



福建省长兴电子公司

CHANGXING ELECTRONICS CO., LTD.

福建省将乐县东门新村3号

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石英晶体谐振器产品确认书

Quartz Crystal Resonator Specification For Approval

产品型号:	HC-49S/SMD 10.000000MHz
Model	_____
客户名称:	_____
Customer	_____
客户编号:	_____
Customer's Part No.	_____
长兴编号:	8C100G0020
Product No.	_____
发行日期:	_____
Issue Date	_____

承办: 吴丽萍

审核: 吕锡昌

批准: 杨启付

内容:

- 1、Features 特点
- 2、Electrical Specifications 电气参数
- 3、Dimensions 外型尺寸
- 4、Marking 印码
- 5、Reflow Condition 回流焊条件
- 6、Packing 包装 (EIA-481-2)
- 7、Reliability Specifications (可靠性规范)
- 8、Material Composition Declaration (产品物质成分表)

客户 Conclusion:

Conditional Approval
 Full Approval
 Reject

会 签 意 见	
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APPROVED BY :

ISSUED DATE :

HC-49S/SMD Metal Can Type Crystals / 8C Series

■ Features 特点

- . Resistance welded type crystal units.
- . A great number of standard frequencies.
- . High frequency pullability and low equivalent series resistance.
- . Lower cost and highly mass production capability.
- . The best choice of PC, STB, LCDM, and Cable Modem.
- . RoHS Compliant / Pb Free.

■ Electrical Specifications 电气参数

Standard atmospheric conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurement and tests are as follow:

- Ambient temperatu: $22 \pm 5^\circ\text{C}$
- Relative humidity : 40%~70%

If there is any doubt about the results, measurement shall be made within the following limits:

- Ambient temperatu: $22 \pm 1^\circ\text{C}$
- Relative humidity : 40%~70%

Measure equipment

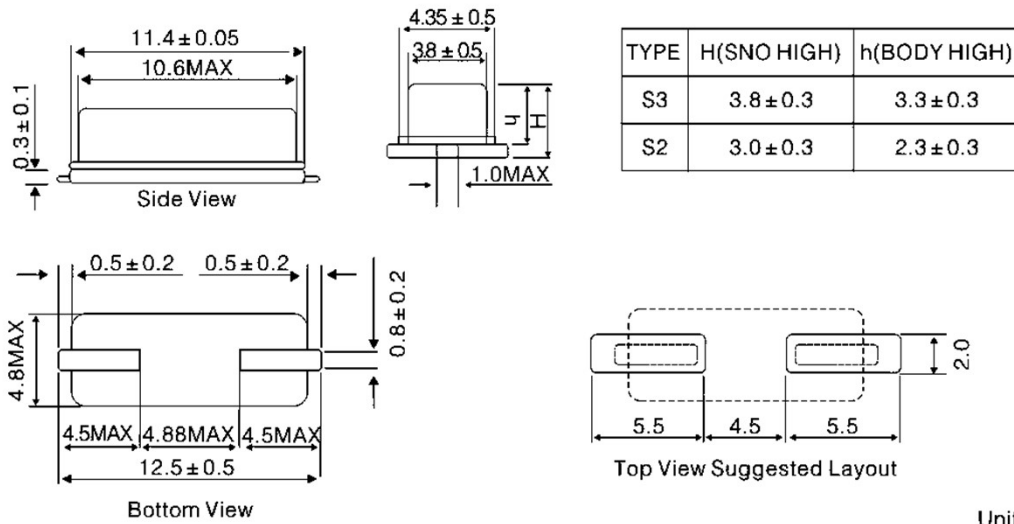
Electrical characteristics measured by S&A 250B or equivalent.

