

Specification No.

纳入仕样数书番号 20210520-06

CRYSTAL UNIT RESONATOR SPECIFICATION

Customer:

咨询厂商: GKK LIMI LTD

Item : CRYSTAL UNIT

品名 : 水晶振动器

Type :

形名 : SMD-3215

Nominal Frequency:

标称频率: 32.7680KHz

Customer's Spec. No.

贵司仕样书番号: FS-3215-G12.5QSA-32.768KHz

Receipt

贵司受领印栏

1. 石英晶体参数规格 QUARTZ CRYSTAL UNIT SPECIFICATION

※描述 Description : Quartz Crystal

※产品型别 Product Type : SF-3215

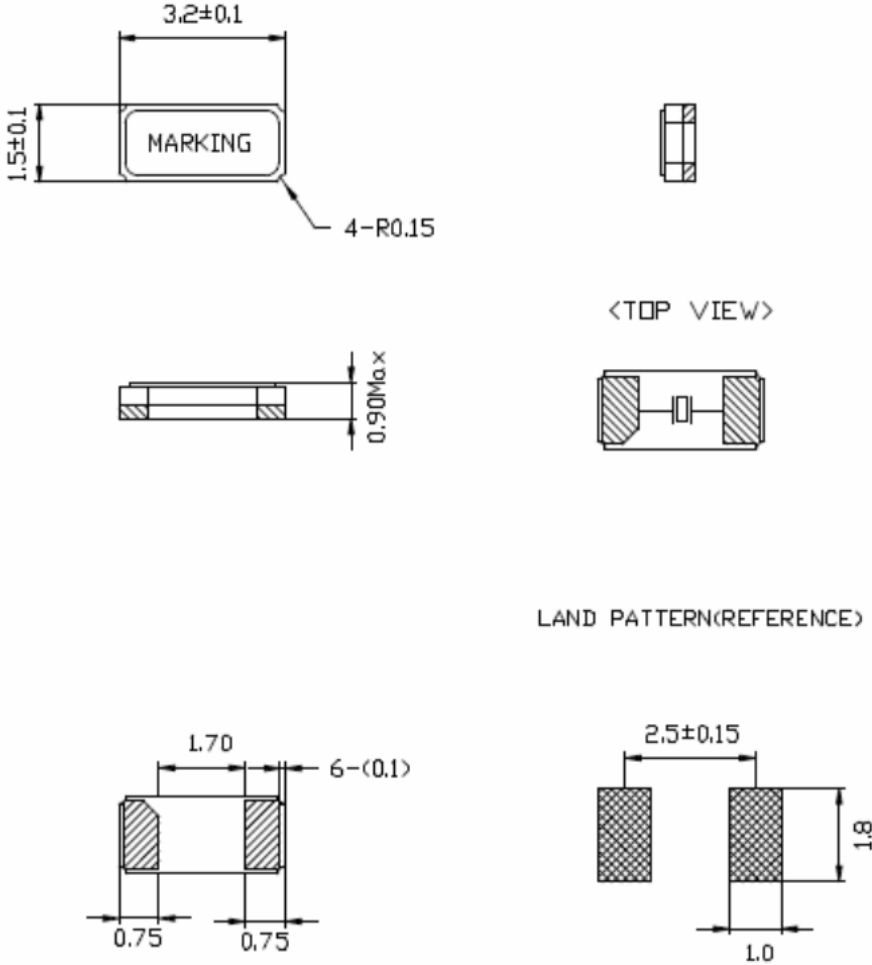
※测量设备 Measure equipment : S&A 250B

※电气特性 Electrical Characteristics

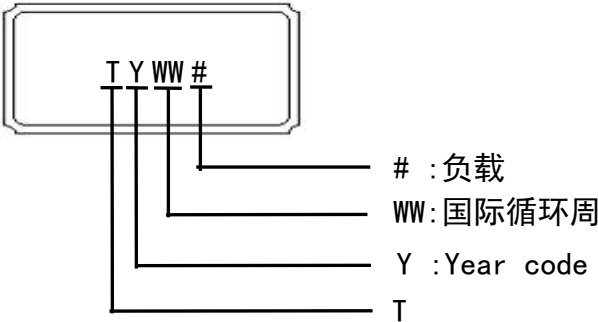
	项目 Item	代码 Symbol	电气特性规格 Electrical Specification				备注 Notes
			下限 Min.	中心 Typ.	上限 Max.	单位 Units	
1	一般频率 Nominal Frequency	F0	32.768000			KHz	
2	振荡模式 Oscillation Mode	-	Fundamental			-	
3	负载电容 Load Capacitance	CL	12.5			pF	
