



A Product Line of
Diodes Incorporated



SPECIFICATION FOR APPROVAL

CUSTOMER _____

NOMINAL FREQUENCY 24.000000 MHz

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

SPEC. NO. (P/N) FJ2400010

CUSTOMER P/N _____

ISSUE DATE June 11, 2018

VERSION B

APPROVED	PREPARED	QA
<i>Brenda Kuo</i>	<i>Winnie Chang</i>	<i>Dony Yang</i>

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

TYPE FJ 2.5x2.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

FJ2400010

VER. B 11-Jun-18

ELECTRICAL SPECIFICATIONS

SRe Part Number : FJ2400010

Item	Symbol	Specifications	Units	Notes
Nominal Frequency	F _o	24.000000	MHz	
Frequency Stability	FT	± 30	ppm	**See note
Operating Temperature Range	TR	-20 to +70	°C	
Supply Voltage	V _{DD}	+1.8 ± 5%	V	
Logic Type	LT	LVC MOS		
Supply Current, Output Enabled	I _{DD} /OE	0.5	mA	Max.
Supply Current, Output Disabled	I _{DD} /OD	10	µA	Max.
Duty Cycle (Symmetry)	DC/SY	45 / 55	%	Measured 50% of Waveform
Rise / Fall Time	T _R /T _F	6	ns	Max. measured 10 / 90% 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	CL	15	pF	Max.
Jitter, Phase	RMS	1.5	ps	Max. 12KHz ~ 5MHz Frequency Band
Jitter, Accumulated	RMS(1-σ)	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	0.7V _{DD}			V	Or Open
Input Voltage (Pin1), Output Disable (low power standby)			0.3V _{DD}	V	Output is Hi-Z
Output Disable Delay			0.1	µs	
Output Enable Delay			2	ms	

