



**PSE Technology Corporation**  
**SPECIFICATION FOR APPROVAL**

CUSTOMER \_\_\_\_\_  
NOMINAL FREQUENCY 100.000000 MHz  
HOLDER TYPE TYPE SQ SEAM SEALED CRYSTAL CLOCK OSCILLATOR  
SPEC. NO. ( P/N ) SQA000001  
CUSTOMER P/N \_\_\_\_\_  
ISSUE DATE September 6, 2017  
VERSION G

APPROVED	PREPARED	QA
APPROVED BY CUSTOMER :		AVL Status
Please return one copy with approval to PSE-TW		

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



# TYPE SQ SEAM SEALED CRYSTAL CLOCK OSCILLATOR

**SQA000001**

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## VERSION HISTORY

Version No.	Version Date	Customer Receipt Date	Supplier Receipt Date	Description	Notes
A	Feb.6,2011			New	
B	Mar.4,2011			Changed Output Load, Rs from 33.3Ω to 33Ω & Updated Mechanical drawings & Packing from 500pcs/reel to 1000pcs/reel	
C	Apr.18,2011			Revised Packing from 1000pcs/reel to 500pcs/reel	
D	Aug.3,2011			Changed $T_R/T_F$ from 700ps max to 500ps max	
E	Sep.20,2011			Added Output Phase Jitter-PCIe Gen3: 1ps max	
F	Oct.1,2013			Revised to RoHS Compliant	
G	Sep.6,2017			1.Added Output Phase Jitter-PCIe Gen4: 0.5ps max 2.Updated logo	



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## SQA000001

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### ELECTRICAL SPECIFICATIONS

SRe Part Number : SQA000001

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	F <sub>o</sub>	100.000000	MHz	
Frequency Stability	FT	± 50	ppm	**See note
Operating Temperature Range	TR	-40 to +85	°C	
Supply Voltage	V <sub>CC</sub>	+3.3 ± 10.0%	V	
Logic Type	LT	HCSL		
Supply Current, Output Enabled	I <sub>CC/OE</sub>	40	mA	Max.
Supply Current, Output Disabled	I <sub>CC/OD</sub>	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>	500	ps	Max. measured from Vol=0.175V to Voh=0.525V
Output Voltage "0" Level	V <sub>OL</sub>	-0.150	V	Min.
Output Voltage "1" Level	V <sub>OH</sub>	0.900	V	Max.
Output Load		Rs=33Ω, Rp=50Ω, CL=2pF		Typ. In HCSL termination
Output Phase Jitter-PCIe Gen2		2.5	ps RMS	Max.
Output Phase Jitter-PCIe Gen3		1	ps RMS	Max.
Output Phase Jitter-PCIe Gen4		0.5	ps RMS	Max.
Jitter, Phase	RMS(1-σ)	1	ps	Max. 12KHz ~ 20MHz Frequency Band
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

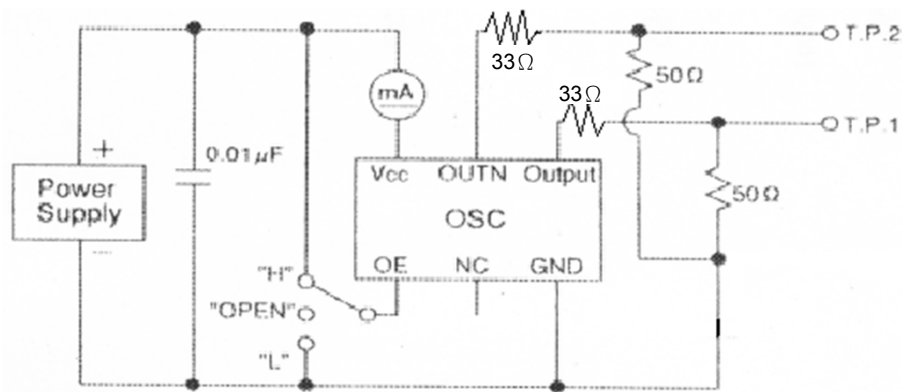
Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (Pin1), Output Enable	0.7V <sub>DD</sub>			V	Or Open
Input Voltage (Pin1), Output Disable (low power standby)			0.3V <sub>DD</sub>	V	Output is Hi-Z
Output Disable Delay			200	ns	
Output Enable Delay			2	ms	

