

SMD CRYSTAL UNIT SPECIFICATIONS

Automotive Application: AEC-Q200
For non-safety applications only

Customer	FOXCONN
Customer P/N	
Product	3225 Seam Sealing Crystal
Nominal Frequency	40.000000MHz
HOSONIC P/N	E3SB40E00000EA
Version	10C0
Issue Date	2023/10/17

HOSONIC		
Drawn	Checked	Approved
LUCY	ZOE	JOHN

Approved By Customer : _____

ü MSL: Level 1

ü Halogen Free

I ELECTRICAL PARAMETERS

Electrical characteristics measured by S&A250B or equivalent.

No.	Item	Symb.	Electrical Specification				Remark
			Min.	Typ.	Max.	Units	
1	Nominal Frequency	F0	40.000000			MHz	
2	Crystal cutting type		AT cut				
3	Mode of Vibration		Fundamental				
4	Frequency Tolerance	$\Delta F/F0$	-50	-	50	ppm	At 25°C±3°C
5	Operating Temperature Range	T _{OPR}	-40	-	150	°C	
6	Frequency Stability (over operating temperature)	TC	-200	-	200	ppm	Ref. to 25°C
7	Storage Temperature	T _{STG}	-40	-	150	°C	
8	Load capacitance	CL	-	8	-	pF	
9	Equivalent Series Resistance	ESR	-	-	50	Ω	
10	Drive Level	DL	0.01-	-	200	μW	
11	Insulation Resistance	IR	500	-	-	MΩ	At 100V _{DC}
12	Shunt Capacitance	C0	-	-	3	pF	
13	C0/C1		-	-	-		± 30%
14	Pulling Sensitivity	TS	-	-	-	ppm/pF	
15	RLD2		-	-	50	Ω	
16	DLD2		-	-	15	Ω	
17	SPDB		-	-	-3	dB	±5000ppm
18	Aging Per Year	Fa	-2	-	2	ppm	First Year
19	Unit weight		-	0.017	-	g/pcs	± 15%
20	Package type	E3SB					

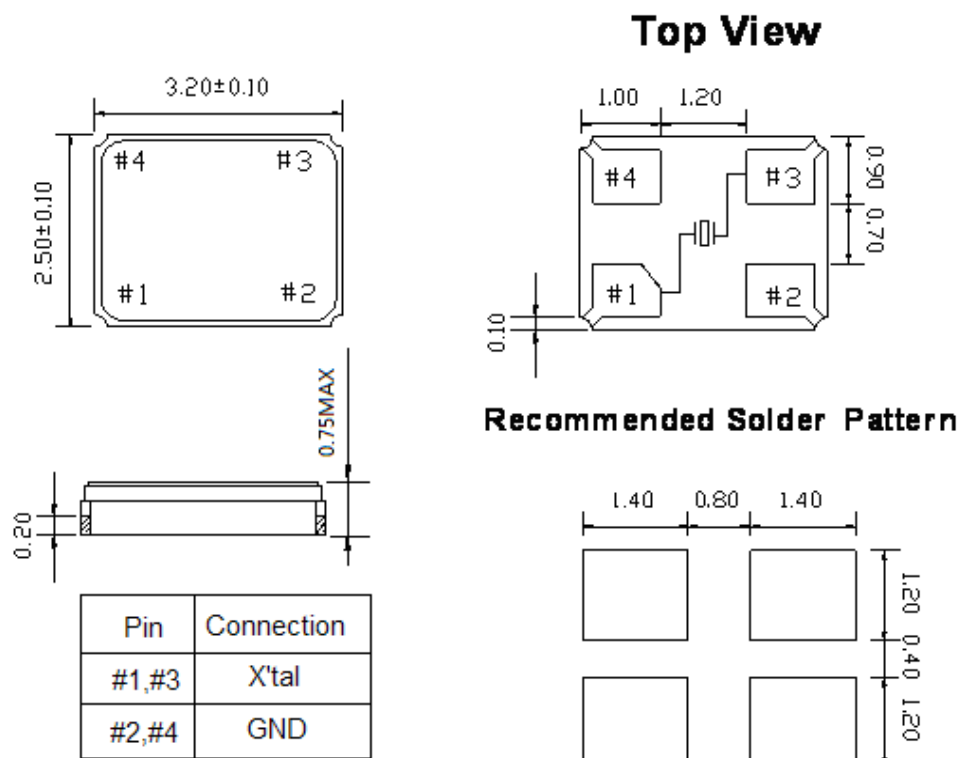
NOTE: Storage Temperature is only for the product itself,the temperature for the packing material is -4~40°C .

I STORAGE REQUIRMENT

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

Maximum storage time: 24 Months from date of manufacture.

