

SMD CRYSTAL OSCILLATOR SPECIFICATIONS

| | |
|--------------------------|----------------|
| Customer | 立创 |
| Customer P/N | |
| Product | 3225 OSC |
| Nominal Frequency | 40.000000MHz |
| HOSONIC P/N | D3SX40E00000EE |
| Version | 10C0 |
| Issue Date | 2021/2/27 |

| HOSONIC | | |
|----------------|----------------|-----------------|
| Drawn | Checked | Approved |
| LUCY | Richard | JOHN |

Approved By Customer : _____



HOSONIC ELECTRONIC CO., LTD.



Revised Record

| Rev. | Rev. Date | Item | Content | Remark |
|------|------------|------|------------------|--------|
| 1.0 | 2021-02-27 | | Initial released | |

I ELECTRICAL PARAMETERS

| No. | Item | Symb. | Electrical Specification | | | | Remark | |
|-----|-----------------------------|---|--------------------------|------|------|-----------------|------------------------|--|
| | | | Min. | Typ. | Max. | Units | | |
| 1 | Nominal Frequency | F0 | 40.000000 | | | MHz | | |
| 2 | Frequency Stability | | -25 | | 25 | ppm | All condition* | |
| 3 | Operating Temperature Range | TOPR | -40 | | 85 | °C | | |
| 4 | Storage Temperature | TSTG | -55 | | 125 | °C | | |
| 5 | Power supply Voltage | V _{DD} | 3.3±10% | | | V | | |
| 6 | Aging Per Year | Fa | -3.0 | | 3.0 | ppm | First Year | |
| 7 | Supply current | I _{DD} | | | 25 | mA | | |
| 8 | Output symmetry | Sym | 45 | | 55 | % | | |
| 9 | Rise time | Tr | | | 5.0 | ns | 10%~90%V _{DD} | |
| 10 | Fall time | Tf | | | 5.0 | 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 | D3SX | | | | | | |

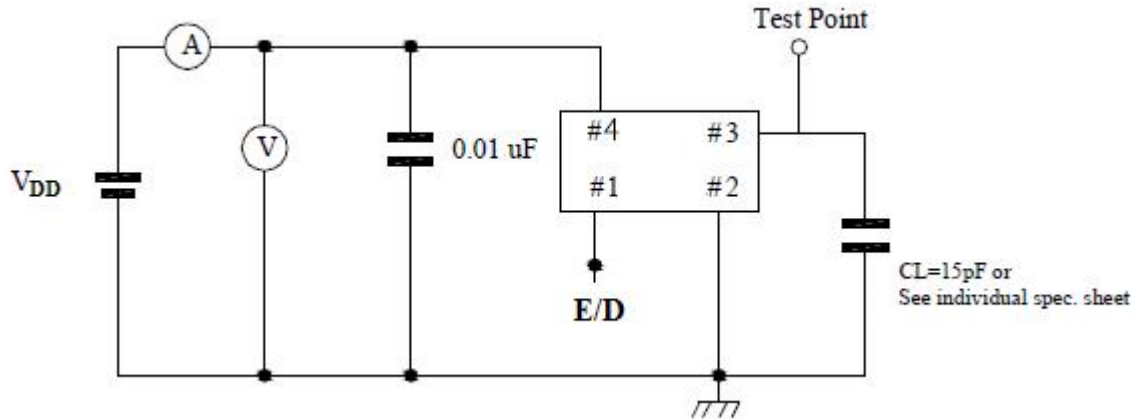
NOTE: Storage Temperature is only for the product itself,the temperature for the packing material is -4~40°C.

All condition*: Include 25°C tolerance, operating temperature range , input voltage change, aging, load change.

