



A Product Line of  
Diodes Incorporated



## SPECIFICATION FOR APPROVAL

CUSTOMER \_\_\_\_\_

NOMINAL FREQUENCY 25.000000 MHz

PRODUCT TYPE TYPE FJ 2.5x2.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

SPEC. NO. ( P/N ) FJ2500028Q

CUSTOMER P/N \_\_\_\_\_

ISSUE DATE March 8, 2018

VERSION B

APPROVED	PREPARED	QA
Brenda	Vikki Lu	Dong Yang

### Diodes Incorporated

No.2, Ziqiang 5th Rd., Zhongli Industrial Park,  
Zhongli Dist., Taoyuan City 32063, Taiwan (R.O.C.)  
TEL: 886-3-451-8888  
FAX: 886-3-461-3865  
<https://www.diodes.com>

- \*Pb-free
- \*RoHS Compliant
- \*HF-Halogen Free
- \*REACH Compliant
- \*AEC-Q200 Compliant

## **TYPE FJ 2.5x2.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR**

FJ2500028Q

VER. B 8-Mar-18

# VERSION HISTORY



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## ELECTRICAL SPECIFICATIONS

SRe Part Number : **FJ2500028Q**

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	F <sub>0</sub>	25.000000	MHz	
Frequency Stability	F <sub>T</sub>	± 50	ppm	**See note
Operating Temperature Range	T <sub>R</sub>	-40 to +125	°C	
Supply Voltage	V <sub>DD</sub>	+3.3 ± 10%	V	
Logic Type	L <sub>T</sub>	LVC MOS		
Supply Current, Output Enabled	I <sub>DD/OE</sub>	10	mA	Max
Supply Current, Output Disabled	I <sub>DD/OD</sub>	10	µA	Max
Duty Cycle (Symmetry)	D <sub>C/SY</sub>	45 / 55	%	Measured 50% of Waveform
Rise / Fall Time	T <sub>R/T<sub>F</sub></sub>	5	ns	Max. measured 10 / 90% of Waveform
Output Voltage "0" Level	V <sub>OL</sub>	10% V <sub>DD</sub>	V	Max
Output Voltage "1" Level	V <sub>OH</sub>	90% V <sub>DD</sub>	V	Min
Output Load	C <sub>L</sub>	15	pF	Max
Jitter, Phase	RMS	1	ps	Max. 12KHz ~ 5MHz Frequency Band
Jitter, Accumulated	RMS(1- $\sigma$ )	5	ps	Typ. 20,000 Consecutive Periods
Jitter, Peak to Peak	Pk-Pk	50	ps	Max. 100,000 Random Periods
Start Up Time		10	ms	Max.
Storage Temperature Range		-55 to +125	°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	0.8V <sub>DD</sub>			V	Or Open
Input Voltage (Pin1), Output Disable (low power standby)			0.2V <sub>DD</sub>	V	Output is Hi-Z
Output Disable Delay			0.1	µs	
Output Enable Delay			2	ms	

