



## PSE Technology Corporation

### SPECIFICATION FOR APPROVAL

CUSTOMER

NOMINAL FREQUENCY

100.000000 MHz

PRODUCT TYPE

TYPE SP 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

SPEC. NO. ( P/N )

SPA000005J

CUSTOMER P/N

ISSUE DATE

February 8, 2013

VERSION

A

| APPROVED                                                                            | PREPARED                                                                            | QA                                                                                    |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |
| APPROVED BY CUSTOMER :                                                              |                                                                                     | AVL Status                                                                            |
| <p>Please return one copy with approval to PSE-TW</p>                               |                                                                                     |                                                                                       |

#### PSE Technology Corporation

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\*Pb-free  
\*RoHS Compliant  
\*HF-Halogen Free  
\*REACH Compliant

\*\*\* A company of  PERICOM Semiconductor Corporation \*\*\*

## TYPE SP 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

***SPA000005J***

VER. A      8-Feb-13

## VERSION HISTORY

[illegible]

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## ELECTRICAL SPECIFICATIONS

**SRe Part Number : SPA000005J**

| Item                            | Symbol                         | Specifications           | Units | Notes                                       |
|---------------------------------|--------------------------------|--------------------------|-------|---------------------------------------------|
| Nominal Frequency               | Fo                             | 100.000000               | MHz   |                                             |
| Frequency Stability             | FT                             | ± 50                     | ppm   | **See note                                  |
| Operating Temperature Range     | TR                             | -20 to +70               | °C    |                                             |
| Supply Voltage                  | V <sub>CC</sub>                | +3.3 ± 10.0%             | V     |                                             |
| Logic Type                      | LT                             | HCSL                     |       |                                             |
| Supply Current, Output Enabled  | I <sub>CC</sub> /OE            | 40                       | mA    | Max.                                        |
| Supply Current, Output Disabled | I <sub>CC</sub> /OD            | 10                       | mA    | Max.                                        |
| Duty Cycle (Symmetry)           | DC/SY                          | 45 / 55                  | %     | Measured 50% of Waveform                    |
| Rise / Fall Time                | T <sub>R</sub> /T <sub>F</sub> | 700                      | ps    | Max. measured from Vol=0.175V to Voh=0.525V |
| Output Voltage "0" Level        | V <sub>OL</sub>                | -0.150                   | V     | Min. 0.0V Typ.                              |
| Output Voltage "1" Level        | V <sub>OH</sub>                | 0.900                    | V     | Max. 0.660V Min. 0.700V Typ.                |
| Output Load                     |                                | Rs=33.3Ω, Rp=50Ω, CL=2pF |       | Typ. In HCSL termination                    |
| Jitter, Phase                   | RMS(1-σ)                       | 0.3                      | ps    | Max. 12KHz ~ 20MHz Frequency Band           |
| Jitter, Accumulated             | RMS(1-σ)                       | 3                        | ps    | Max. 20,000 Consecutive Periods             |
| Jitter, Peak to Peak            | Pk-Pk                          | 40                       | ps    | Max. 100,000 Random Periods                 |
| Storage Temperature Range       |                                | -55°C to +125°C          | °C    |                                             |

※ This product doesn't include harmful substance that stipulated by SONY SS-00259 Level 1 and S-AT2-001 Level 1 standard. RoHS Compliant (Pb - Free).

**\*\*Stability includes all combinations of Operating Temperature, Load changes, rated Input (Supply) Voltage changes, Initial Calibration Tolerance (25°C), Aging (5 years at 40°C Average Effective Ambient Temperature), Shock and Vibration.**

### OUTPUT ENABLE / DISABLE

| Parameter                                                | Min.               | Typ. | Max.               | Units | Notes          |
|----------------------------------------------------------|--------------------|------|--------------------|-------|----------------|
| Input Voltage (Pin1), Output Enable                      | 0.7V <sub>CC</sub> |      |                    | V     | Or Open        |
| Input Voltage (Pin1), Output Disable (low power standby) |                    |      | 0.3V <sub>CC</sub> | V     | Output is Hi-Z |
| Output Disable Delay                                     |                    |      | 0.2                | μs    |                |
| Output Enable Delay                                      |                    |      | 2                  | ms    |                |

