



HANGZHOU HOSONIC ELECTRONIC CO., LTD.
CRYSTAL OSCILLATOR SPECIFICATIONS



Issue	February 13, 2012
Rev.	
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Customer	Future
Customer P/N	
Product	3225 OSC
Nominal Frequency	12.000000MHz
HOSONIC P/N	DSEB12.0000WNS

Drawn	Checked	Approved



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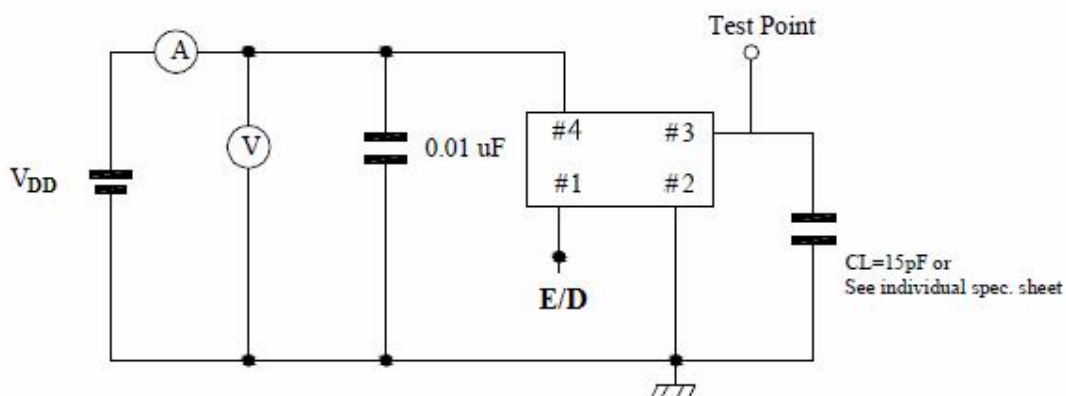
I ELECTRICAL PARAMETERS

No.	Item	Symb.	Electrical Specification				Remark
			Min.	Type	Max.	Units	
1	Nominal Frequency	F0	12.000000				MHz
2	Frequency Stability		-50		50	ppm	All condition*
3	Operating Temperature Range	T _{OPR}	-40		85	°C	
4	Storage Temperature	T _{STG}	-55		125	°C	
5	Power supply Voltage	V _{DD}	1.62	1.80	1.98	V	
6	Aging Per Year	Fa	-2.0		2.0	ppm	First Year
7	Supply current	I _{DD}			7	mA	
8	Output symmetry	Sym	45		55	%	
9	Rise time	Tr			7	nS	10%~90%V _{DD}
10	Fall time	Tf			7	nS	90%~10%V _{DD}
11	Output voltage	V _{OH}	90%			V _{DD}	
		V _{OL}			10%	V _{DD}	
12	Output load Hcmos Load				15	pF	
13	Start-up time				10	mS	
14	Pin 1, E/D function	pin 1=H or open.....output active at pin 3 pin 1=L.....high impedance at pin 3					
15	Package type	HXO-SE					

All condition*: Include 25deg C tolerance, operating temperature range , input voltage change, aging, load change, shock and vibration.