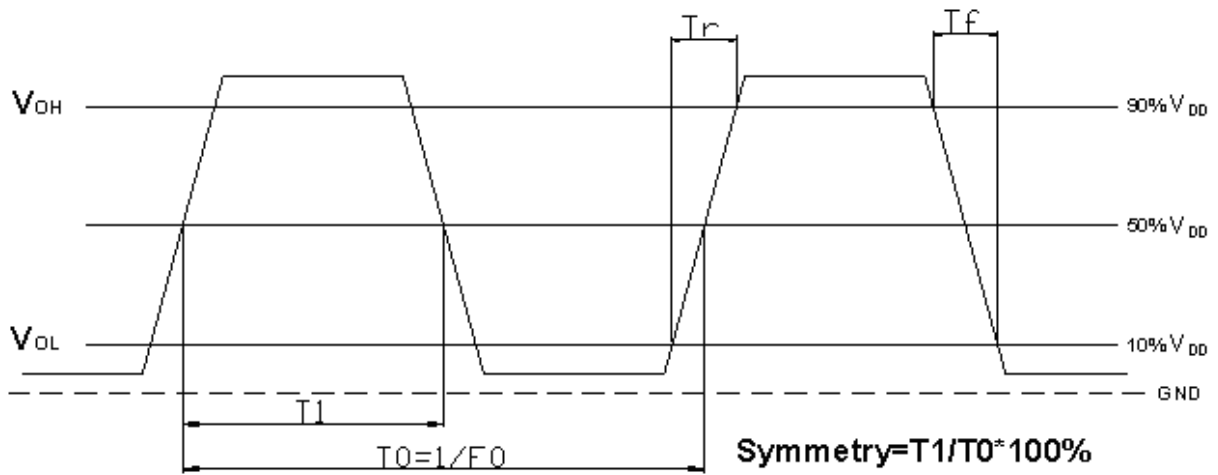
I STORAGE REQUIRMENT

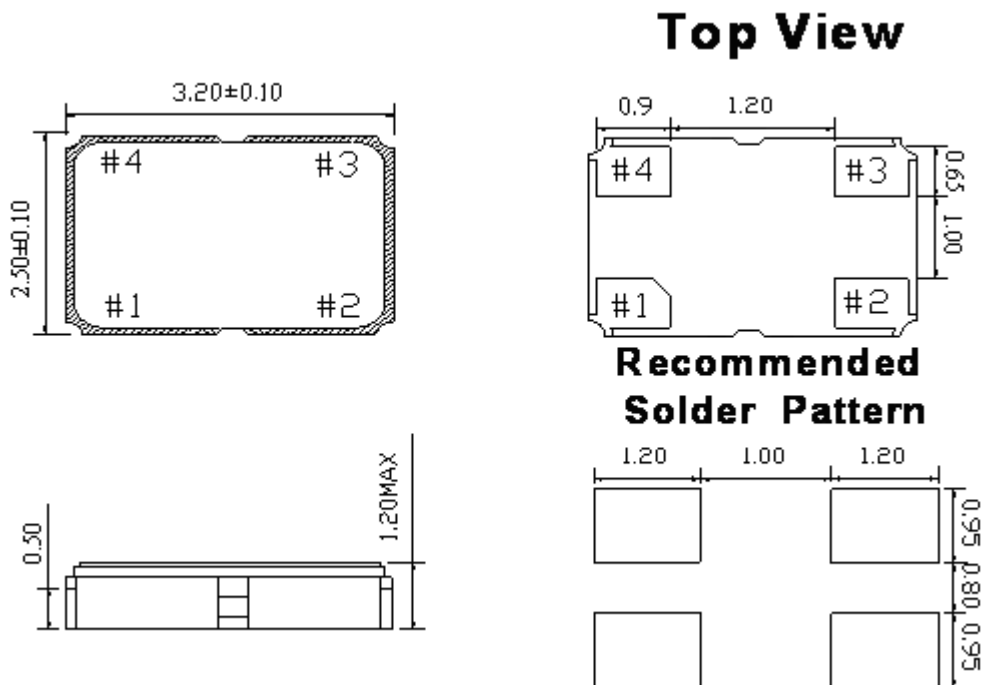
Storage environmental conditions: -4~40°C, 70%RH max.

Maximum storage time: 24 Months from date of manufacture.