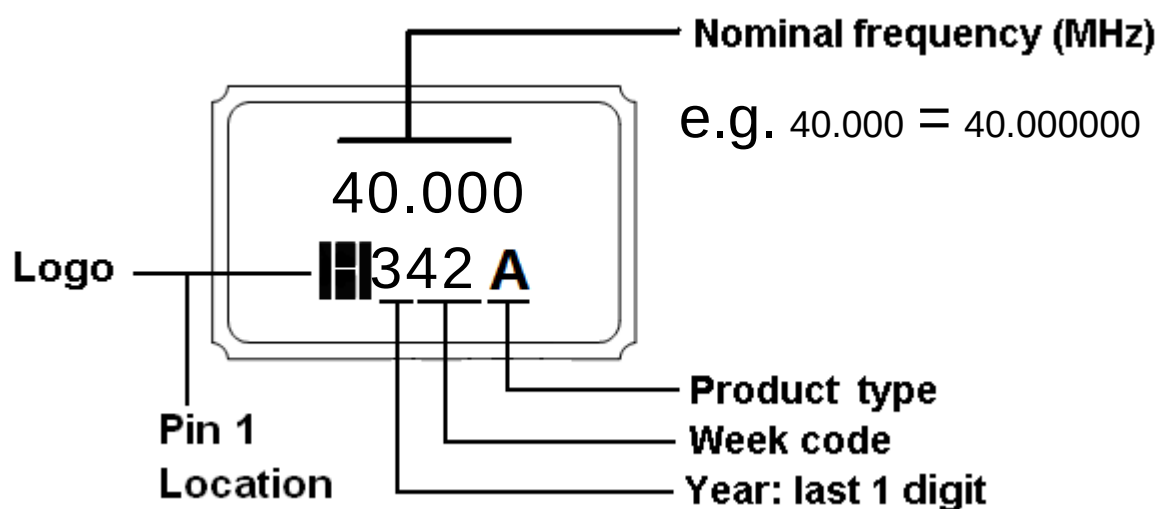
I OUTLINE DIMENSIONS (UNIT: mm)



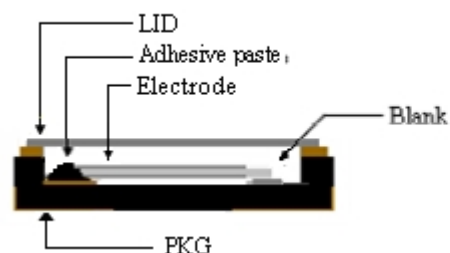
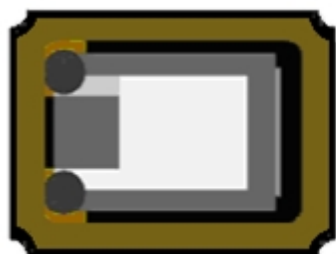
【Note】 #2, #4: connected with metal cover