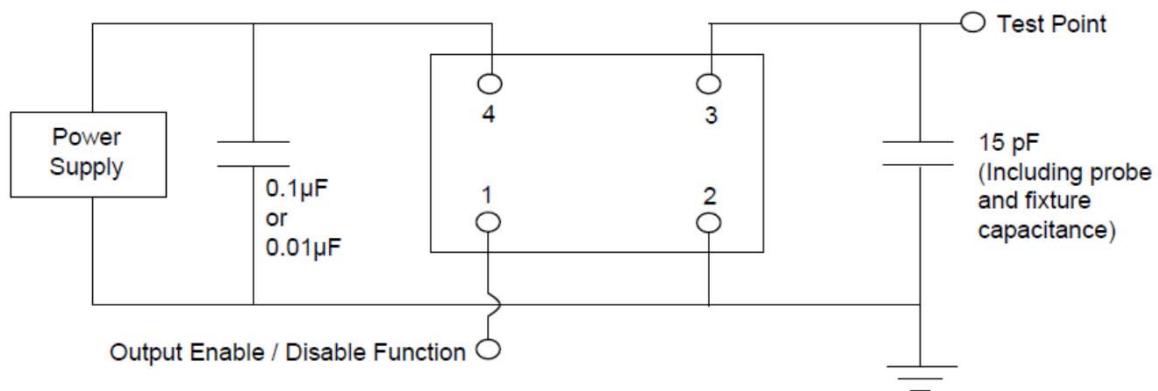


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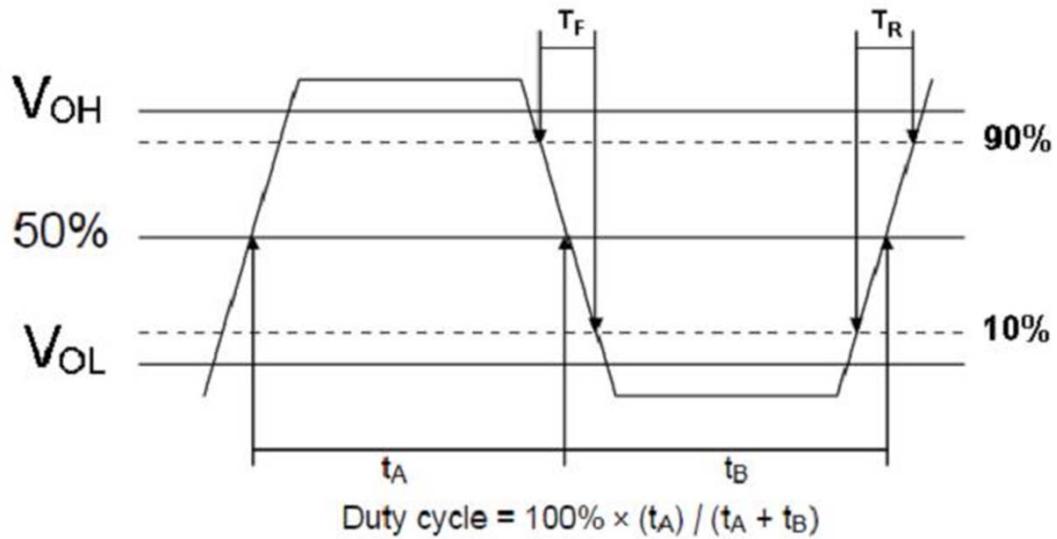
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## TEST CIRCUIT



## OUTPUT WAVEFORM



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## AEC-Q200 RELIABILITY TEST SPECIFICATIONS:

### 1. Initial

- 1.1 Physical Dimensions: JESD22, Method JB1-100
- 1.2 External Visual: MIL-STD-883, Method 2009
- 1.3 Freq. Vs. Temperature: Per Specification/Datasheet

### 2. Mechanical

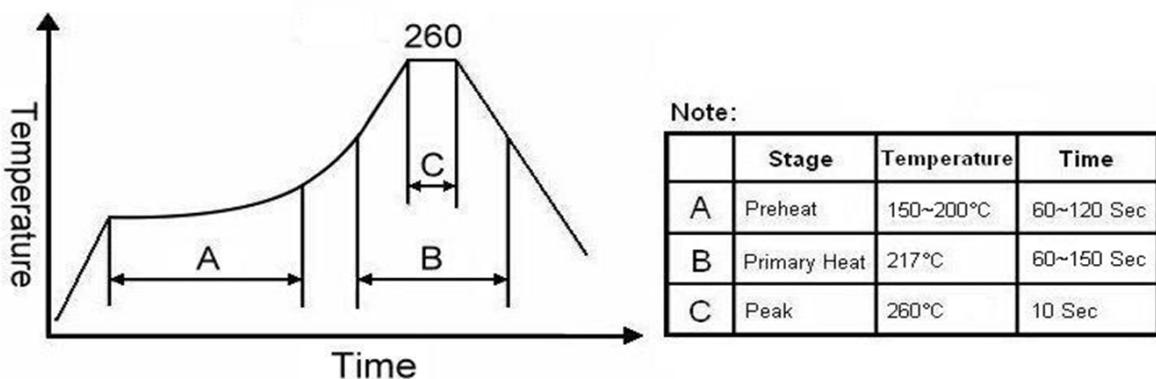
- 2.1 Mechanical Shock: MIL-STD-202 Method 213
- 2.2 Vibration: MIL-STD-202 Method 204
- 2.3 Solderability: J-STD-002
- 2.4 Board Flex: AEC Q200-005
- 2.5 Terminal Strength (SMD): AEC Q200-006

### 3. Environmental

- 3.1 Temp Cycle: JESD22, Method JA-104
- 3.2 Resistance to Solder Heat: MIL-STD-202 Method 210
- 3.3 High Temperature Operating Life: MIL-STD-202, Method 108
- 3.4 High Temp Exposure: MIL-STD-202, Method 108
- 3.5 High Temp & High Humidity: MIL-STD-202, Method 103
- 3.6 Thermal Shock: MIL-STD-202, Method 107

