

5.0x3.2x1.2mm SMD Glass Sealing Crystals / 9A Series

■ Features 特点

- . 2 pads SMD glass sealed crystal units.
- . High reliable environmental performance.
- . Tight tolerance and stability parts are available.
- . Designed for automatic mounting and reflow soldering.
- . Reasonable cost and good delivery performance.
- . The best choice of portable PC, PDA, DSC, and USB interface card.
- . Contains Pb in sealing glass exempted by RoHS directive.

■ 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

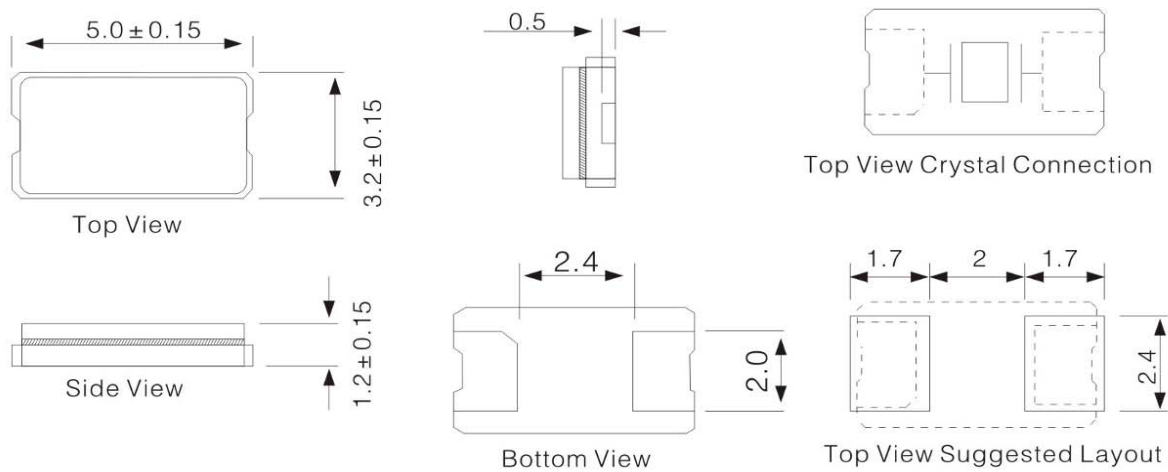
Electrical characteristics measured by HP E5100A or equivalent.

Crystal cutting type

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

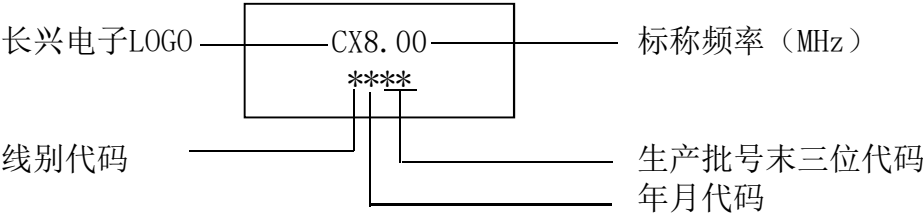
	Parameters	Electrical Spec.	UNITS	Notes
1	Nominal Frequency	24.000000	MHz	—
2	Oscillation Mode	Fund	—	—
3	Load Capacitance	20	pF	—
4	Frequency Tolerance	± 10	ppm	at $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$
5	Frequency Stability	± 30	ppm	Over Operating Temp. Range
6	Operating Temperature	$-40 \sim +85$	$^{\circ}\text{C}$	—
7	Aging		ppm	1st Year
8	Drive Level	100	uW	—
9	Effective Resistance Rr	40 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	40 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	0.01~30 μW /15 steps
22	DLD2 (低)	—	Ω	
23	Others	—	—	—