Crystal cutting type

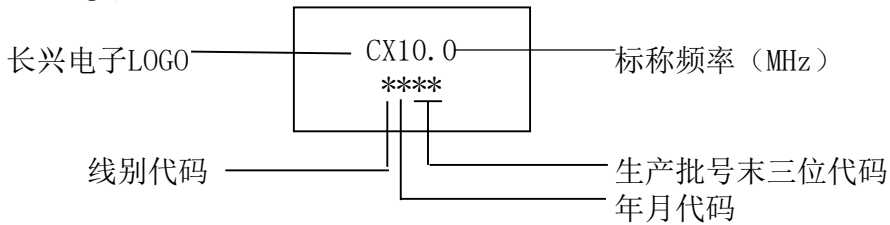
The crystal is using AT CUT (thickness shear mode).

	Parameters	Electrical Spec.	UNITS	Notes
1	Nominal Frequency	10.000000	MHz	-
2	Oscillation Mode	Fund	-	-
3	Load Capacitance	20	pF	-
4	Frequency Tolerance	± 20	ppm	at $25^\circ\text{C} \pm 3^\circ\text{C}$
5	Frequency Tolerance	± 30	ppm	Over Operating Temp. Range
6	Operating Temperature	$-40 \sim +85$	$^\circ\text{C}$	-
7	Aging	± 3	ppm	1st Year
8	Drive Level	100	μW	-
9	Effective Resistance R_r	40 Max.	Ω	-
10	Shunt Capacitance C_0	5 Max.	pF	-
11	Motional Capacitance C_1	-	fF	-
12	Pulling Sensitivity T_S	-	ppm/pF	-
13	Spurious Response	-	dB	-
14	Insulation Resistance	500 Min.	$\text{M}\Omega$	at DC 100V
15	Storage Temperature Range	$-40 \sim +85$	$^\circ\text{C}$	-
16	RLD2	40 Max.	Ω	0.1, 1, 10, 50, 100, 500 μW
17	FDDL	10 Max.	ppm	
18	DLD2	10 Max.	Ω	
19	FDDLH	-	ppm	
20	DLDH2	-	Ω	
21	DLDF	-	Ω	
22	Others	-	Ω	-