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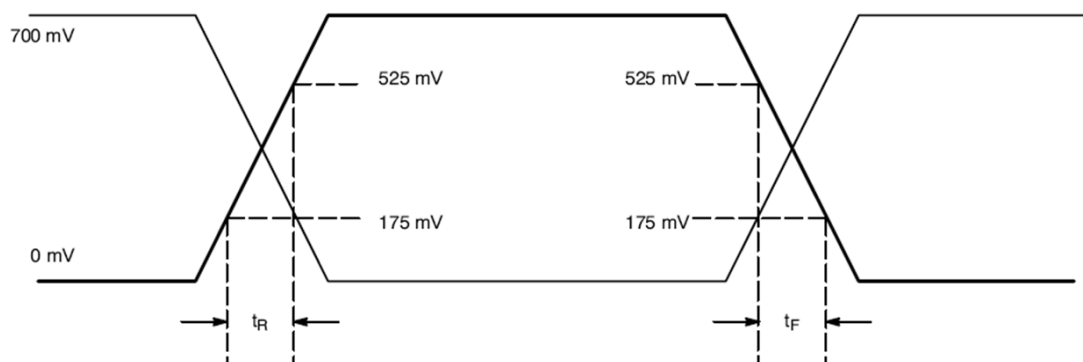
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## TEST CIRCUIT



## OUTPUT WAVEFORM



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## RELIABILITY SPECIFICATIONS

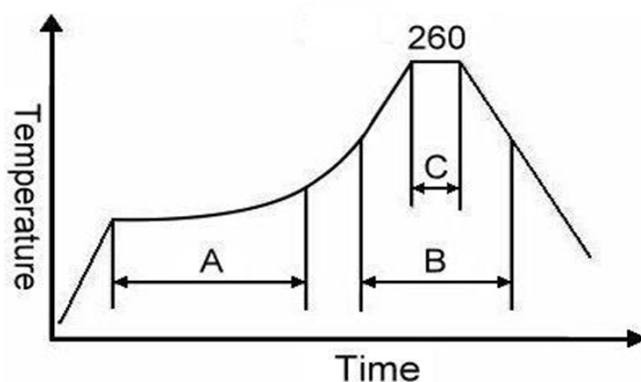
### ENVIRONMENTAL:

- 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

### 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



Note:

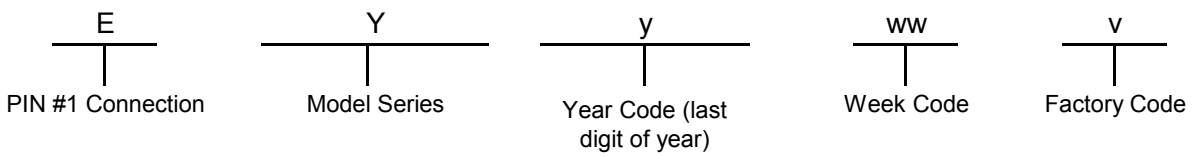
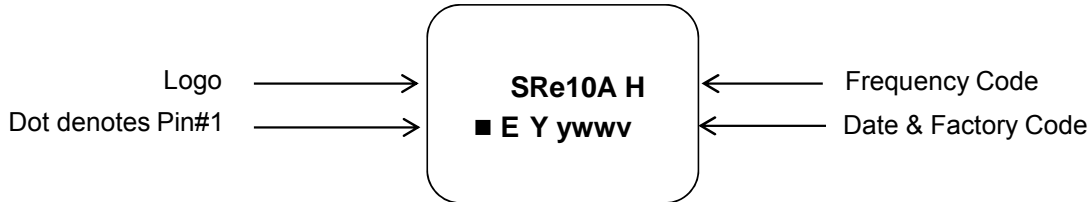
	Stage	Temperature	Time
A	Preheat	150~200°C	60~120 Sec
B	Primary Heat	217°C	60~150 Sec
C	Peak	260°C	10 Sec

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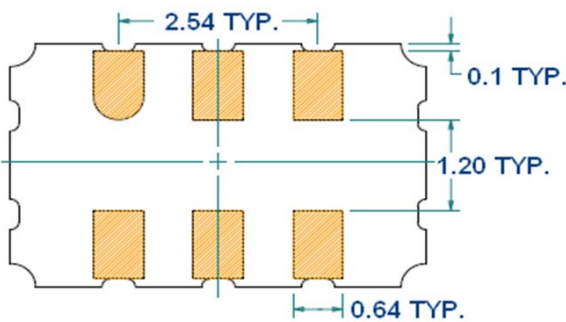
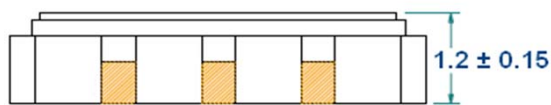
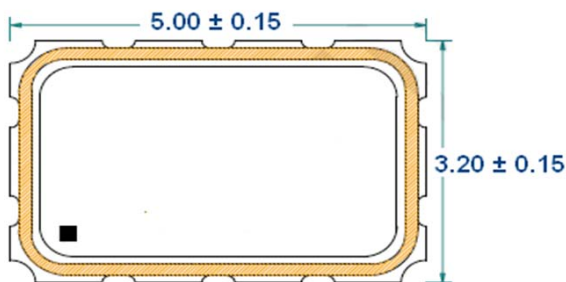
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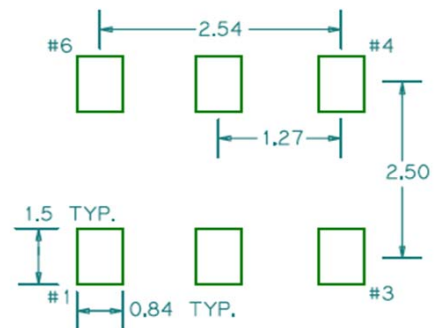
## MARKING