4	频率公差 Frequency Tolerance	-	-20	-	20	ppm	At 25°C ± 3°C
5	等效串联电阻 Equivalent Series Resistance	ESR	-	-	70	KΩ	
6	驱动功率 Drive Level	DL	-	0.1	0.5	μW	
7	斜率 Parabolic Coefficient		-0.02	-	-0.04	PPM/°C ²	
8	动作温度 Operating Temperature	-	-40	-	85	°C	
9	储存温度 Storage Temperature	-	-55	-	125	°C	
10	老化率 Aging	-	-3	-	3	ppm	Per Year
11	绝缘阻抗 Insulation Resistance	-	500	-	-	MΩ	At DC 100V
12	并联电容 Shunt Capacitance	C0	-	1.1	-	pF	
13	动态电容 Motional Capacitance	C1	-	4.1	-	fF	
14	品质因素 Quality Factor	Q	13	-	-	K	

备注 Notes:

2. 产品图纸 DIMENSIONS (Units:mm)

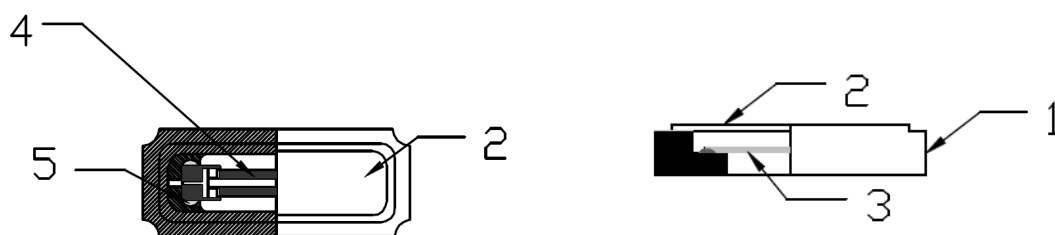


3. 印字 MARKING



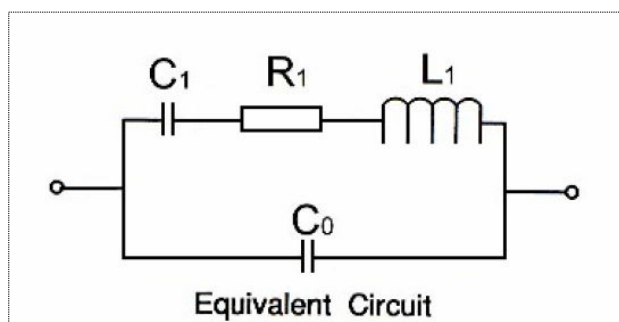
- Year : 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020
- Code : 1 2 3 4 5 6 7 8 9 0
- WW : 国际循环周
- #负载 : A→12.5PF、B→9PF、C→7PF、D→6PF

