



福建省长兴电子有限公司

CHANGXING ELECTRONICS CO.,LTD.

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石英晶体振荡器产品确认书

Quartz Crystal Resonator Specification For Approval

产品型号:	Seam2520 4PIN 16.000000MHz
Model	
客户名称:	
Customer	
客户编号:	
Customer's Part No.	
长兴编号:	4D160G0009
Product No.	
发行日期:	
Issue Date	

承办: 林峰

审核: 林东国

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
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- 7、Reliability Specifications 可靠性规范
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客户 Conclusion:

Conditional Approval

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Full Approval

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Reject

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APPROVED BY :

ISSUED DATE :

2.5×2.0×0.55mm SMD Seam Sealing Crystals / 4D Series

■ Features 特点

- . High precision and high frequency stability.
- . Excellent heat resistance and environmental characteristics.
- . Applications in PDA, DSC, DVC, and PC.
- . 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

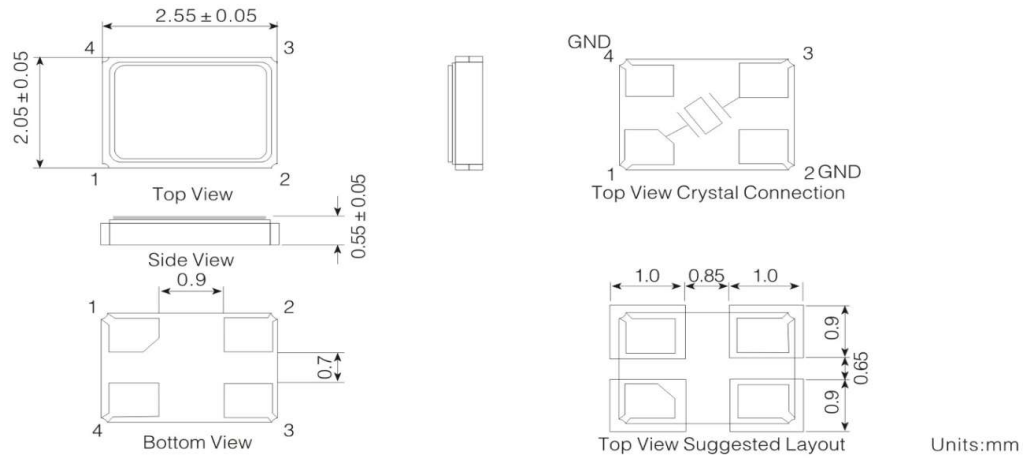
Electrical characteristics measured by HP E5100A or equivalent.

Crystal cutting type

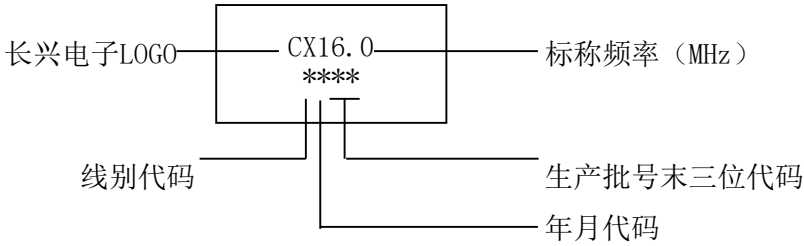
The crystal is using AT CUT (thickness shear mode).

	Parameters	Electrical Spec.	UNITS	Notes
1	Nominal Frequency	16.000000	MHz	—
2	Oscillation Mode	Fund	—	—
3	Load Capacitance	9	pF	—
4	Frequency Tolerance	± 10	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 Rr	100 Max.	Ω	—
10	Shunt Capacitance C0	5 Max.	pF	—
11	Motional Capacitance C1	—	fF	—
12	Pulling Sensitivity TS	—	ppm/pF	—
13	Spurious Response	-3.0	dB	-1000~+5000 ppm 125 步
14	Insulation Resistance	500 Min.	M Ω	at DC 100V
15	Storage Temperature Range	$-55 \sim +125$	$^\circ\text{C}$	—
16	RLD2	100 Max.	Ω	0.01~30 μW /15 steps 30~100 μW /5 steps 100~30 μW /5 steps 30~0.01 μW /15 steps
17	FDDL	10 Max.	ppm	
18	DLD2	10 Max.	Ω	
19	FDDLH	5 Max.	ppm	
20	DLDH2	5 Max.	Ω	
21	DLDF	—	Ω	
22	DLD2 (低)	—	Ω	0.01~30 μW /15 steps
23	Others	—	—	—

