HOSONIC ELECTRONIC CO., LTD.

SMD CRYSTAL UNIT SPECIFICATIONS

Customer	
Customer P/N	
Product	3225 Seam Sealing Crystal
Nominal Frequency	48.000000MHz
HOSONIC P/N	E3SB48E00000CE
Version	10C0
Issue Date	2015/9/6

HOSONIC		
Drawn	**Checked**	**Approved**
LUCY	**ZOE**	**JOHN**

Approved By Customer : _____

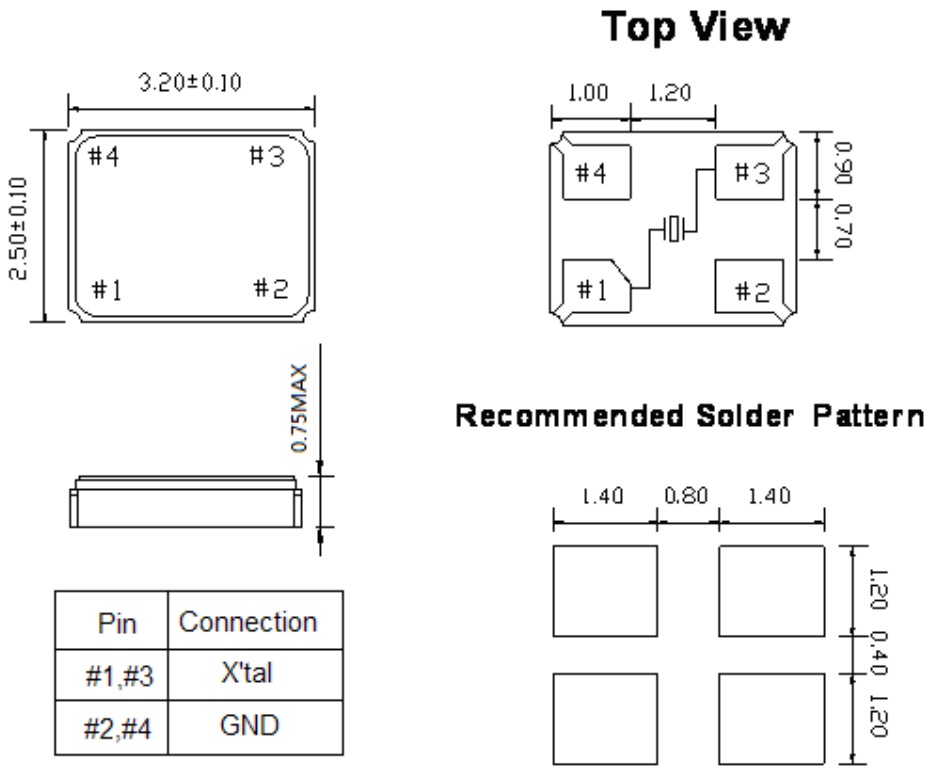
Revised Record				
Rev.	Rev. Date	Item	Content	Remark
1.0	2015-09-06		Initial released	

- **ELECTRICAL PARAMETERS**

No.	Item	Symb.	Electrical Specification				Remark
			Min.	Typ.	Max.	Units	
1	Nominal Frequency	F0		48.000000		MHz	
2	Mode of Vibration			Fundamental			
3	Frequency Tolerance	Δ F/F0	-10	-	10	ppm	At 25℃±3℃
4	Operating Temperature Range	T_{OPR}	-30	-	85	℃	
5	Frequency Stability	TC	-10	-	10	ppm	Ref. to 25℃
6	Storage Temperature	T_{STG}	-55	-	125	℃	
7	Load capacitance	CL	-	10	-	pF	
8	Equivalent Series Resistance	ESR	-	-	50	Ω	
9	Drive Level	DL	-	100	200	μW	
10	Insulation Resistance	IR	500	-	-	MΩ	At 100V_{DC}
11	Shunt Capacitance	C0	-	-	3	pF	
12	Aging Per Year	Fa	-2	-	2	ppm	First Year
13	Package type	HCX-3SB					