*unlabeled tolerance: $\pm 0.1\text{mm}$

I MARKING



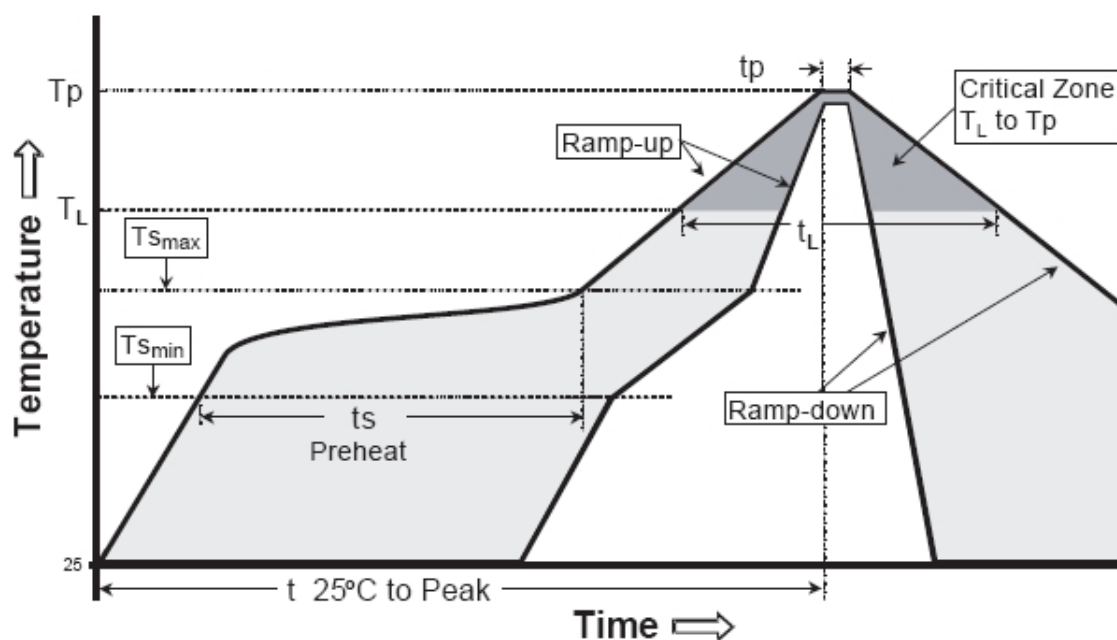
I PRODUCT LAYOUT



NO.	Part	Material	Remark
1	LID	KOVAR(Fe+Co+Ni alloy)	
2	PKG	Al ₂ O ₃	Base Surface plating(Pad): Nickel:1.27~20μm Au:0.1~1.0μm
3	Blank	SiO ₂	Quartz
4	Adhesive paste	Ag/Silicon	Support
5	Electrode	Noble metal	

REFLOW PROFILES

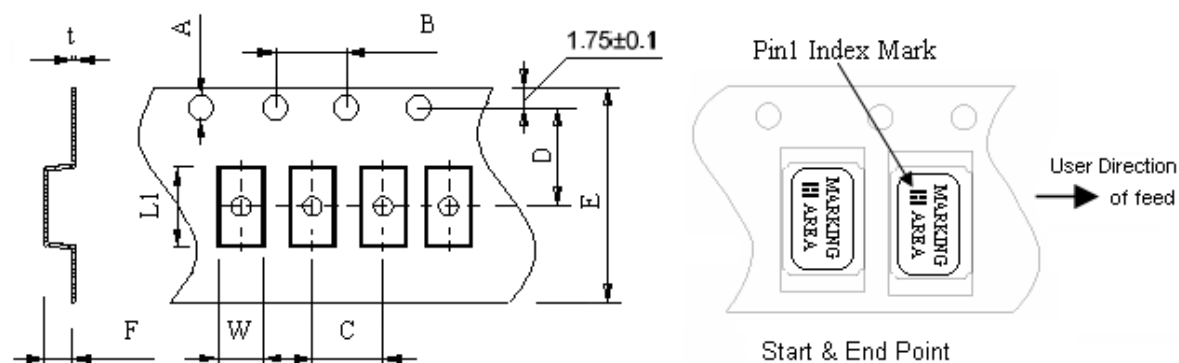
Profiles Feature	Pb-Free Assembly
Average Ramp-up Rate (Ts max to Tp)	3°C/second max.
Preheat ■ Temperature Min (Ts min) ■ Temperature Max (Ts max) ■ Time (ts min to ts max)	125°C 200°C 60~180 Sec.
Time maintained above ■ Temperature (T_L) ■ Time (t_L)	217°C 60~150 Sec.
Peak/Classification Temperature (Tp)	260°C
Time within 5°C of actual Peak Temperature (t _p)	20~40 Sec.
Ramp-down rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.
Suggest reflow times	3 Times max



Remark: To reference JEDEC J-STD-020

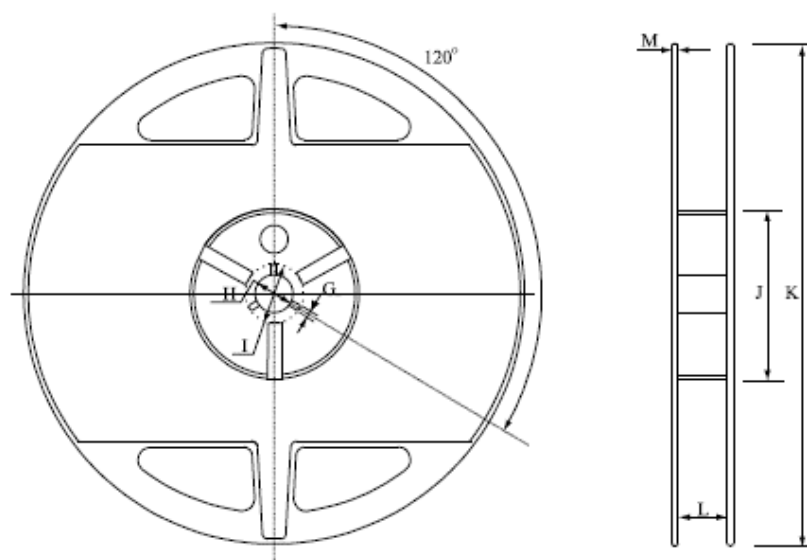
I PACKAGE(reference to EIA-481)

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	0.8±0.1	3.4±0.1	2.7±0.1	0.25±0.05