## SUGGESTED IR REFLOW PROFILE

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



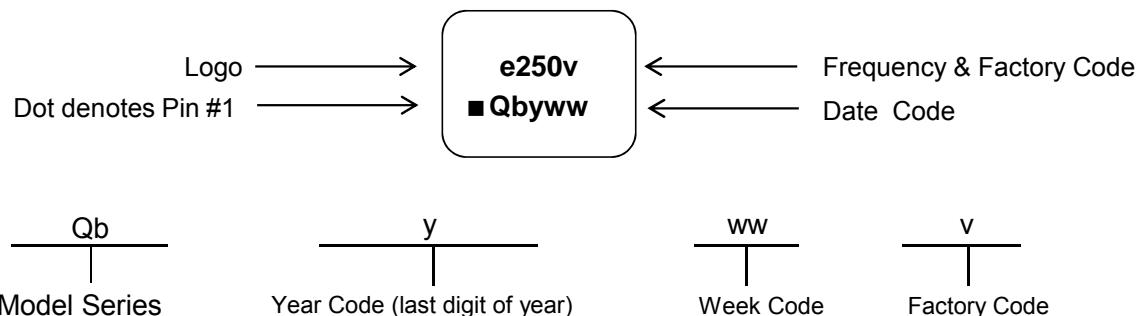
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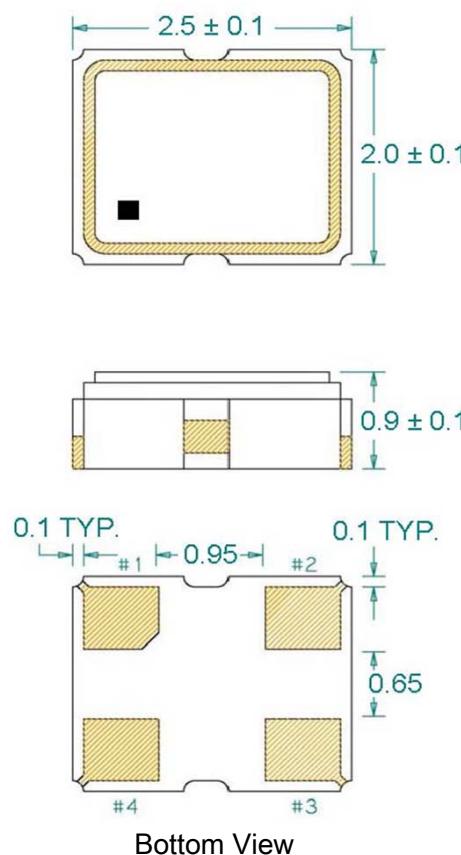
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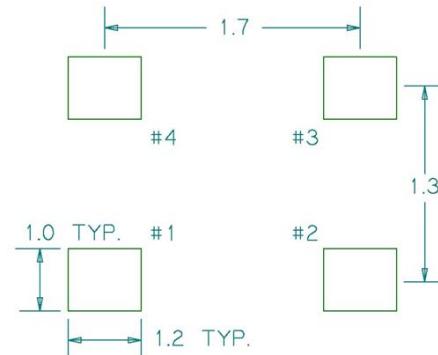
## MARKING



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



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	Ground
3	Clock Output
4	V <sub>DD</sub>