4. 内部结构产品图纸 INSIDE STRUCTURE



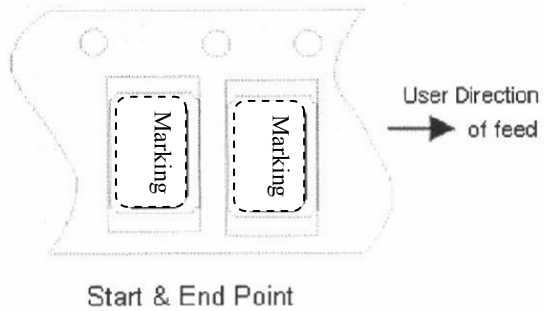
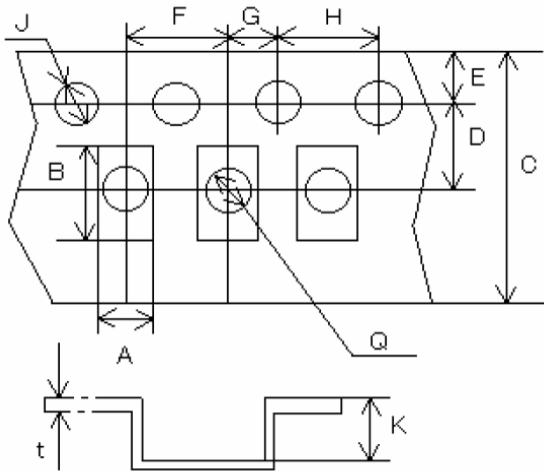
No.	组件 COMPONENTS	材料成份 MATERIALS
1	基座 Package	陶瓷 Ceramic (Al2O3)
2	外壳 LID	KV 合金 KV (Fe/Co/Ni)
3	水晶片 Crystal blank	二氧化硅 SiO ₂
4	电极 Electrode	Au、Ag (Au+Ag)
5	接着剂 Adhesive	树脂、银粉 Resin、Ag

5. 等效电路图 EQUIVALENT CIRCUIT



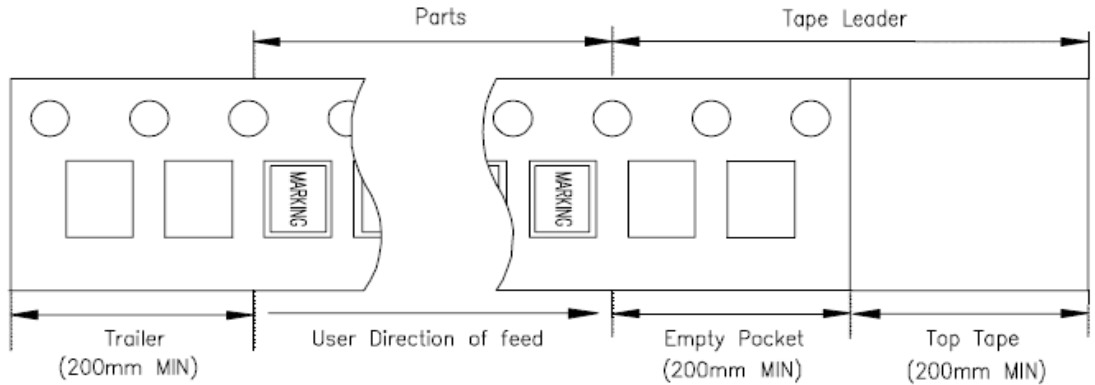
6. 包装 PACKING (Units:mm)

※载带类型 CARRIER TYPE

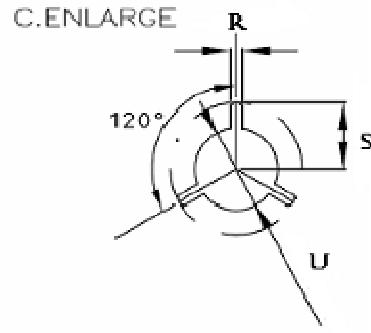
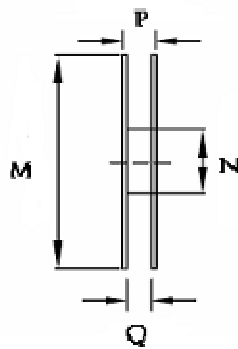
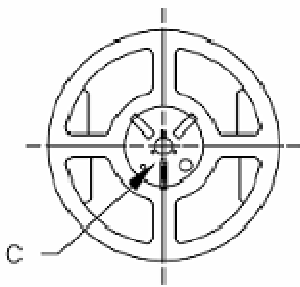


A	B	C	D	E	F	G	H	J	K	t
1.75	3.45	12.0	5.5	1.75	4.0	2.0	4.0	1.5	1.0	0.25

备注 REMARK:



