



HOSONIC ELECTRONIC CO., LTD.
CRYSTAL UNIT SPECIFICATIONS



Issue	November 12, 2010
Rev.	1.0
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Customer	
Customer P/N	
Product	3225 Crystal
Nominal Frequency	27.000MHz
HOSONIC P/N	E3SB27E00000DE

Drawn	Checked	Approved



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Review Record

Rev.	Rev. Date	Item	Content	Remark
1.0			Initial released	



ELECTRICAL PARAMETERS

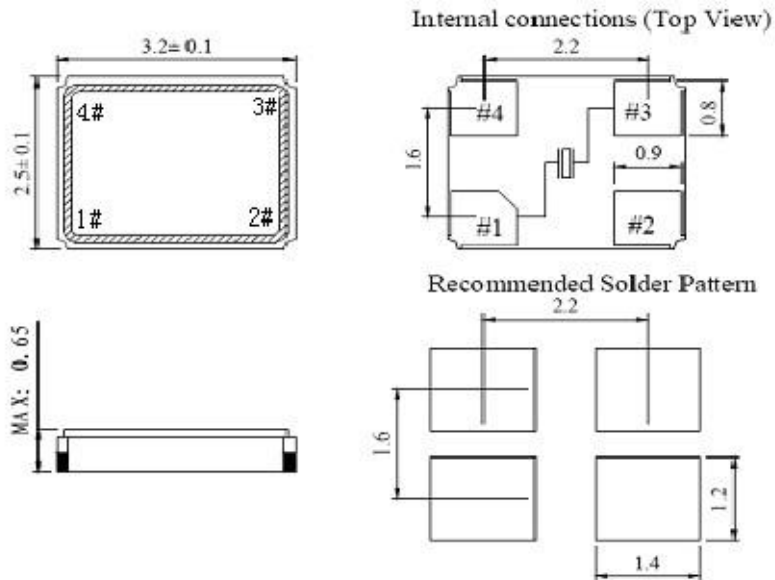
No.	Item	Symb.	Electrical Specification				Remark
			Min.	Type	Max.	Units	
1	Nominal Frequency	F0	27.000			MHz	
2	Mode of Vibration		<input checked="" type="checkbox"/> Fundamental		<input type="checkbox"/> 3 rd Overtone		
3	Frequency Tolerance	$\Delta F/F0$	-10	-	10	ppm	at 25°C±3°C
4	Operating Temperature Range	TOPR	-20	-	70	°C	
5	Frequency Stability	TC	-10	-	10	ppm	
6	Storage Temperature	TSTG	-40	-	85	°C	
7	Load capacitance	CL	-	10	-	pF	
8	Equivalent Series Resistance	ESR	-	-	50	Ω	
9	Drive Level	DL	-	50	100	μW	
10	Insulation Resistance	IR	500	-	-	M Ω	At 100V _{DC}
11	Shunt Capacitance	C0	-	-	3	pF	
12	Aging Per Year	Fa	-2	-	2	ppm	First Year
13	Package type	HCX-3SB					



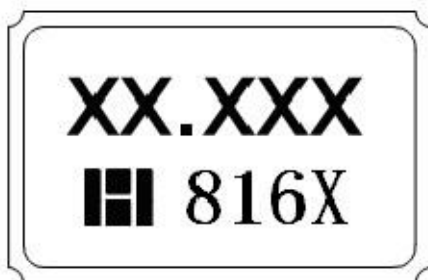
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● OUTLINE DIMENSIONS (UNIT: MM)



● MARKING



First Line: Frequency in MHz (6 digitals include dot)
Second Line: H---HOSONIC LOGO Date code
8---Year 2008
16---Week code
X--- Internal control code

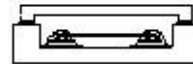
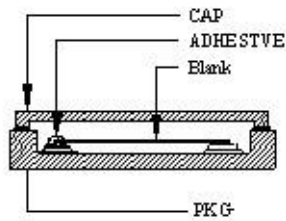
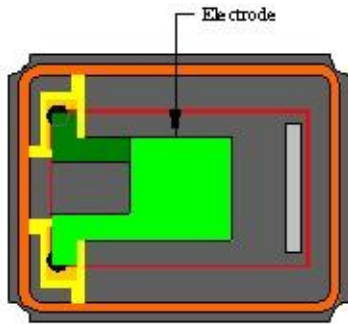
FOR EXAMPLE:
26.000
H 816M



