

深圳市福浪电子有限公司
FRONTER ELECTRONICS CO., LTD

**APPROVAL
SHEET**



CUSTOMER: Specelservice Co. Ltd. Russia

DESCRIPTION: HC-49/S 7.3728MHz Quartz Crystal Resonator

MANUFACTURER PART NO.: FTX7.3728M20S-30/50D

CUSTOMER PART NO: _____

USED IN MODEL: _____

REVISION A1

承 认 APPROVAL		
工程部 TECHNOLOGY DEPT.	品质部 QUALITY DEPT.	采购部 PURCHASING DEPT.

Date: July 13, 2017



深圳市福浪电子有限公司

FRONTER ELECTRONICS CO., LTD

地址 ADD: 深圳市福田区深圳大道 6021 号喜年中心 1112~1117 室

RM.1112-1117, 11/F., XINIAN CENTER, NO.6021, SHENNAN RD.,

SHENZHEN, CHINA.518040

电话 TEL: 86-755-83458796 传真 FAX: 86-755-83459818 网址

WEB ADD: <http://www.chinafronter.com>

E-MAIL: sophie@chinafronter.com

<u>Rev</u>	<u>Revise page</u>	<u>Revise contents</u>	<u>Date</u>	<u>Ref.No.</u>	<u>Reviser</u>
A1	ALL	Initial released		N/A	DavidJiang

FRONTER ELECTRONICS CO., LTD.