■ Dimensions外型尺寸



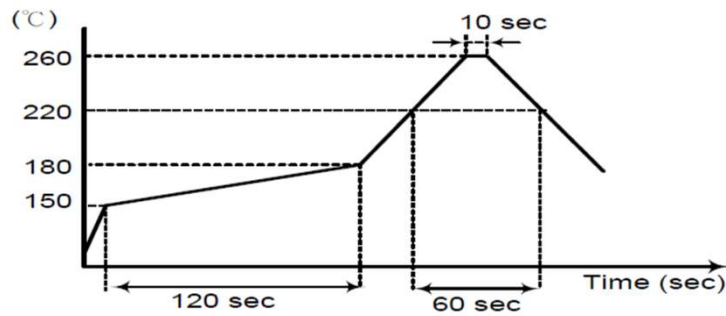
■ Marking印码



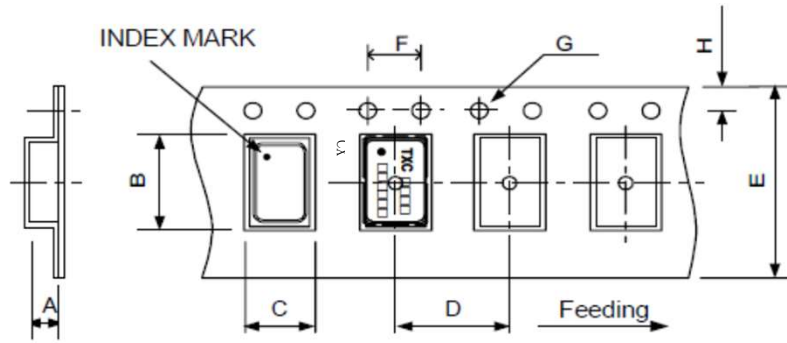
年月代码（四年一个周期）：

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

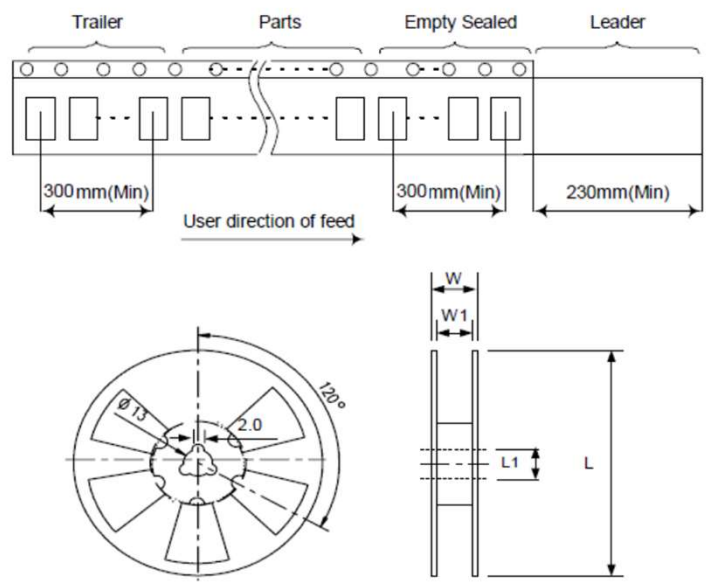
■ Reflow Condition回流焊条件



■ Packing包装 (EIA-481-2)