■ Dimensions外型尺寸



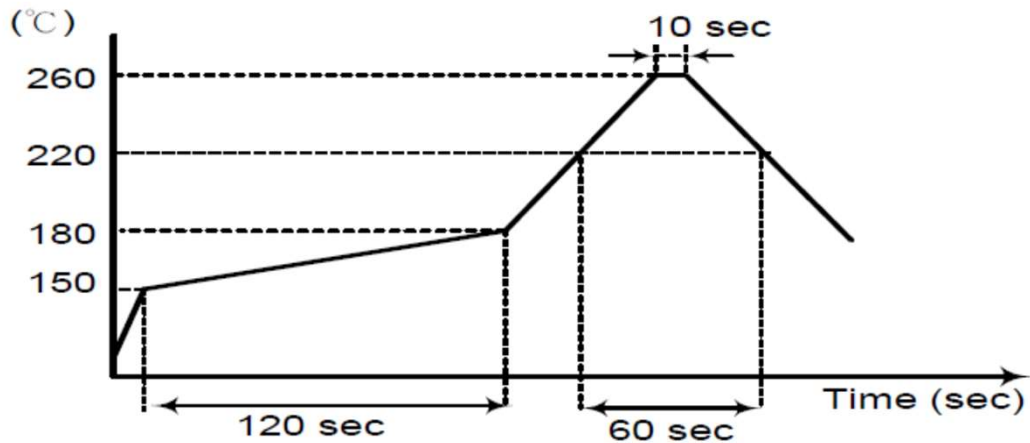
■ Marking印码



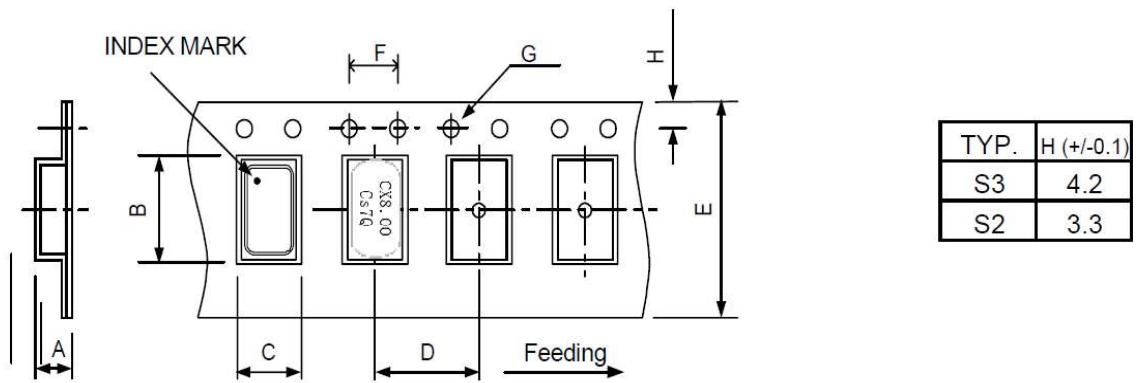
年月代码（四年一个周期）：

年份 \ 月份		一月	二月	三月	四月	五月	六月	七月	八月	九月	十月	十一月	十二月
2015	2019	a	b	c	d	e	f	g	h	j	k	l	m
2016	2020	n	p	q	r	s	t	u	v	w	x	y	z
2017	2021	A	B	C	D	E	F	G	H	J	K	L	M
2018	2022	N	P	Q	R	S	T	U	V	W	X	Y	Z

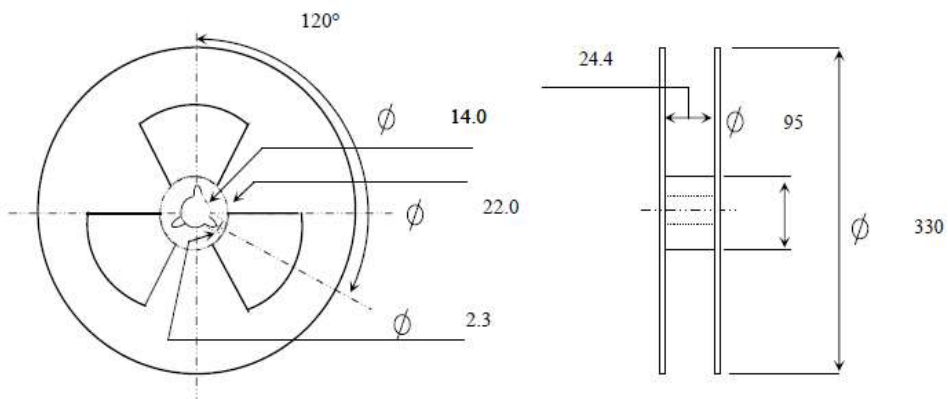
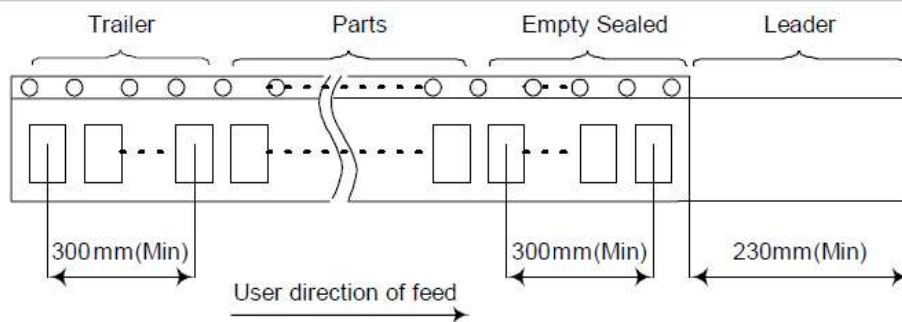
■ Reflow Condition回流焊条件



■ Packing包装 (EIA-481-2)



DIMENSIONS	A(S2) or A(S3)	B	C	D	E	F	G	H	(UNIT : mm)
		3.3±0.1	4.2±0.1	13.5±0.1	5.5±0.1	12.00	24.00	4.00	



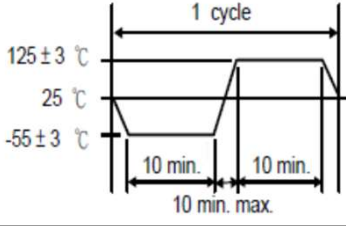
DIMENSIONS	L	L1	W	W1	pcs / Reel (UNIT : mm)
		330	14	31	24.4