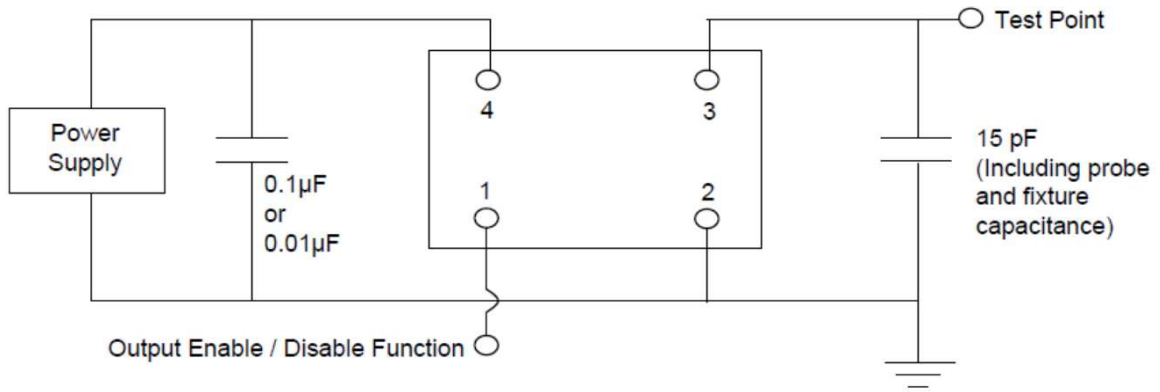


TYPE FJ 2.5x2.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

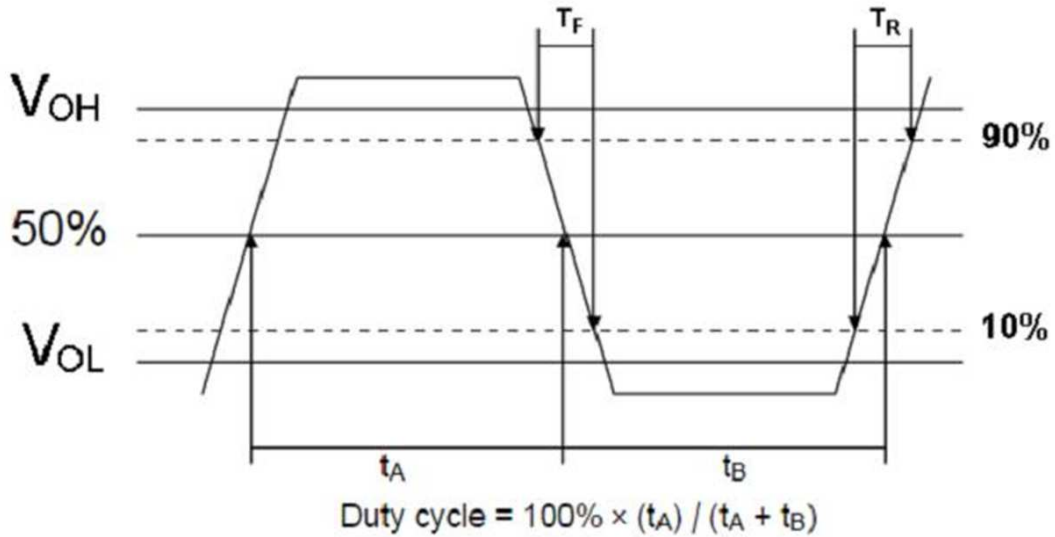
FJ2400010

VER. B 11-Jun-18

TEST CIRCUIT



OUTPUT WAVEFORM



TYPE FJ 2.5x2.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

FJ2400010

VER. B 11-Jun-18

RELIABILITY SPECIFICATIONS

ENVIRONMENTAL:

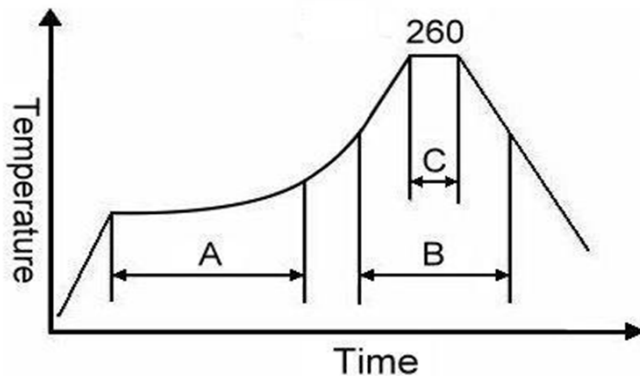
- a) THERMAL SHOCK: MIL-STD-883, Method 1011, Condition A
- b) MOISTURE RESISTANCE: MIL-STD-883, Method 1004
- c) VIBRATION: MIL-STD-883, Method 2007, Condition A
- d) RESISTANCE TO SOLDERING HEAT: J-STD-020D Table 5-2 Pb-free devices (except 2 cycles max)
- e) HAZARDOUS SUBSTANCE: Pb - free and RoHS/Green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

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



Note:

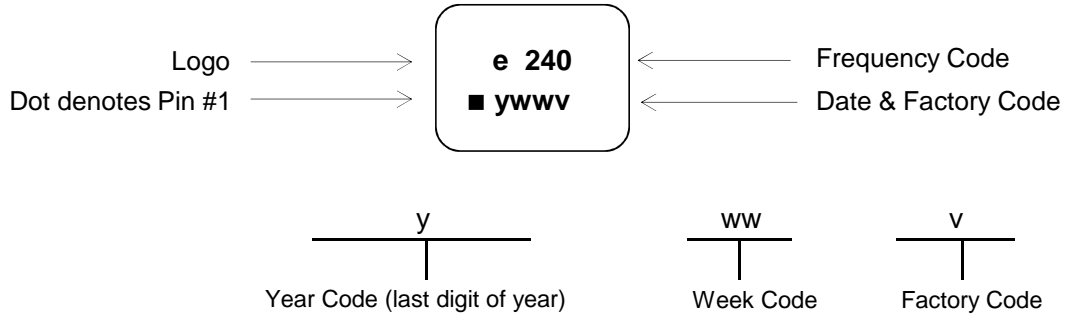
	Stage	Temperature	Time
A	Preheat	150~200°C	60~120 Sec
B	Primary Heat	217°C	60~150 Sec
C	Peak	260°C	10 Sec

