



A Product Line of
Diodes Incorporated



SPECIFICATION FOR APPROVAL

CUSTOMER _____

NOMINAL FREQUENCY _____

24.000000 MHz

PRODUCT TYPE _____

TYPE FN 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

SPEC. NO. (P/N) _____

FN2400046

CUSTOMER P/N _____

ISSUE DATE _____

March 13, 2018

VERSION _____

F

APPROVED	PREPARED	QA
<i>Brenda</i>	<i>Bess</i>	<i>Dong Yang</i>

Diodes Incorporated

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*Pb-free

*RoHS Compliant

*HF-Halogen Free

*REACH Compliant

TYPE FN 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

FN2400046

VER. F 13-Mar-18

VERSION HISTORY



TYPE FN 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

FN2400046

VER. F 13-Mar-18

ELECTRICAL SPECIFICATIONS

SRe Part Number : **FN2400046**

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	F ₀	24.000000	MHz	
Frequency Stability	F _T	± 50	ppm	**See note
Operating Temperature Range	T _R	-20 to +70	°C	
Supply Voltage	V _{DD}	+3.3 ± 10.0%	V	
Logic Type	L _T	LVCMOS		
Supply Current, Output Enabled	I _{DD/OE}	15	mA	Max.
Supply Current, Output Disabled	I _{DD/OD}	10	µA	Max.
Duty Cycle (Symmetry)	D _{C/SY}	45 / 55	%	Measured 50% of Waveform
Rise / Fall Time	T _{R/T_F}	7	ns	Max. measured 20/80% of Waveform
Output Voltage "0" Level	V _{OL}	10% V _{DD}	V	Max.
Output Voltage "1" Level	V _{OH}	90% V _{DD}	V	Min.
Output Load	C _L	15	pF	Max
Jitter, Phase	RMS	1.5	ps	Max, 12KHz ~ 5MHz Frequency Band
Jitter, Accumulated	RMS(1- σ)	5	ps	Max, 20,000 Consecutive Periods
Jitter, Peak to Peak	Pk-Pk	50	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 (1 year at 25°C Average Effective Ambient Temperature), Shock and Vibration.

Output Enable / Disable Function

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (Pin1), Output Enable	0.7V _{DD}			V	Or Open
Input Voltage (Pin1), Output Disable (low power standby)			0.3V _{DD}	V	Output is Hi-Z
Internal Pullup Resistance	30			KΩ	
Output Disable Delay			50	ns	