DESCRIPTION	HC-49/S 7.3728MHz ±30ppm 20pF	Page:
DATE	2017-07-13	2 / 6

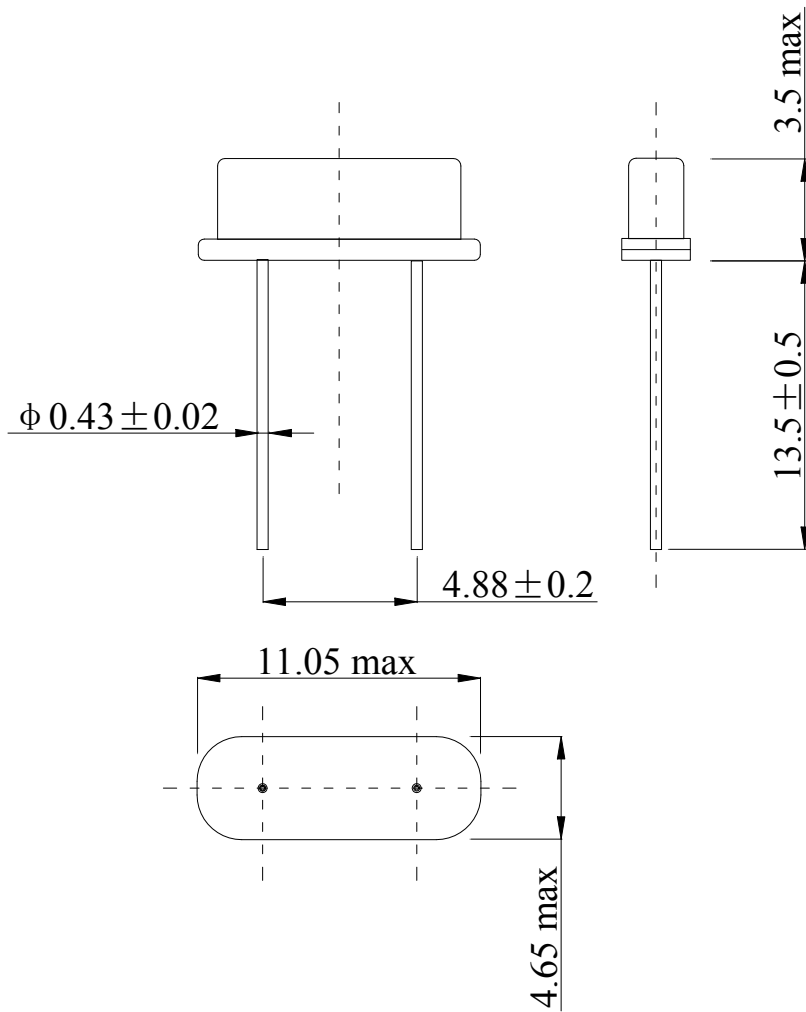
1. QUARTZ CRYSTAL UNIT SPECIFICATION

1.1 Frequency:	7.3728MHz
1.2 Mode of Oscillation	AT Fundamental
1.3 Holder type :	HC-49/S
1.4 Frequency tolerance:	±30ppm at 25°C
1.5. Equivalent resistance (Rr):	70Ω Max.
1.6 Operating temperature range:	-40°C To +80°C
1.7 Storage temperature range:	-55°C To +125°C
1.8. Frequency stability:	±50ppm at-40°C To +80°C
1.9 Loading capacitance (CL) :	20pF
1.10 Drive level (DL):	100 uW Typical
1.11 Shunt Capacitance (C0):	7.0pF MAX
1.12 Insulation resistance (IR) :	More than 500M ohms at DC 100V
1.13 Circuit:	Measured in S&A 250B
1.14 Aging:	±3 ppm Max (+25°C 1 st Year)
1.15 Dimensions and marking	Refer to page.3
1.16 Other	RoHS Compliant (Pb free)

FRONTER ELECTRONICS CO., LTD.

DESCRIPTION	HC-49/S 7.3728MHz ±30ppm 20pF	Page:
DATE	2017-07-13	3 / 6

2. MARKING & DIMENSIONS



*Marking should be printed as following:

Logo, Nominal Frequency

Logo: T

Nominal Frequency: (ex. 12.000MHz \rightarrow 12.000)

Marking: Laser marking

FRONTER ELECTRONICS CO., LTD.

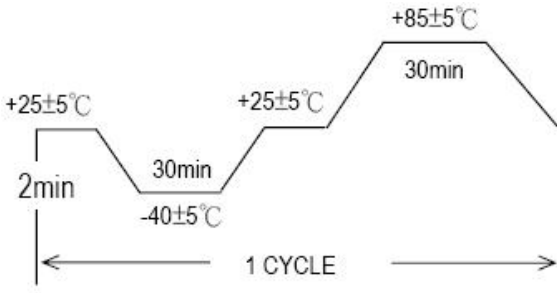
DESCRIPTION	HC-49/S 7.3728MHz \pm 30ppm 20pF	Page:
DATE	2017-07-13	4 / 6

3.MECHANICAL/ENVIRONMENTAL CHARACTERISTICS

NO.	项 目 ITEM	条 件 CONDITIONS	规 格 SPECIFICATIONS
3.1	漏气试验 Leaking Test	完全浸入 90±3℃热水中 3 分钟。 Fully immersed into hot water at 90℃ ± 3℃ for 3 minutes.	无气泡存在 no air bubble are visible.
3.2		用氦质谱仪测试或加压测绝缘电阻 Take measurements with a helium leakage detector, or measure insulation resistance under pressure.	$1 \times 10^{-8} \text{ Pa.m}^3 / \text{s}$ Max or $IR \geq 500M\Omega$
3.3	跌落试验 Drop Test	高度 75cm, 自由落体于 3cm 木板上, 6 次 Dropping 6 times from the height of 75 cm onto hard wooden board of thickness more than 30mm.	频率变化±5ppm 以内, 电阻变化 15%以内 The crystal must meet: $\Delta f \leq \pm 5\text{ppm}$ $\Delta R \leq 15\%$
3.4	振动试验 Vibration Test	频率 10~55Hz, 振幅 1.5mm, 时间 1.5 分钟循环, 在 XYZ 方向各 2 小时。 Vibration Frequency: 10~55Hz Cycle: 1.5 Min. Amplitude: 1.5mm P-P. Direction: X.Y.Z Time: 2 Hours / Each Direction	频率变化±5ppm 以内, 电阻变化 15%以内 The crystal must meet: $\Delta f \leq \pm 5\text{ppm}$ $\Delta R \leq 15\%$
3.5	可 焊 性 Solderability Test	从引线末端至距底部 2mm 处放入 230℃ ± 5℃ 焊槽内,时间: 5 ± 0.5 秒。 The terminal lead wire is to be soaked in a 230℃ ± 5℃ tin trough for 5 ± 0.5 seconds.	沾锡面 ≥ 90%. 频率变化±5ppm 以内,电阻变化 15%以内 Tin over the wire ≥ 90% The crystal must meet: $\Delta f \leq \pm 5\text{ppm}$ $\Delta R \leq 15\%$
3.6	耐低温性 Low Temperature Enduring	在 -40℃ ± 3℃ 下,放置 96 小时,取出后在常温下恢复 2 小时。 The samples crystal is to be tested after being placed in the environment of -40℃ ± 3℃ for 96 hours, and recovered to room temperature for 2 hours.	频率变化±5ppm 以内, 电阻变化 15%以内 The crystal must meet: $\Delta f \leq \pm 5\text{ppm}$ $\Delta R \leq 15\%$
3.7	耐高温性 High Temperature Enduring	在 +85℃ ± 3℃ 下放置 96 小时,取出后在常温下恢复 2 小时。 The samples crystal is to be tested after being heated at +85 ± 3℃ for 96 hours, and cooled to room temperature for 2 hours.	频率变化±5ppm 以内, 电阻变化 15%以内 The crystal must meet: $\Delta f \leq \pm 5\text{ppm}$ $\Delta R \leq 15\%$