I HCMOS Test Circuit


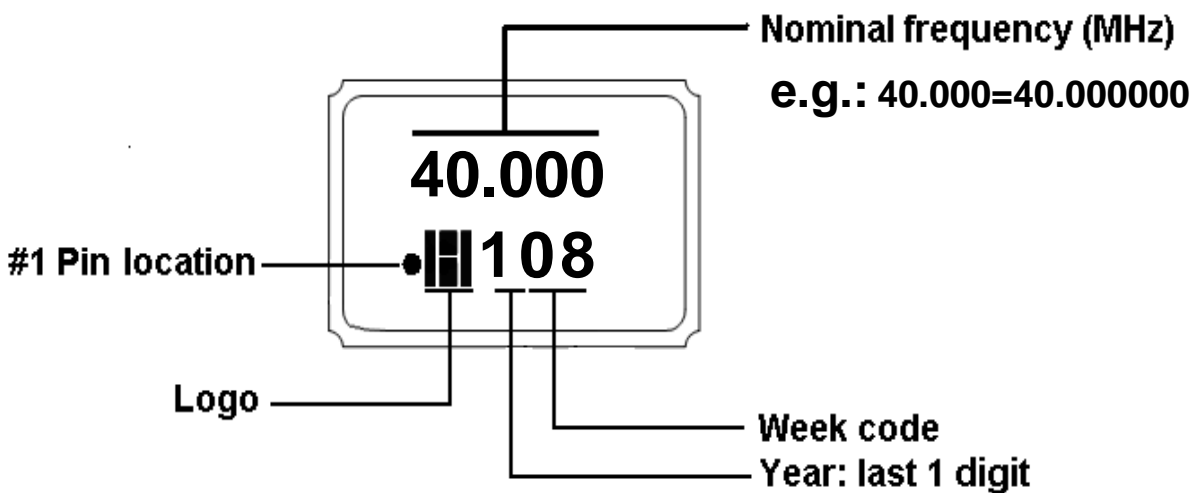
| Enable/Disable Function | |
|-------------------------|----------------|
| Input (pin 1) | Output (pin 3) |
| Open | Enable |
| $V_{IH} \geq 0.7V_{DD}$ | Enable |
| $V_{IL} \leq 0.3V_{DD}$ | Disable |

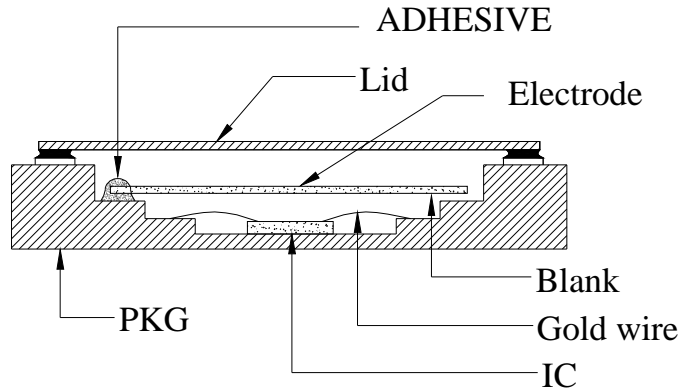
I HCMOS OUTPUT WAVEFORM


I OUTLINE DIMENSIONS (unit: mm)


| 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;
 - Line shouldn't be layed under the oscillator in the PCB to minimize signal interference.
 - The Load we advise is only 15pF (that means drive only 1 CMOS/TTL gate).
 - Unlabeled tolerance: ± 0.1mm