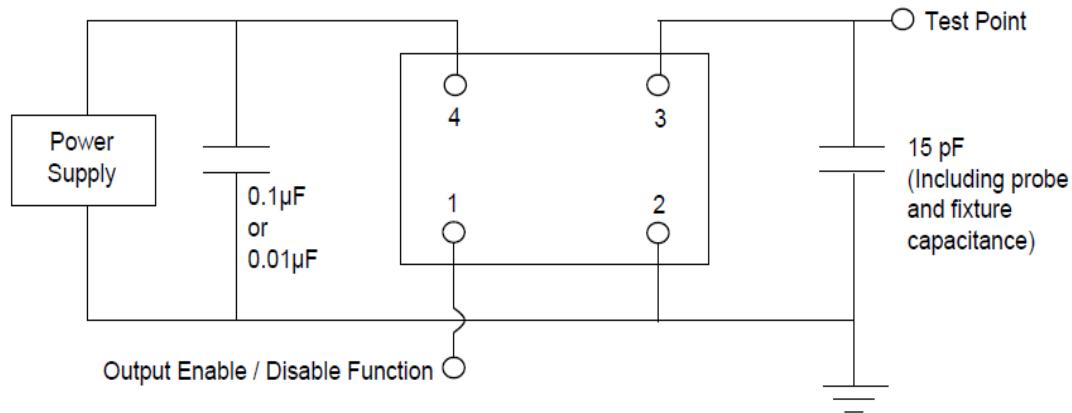


TYPE FN 7.0x5.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

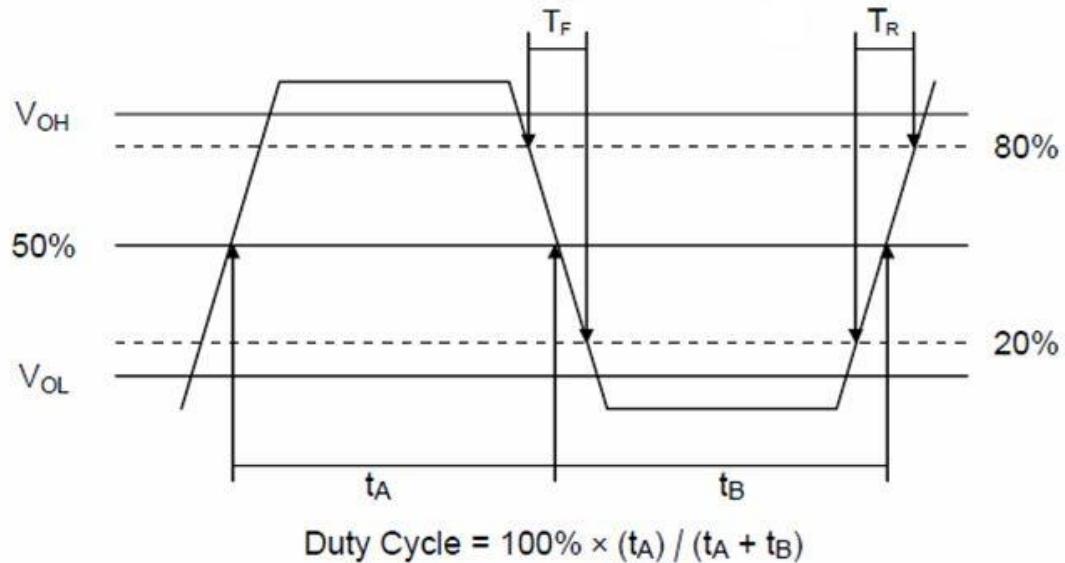
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TEST CIRCUIT



OUTPUT WAVEFORM



DIODES
INCORPORATED

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RELIABILITY SPECIFICATIONS

ENVIRONMENTAL:

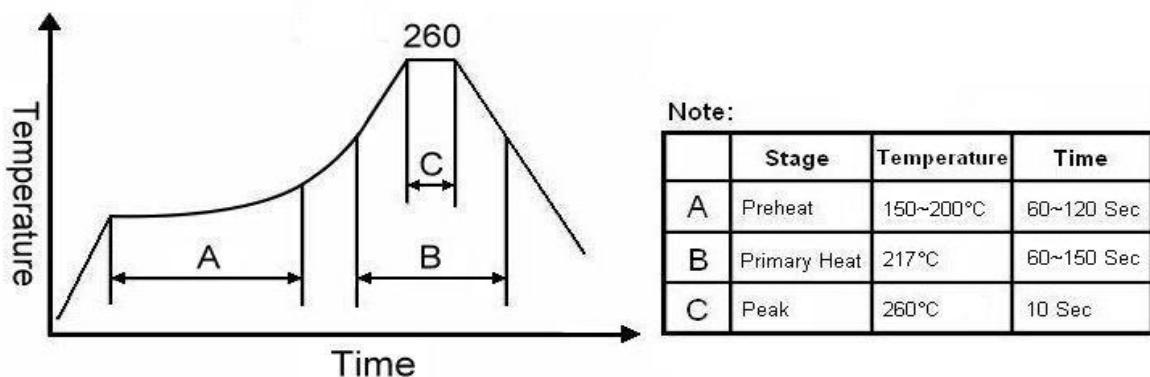
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices
(except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS 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, $R1=2\times10^{-8}$ atm cc/s
- f) SOLVENT RESISTANCE: MIL-STD-202, Method 215

