

## SMD CRYSTAL UNIT SPECIFICATIONS

<b>Customer</b>	
<b>Customer P/N</b>	
<b>Product</b>	2520 Seam Sealing Crystal
<b>Nominal Frequency</b>	16.000000MHz
<b>HOSONIC P/N</b>	E2SB16E000029E
<b>Version</b>	10C0
<b>Issue Date</b>	2022/7/15

HOSONIC		
Drawn	Checked	Approved
LUCY	ZOE	JOHN

Approved By Customer : \_\_\_\_\_



HOSONIC TECHNOLOGY (GROUP) CO., LTD.



Revised Record

Rev.	Rev. Date	Item	Content	Remark
1.0	2022-07-15		Initial released	

**I ELECTRICAL PARAMETERS**

Electrical characteristics measured by S&amp;A250B or equivalent.

No.	Item	Symb.	Electrical Specification				Remark
			Min.	Typ.	Max.	Units	
1	Nominal Frequency	F0	16.000000			MHz	
2	Mode of Vibration		Fundamental				
3	Frequency Tolerance	$\Delta F/F0$	-10	-	10	ppm	At 25°C±3°C
4	Operating Temperature Range	T <sub>OPR</sub>	-40	-	85	°C	
5	Frequency Stability (over operating temperature)	TC	-20	-	20	ppm	Ref. to 25°C
6	Storage Temperature	T <sub>STG</sub>	-55	-	125	°C	
7	Load capacitance	CL	-	9	-	pF	
8	Equivalent Series Resistance	ESR	-	-	60	Ω	
9	Drive Level	DL	-	50	100	μW	
10	Insulation Resistance	IR	500	-	-	MΩ	At 100V <sub>DC</sub>
11	Shunt Capacitance	C0	-	-	3	pF	
12	Aging Per Year	Fa	-2	-	2	ppm	First Year
13	Package type	E2SB					

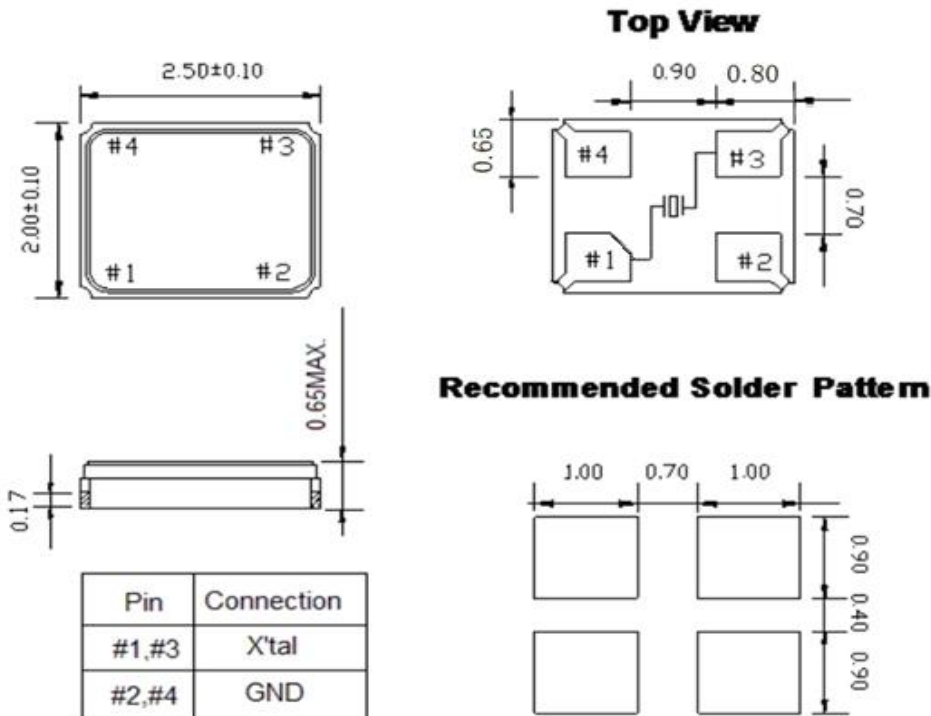
**NOTE: Storage Temperature is only for the product itself, the temperature for the packing material is -4~40°C.**

**I STORAGE REQUIRMENT**

Storage environmental conditions: -4~40°C, 70%RH max.