## 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.

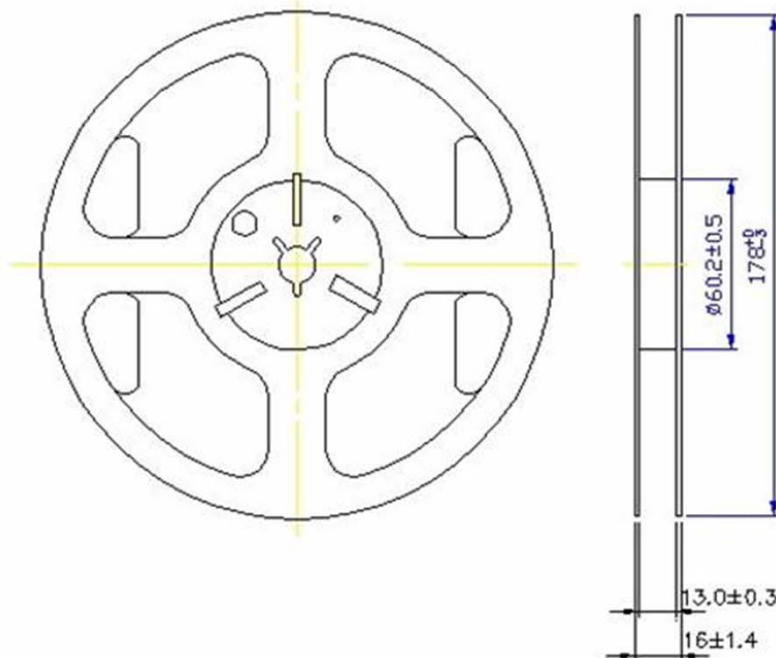
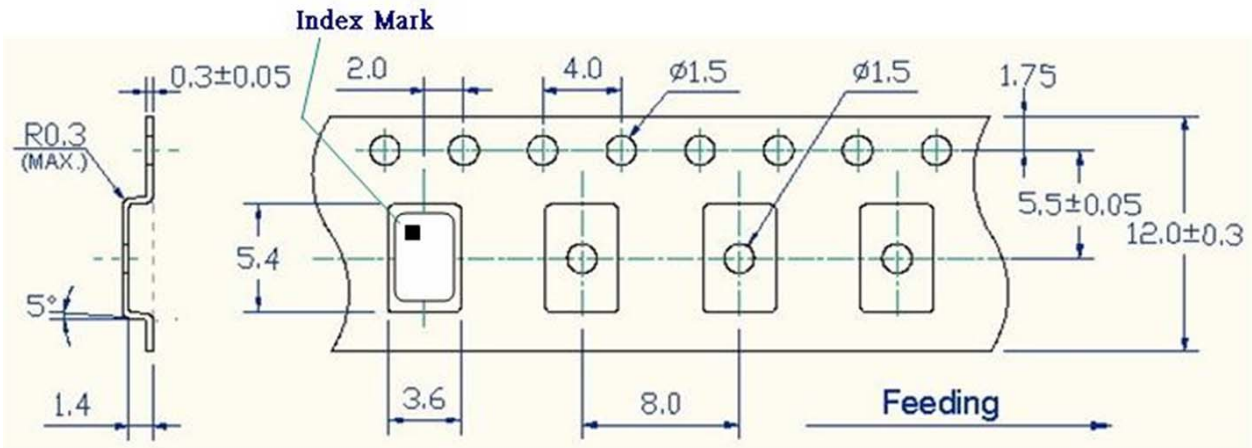
Pin	Function
1	OE
2	NC
3	V <sub>EE</sub>
4	OUTPUT
5	OUTPUT N
6	V <sub>CC</sub>

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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

