



深圳市晶友嘉电子有限公司

SHENZHEN JINGYOUJIA ELECTRONIC CO., LTD



CRYSTAL RESONATOR SPECIFICATIONS

石英晶体谐振器承认书

客户 Customer:	立创商城
型号 Product:	F3K2
客户料号 Code No:	
我司料号 Code No:	F3K232768PWQAC
频率 Frequency:	32.768KHz
数量 Sample Quantity:	
日期 Date:	2021-7-15

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深圳市龙华区东环二路数字智能颖博园B栋412

TEL: 86-755-32840201 32850080  
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供应商确认栏:

制作 Handler	确认 Checked	核审 Approved
戴晓嘉	陈斌	李晨

客户承认栏:

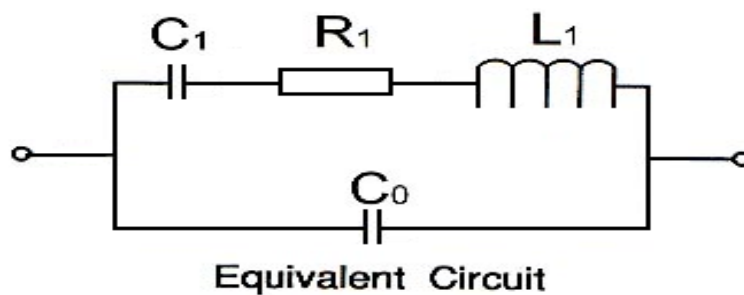
承认 Checked	核审 Approved



### 1. Electrical Parameters

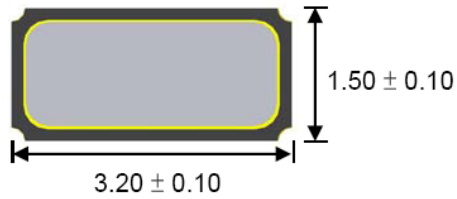
No.	Item	Symb	Electrical Specification				Remark
			Min.	Type	Max.	Units	
1	Nominal Frequency	F0	32.768			KHz	
2	Mode of Vibration		Fundamental				
3	Frequency Tolerance	$\Delta F/F0$	-20		20	ppm	At 25°C ± 3°C
4	Operating Temperature Range	TOPR	-40		85	°C	
5	Parabolic Coefficient	TC	-0.02		-0.04	PPM/°C <sup>2</sup>	
6	Storage Temperature	TSTG	-55		125	°C	
7	Load Capacitance	CL		12.5		PF	
8	Equivalent Series Resistance	ESR			70	KΩ	
9	Drive Level	DL		0.1	0.5	μW	
10	Insulation Resistance	IR	500			MΩ	At 100VDC
11	Aging Per Year	Fa	-3		3	ppm	First Year

### 2. Equivalent Circuit:



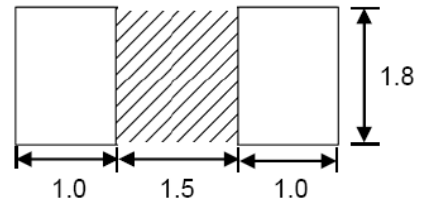
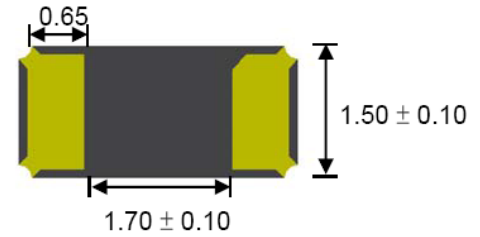
■ DIMENSIONS

(UNIT:mm)



■ RECOMMENDED SOLDER PAD

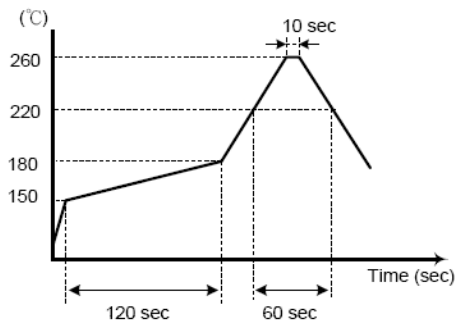
(UNIT:mm)



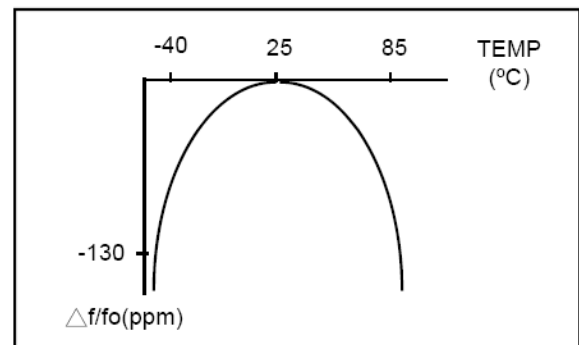
■ SUGGESTED REFLOW PROFILE

Total time : 200 sec. Max.