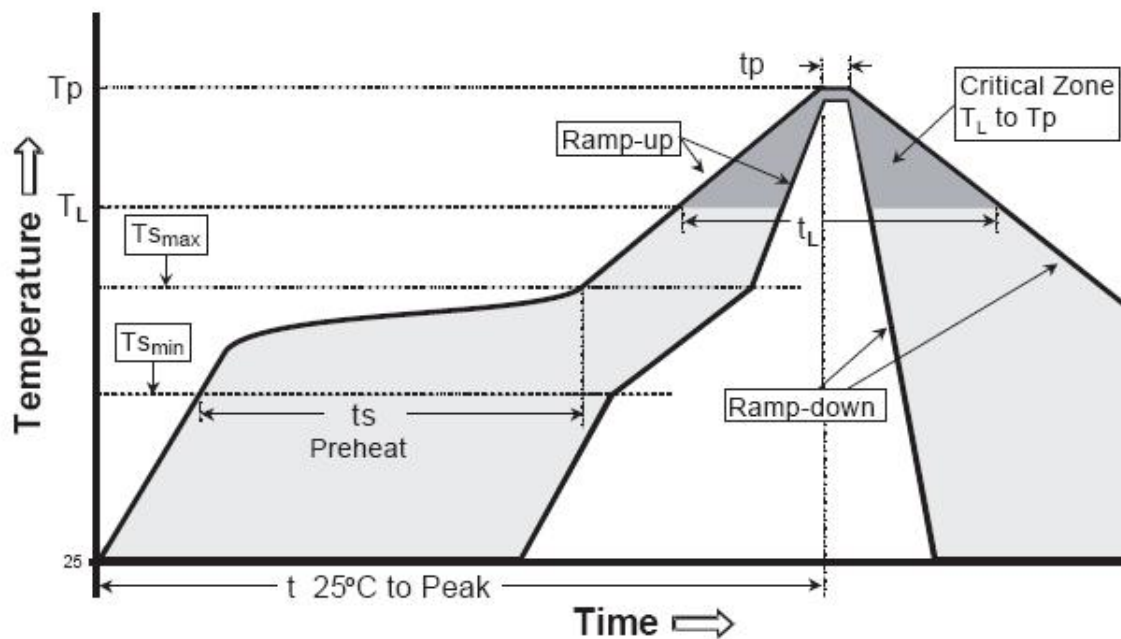
I MARKING


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 |

I REFLOW PROFILES

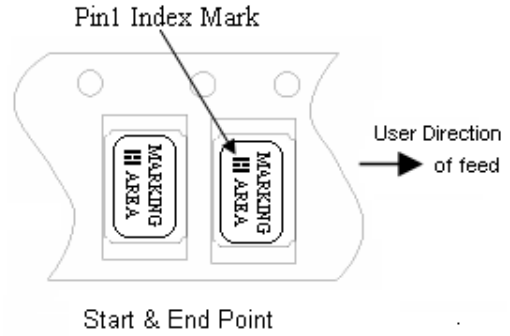
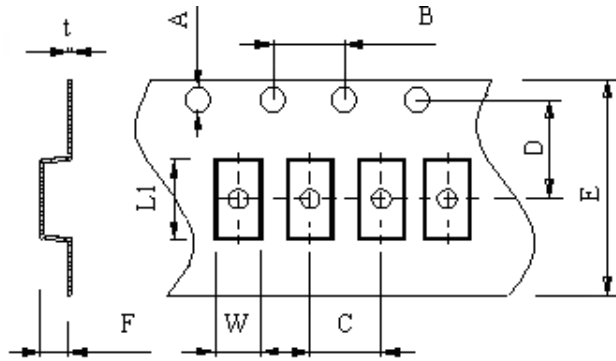
| Profiles Feature | Pb-Free Assembly |
|---|--------------------|
| Average Ramp-up Rate (Ts max to Tp) | 3°C/second max. |
| Preheat | |
| ■ Temperature Min (Ts min) | 125°C |
| ■ Temperature Max (Ts max) | 200°C |
| ■ Time (ts min to ts max) | 60~180 seconds |
| Time maintained above | |
| ■ Temperature (TL) | 217°C |
| ■ Time (tL) | 60~150 seconds |
| Peak/Classification Temperature (Tp) | 260°C |
| Time within 5°C of actual Peak Temperature (tp) | 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-020