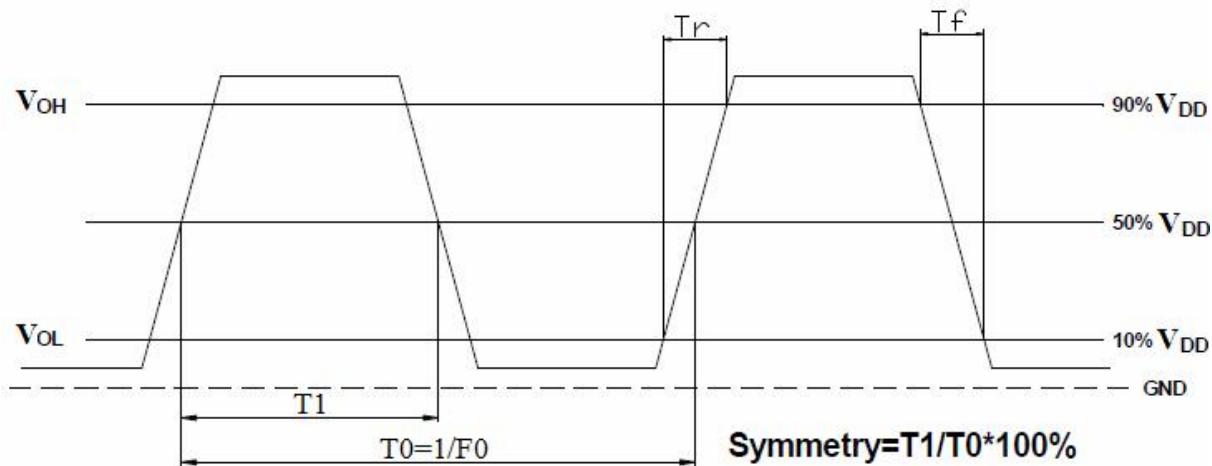


I HCMOS TEST CIRCUIT



Enable/Disable Function	
Input (pin 1)	Output (pin 3)
Open	Enable
$V_{IH} \geq 0.7V_{DD}$	Enable
$V_{IL} \leq 0.3V_{DD}$	Disable

I HCMOS OUTPUT WAVEFORM



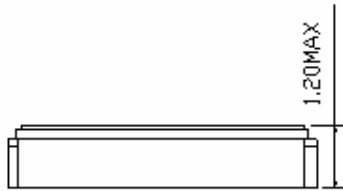
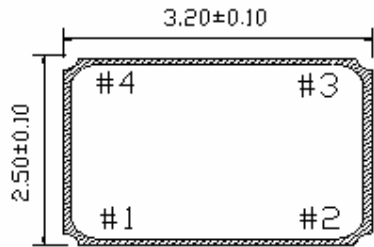


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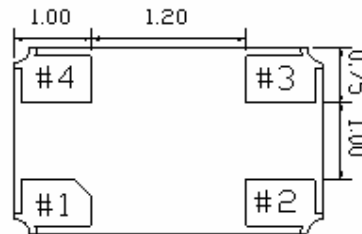
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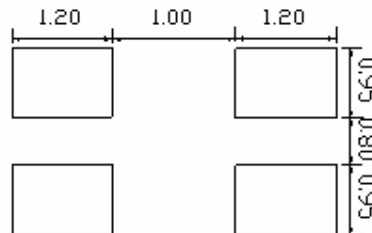
I OUTLINE DIMENSIONS (unit: mm)



Top View



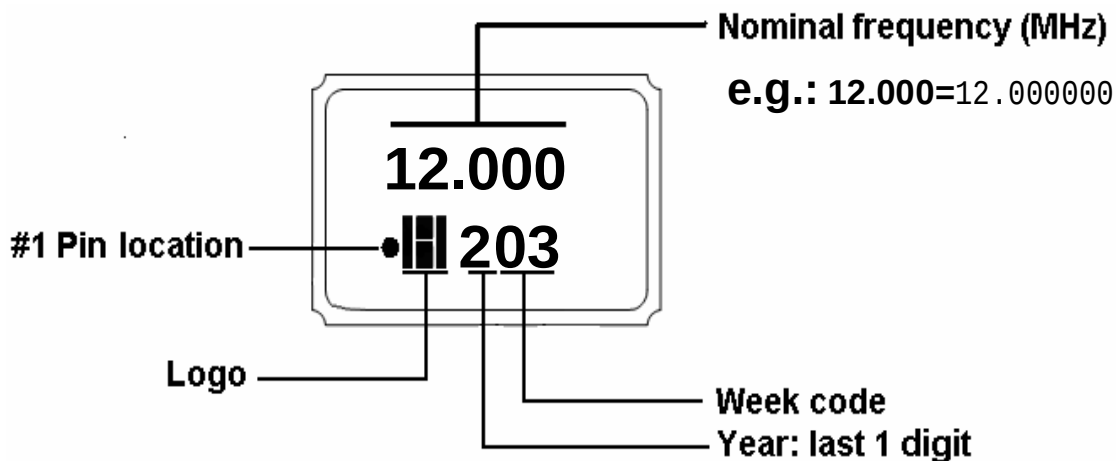
Recommended Solder Pattern



Pin	Connection
1	E/D
2	GND
3	Output
4	V _{DD}

Note: 0.01uF bypass capacitor should be placed between V_{DD} (pin 4) and GND (pin 2) to minimize power supply line noise.