TYPE FJ 2.5x2.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

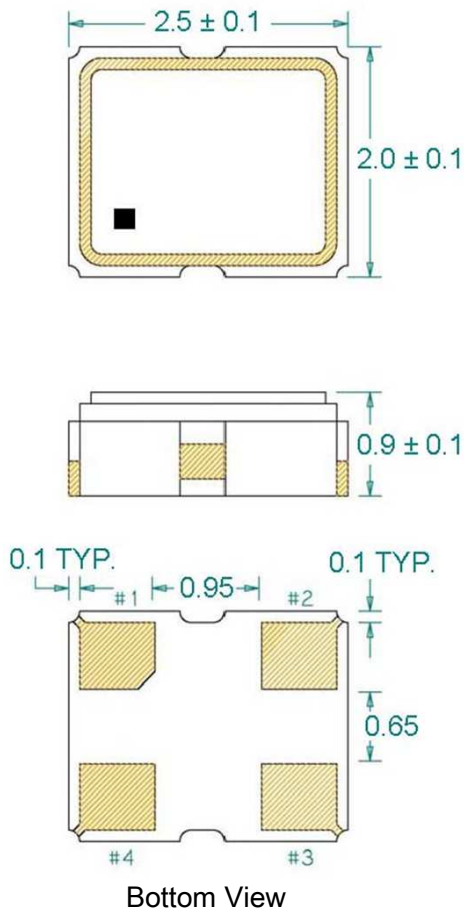
FJ2400010

VER. B 11-Jun-18

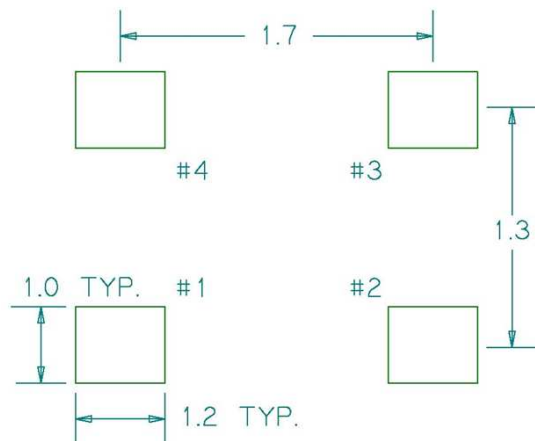
MARKING



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.