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● PRODUCT LAYOUT



NO.	Part	Material	Remark
1	LID	KOVAR(Fe+Co+Ni alloy)	
2	PKG	Al ₂ O ₃	Base
3	BLANK	SiO ₂	Quartz
4	ADHESIVE	Ag/SILICON	Support
5	Electrode	Noble metal	

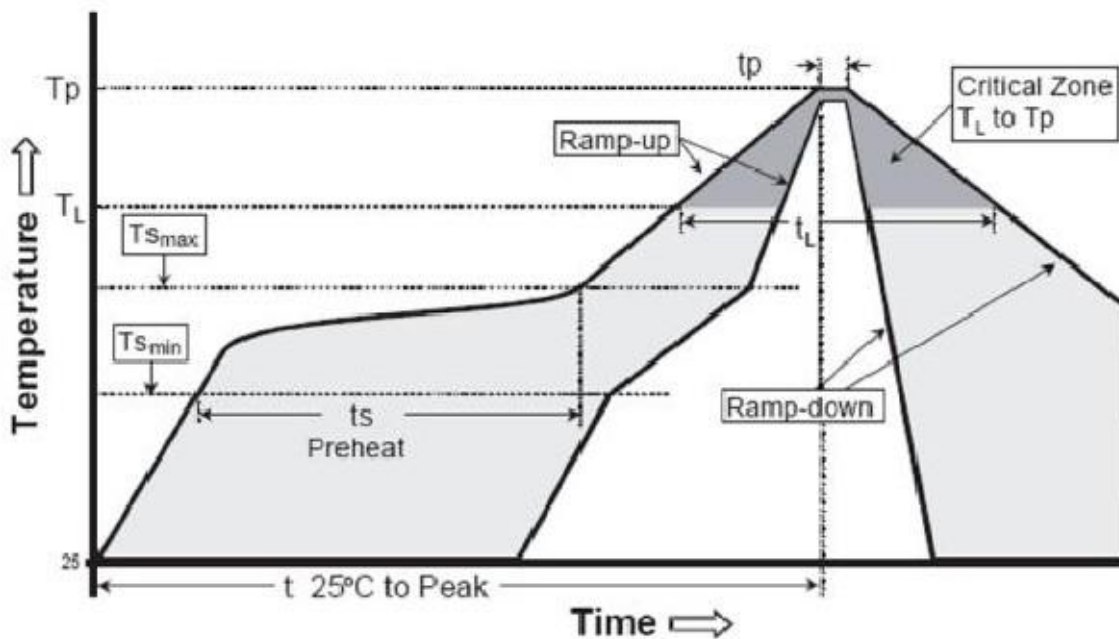


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● REFLOW PROFILES

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



Remark: To reference JEDEC J-STD-020C

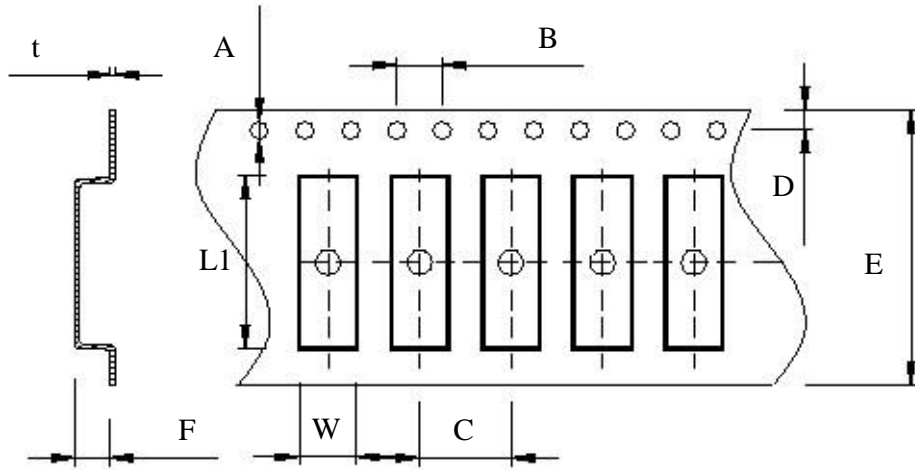


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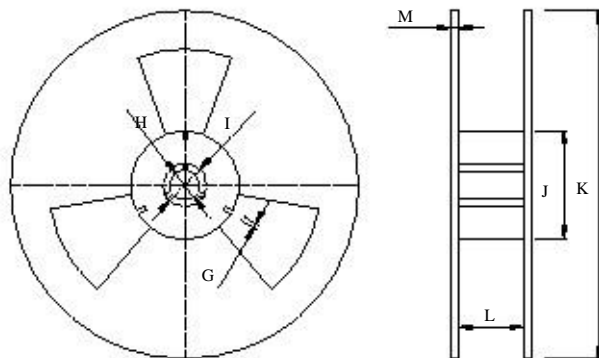
● PACKAGE