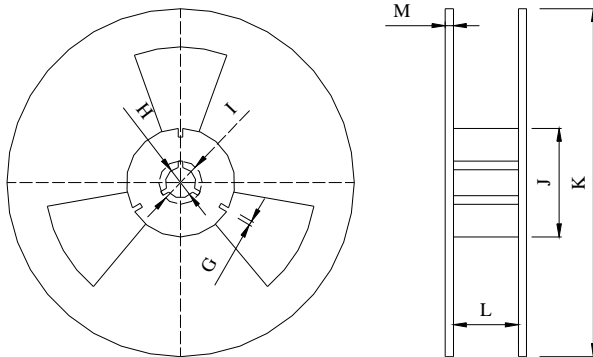
I PACKAGE(reference to EIA-481)

Tape Dimensions(unit : mm)



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

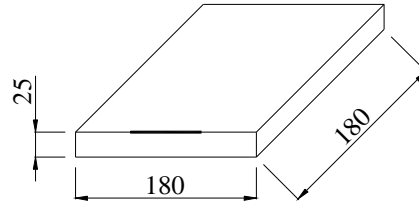
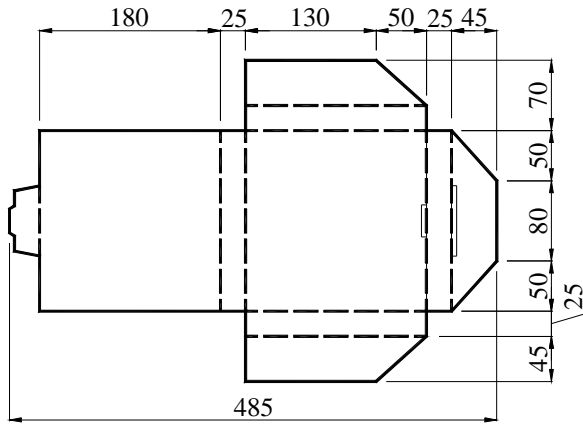
Reel Dimensions(unit: mm)



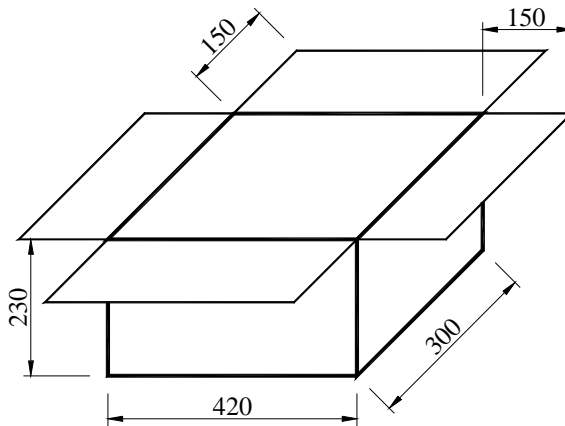
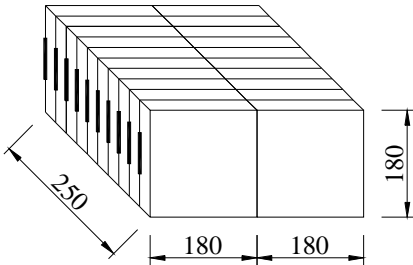
| G | H | I | J | K | L | M |
|-----|------|------|------|-----|-----|-----|
| 2.5 | 13.5 | 21.6 | 60.0 | 178 | 9.5 | 1.6 |

*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: $125^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Time: 1000 ± 12 Hours | MIL-STD-202 Method 108 |
| 2 | Temperature Cycle | Temperature 1: $-55^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Temperature 2: $125^{\circ}\text{C} \pm 3^{\circ}\text{C}$ 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: $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 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: $85^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Relative Humidity: 80%--85% Time: 250Hours ± 12 Hours | MIL-STD-202 Method 103 |
| 6 | Steam Aging | Temperature: $97^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Time: 24 Hours 260°C solder pot to check solderability | J-STD-002 |
| 7 | Solderability | Dip in flux 5~10 seconds Temperature: $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Time: 10 Seconds | J-STD-002 |
| 8 | Aging | Temperature: $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Time: 250 ± 12 Hours | MIL-STD-202 Method 108 |
| 9 | Thermal Shock | Temperature 1: $-55^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Temperature 2: $125^{\circ}\text{C} \pm 3^{\circ}\text{C}$ 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 |

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