SUGGESTED IR REFLOW PROFILE

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



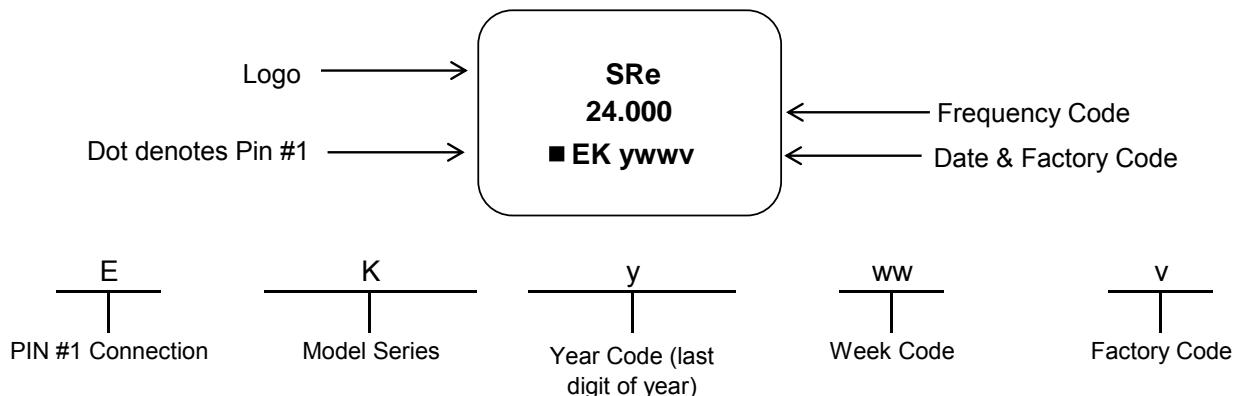
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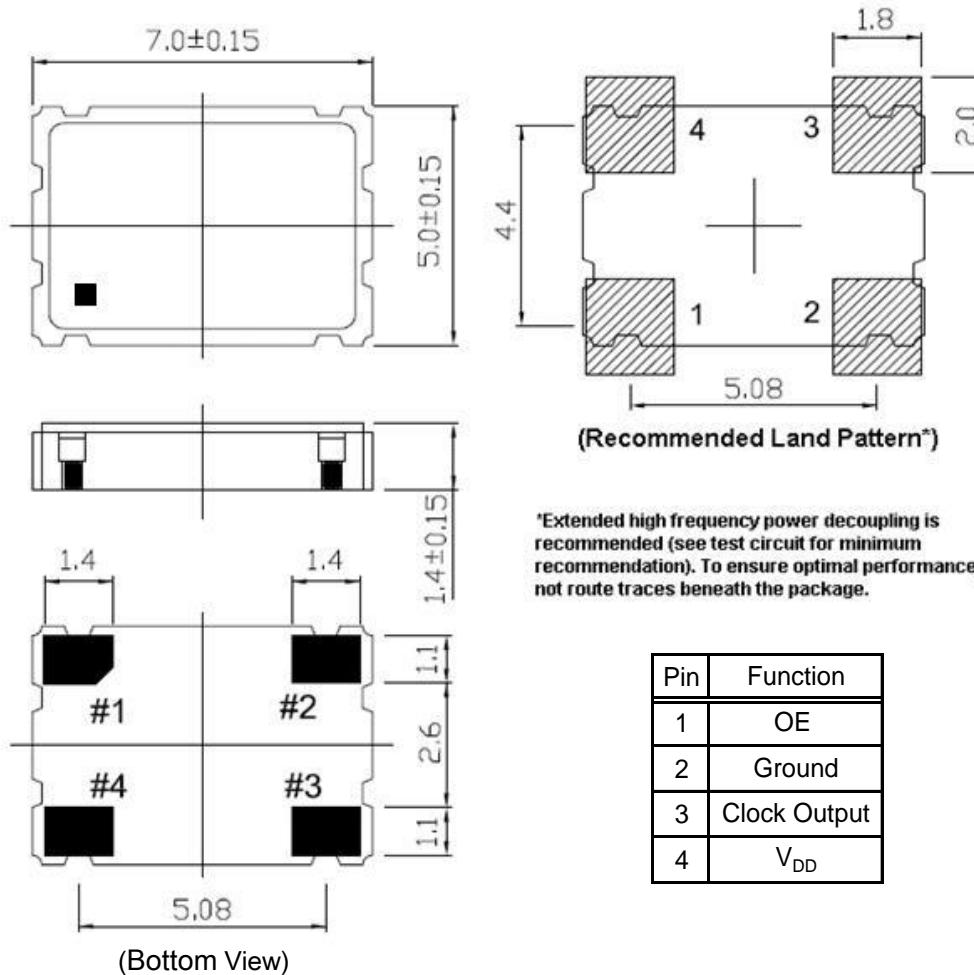
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MARKING