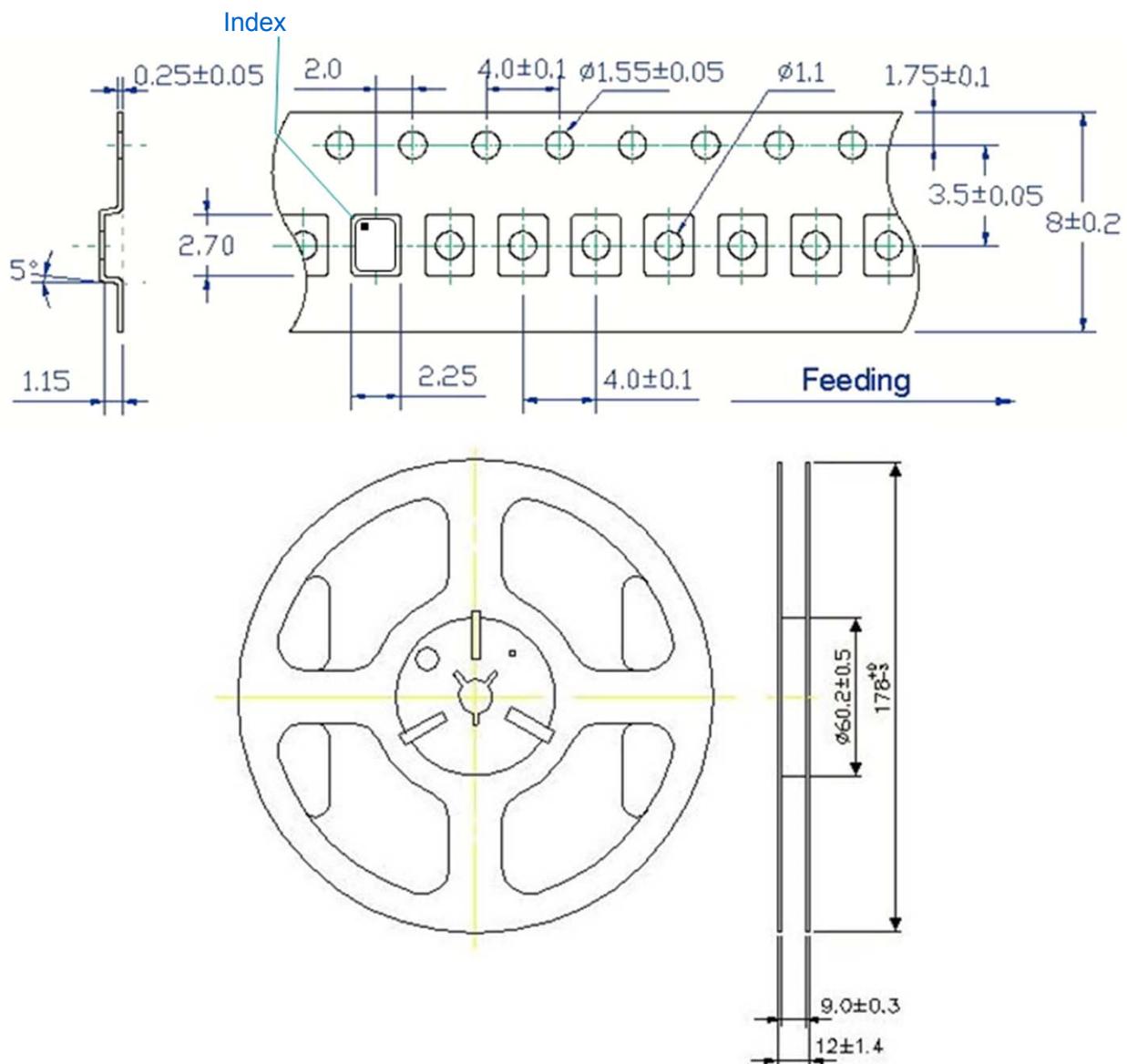
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## TAPE & REEL



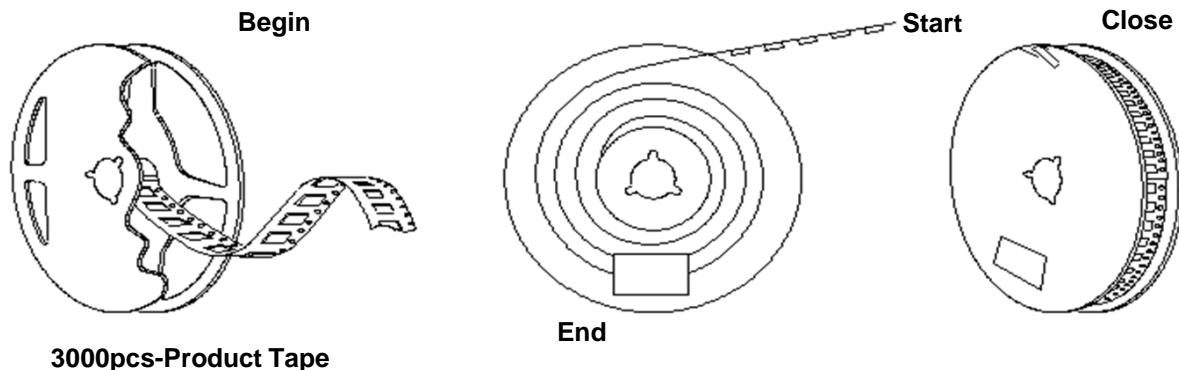
1. 230mm minimum leafer which consist of carrier and/or tape followed by a minimum of 160mm of empty carrier tape sealed with cover tape.
2. 160mm minimum trailer of empty carrier tape sealed with cover tape.

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## PACKING



3000pcs-Product Tape