Maximum storage time: 24 Months from date of manufacture.

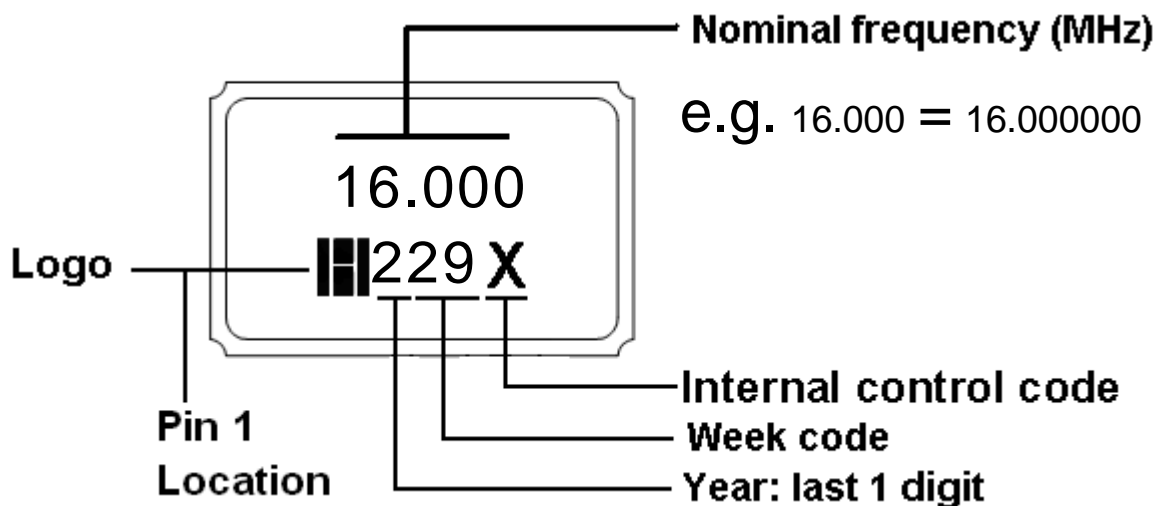
I OUTLINE DIMENSIONS (UNIT: mm)

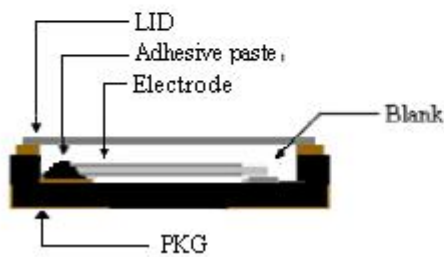
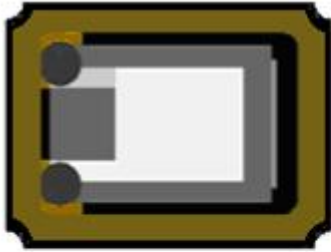


【Note】 #2, #4: connected with metal cover

\*unlabeled tolerance: ± 0.1mm

I MARKING:

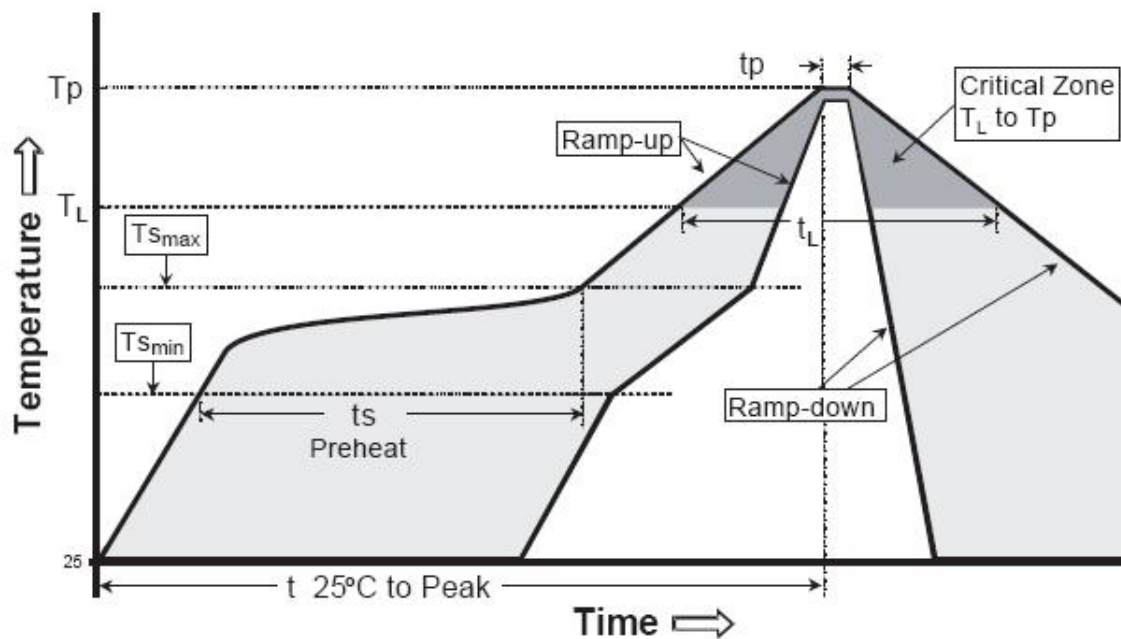


**I PRODUCT LAYOUT**


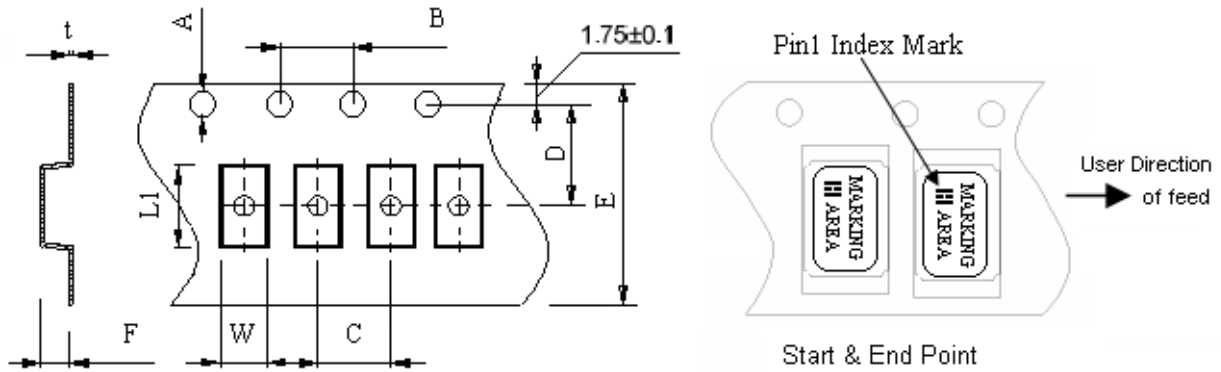
NO.	PART	MATERIAL	REMARK
1	LID	KOVAR(Fe+Co+Ni alloy)	
2	PKG	Al <sub>2</sub> O <sub>3</sub>	Base
3	Blank	SiO <sub>2</sub>	Quartz
4	Adhesive paste	Ag/Silicon	Support
5	Electrode	Noble metal	