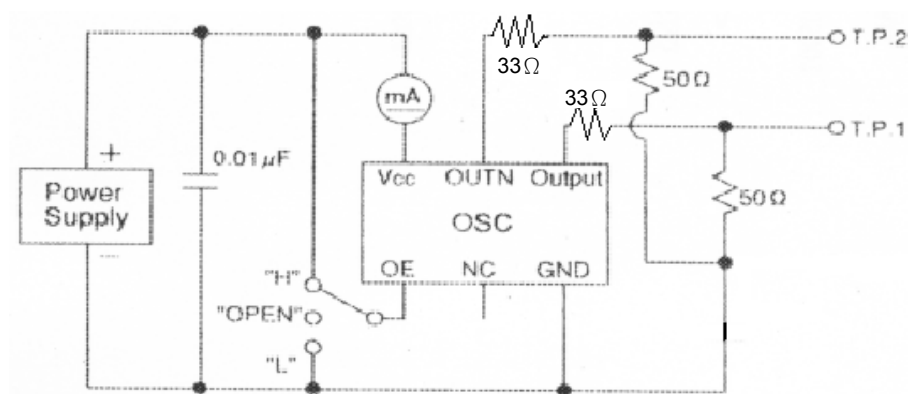


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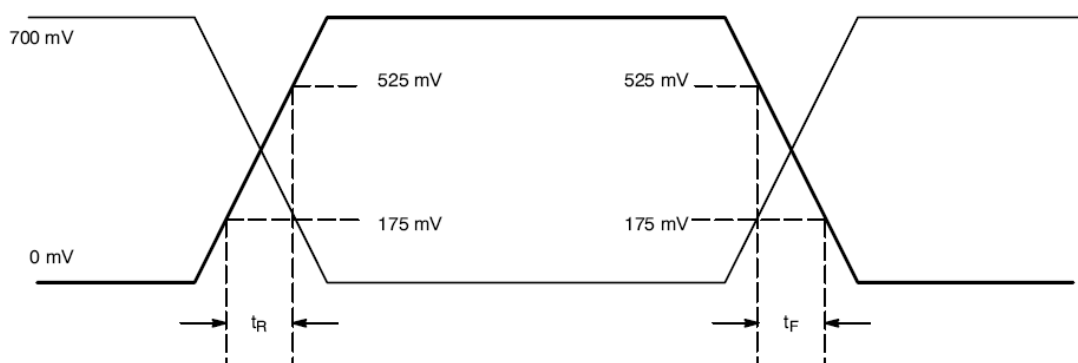
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## TEST CIRCUIT



## OUTPUT WAVEFORM



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## RELIABILITY SPECIFICATIONS

### ENVIRONMENTAL:

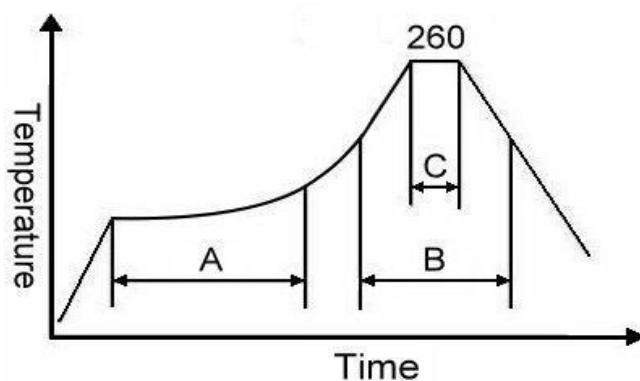
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices  
(except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: RoHS Compliant by Exemption

### MECHANICAL:

- a) SHOCK: MIL-STD-883, Method 2002, Condition B
- b) SOLDERABILITY: JESD22-B102-D Method 2 (Preconditioning E)
- c) TERMINAL STRENGTH: MIL-STD-883, Method 2004, Test Condition D
- d) GROSS LEAK: MIL-STD-883, Method 1014, Condition C
- e) FINE LEAK: MIL-STD-883, Method 1014, Condition A2,  $R1=2 \times 10^{-8}$  atm cc/s
- f) SOLVENT RESISTANCE: MIL-STD-202, Method 215