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



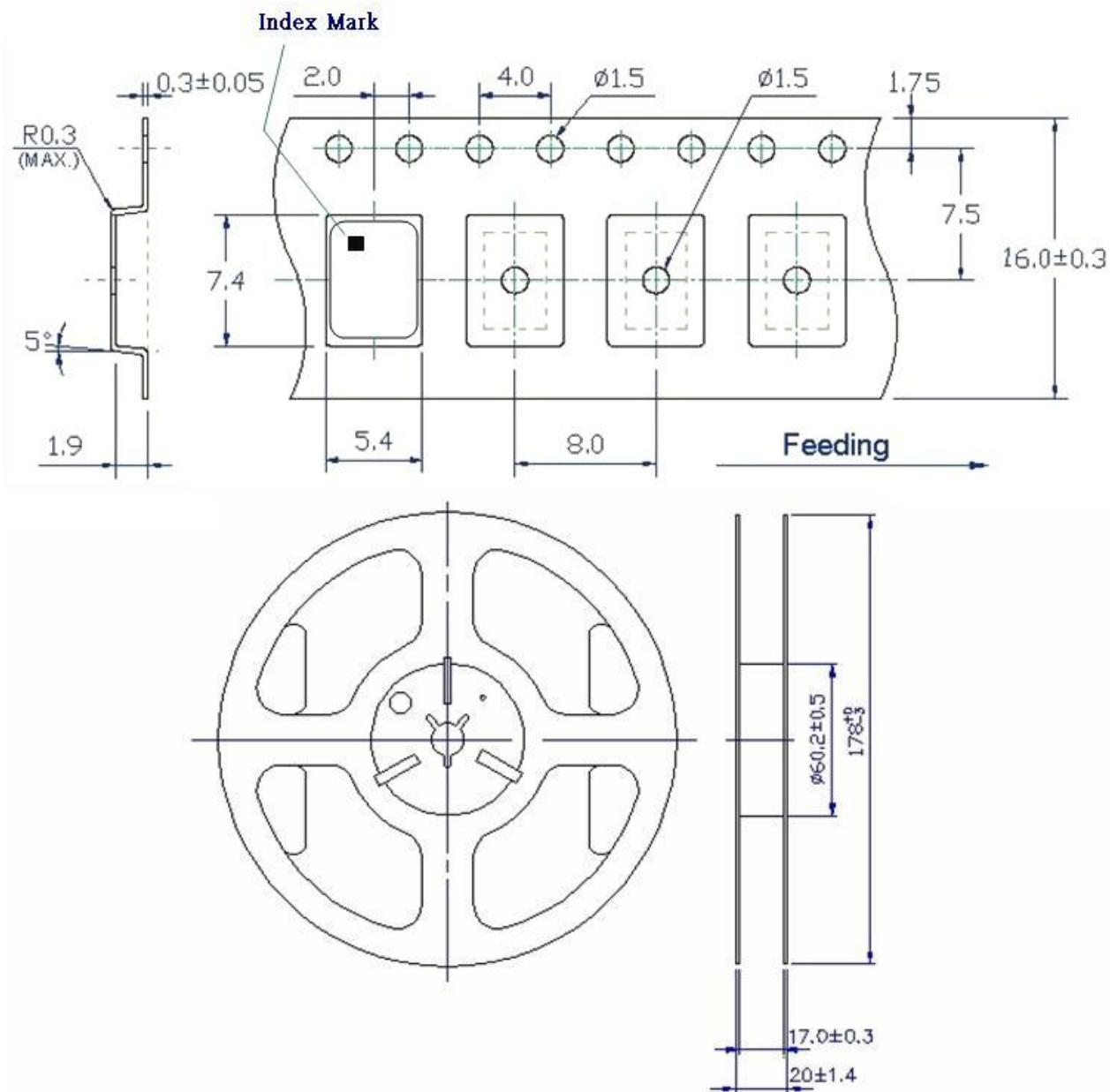
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TAPE&REEL



1. 230mm minimum leafer 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.