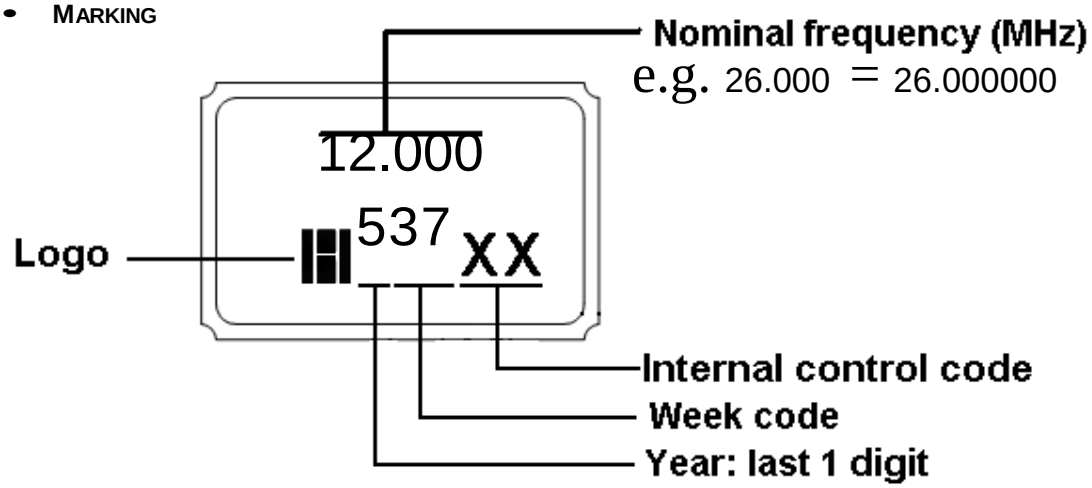
NOTE：Storage Temperature is only for the product itself,the temperature for the packing material is -4~40℃.