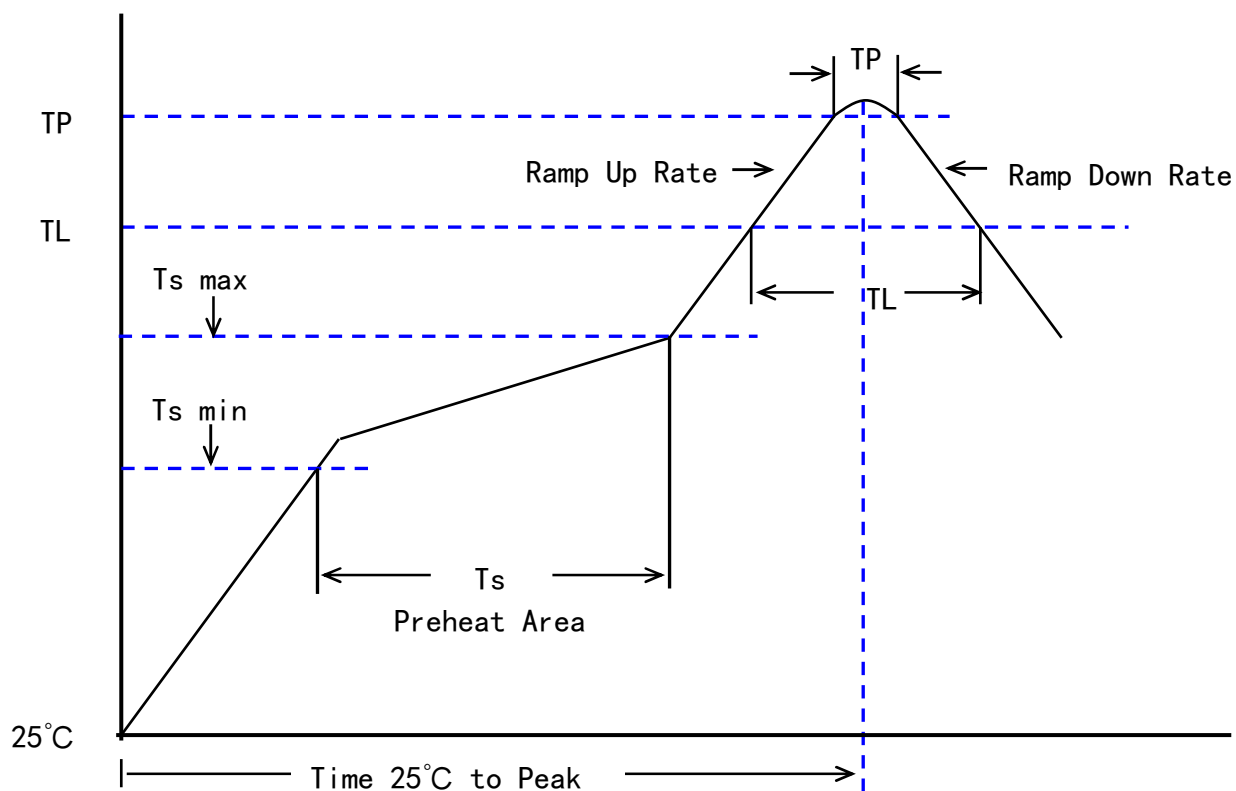
※圆卷 REEL: 3000 PCS/Reel



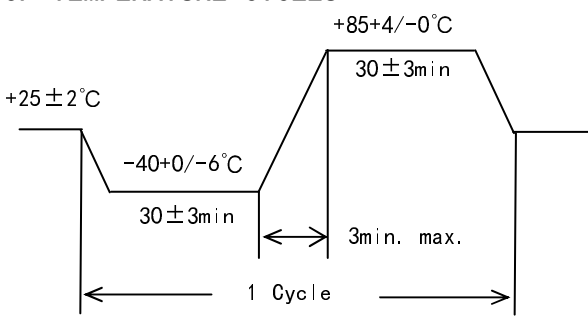
M	N	P	Q	R	S	U
180	60	15.4	13.0	2.5	10.5	13.0

