

SHOULDER ELECTRONICS LIMITED

SPECIFICATION FOR APPROVAL

D A T E : 2012-08-03

| | |
|----------------------|--|
| CUSTOMER | |
| PRODUCT TYPE | 3225 TCXO(3.0V -30/85°C ±0.5ppm 1.2Tmax) |
| NOMINAL FREQ. | 16.369000 MHz |
| CUSTOMER P/N | N/A |
| SHOULDER P/N | TE005H16363TOC(3225TCXO16.369 0.5PPM 3.0V) |

[USER]

| CHECK | CHECK | APPROVAL |
|------------------------|------------|------------|
| LEO | YORK | PERCY |
| 20 | 20 | 20 |
| EXPIRATION DATE | 20 | |

[SHOULDER]

| CHECK | CHECK | APPROVAL |
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| LEO | YORK | PERCY |
| 2012 . 08 . 03 . | 2012 . 08 . 03 . | 2012 . 08 . 03 . |

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SCOPE

This specification is for SMD TCXO(Temperature Compensated Crystal Oscillator).

APPLICATION STANDARDS

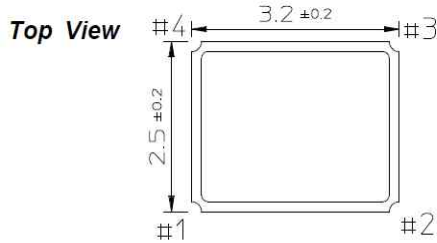
MIL-STD-883.

ELECTRICAL SPECIFICATIONS

| Parameters | | Electrical Specifications | | | |
|-----------------------------|-------------------------|---------------------------|------|------|----------|
| | | MIN | TYP | MAX | UNITS |
| Frequency(Fo) ref: 25°C | | 16.369000 | | | MHz |
| Frequency Tolerance at 25°C | | -2.0 | | +2.0 | ppm |
| Frequency Stability | Vs. Temperature Range | -0.5 | | +0.5 | ppm |
| | Vs. Supply Voltage(±5%) | -0.2 | | +0.2 | ppm |
| | Vs. Load(±5%) | -0.2 | | +0.2 | ppm |
| | Vs. Aging(at 25°C) | -1.0 | | +1.0 | ppm/year |
| Operating Temperature Range | | -30 | | 85 | °C |
| Storage Temperature Range | | -40 | | 85 | °C |
| Supply Voltage | | | 3.0 | | VDC |
| Current Consumption | | | | 1.5 | mA |
| Output Voltage Level | | 0.8 | | | Vp-p |
| Output Waveform | | Clipped Sinewave | | | |
| Output Load | | 10kΩ//10pF | | | |
| Start-up Time(90% of Vp-p) | | | | 3.0 | mS |
| Duty Cycle | | 40 | | 60 | % |
| Phase Noise | 10Hz Carrier Offset | | -86 | | dBc/Hz |
| | 100Hz Carrier Offset | | -115 | | dBc/Hz |
| | 1KHz Carrier Offset | | -138 | | dBc/Hz |
| | 10KHz Carrier Offset | | -146 | | dBc/Hz |
| Remark | | | | | |

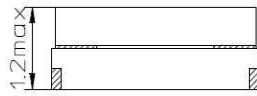
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DIMENSIONS(UNIT: mm)

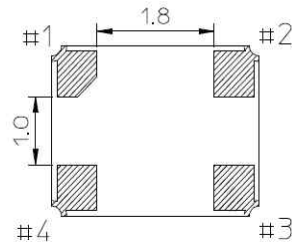


| No. | Connection |
|-----|------------|
| #1 | GND |
| #2 | GND |
| #3 | Output |
| #4 | Vcc |

