEING STATIC FOR MORE THAN 2H AT ROOM TEMPERATURE ($25 \pm 2^{\circ}\text{C}$).	A. C
5	SOLDERABILITY	THE LEAD IS IMMERSIED IN A $260 \pm 5^{\circ}\text{C}$ SOLDER BATH WITHIN 2 ± 0.6 SECONDS	F
6	FINE LEAK	HELIUM BOMBING 5.0~5.5 Kg _f / cm ² , FOR 2 HOURS	E
7	WELDING HEAT RESISTANCE	2 REFLAWS, THE MAXIMUM TEMPERATURE & TIME IS $265^{\circ}\text{C} \pm 5^{\circ}\text{C}$, 15 $\pm$ 5SEC. THE CHARACTERISTIC PARAMETERS OF 250B MUST BE TESTED IN 24H AFTER BEING STATIC FOR MORE THAN 2H AT ROOM TEMPERATURE ($25 \pm 2^{\circ}\text{C}$).	A. C
8	FREE FALL	FREE DROPPING FROM 100cm HEIGHT 3 TIMES ON A HARD	B. C
9	VIBRATION	FREQUENCY: 10~55Hz AMPLITUDE (TOTAL EXCURSION): THE SCANNING FREQUENCY IS 0.750CT/MIN, AND THE PEAK ACCELERATION IS 5G SWEEP TIME: 3 DIRECT ION (X, Y, Z) EACH FOR 2 Hrs.	A. C
10	TERMINAL STRENGTH	SHALL BE PRESSURIZED AT A SPEED OF APPROX. 0.5mm/sec IN THE DIRECTION INDICATED BY THE ARROW UNTIL THE BENDING WIDTH REACHES 3mm AND HELD FOR 5 SECONDS 	A. C



11	STICKING TENDENCY	A RO.5 JIG SHALL BE USED TO APPLY A 10N DEAD LOAD IN THE DIRECTION INDICATED BY THE ARROW TO THE ELEMENT AND RETAIN IT FOR 10 SECONDS. 	A. C
12	ELEMENT ASSEMBLY STRENGTH	A RO.5 PRESSURIZED BAR SHALL BE USED TO APPLY A 10N LOAD IN THE CENTER OF ELEMENT AND RETAIN IT FOR 10 SECONDS 	A. C
13	Mechanical Shock	100G, 6MS, HALF SINE SHOCK PULSE, 6AXIS*3TIMES	A. C

SPECIFICATIONS

A	FREQUENCY CHANGE PERMITTED.	$\Delta F \leq 10\text{PPM}$
B	FREQUENCY CHANGE PERMITTED.	$\Delta F \leq 20\text{PPM}$
C	EQUIVALENT SERIES RESISTANCE CHANGE PERMITTED	$\Delta CI \leq 5K\Omega$ or 20% Make use larger value
D	INSULATION RESISTANCE	$>500M\Omega$
E	LEAK RATE LESS THAN	$<1 \times 10^{-9} \text{ Pa} \cdot \text{m}^3 / \text{sec}$
F	A NEW UNIFORM COATING OF SOLDER SHALL COVER A MINIMUM 95% OF THE SURFACE	

※ Each test done independently

※ Measurement condition: Electrical characteristics measured by SA250B or equivalent