I MARKING



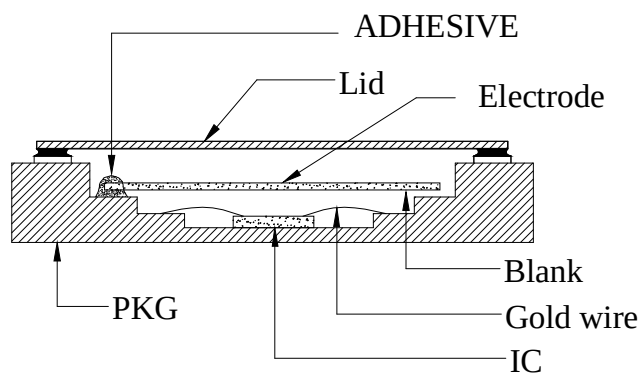


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I PRODUCT LAYOUT



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	
6	IC	Si	
7	Gold wire	Au	Connect



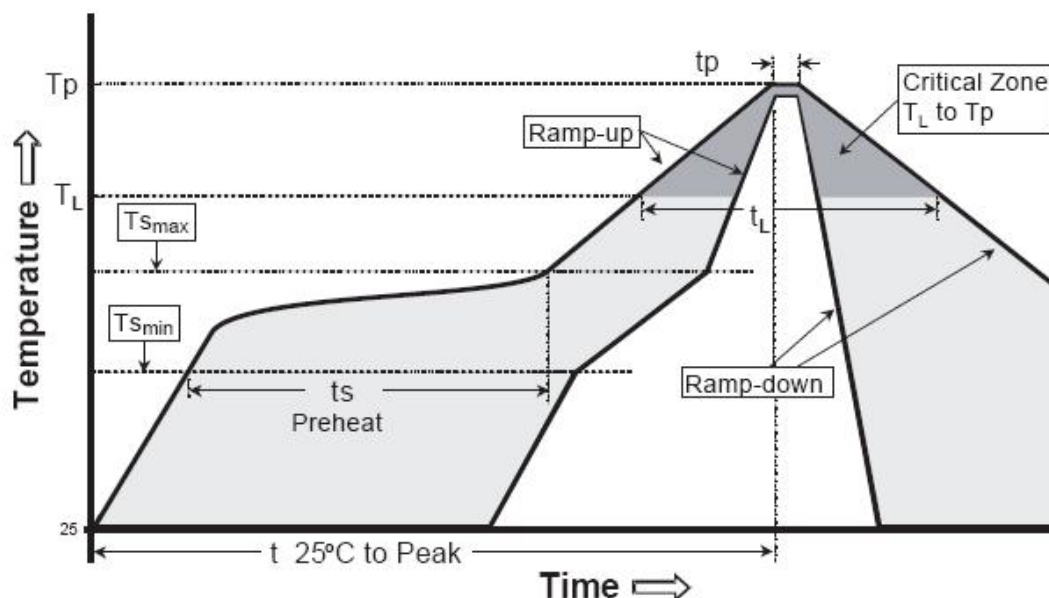
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I REFLOW PROFILES

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 seconds
Time maintained above ■ Temperature (TL) ■ Time (tL)	217°C 60~150 seconds
Peak/Classification Temperature (Tp)	260°C
Time within 5°C of actual Peak Temperature (tp)	20~40 seconds
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-020C