FRONTER ELECTRONICS CO., LTD.

DESCRIPTION	HC-49/S 7.3728MHz ±30ppm 20pF	Page:
DATE	2017-07-13	5 / 6

3.8	恒定湿热 Humidity	<p>在 $40\pm 3^{\circ}\text{C}$、RH $93\%\pm 2\%$ 下放置 96 小时,取出后恢复 2 小时。 The temperature is at $40\pm 3^{\circ}\text{C}$, and at $93\%\pm 2\%$ RH after 96 hours, and cooled to room temperature for 2 hours.</p>	<p>外观无异常, 频率变化$\pm 5\text{ppm}$ 以内, 电阻变化 15%以内 The crystal must meet: $\Delta f \leq \pm 5\text{ppm}$ $\Delta R \leq 15\%$</p>
3.9	耐焊接热 Resistance to Solder Heat	<p>引线端子应插入 $350\pm 5^{\circ}\text{C}$ 的焊接槽中 3 ± 0.5 秒或 $260\pm 5^{\circ}\text{C}$ 的焊接槽中 10 ± 0.5 秒,插入深度为从引线末端至距底部 2mm 处,而后放在自然环境中 1 小时,再进行测试。 Lead terminals are immersed up to 1.5mm from resonator's body in soldering bath of $350\pm 5^{\circ}\text{C}$ for 3 ± 0.5 sec. And then resonator shall be measured after being placed in room temperature for 1 hour.</p>	<p>外观无异常, 频率变化$\pm 5\text{ppm}$ 以内, 电阻变化 15%以内 The crystal must meet: $\Delta f \leq \pm 5\text{ppm}$ $\Delta R \leq 15\%$</p>
3.10	热冲击 Thermal shock	<p>在 -40°C 保持 30 分钟, $+85^{\circ}\text{C}$ 保持 30 分钟, 循环 10 次。 Should be satisfied after supplying the following temperature cycle (10 cycles). (Refer to Fig-4). Temperature shift from low to high, high to low shall be done in $1^{\circ}\text{C}/\text{min}$.</p>  <p style="text-align: center;">Fig-4</p>	<p>外观无异常, 频率变化$\pm 5\text{ppm}$ 以内, 电阻变化 15%以内 The crystal must meet: $\Delta f \leq \pm 5\text{ppm}$ $\Delta R \leq 15\%$</p>

4. PACKAGE 包装

4.1 Quantity of package:

250 pieces of crystal unit	per bag
2500 pieces of crystal unit	per inner box, 10 bags
25000 pieces of crystal unit	per carton, 10 inner boxes

FRONTER ELECTRONICS CO., LTD.

DESCRIPTION	HC-49/S 7.3728MHz $\pm 30\text{ppm}$ 20pF	Page:
DATE	2017-07-13	6 / 6