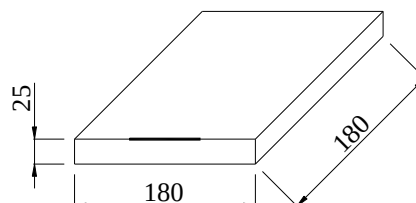
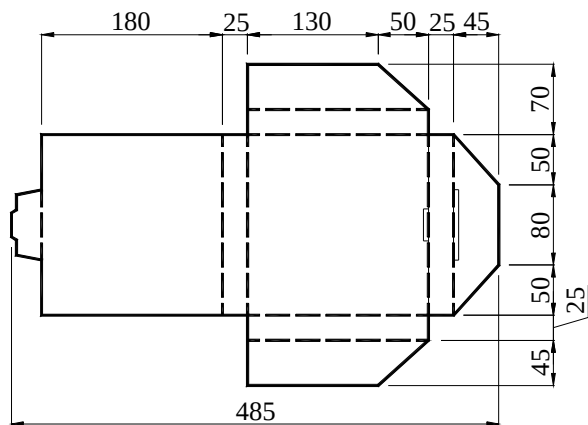
Reel Dimensions(unit: mm)



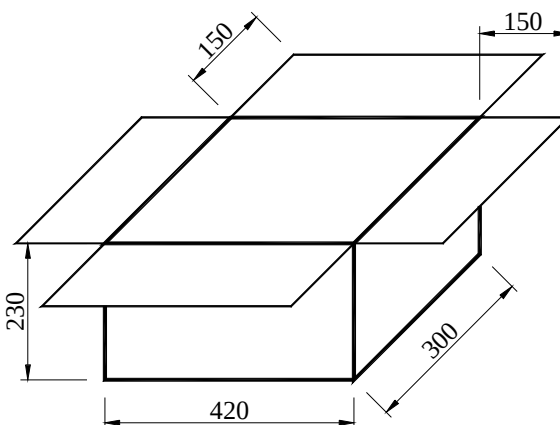
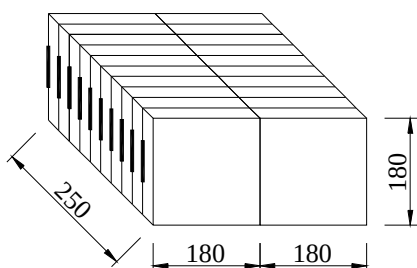
G	H	I	J	K	L	M
2.2±0.5	13.5±0.5	18.2±0.5	60.0±1.0	178.0±1.0	9.5±1.0	1.6±0.2

*3000pcs/Reel

Carton Dimension (unit : mm)



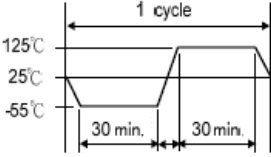
1 reel = 1 Inner box



20 Inner boxes = 1 Carton

60kpcs = 1 Carton

I RELIABILITY SPECIFICATIONS

No.	Test Item	Test Conditions	Reference
1	High Temp. Storage	Temp.: $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Time: 1000 ± 12 Hrs	MIL-STD-883 Method 108
2	Low Temp. Storage	Temp.: $-40^{\circ}\text{C} \pm 5^{\circ}\text{C}$; Time: 1000 ± 12 Hrs	JIS-C7021 B-12
3	Solder Heat Resistance	Pre-heat: 125°C 60~120 Sec. Solder Temp.: $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$; Time: 30 Sec.	MIL-STD-202 Method 210
4	High Temp., High Humidity Storage	Temp.: $85^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Relative Humidity: 80%~85%; Time: 1000Hrs	MIL-STD-202 Method 103
5	Thermal Shock	Temp.1: $-55^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Temp.2: $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Temp. change: 1min. max. 1000 cycles, maintain T1 and T2 for 30min.max each in one cycle 	JESD22 JA-104
6	Thermal Strength	Mount on PCB board and shear strength 1.8kg for 60 sec.	AEC-Q200
7	Drop Test	20Times Free Fall from 120cm height table to concrete floor	IEC60068-2-32
8	Vibration	Frequency Range: 10Hz~2000Hz Amplitude: 1.52mm or 20G 4Hrs in each direction, total 12Hrs	MIL-STD-202 Method 204
9	Mechanical Shock	Peak value:1000(g's); Normal duration: 0.5mS Waveform : Half-sine shock Pulse:6axis*3times	MIL-STD-202 Method 213
10	Board Flex	Duration time 60 sec. Deviation 3mm	AEC-Q200
11	Thermal Cycle	Total 1000 cycles of the following temperature: $-40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ to $125^{\circ}\text{C} \pm 3^{\circ}\text{C}$.Dwell time:15 min.	MIL-STD-202 Method 104
12	Moisture Resistance	20 cycles($25^{\circ}\text{C} \sim 65^{\circ}\text{C}$, 80%~100% RH) 24Hrs cycle	MIL-STD-202 Method 106
13	Operational Lite	$125^{\circ}\text{C} \pm 3^{\circ}\text{C}$ for 1000Hrs	MIL-STD-202 Method 108
14	Solderability	Dip in flux 5~10 Sec.; Temp.: $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Time: 10 Sec.	J-STD-002