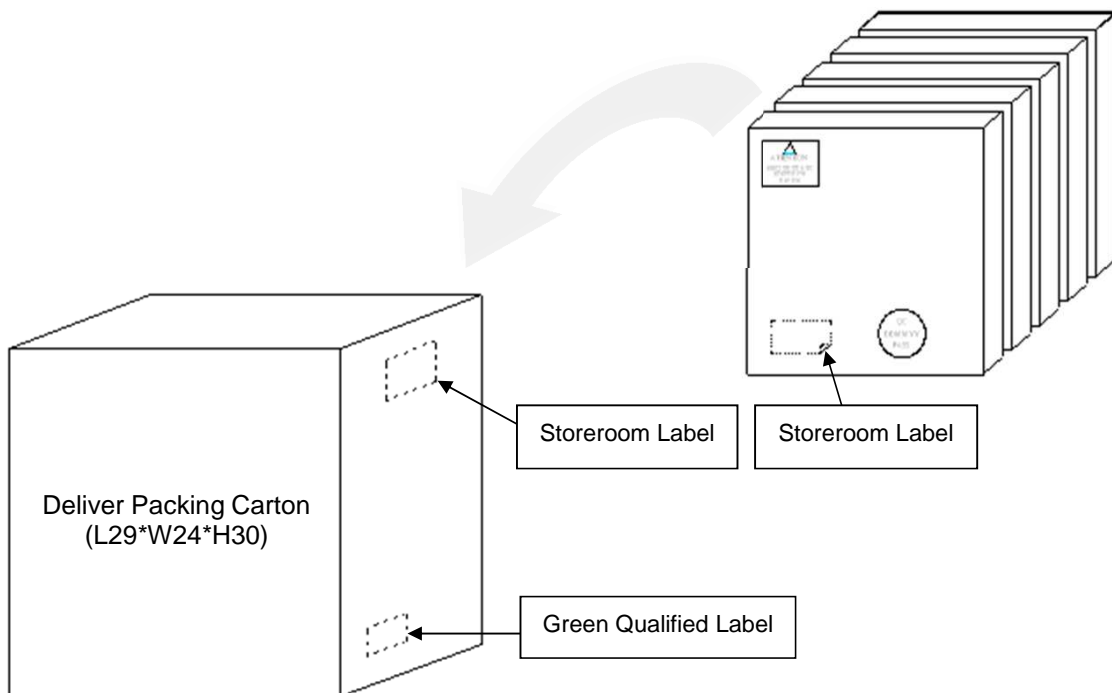
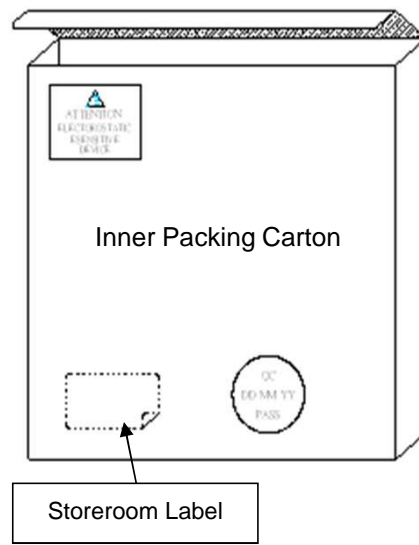
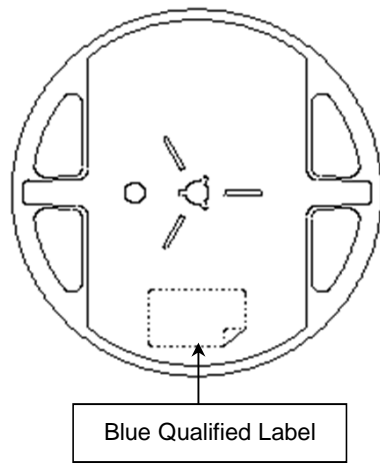
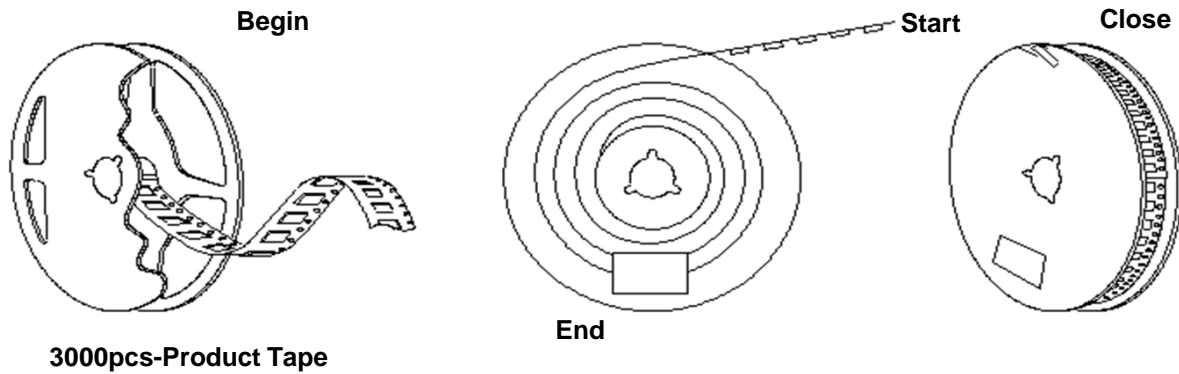
Pin	Function
1	OE
2	Ground
3	Clock Output
4	V_{DD}

TYPE FJ 2.5x2.0 SEAM SEALED CRYSTAL CLOCK OSCILLATOR

FJ2400010

VER. B 11-Jun-18

PACKING



单击下面可查看定价，库存，交付和生命周期等信息

[>>Diodes Incorporated\(达达科技\(美台\)\)](#)