■ Dimensions外型尺寸



Units:mm

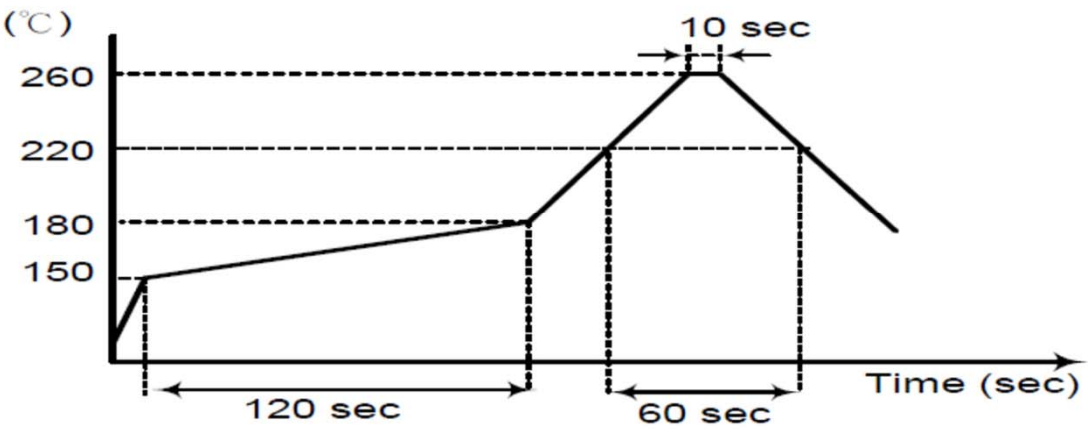
■ Marking印码



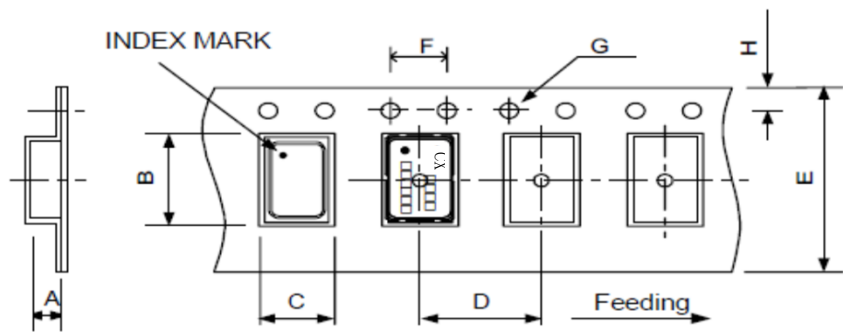
年月代码（四年一个周期）：

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
2023	2027	a	b	c	d	e	f	g	h	j	k	l	m
2024	2028	n	p	q	r	s	t	u	v	w	x	y	z
2025	2029	A	B	C	D	E	F	G	H	J	K	L	M
2026	2030	N	P	Q	R	S	T	U	V	W	X	Y	Z

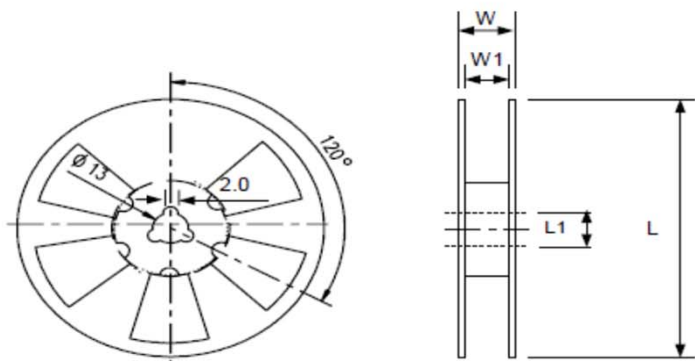
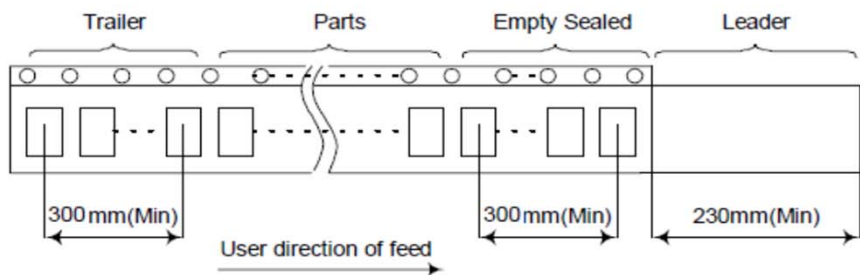
■ Reflow Condition回流焊条件



■ Packing包装（EIA-481-2）



DIMENSIONS	A	B	C	D	E	F	G	H
UNIT : mm	1.45±0.1	5.40±0.1	3.60±0.1	8.00±0.1	12.0±0.2	4.00±0.1	1.55±0.05	1.75±0.1



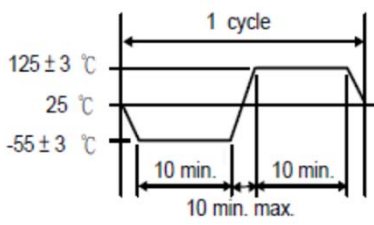
DIMENSIONS	L	L1	W	W1	Standard Reel Quantity
UNIT : mm	180±1.0	13±0.5	16.5±0.2	12.0±1.0	1,000 pcs per reel (WHITE)

■ 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	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 Kgf / 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  The diagram shows a temperature cycle with three levels: 125 ± 3 °C, 25 °C, and -55 ± 3 °C. The cycle consists of a 10 min. ramp up, a 10 min. dwell at the high temperature, a 10 min. ramp down, a 10 min. dwell at the low temperature, and a 10 min. ramp up. The total duration of one cycle is 50 min. max.	MIL-STD-883E
2.5	High Temp&Humidity	85°C ± 3°C , RH 85% , 1000Hrs	JIS C5023