DIMENSIONS	A	B	C	D	E	F	G	H
UNIT : mm	0.80 ± 0.1	2.70 ± 0.1	2.25 ± 0.1	4.00 ± 0.1	8.0 ± 0.2	4.00 ± 0.1	1.55 ± 0.05	1.75 ± 0.1



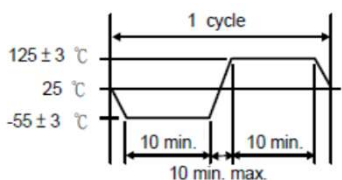
DIMENSIONS	L	L1	W	W1	Standard Reel Quantity
UNIT : mm	178 ± 1.0	13 ± 0.5	11.5 ± 0.2	8.0 ± 1.0	3,000 pcs per reel (WHITE)

■ 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	150 cm height, 3 times on concrete floor .	JIS C6701
1.2	Shock Test	150g/150cm Height, 3 times in the direction of $\pm X, \pm Y, \pm Z$ on concrete floor	IEC-68-02-27
1.3	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
1.4	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
1.5	Gross Leak	Standard Sample For Automatic Gross Leak Detector, Test Pressure: 2Kg / cm ²	MIL-STD-883E
1.6	Fine Leak	Helium Bombing 4.5 Kgf / cm ² for 2 hr	
1.7	Solderability	Temperature 260 °C $\pm$ 5°C Immersing depth 0.5 mm minimum Immersion time 5 $\pm$ 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 $\pm$ 5 °C Test time 10 $\pm$ 1 sec.	MIL-STD-202F
2.2	High Temp.	+ 125 °C $\pm$ 3 °C for 500 $\pm$ 12 hours	MIL-STD-883E
2.3	Low Temp.	- 40 °C $\pm$ 3 °C for 500 $\pm$ 12 hours	
2.4	Thermal Shock	Total 100 cycles of the following temperature cycle 	MIL-STD-883E
2.5	High Temp&	85°C $\pm$ 3°C , RH 85% , 500Hrs	JIS C5023
2.6	Pressure	125°C $\pm$ 3°C , RH100% , 2 bar , 240Hrs	JIS C6701

Material Composition Declaration

材 料 成 份 表

1.PRODUCTION NAME : Seam 2520

2.PRODUCTION WEIGHT(mg) : 10.982

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 Mat er i al 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	陶瓷 Ceramics	6.39	58.17%	Al2O3 Aluminum oxide	1344-28-1	90.00%
					SiO2 Siliconoxide	4808-60-7	6.00%
					Cr2o3	1308-38-9	2.00%
					MO Magnesium oxide	7439-98-7	2.00%
		KV环	0.35	3.17%	Fe Iron	7439-89-6	51.00%
					Ni Nickel	7440-02-0	29.00%
					Co	7440-48-4	18.00%
		焊料			Ag silver	7440-22-4	71.00%
					Cu	7440-50-8	29.00%
		金属化 (Metal)	0.28	2.56%	W Tungsten	7440-33-7	100.00%
		镀层 Metallizing			Au Gold	7440-57-5	100.00%
					Ni Nickel	7440-02-0	100.00%
2	外壳 Cover	4J29 (基材)	2.30	20.94%	Fe	7439-89-6	49.00%
		Ni（镀层）			Ni	7440-02-0	35.00%
					Co	7440-48-4	16.00%
					Ni	7440-02-0	100.00%
3	黏合剂 Adhesive	金属 Metal	0.12	1.09%	Ag Silver	7440-22-4	74.00%
		聚合物 Polymer			-	-	10.20%
					SiO2	14808-60-7	10.00%
					-	64742-47-8	5.00%
					CH3OH	67-56-1	0.80%
4	Blank	晶片 Quartz	1.20	10.96%	SiO2 Silicon oxide	14808-60-7	100.00%
5	Electrode	电极 Electrode	0.34	3.07%	Cr Chromium	7440-47-3	5.56%
					Ag silver	7440-22-4	94.44%