## SUGGESTED IR REFLOW PROFILE

\*As per IPC-JEDEC J-STD-020D



Note:

|   | Stage        | Temperature | Time       |
|---|--------------|-------------|------------|
| A | Preheat      | 150~200°C   | 60~120 Sec |
| B | Primary Heat | 217°C       | 60~150 Sec |
| C | Peak         | 260°C       | 10 Sec     |

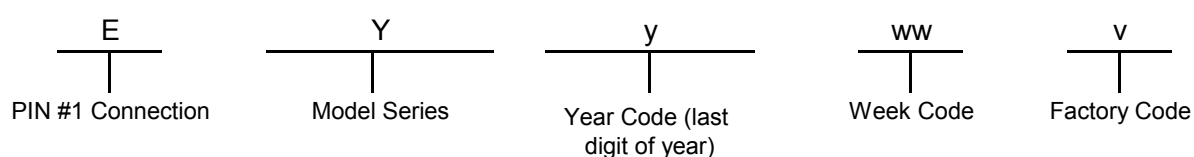
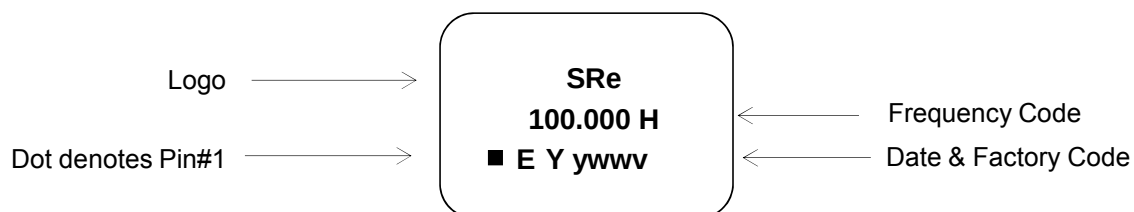
For soldering reflow profile and reliability test ratings go to: <http://www.pericom.com/pdf/sre/reflow.pdf>

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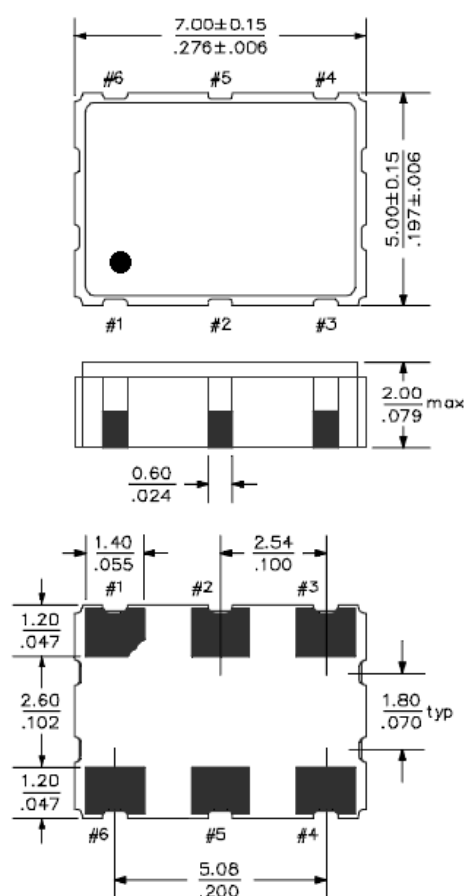
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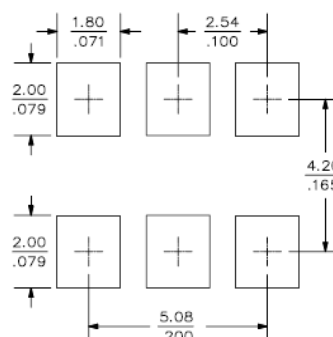
## MARKING



## MECHANICAL DRAWINGS ( Scale:None. Dimensions are in mm.)



### Recommended Land Pattern\*



\*External high-frequency power decoupling is recommended. (see test circuit for minimum recommendation). To ensure optimal performance, do not route traces beneath the package.