7. 回流焊温度曲线 REFLOW PROFILES

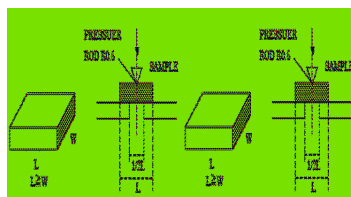
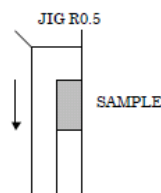
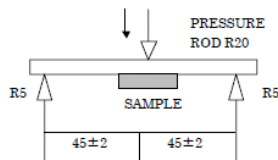
参考标准 REFER: JEDEC J-STD-020D	
Profiles Feature	Pb-Free Assembly
Preheat/Soak	
Temperature Min (Ts min)	150°C
Temperature Max (Ts max)	200°C
Time (Ts) from (Ts min to Ts max)	60-120 seconds
Ramp-up rate (TL to TP)	3°C/second max.
Liquidous temperature (TL)	217°C
Time (TL) maintained above TL	60-150 seconds
Peak/Classification Temperature (TP)	260±5°C
Time within 5°C 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



8. 可靠性试验 RELIABILITY SPECIFICATION

参考标准 REFER		JIS C 6701	
NO.	项目 ITEM	测试条件 CONDITIONS	测试标准 Criteria
1	跌落 FREE FALL	从100cm位置高度, 自由跌落在木板上, 连续3次. FREE DROPPING FROM 100 cm HEIGHT 3 TIMES ON A HARD	B. C
2	振动 VIBRATION	振动频率: 10~55 Hz, 振幅: 1.5mm±15%, 时间: 每个方位三面(X、Y、Z) 各振动2小时 FREQUENCY: 10~55Hz; AMPLITUDE (TOTAL EXCURSION): 1.5mm ±15% SWEEP TIME: 2-3MIN, 3 DIRECTION(X, Y, Z) EACH FOR 2 Hrs.	A. C
3	冷热冲击 TEMPERATURE CYCLE	晶体放入试验箱中, 高、低温循环100次 THE CRYSTAL UNIT SHALL BE SUBJECTED TO 100 SUCCESSIVE CHANGE OF TEMPERATURE CYCLES 	A. C. G
4	气密性 FINE LEAK	氦气压力标准: 5.0~5.5Kg/cm ² , 加压时间: 2小时 HELIUM BOMBING 5.0~5.5 Kg / cm ² , FOR 2 HOURS.	E
5	可焊性 SOLDERABILITY	温度: 260±5°C, 浸锡时间: 2±0.6秒 THE LEAD IS IMMERSED IN A 260±5°C SOLDER BATH WITHIN 2±0.6 SECONDS.	F
6	高温高湿 HIGH TEMP. & HUMIDITY	温度: 60±2°C, 湿度: 90%~95%, 保持时间: 500个小时 STORED AT 60±2°C AND HUMIDITY 90%~95% FOR 500±12H.	A. C. D. G
7	高温存储 HIGH TEMPERATURE STORAGE	高温温度: 125±2°C, 时间: 1000±12个小时 STORED AT 125±2°C FOR 1000±12H. 如果客户的温度要求是高于标准, 则必须根据客户的要求测试 If Customer's temperature request is higher than the standard, Temperature test must be done for customer requirements	B. C. G
8	低温存储 LOW TEMPERATURE STORAGE	低温温度: -40±2°C, 时间: 500±12个小时 STORED AT -40±2°C FOR 500±12H. 如果客户的温度要求是低于标准, 则必须根据客户的要求测试 If Customer's temperature request is lower than the standard, Temperature test must be done for customer requirements	A. C. G

9	折板弯曲试验 TERMINAL STRENGTH	弯曲度：3mm, 保持时间：5sec, 速度：0.5mm/sec 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.	H
10	折板推力试验 STICKING TENDENCY	荷重：10N, 保持时间：10秒, 治具：R0.5(制品侧边位置) A R0.5 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.	H
11	本体荷重试验 ELEMENT ASSEMBLY STRENGTH	荷重：10N, 保持时间：10秒, 治具：R0.5(制品中心位置) A R0.5 PRESSURIZED BAR SHALL BE USED TO APPLY A 10N LOAD IN THE CENTER OF ELEMENT AND RETAIN IT FOR 10 SECONDS.	H



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%
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	
G	THEN $25 \pm 2^\circ\text{C}$ OVER 2Hr BEFORE TESTING	
H	NO PEELING-OFF AT A SOLDERED PART	

Remark:

※ Each test done independently

※ Measurement condition: Electrical characteristics measured by S&A250B or equivalent.