■ Reliability Specifications (可靠性规范)

1. Mechanical Endurance (机械耐久性)

No.	Test Item	Test Methods	REF. DOC
1.1	Drop Test	75 cm height, 3 times on concrete floor .	JIS C6701
1.2	Mechanical Shock	Device are shocked to half sine wave (1000 G) three mutually perpendicular axes each 3 times. 0.5m sec. duration time	MIL-STD-202F
1.3	Vibration	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)	MIL-STD-883E
1.4	Gross Leak	Standard Sample For Automatic Gross Leak Detector, Test Pressure: 2Kg / cm ²	MIL-STD-883E
1.5	Fine Leak	Helium Bombing 4.5 Kg _f / cm ² for 2 hr	
1.6	Solderability	Temperature 260 °C ± 5°C Immersing depth 0.5 mm minimum Immersion time 5 ± 1 seconds Flux Rosin resin methyl alcohol solvent (1 : 4)	MIL-STD-883E

2. Environmental Endurance (环境耐久性)

No.	Test Item	Test Methods	REF. DOC
2.1	Resistance To Soldering Heat	Pre-heat temperature 125 °C Pre-heat time 60 ~ 120 sec. Test temperature 260 ± 5 °C Test time 10 ± 1 sec.	MIL-STD-202F
2.2	High Temp. Storage	+ 125 °C ± 3 °C for 1000 ± 12 hours	MIL-STD-883E
2.3	Low Temp. Storage	- 40 °C ± 3 °C for 1000 ± 12 hours	
2.4	Thermal Shock	Total 100 cycles of the following temperature cycle 	MIL-STD-883E
2.5	High Temp&Humid	85°C ± 3°C , RH 85% , 1000Hrs	JIS C5023

长兴电子公司

材料成份表

产品系列 (Product Family): 49S/SMD

单体重量(unit weight/mg): 546.06

编号 No.	构成部件 Name of Part	部件材质名 Material Name	材质质量 Material Mass(mg)	材质质量百分比 Material mass (%)	构成之元素名称 Constituent name	CAS编号 CAS No.	元素百分比 Material Analysis(%)
1	基座 Base	底板	277.20	50.76%	Fe Iron	7439-89-6	99.80%
					Mn Manganese	7439-96-5	0.20%
		引线	32.50	5.95%	Fe Iron	7439-89-6	53.03%
					Mn Manganese	7439-96-5	0.06%
					Ni Nickel	7440-02-0	28.63%
					Co Cobalt	7440-48-4	16.79%
					Cr chromium	7440-47-3	0.12%
					Cu copper	7440-50-8	0.11%
					others	-----	1.26%
					绝缘珠	14.32	2.62%
		Al ₂ O ₃ Aluminum oxide	1344-28-1	14.72%			
		others	-----	0.50%			
		弹片	8.50	1.56%	Ni Nickel	7740-02-0	16.61%
					Cu copper	7440-50-8	63.28%
					Zn Zinc	7440-66-6	20.11%
		焊锡	1.40	0.26%	Sn tin	7440-31-5	99.34%
Cu copper	7440-50-8				0.66%		
2	外壳 Cover	金属 Metal	171.00	31.32%	Cu copper	7440-50-8	64.00%
					Ni Nickel	7440-02-0	18.00%
					Zn Zinc	7440-66-6	18.00%
3	黏合剂 Adhesive	金属 Metal	0.55	0.10%	Ag Silver	7440-22-4	79.36%
					Epoxy resin	2425-79-8	20.64%
4	Blank	晶片 Quartz	4.50	0.82%	SiO ₂ Siliconoxide	14808-60-7	100.00%
5	Electrode	电极 Electrode	0.09	0.02%	Ag silver	7440-22-4	100%
6	垫片	PPA	36.00	6.59%	PPA	25776-72-1	100%