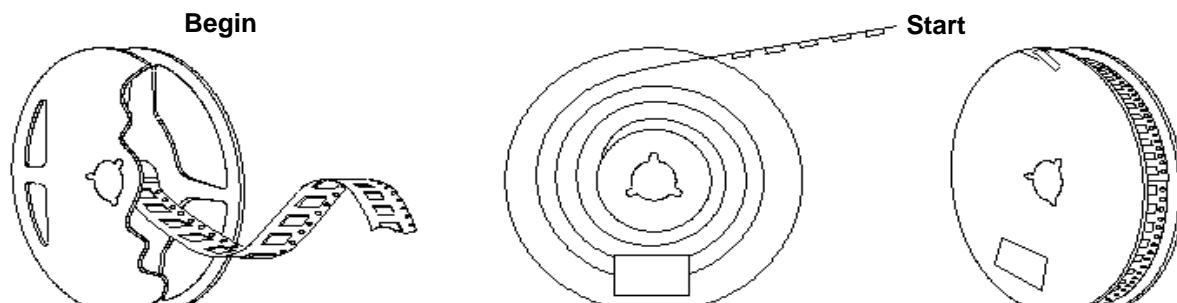
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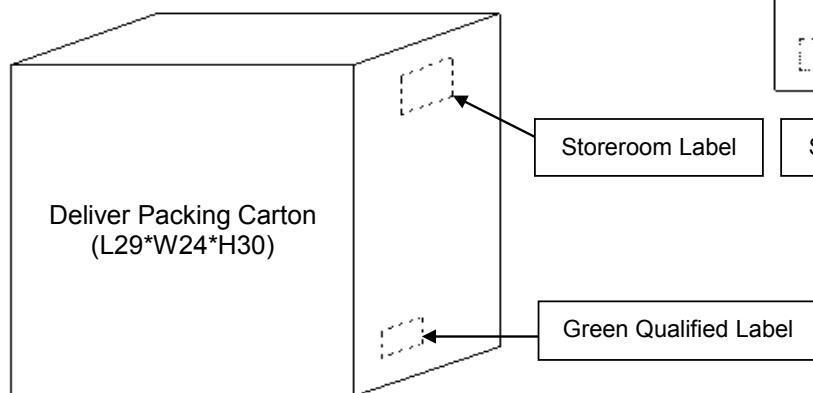
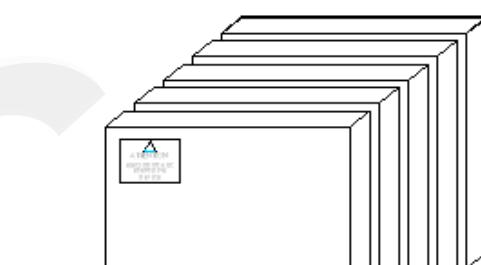
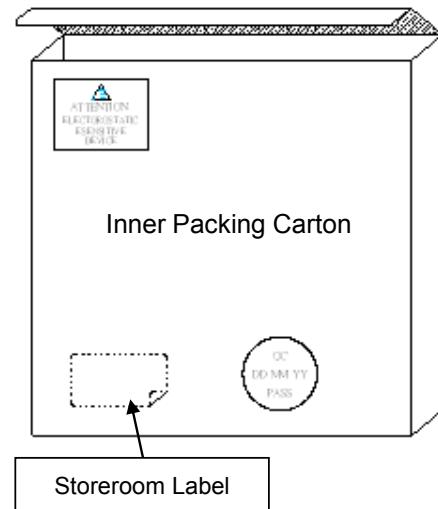
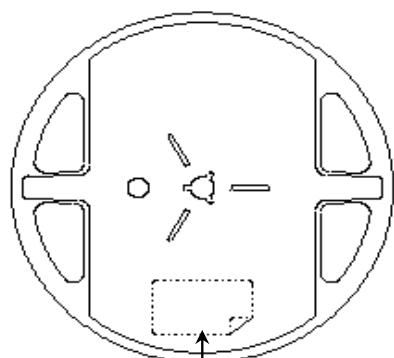
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PACKING



1000pcs-Product Tape



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