- **OUTLINE DIMENSIONS (UNIT: mm)**

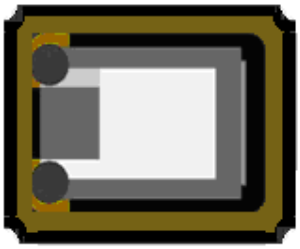


Pin	Connection
#1,#3	X'tal
#2,#4	GND

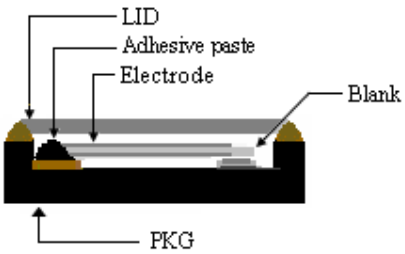
- **MARKING**



- **PRODUCT LAYOUT**





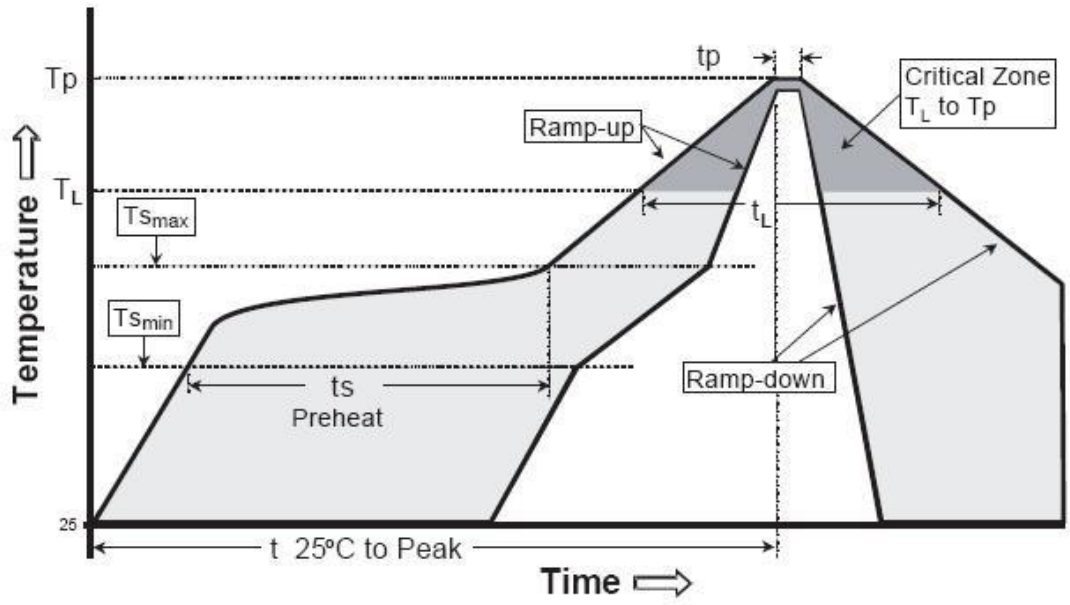




NO.	Part	Material	Remark
1	LID	KOVAR(Fe+Co+Ni alloy)	
2	PKG	Al_2O_3	Base
3	Blank	SiO_2	Quartz
4	Adhesive paste	Ag/Silicon	Support
5	Electrode	Noble metal	

- **REFLOW PROFILES**

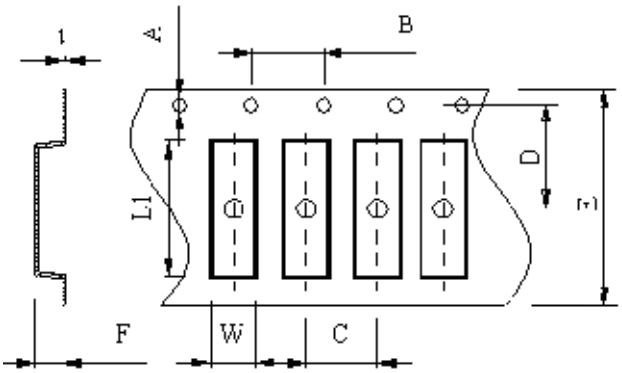
Profiles Feature	Pb-Free Assembly
Average Ramp-up Rate (Ts max to Tp)	3℃/second max.
Preheat ■ Temperature Min (Ts min) ■ Temperature Max (Ts max) ■ Time (ts min to ts max)	 125℃ 200℃ 60~180 seconds
Time maintained above ■ Temperature (T_L) ■ Time (t_L)	 217℃ 60~150 seconds
Peak/Classification Temperature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

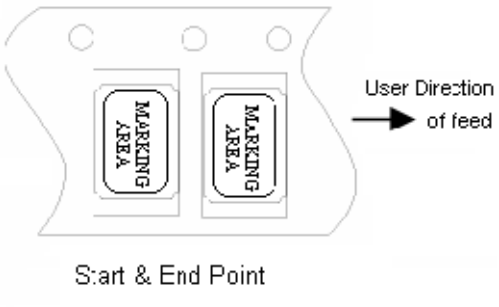


Remark：To reference JEDEC J-STD-020C

- **PACKAGE**

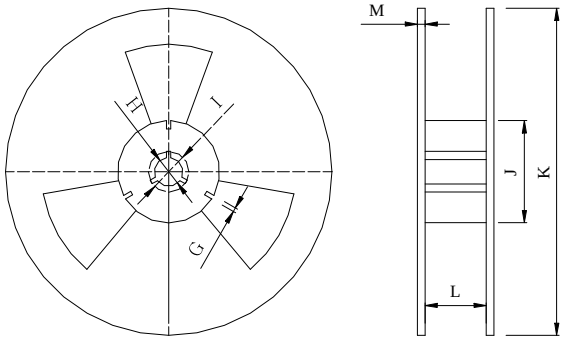
Tape Dimensions(unit : mm)