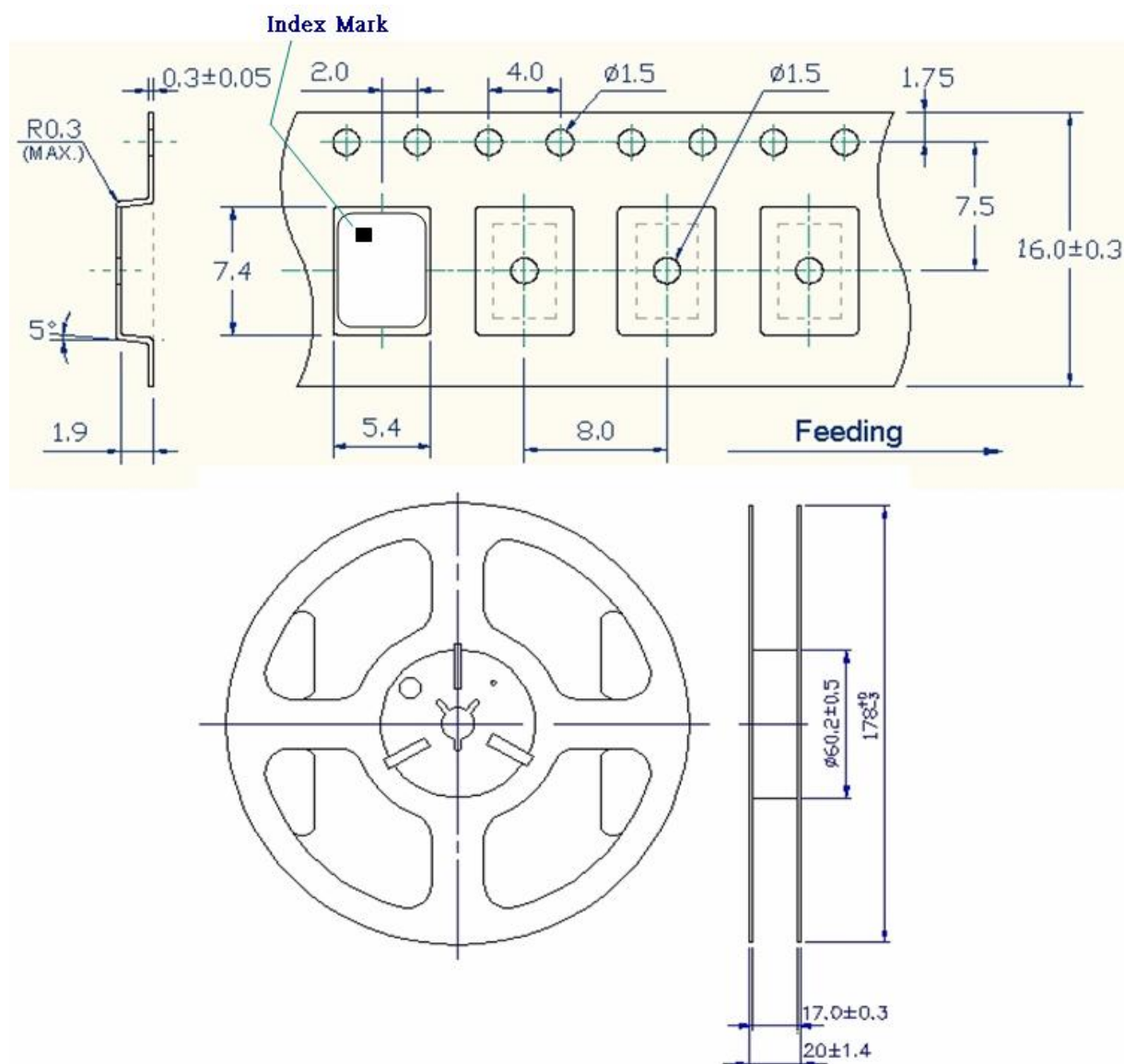
| Pin | Function        |
|-----|-----------------|
| 1   | OE              |
| 2   | NC              |
| 3   | V <sub>EE</sub> |
| 4   | OUTPUT          |
| 5   | OUTPUT N        |
| 6   | V <sub>CC</sub> |

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## TAPE&REEL



1. 230mm minimum leader which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

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## PACKING