**I REFLOW PROFILES**

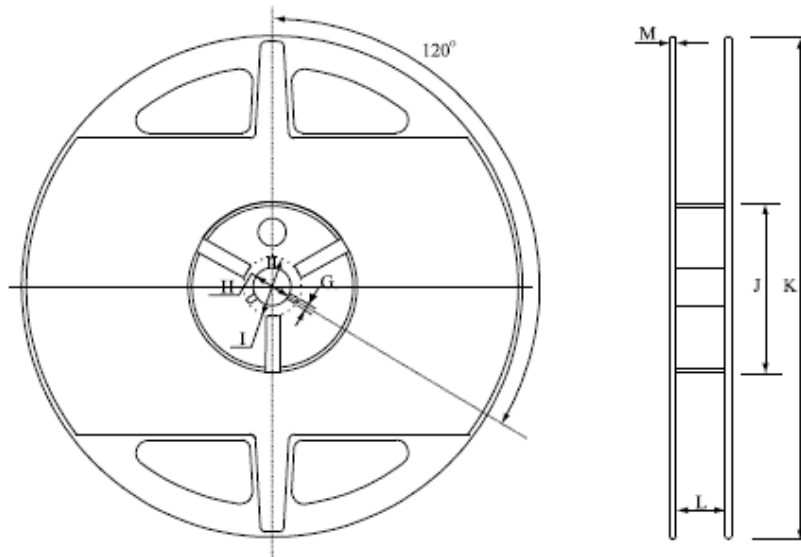
Profiles Feature	Pb-Free Assembly
Average Ramp-up Rate (Ts max to Tp)	3°C/second max.
Preheat <ul style="list-style-type: none"> <li>■ Temperature Min (Ts min)</li> <li>■ Temperature Max (Ts max)</li> <li>■ Time (ts min to ts max)</li> </ul>	125°C 200°C 60~180 seconds
Time maintained above <ul style="list-style-type: none"> <li>■ Temperature (T<sub>L</sub>)</li> <li>■ Time (t<sub>L</sub>)</li> </ul>	217°C 60~150 seconds
Peak/Classification Temperature (Tp)	260°C
Time within 5°C of actual Peak Temperature (t <sub>p</sub> )	20~40 seconds
Ramp-down rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.
<b>Suggest reflow times</b>	<b>3 Times max</b>



**Remark: To reference JEDEC J-STD-020**

**I PACKAGE(reference to EIA-481)**
*Tape Dimensions(unit : mm)*


A	B	C	D	E	F	L1	W	t
1.5±0.1	4.0±0.1	4.0±0.1	3.5±0.1	8.0±0.1	0.9±0.1	2.75±0.1	2.25±0.1	0.25±0.05

*Reel Dimensions(unit: mm)*


G	H	I	J	K	L	M
2.2±0.5	13.5±0.5	18.2±0.5	60.0±1.0	178.0±1.0	9.5±1.0	1.6±0.2

\*3000pcs/Reel

Carton Dimension (unit : mm)



1 reel = 1 Inner box



20 Inner boxes = 1 Carton

60kpcs = 1 Carton



**I RELIABILITY SPECIFICATIONS**

No.	Test Item	Test Conditions	Reference
1	High Temperature Storage	Temperature: 125°C ± 3°C Time: 1000 ± 12 Hours	MIL-STD-202 Method 108
2	Temperature Cycle	Temperature 1: -55°C ± 3°C Temperature 2: 125°C ± 3°C Temperature change between T1 and T2 at soonest Run 1000 cycles, maintain T1 and T2 5minutes each in one cycle	JESD22 Method JA-104
3	Solder Heat Resistance	Pre-heat: 125°C 60~120 Seconds Solder Temperature: 260°C ± 5°C Time: 30 Seconds	MIL-STD-202 Method 210
4	Drop Test	3 Times Free Fall from 150cm height to concrete floor.	IEC 68-2-32
5	High Temperature, High Humidity Storage	Temperature: 85°C ± 5°C Relative Humidity: 80%--85% Time: 250Hours ± 12 Hours	MIL-STD-202 Method 103
6	Steam Aging	Temperature: 97°C ± 3°C Time: 24 Hours 260°C solder pot to check solderability	J-STD-002
7	Solderability	Dip in flux 5~10 seconds Temperature: 245°C ± 5°C Time: 10 Seconds	J-STD-002
8	Aging	Temperature: 85°C ± 2°C Time: 250 ± 12Hours	MIL-STD-202 Method 108
9	Thermal Shock	Temperature 1: -55°C ± 3°C Temperature 2: 125°C ± 3°C Temperature change between T1 and T2: 5 seconds 100 cycles, maintain T1 and T2 for 30 minutes each in one cycle	MIL-STD-202 Method 107
10	Vibration	Frequency Range: 10Hz~2000Hz Amplitude: 1.5mm or 20G 4Hours in each direction, total 12Hours	MIL-STD-202 Method 204