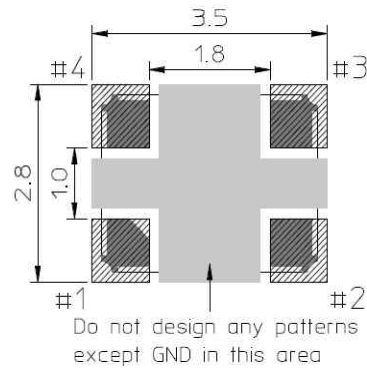
Side View



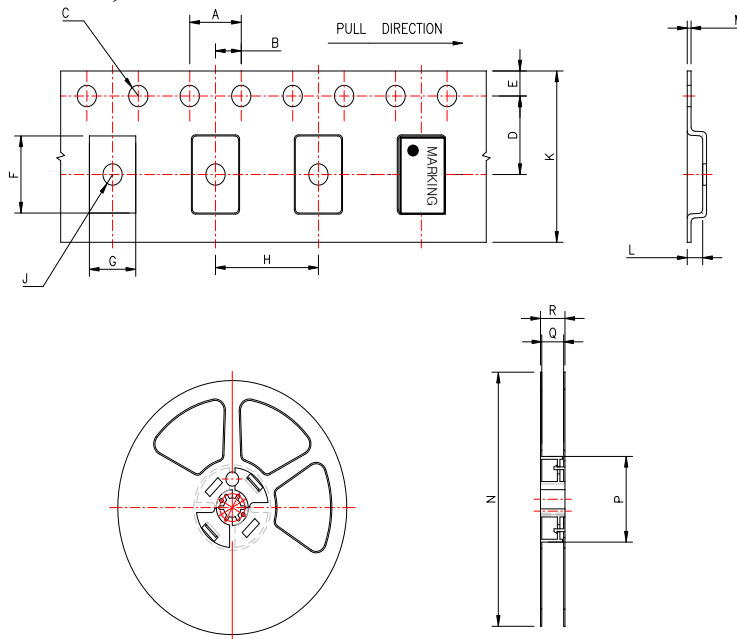
Bottom View



※ Recommended Land Pattern (Top View)



PACKING(UNIT: mm)

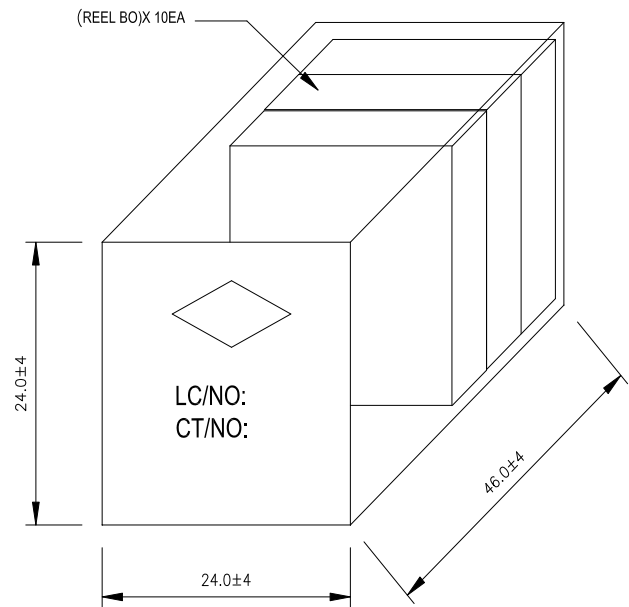
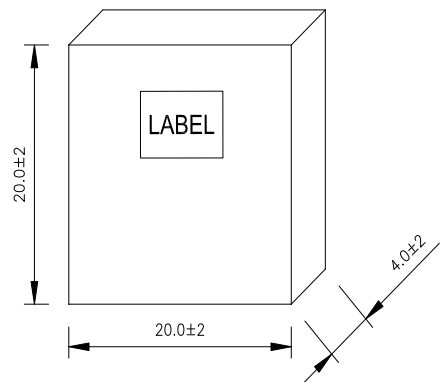
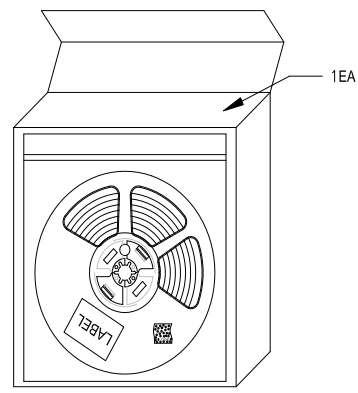
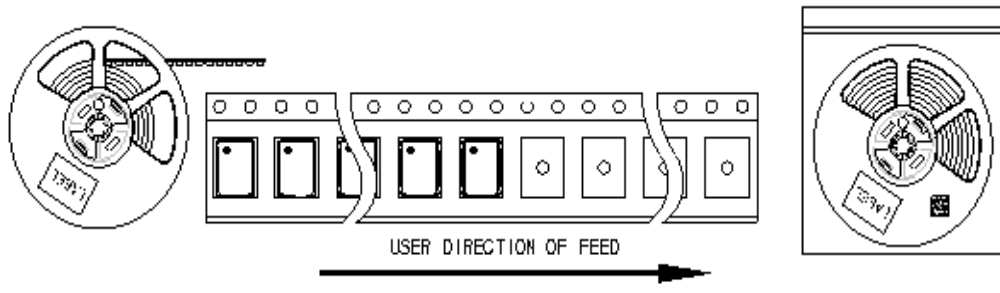


| | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | QTY |
|------|------|------|-------|------|------|------|------|------|-------|------|------|------|------|-----|-------|-------|------|
| SIZE | 8.00 | 2.00 | φ1.50 | 5.50 | 1.75 | 5.35 | 3.50 | 8.00 | φ1.50 | 12.0 | 1.50 | 0.29 | φ178 | φ60 | 13.00 | 16.00 | 3000 |

1. TOP TAPE START 250mm MINIMUM LEADER AND 160mm EMPTY POCKETS
2. END TAPE 250mm MINIMUM EMPTY POCKETS

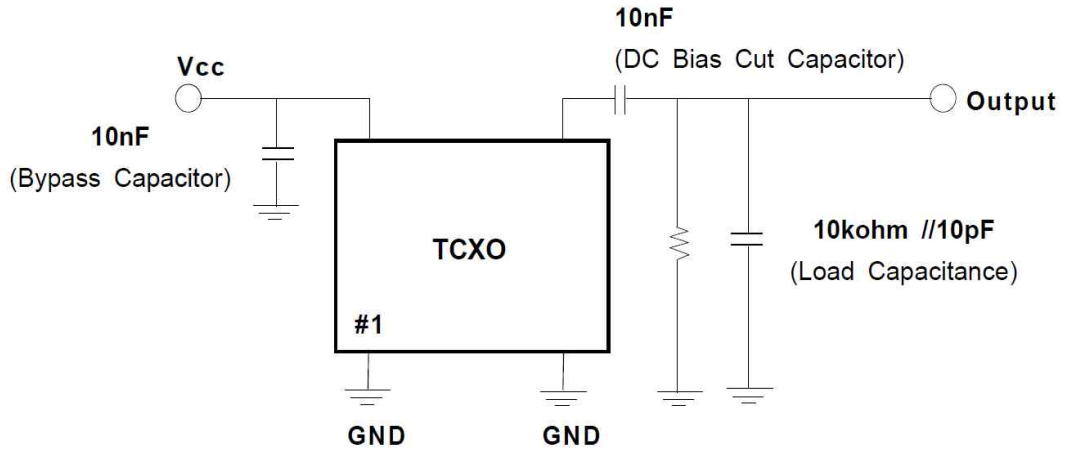
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OUTBOX DIMENSIONS(CM)



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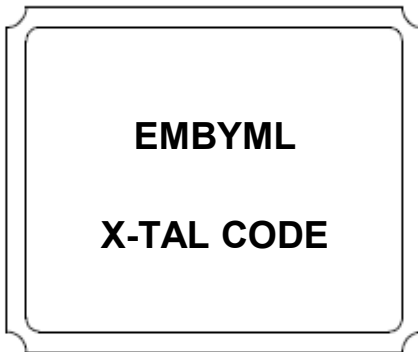
TEST DIAGRAM