Tape Dimensions(unit : mm)



A	B	C	D	E	F	L1	W	t
1.50	4.0	4.0	1.75	8.0	1.0	3.6	2.9	0.3

Reel Dimensions(unit: mm)



G	H	I	J	K	L	M
2.5	13.5	21.6	60.0	180	9.5	1.6

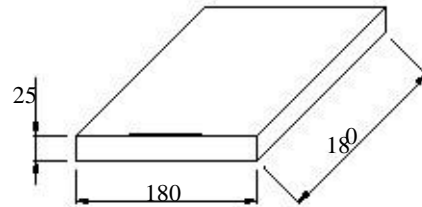
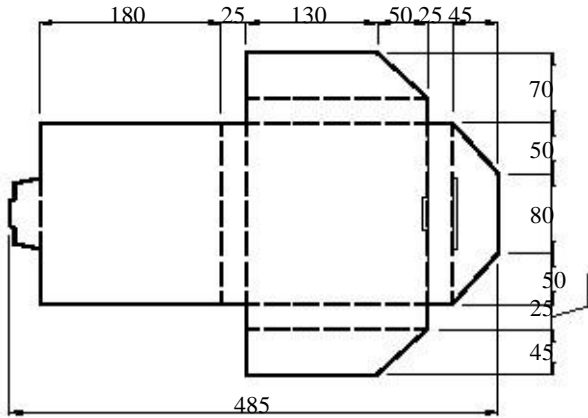
*3000pcs/Reel



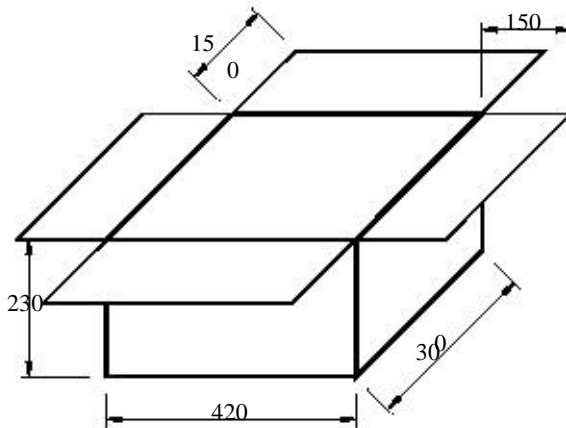
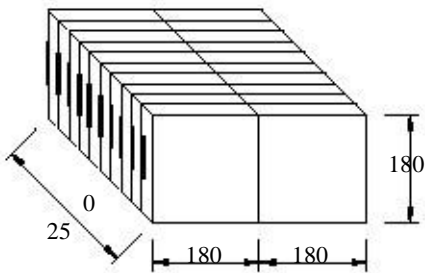
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Carton Dimension (unit : mm)



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°C±5°C Time:1000±24 Hours	MIL-STD-883E-1016
2	Temperature Cycle	Temperature 1: -55°C±5°C Temperature 2: 125°C±5°C Temperature change between T1 and T2 at soonest Run 10 cycles, maintain T1 and T2 15minutes each in one cycle	MIL-STD-883E-1011.9B
3	Solder Heat Resistance	Pre-heat: 125°C 60~120 Seconds Solder Temperature: 260°C±5°C Time:30 Seconds	MIL-STD-202F 210 E
4	Drop Test	6 Times Free Fall from 150cm height table to cement block	MIL-STD-202F-203B
5	High Temperature, High Humidity Storage	Temperature: 85°C±5°C Relative Humidity: 80%~85% Time: 250Hours±24 Hours	MIL-STD-202 F-103B
6	Steam Aging	Temperature: 97°C±5°C Time:8 Hours 260°C solder pot to check solderability	MIL-STD-883 C-1008.2B
7	Solderability	Dip in flux 5~10 seconds Temperature: 260°C±5°C Time:10 Seconds	MIL-STD-883E 2003
8	Aging	Temperature: 85°C±5°C Time:250±12Hours	MIL-STD-202 F-108A B
9	Thermal Shock	Temperature 1: -55°C±5°C Temperature 2: 125°C±5°C Temperature change between T1 and T2: 5 seconds 10 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