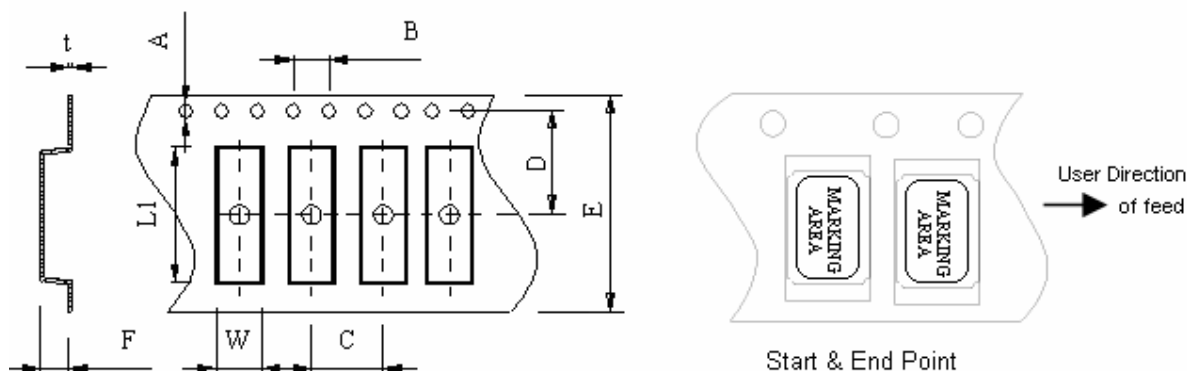
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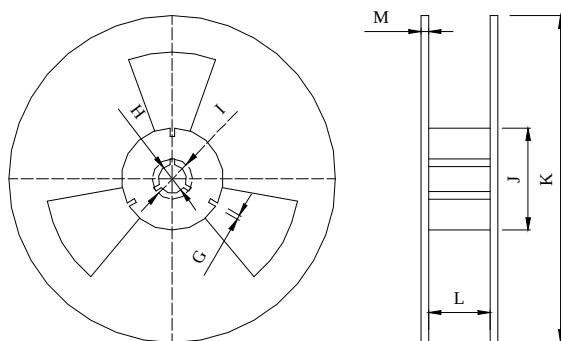
I PACKAGE

Tape Dimensions(unit : mm)



A	B	C	D	E	F	L1	W	t
1.50±0.1	4.0±0.1	4.0±0.1	3.5±0.1	8.0±0.2	1.3	3.4±0.1	2.7±0.1	0.3

Reel Dimensions(unit: mm)



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

*3000pcs/Reel

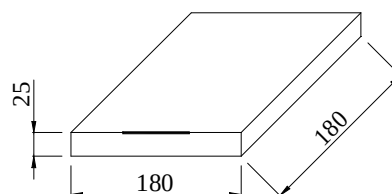
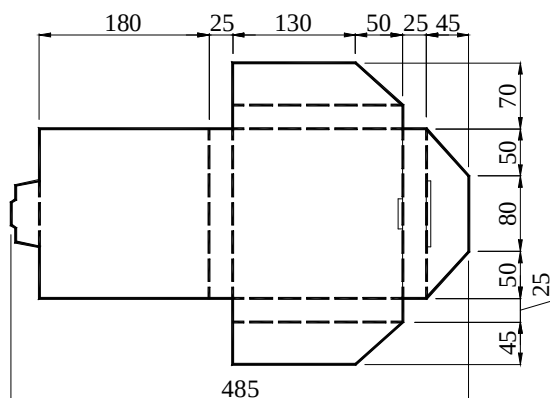


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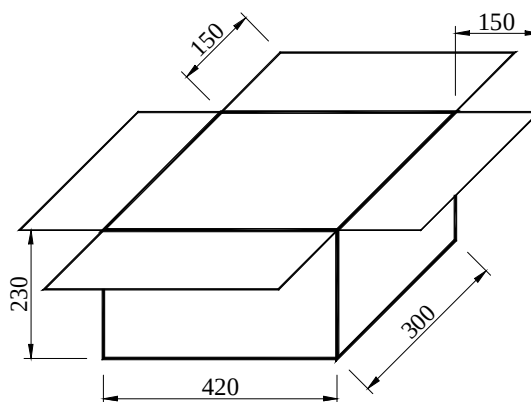
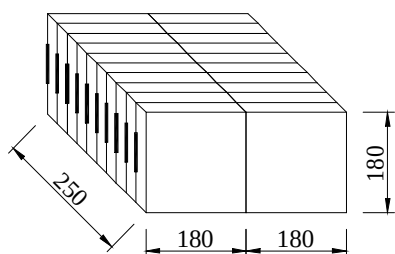
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Carton Dimension (unit : mm)



1 reel = 1 Inner box



20 Inner boxes = 1 Carton

60kpcs = 1 Carton



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I 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	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°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: 245°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