※ Note

1. Be cautious of TCXO pin connection.
2. Load Capacitance includes probe and test JIG capacitance.

MARKING



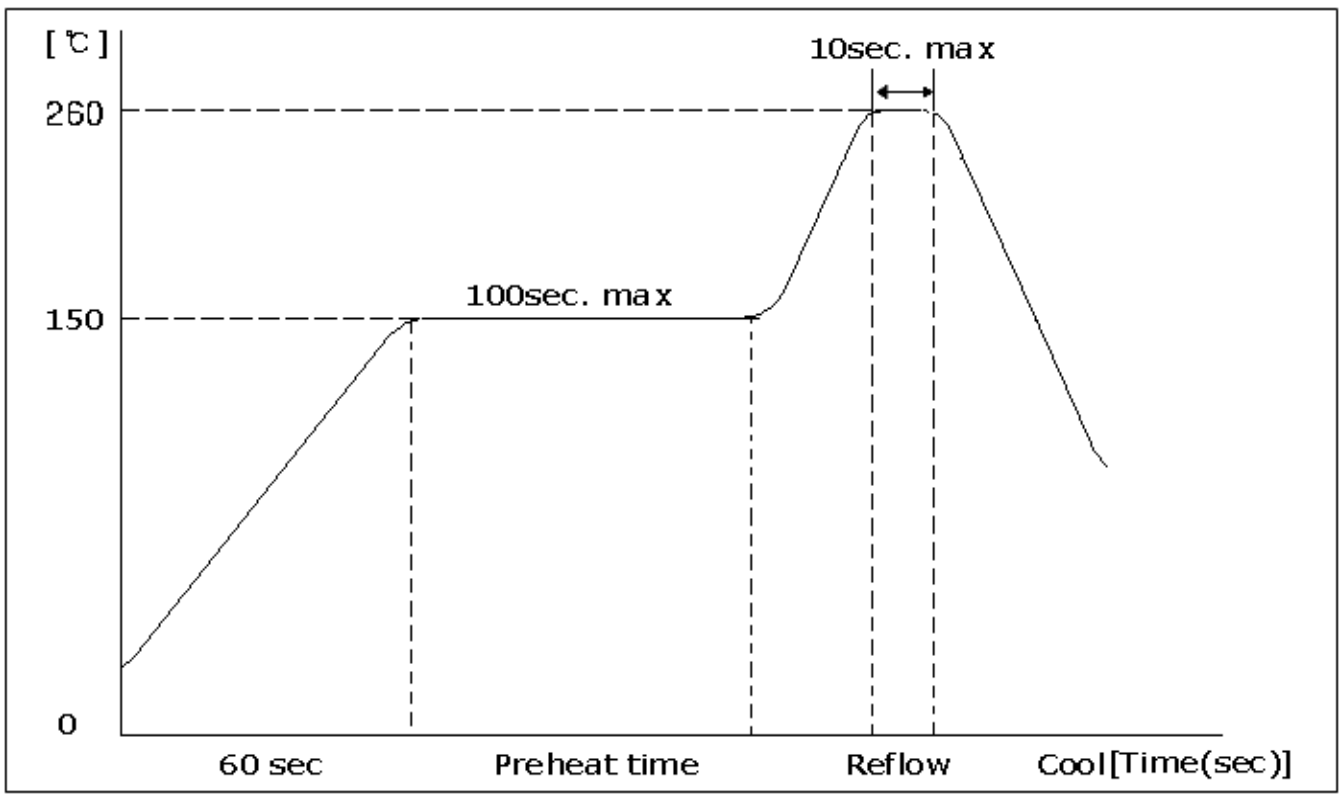
1. E : Initial
2. M : Frequency Code
3. B : Control Code
4. Y : Year
5. M : Month
6. L : Date

| | | | | | |
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RELIABILITY SPECIFICATION

| NO | ITEMS | CONDITIONS |
|----|--------------------------|--|
| 1 | Solderability | Solder dip at 260°C for 5 seconds |
| 2 | Vibration | 20 - 2000-20Hz , 1.55mm total amplitude, each directions(X,Y,Z)/3times, 4min |
| 3 | Drop | 3 times drop onto hard wooden board from 75cm |
| 4 | High Temp. High Humidity | +45°C ±2°C , RH=90%±5% 96 hours minimum |
| 5 | High Tempe. Storage | +100°C ±5°C , 100 hours minimum |
| 6 | Low Tempe. Storage | -55°C ±5°C , 100 hours minimum |
| 7 | Thermal Shock | -25°C ±5°C , +85°C ±5°C , 15 minutes each 10 cycles |
| 8 | Aging | +125°C ±5°C , 24 hours minimum |
| 9 | Reflow | +260°C max, 10sec max |

REFLOW SPECIFICATION



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APPLICATION GUIDELINES

Correct application and strict adherence to the important information listed below, will be ensure optimum performance of the crystal oscillator.

SHOCK RESISTANCE

SHOULDER's all products are designed to endure physical shocks.

(Drop test consist of three drops onto a hard wooden board from a height of 75cm)

Nevertheless, under some condition, crystal products may be damaged by drops or Shocks during mounting.

It is important, therefore, to run mounting machines as smoothly as possible to

Prevent under shocks. Please review conditions prior to using a mounting machine.

VIBRATION RESISTANCE

Mechanical vibration of a piezo buzzer could cause frequency and amplitude

Change to the output frequency. It is advisable to use cushion or cutting PCB, if

You mount on same PCB.

SOLDERING CONDITION

Please keep the conditions of "Reflow diagram"

STORAGE

We recommend storing products at +15°C to +35°C and 25% R.H to 75% R.H

RoHS

SHOULDER's all products are complies with all relevant international regulations concerning he substances with environmental impacts.