Solder melting point :  $220^{\circ}\text{C}$



■ TEMPERATURE V.S FREQUENCY CURVE





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■ RELIABILITY SPECIFICATIONS

1. Mechanical Endurance

No.	Test Item	Test Methods										
1	Drop Test	150 cm height, fall freely onto concrete floor 3 times.										
1	Mechanical Shock	Device are shocked to half sine wave ( 1000 G ) three mutually perpendicular axes each 3 times. 0.5m sec. duration time										
1	Vibration	<table border="0"> <tr> <td>Frequency range</td> <td>10 ~ 2000 Hz</td> </tr> <tr> <td>Amplitude</td> <td>1.52 mm,20G</td> </tr> <tr> <td>Sweep time</td> <td>20 minute</td> </tr> <tr> <td>Perpendicular axes each test time</td> <td>4 hours</td> </tr> <tr> <td></td> <td>(Total test time 12 hours)</td> </tr> </table>	Frequency range	10 ~ 2000 Hz	Amplitude	1.52 mm,20G	Sweep time	20 minute	Perpendicular axes each test time	4 hours		(Total test time 12 hours)
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Amplitude	1.52 mm,20G											
Sweep time	20 minute											
Perpendicular axes each test time	4 hours											
	(Total test time 12 hours)											
1	Solderability	<table border="0"> <tr> <td>Temperature</td> <td>245 °C ± 5°C</td> </tr> <tr> <td>Immersing depth</td> <td>0.5 mm minimum</td> </tr> <tr> <td>Immersion time</td> <td>5 ± 1 seconds</td> </tr> <tr> <td>Flux</td> <td>Rosin resin methyl alcohol solvent ( 1 : 4 )</td> </tr> </table>	Temperature	245 °C ± 5°C	Immersing depth	0.5 mm minimum	Immersion time	5 ± 1 seconds	Flux	Rosin resin methyl alcohol solvent ( 1 : 4 )		
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Immersion time	5 ± 1 seconds											
Flux	Rosin resin methyl alcohol solvent ( 1 : 4 )											

2. Environmental Endurance

No.	Test Item	Test Methods								
2	Resistance To Soldering Heat	<table border="0"> <tr> <td>Pre-heat temperature</td> <td>125 °C</td> </tr> <tr> <td>Pre-heat time</td> <td>60 ~ 120 sec.</td> </tr> <tr> <td>Test temperature</td> <td>260 ± 5 °C</td> </tr> <tr> <td>Test time</td> <td>10 ± 1 sec.</td> </tr> </table>	Pre-heat temperature	125 °C	Pre-heat time	60 ~ 120 sec.	Test temperature	260 ± 5 °C	Test time	10 ± 1 sec.
Pre-heat temperature	125 °C									
Pre-heat time	60 ~ 120 sec.									
Test temperature	260 ± 5 °C									
Test time	10 ± 1 sec.									
2	High Temp. Storage	+ 125 °C ± 3 °C for 1000 ± 12 hours								
2	Low Temp. Storage	- 40 °C ± 3 °C for 1000 ± 12 hours								
2	Thermal Shock	<p>Total 100 cycles of the following temperature cycle</p> <p>The diagram shows a temperature cycle with three levels: 125 ± 3 °C (top), 25 °C (middle), and -55 ± 3 °C (bottom). The cycle consists of a ramp down from 125 °C to -55 °C, a dwell at -55 °C for 10 min., a ramp up to 125 °C, a dwell at 125 °C for 10 min., and a ramp down to 25 °C. The total duration of one cycle is indicated as 10 min. max. The diagram is labeled '1 cycle'.</p>								
3	Pressure Cooker Storage	121 ± 3°C, RH100%, 2 bar, for 240 hours								
3	High Temp & Humidity	85°C ± 3°C, RH 85% , 1000Hrs								