A	B	C	D	E	F	L1	W	t
1.50	4.0	4.0	3.5	8.0	1.0	3.4	2.7	0.3

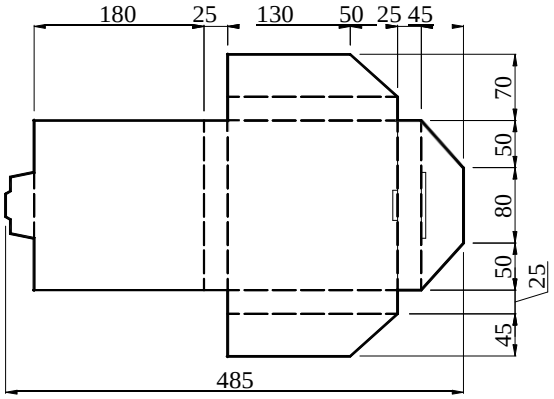
Reel Dimensions(unit: mm)

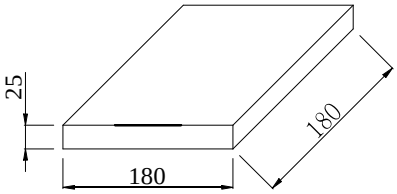


G	H	I	J	K	L	M
2.5	13.5	21.6	60.0	178	9.5	1.6

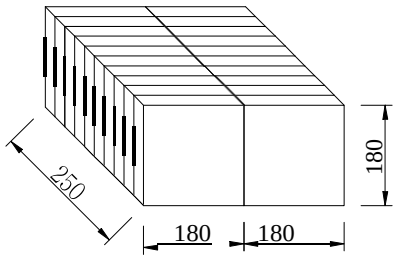
*3000pcs/Reel

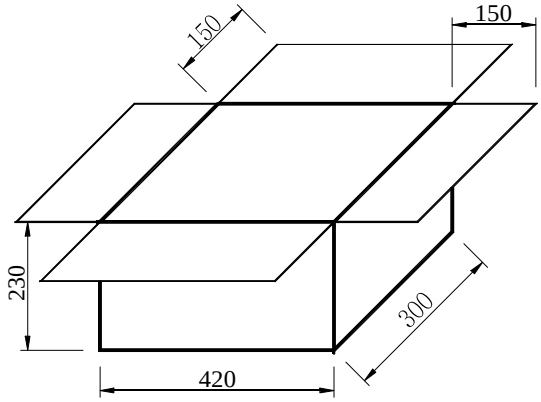
Carton Dimension (unit : mm)





1 reel = 1 Inner box





20 Inner boxes = 1 Carton

60kpcs = 1 Carton

- **RELIABILITY SPECIFICATIONS**

No.	Test Item	Test Conditions	Reference
1	High Temperature Storage	Temperature: 125℃ ±5℃ Time: 1000±12 Hours	MIL-STD-883E-1016
2	Temperature Cycle	Temperature 1: -55℃ ±5℃ Temperature 2: 125℃ ±5℃ 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℃ 60~120 Seconds Solder Temperature: 260℃ ±5℃ Time: 30 Seconds	MIL-STD-202F 210 E
4	Drop Test	3 Times Free Fall from 75cm height table to 3cm thickness hard wood board	MIL-STD-202F-203B
5	High Temperature, High Humidity Storage	Temperature: 85℃ ±5℃ Relative Humidity: 80%--85% Time: 250Hours±24Hours	MIL-STD-202F-103B
6	Steam Aging	Temperature: 97℃ ±5℃ Time: 24 Hours 260℃ solder pot to check solderability	MIL-STD-883 C-1008.2B
7	Solderability	Dip in flux 5~10 seconds Temperature: 245℃ ±5℃ Time: 10 Seconds	MIL-STD-202F-208H
8	Aging	Temperature: 85℃ ±5℃ Time: 250±12Hours	MIL-STD-202 F-108A
9	Thermal Shock	Temperature 1: -55℃ ±5℃ Temperature 2: 125℃ ±5℃ Temperature change between T1 and T2: 5 seconds 100 cycles, maintain T1 and T2 for 30 minutes each in one cycle	MIL-STD-883E-1011.9B
10	Vibration	Frequency Range: 10Hz~2000Hz Amplitude: 1.5mm or 20G 4Hours in each direction, total 12Hours	MIL-STD-202F-204D